MAKÜ İİBFD

**Journal of Mehmet Akif Ersoy University
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Online Alışveriş Yapan Tüketicilerde Fiziksel Dağıtım Hizmet Kalitesinin E-Memnuniyet ve E-Sadakat Üzerindeki Etkisi *

The Effects of Physical Distribution Service Quality on E- Satisfaction and E-Loyalty in Consumers Who Shop Online

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* This article is produced from the master's thesis titled "Online Alışveriş Sitelerinin Fiziksel Dağıtım Hizmet Kalitesinin Tüketicinin E-Memnuni-yeti ve E-Sadakati Üzerindeki Etkisi".

Özet

Teknolojinin gelişmesi ile birlikte internet kullanımının artması sonucu insanlar geleneksel alışverişten e-ticarete yönelmişlerdir. Ürünlerin internet ortamında daha güvenilir ve hızlı bir şekilde tüketiciye ulaştırılması noktasında lojistik ile birlikte online alışveriş sitelerinde fiziksel dağıtım hizmet kalitesi kavramı da ön plana çıkmıştır. Buna bağlı olarak fiziksel dağıtım faaliyetinin güvenli ve sorunsuz bir şekilde gerçekleştirilmesi müşterilerde e-memnuniyet ve e-sadakat olgusunun oluşmasına katkı sağlamaktadır. Bu doğrultuda bu araştırmanın amacı online alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesinin tüketicinin e-memnuniyet ve e-sadakatine olan etkisini incelemektir. Araştırmanın örneklemini Türkiye'de yaşayan 18 yaş ve üzeri online alışveriş yapan 988 kişi oluşturmaktadır. Veriler online anket ile toplanmış olup yapısal eşitlik modeli ile analiz edilmiştir. Araştırma sonuçlarına göre dakiklik ve teslimat durumu e-memnuniyeti, e-memnuniyet de e-sadakati olumlu olarak etkilemektedir.

Anahtar Kelimeler: E-Ticaret, Online Alışveriş, Fiziksel Dağıtım Hizmet Kalitesi, E-Memnuniyet, E-Sadakat

Abstract

With the advent of technology, the increase in internet usage has led people to shift from traditional shopping to e-commerce. online shopping sites have become increasingly focused on the quality of physical distribution service, along with logistics, in terms of delivering products to consumers more reliably and quickly on the internet. Ensuring safe and trouble-free physical distribution contributes to the formation of e-satisfaction and e-loyalty among customers. therefore, this research aims to examine the effect of physical distribution service quality on consumer e-satisfaction and e-loyalty of consumers who shop online. The research sample consists of 988 online shoppers above 18 years of age residing in Turkey. data were collected through an online survey and analyzed using a structural equation model. according to the research results, punctuality and delivery status have a positive impact on e-satisfaction, and e-satisfaction has a positive impact on e-loyalty.

Keywords: E-Commerce, Online Shopping, Physical Distribution Service Quality, E-Satisfaction, E-Loyalty.

EXTENDED SUMMARY

Research Problem

In the literature, there are many studies on e-service quality, logistics service quality, e-satisfaction, and e-loyalty. In some studies, the relationship between logistics service quality and e-satisfaction and/or e-loyalty has also been examined. In addition, it has been observed that the logistics service quality used in these studies consists of more comprehensive sub-factors such as efficiency, communication, confidentiality, system, operation, personnel, technique, order and information quality, and time, or a single factor as logistics service quality. However, there are only a few studies that directly measure the physical delivery service quality of online shopping sites, such as punctuality, stock, and delivery status. Therefore, this research aims to examine the effect of physical distribution service quality on consumer e-satisfaction and e-loyalty of consumers who shop online.

Research Questions

The main question of the research is whether the physical distribution service quality affects the consumer's e-satisfaction and e-loyalty of consumers who shop online. In the research, the effects of punctuality, accessibility, and delivery, which are the sub-factors of physical distribution service quality, on e-satisfaction and e-loyalty, and the effect of e-satisfaction on e-loyalty were examined. Seven hypotheses were tested.

Literature Review

The development of technology has affected the lives of consumers in many areas. One of these areas has been shopping. Consumers, who used to have to go from store to store to buy a product, have started to shop wherever they are with the development of technology. The lack of time and place limits, the ease of accessing many products, the opportunity to make comparisons, and the ability to list the desired products more quickly with the filtering feature have caused consumers to use online shopping intensively. In online shopping, the job does not end with the payment after the product is selected and added to the basket. Another important process for the consumer is the delivery of purchased products to consumers. This reveals the importance of physical distribution services. Cancellation of the sale by saying that the product is out of stock after purchase or late or damaged delivery of the product may reduce the satisfaction of the consumer from online shopping. However, one of the main goals of most businesses is to make customers satisfied with the product, brand, or purchasing process and become loyal customers of the business. Satisfaction, which emerges as a result of the quality criterion perceived by consumers, is also expressed as an indicator of consumer loyalty. As the consumer is satisfied, his loyalty to the business will increase. Although there are many factors affecting satisfaction and loyalty, it is thought that physical distribution service quality also plays an important role, especially in online sales.

Methodology

The research sample consists of 988 people aged 18 and over who live in Turkey and use online shopping sites. The data were collected through the online survey technique and analyzed using the structural equation model. In the first part of the survey, the "physical distribution service quality" scale developed by Bienstock, Mentzer, and Bird in 1997 was used to determine the physical distribution service quality perception of the e-commerce sites most preferred by consumers. The questionnaire consists of three dimensions, six on punctuality, five on availability, and four on delivery status. In the second part of the questionnaire, the scales related to e-satisfaction and e-loyalty used by Ting et al. (2016) are included. There are 15 expressions in this section, seven of which are on the e-satisfaction scale and eight on the e-loyalty scale. The online questionnaire form created for the research was applied between 19 March and 29 May 2021. Online surveys were delivered to consumers aged 18 and over who shop online in Turkey via platforms such as e-mail and social media. 1115 questionnaires were answered by the participants, and 46 of them were not included in the study because they were filled incompletely and incorrectly. Outlier analysis was conducted for the remaining 1069 questionnaires, and as a result of this examination, 988 questionnaires were analyzed.

Results and Conclusions

According to the research results, consumers prefer online shopping for reasons such as being reliable, easy, and fast, the abundance and quality of varieties, affordable prices, and ease of returns. Punctuality and delivery status positively affect e-satisfaction, and e-satisfaction positively affects e-loyalty. According to the research

results, e-commerce businesses need to manage not only the process until the product is purchased but also the process until the product is delivered to the consumer well and smoothly. It is because participants also attach great importance to the quality of physical distribution service. Particular attention should be paid to the condition and punctuality of delivery. Delivery status and punctuality affect e-satisfaction. For this reason, businesses that offer online shopping services must start the process immediately after the order is completed and deliver the product to the consumer as soon as possible. In addition to speed, delivery, and packaging of the correct product without damage should not be neglected. Since one of the most important goals of businesses is to increase the loyalty of their customers, businesses need to pay due attention to the distribution elements that will satisfy their customers. As can be seen from the research results, e-satisfaction greatly affects e-loyalty. It should not be forgotten that a satisfied customer will become a loyal customer over time.

1. GİRİŞ

Lojistik kökeni çok eskilere dayanan taşıma, depolama, dağıtım gibi faaliyetlerin yürütüldüğü bir hizmet şeklidir. Kavram ilk kez 1905 yılında askeri bir terim olarak ortaya çıkmış olup bu alanda çalışan personelin mühimmat taşıma, bakım ve onarım, tedarik ve sevkiyatı sağlamasında kullanılmıştır (Duran & Türkoğlu, 2019). Kavram askeri kökene dayandığı için yapılan ilk tanımlar da bu yöndedir. Eccles (1949) lojistiğin tüm askeri faaliyetin, personel, malzeme ve teçhizatın üretimi, tedariki, depolanması, taşınması, dağıtımı, bakımı ve tahliyesi; personelin göreve getirilmesi, sınıflandırılması, askeri teşkilatın inşası ve işletilmesi de dahil olmak üzere desteklenmesi hem planlama hem de uygulamayı kapsadığını belirtmektedir. Rider (1970) de lojistiğin üç düzeyden oluşan bir kavram olduğunu, en üstte sosyal ve ekonomik amacın, ikinci düzeyde amaca ulaşılmasını sağlayan sistem süreçleri veya adımlarının ve son olarak da sistemin çalışmasını sağlamak için yerine getirilmesi gereken iş fonksiyonları veya organizasyonel görevlerin yer aldığını belirtmektedir. Lojistik, bir ürünün üretildiği yerden alınması, depolarda bekletilmesi, stoğunun yapılması, ürünün tüketicinin, istediği yere istenilen şekilde teslim edilmesi ve bu faaliyetlerin planlı, hızlı ve verimli bir şekilde gerçekleştirilme işlemidir (Erkan, 2014). Lojistik sektörü milli gelirin artması, buna bağlı olarak alım gücünün yükselmesi, işsizliğin azalması, ikili ve çoklu antlaşmalar, siyasi güç ve liderlik, lojistik üsler, stratejik ortaklık, gelir dağılımı adaleti, rekabet gücünün, eğitimin, yabancı sermayenin ve dış ticaret hacminin artması, ekonomik büyüme ve kalkınma gibi birçok alanda etkili olmaktadır (Arabacı & Yücel, 2020). Kapsamının giderek genişlemesi ve önem kazanması ile kavram iş dünyasının ilgi odağı haline gelmiştir. Buna bağlı olarak iç ve dış piyasada da lojistik etkinliğini sürdürmektedir. Ek olarak lojistik kavramı ön plana çıkarak küresel rekabet ortamında işletmelere ve ülkelere rekabet avantajı sağlamada aktif rol oynamaktadır (Şengel, 2012).

İletişim ve bilgisayar teknolojilerinde yaşanan gelişmeler sonucu ticari faaliyetlerin gerçekleştirilmesi sürecinde köklü ve kapsamlı değişimler meydana gelmiştir. Bununla birlikte e-ticaret uygulaması önem kazanmıştır (Soydal, 2006). E-ticaret, internet üzerinden gerçekleştirilen ticari faaliyetler olarak tanımlanmaktadır (Afşar, 2001). Türkiye'nin e-ticaret pazarı gittikçe büyümektedir. Türkiye Bilişim Sanayicileri Derneği (TÜBİSAD) ve Deloitte'nin 2020 yılında Türkiye'nin e-ticaret pazarının büyüklüğünü tespit etmek için hazırladıkları rapora göre Türkiye'nin e-ticaret pazar

büyüklüğü 2018 yılında 59,9 milyar TL iken, %39'luk bir artışla 2019 yılında 83,1 milyar TL seviyelerine ulaşmıştır. 2018-2019 yıllık büyüme oranları incelendiğinde sadece online perakendeciliğin %48, tatil ve seyahatin %32 ve çok kanallı perakendenin %32 arttığı görülmüştür (TÜBİSAD, 2020). 2023 yılının ilk altı ayında Türkiye'de e-ticaret hacmi önceki yıla göre %109,7'lik artarak 652,7 milyar TL olmuş, aynı dönemde sipariş adetleri 2 milyar 556 milyon adede çıkarak %20 artış göstermiş ve perakende e-ticaret hacmi de %119'luk artışla 390 milyar TL'ye yükselmiştir (Ticaret Bakanlığı, 2023). Tüketicilerin e-ticaret siteleri üzerinden birden fazla ürüne aynı anda ulaşabilmeleri ve ürünlerin fiyat, kalite ve özellik bakımlarından kolayca karşılaştırmasını yapabilmelerinin bu büyümede payı olduğu düşünülmektedir. Online perakendecilerin kabul edilebilir bir tatmin hizmeti düzeyini karşılamaması veya aşmaması halinde, mevcut müşterilerini elde tutmaları veya yenilerini çekmeleri pek olası değildir (Rabinovich & Bailey, 2004). Bu da beraberinde müşteriler için e-memnuniyet ve e-sadakat kavramlarının ortaya çıkmasına zemin hazırlamaktadır.

E-memnuniyet, tüketicilerin online alışveriş sitelerinin verdiği hizmetten memnun olması şeklinde ifade edilmektedir (Faiz, 2018). E-memnuniyet kavramı algılanan hizmet kalitesi faktörlerinden etkilenmektedir (İlhan, 2021). E-memnuniyetin oluşması hizmet kalitesi faktörlerinin tanımlanması, müşterilerin alışveriş sırasında veya alışveriş sonrasında bu hizmete verdiği tepkinin ortaya konulması şeklinde gerçekleşmektedir (Bozbay vd., 2016). Müşterinin memnuniyet seviyesi yükseldikçe o ürün ya da markaya olan sadakati de çoğalacaktır.

E-sadakat; müşterilerin herhangi bir online alışveriş sitesinden sürekli olarak ürün satın almasıdır (Öztürk vd., 2012). Satıcıların sattıkları ürünlerin sorunsuz, kaliteli ve güvenilir olması müşterilerde satıcılara karşı güven duygusunun gelişmesine neden olmaktadır. Buna bağlı olarak tüketiciler işletmeler hakkında olumlu ağızdan ağıza pazarlama yapmakta hatta işletmenin satış elemanı gibi davranışlar sergileyebilmektedirler. İşletmelerin en temel amaçlarından biri de sadık müşterilerini kaybetmemek ve onların sayılarını artırmaktır.

Alan yazında e-hizmet kalitesi, lojistik hizmet kalitesi, e-memnuniyet ve e-sadakat ile ilgili birçok çalışma (Çallı vd., 2010; Aktürk, 2013; Uzel & Tuna, 2014; Hua & Jing, 2015; Demirgüneş, 2016; Faiz, 2018; Huang & Satchabut, 2019; Valiyev, 2019; Yıldız, 2020; Bakır & Bekereci, 2020; Erçetin & Arıkan, 2020; Faiz & Kaplan, 2020; Akıskalı & Kitapçı, 2021; Aydın, 2021; Güllü vd., 2021; Jarrar, 2021; Karabıyık, 2021) bulunmaktadır. Hatta bazı çalışmalarda (Karadeniz & Işık, 2014; Bakan & Şekkeli, 2018; Yıldız, 2020; İlhan, 2021) lojistik hizmet kalitesi ile e-memnuniyet ve/veya e-sadakat arasındaki ilişki de incelenmiştir. Ek olarak bu çalışmalarda kullanılan lojistik hizmet kalitesinin verimlilik, iletişim, gizlilik, sistem, operasyon, personel, teknik, sipariş ve bilgi kalitesi ile zaman gibi daha kapsamlı alt faktörlerden veya lojistik hizmet kalitesi olarak tek faktörden meydana geldiği görülmüştür. Ancak online alışveriş sitelerinin dakiklik, stok ve teslimat durumu gibi doğrudan fiziksel dağıtım hizmet kalitesini ölçmeye yönelik çok az sayıda (Murfield vd., 2017; Cotarelo vd., 2021; Akıl & Ungan, 2022) çalışmayla karşılaşılmıştır. Bu çalışmalardan Murfield vd. (2017) ve Cotarelo vd.

(2021) çok kanallı pazarlama uygulamalarındaki fiziksel dağıtım hizmet kalitesine odaklanırken, Akıl & Ungan (2022) ise online alışveriş yapan tüketiciler üzerinde çalışma yapmış ancak fiziksel dağıtım hizmet kalitesinin e-sadakat üzerindeki etkisini doğrudan irdelememiştir. Bu sebeple araştırmanın amacı, online alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesinin tüketicinin e-memnuniyet ve e-sadakatine olan etkisini incelemektir.

2. KAVRAMSAL ÇERÇEVE

2.1. E-Ticaret Kavramı

Küreselleşme ile birlikte teknoloji alanında hızlı gelişmeler yaşandığı için ticaret sektörü de bu durumdan etkilenmiştir. Satıcılar ve tüketiciler arasında gerçekleşen ticaret yerini internet üzerinden dijital ortamda gerçekleştirilen e-ticarete bırakmıştır. E-ticaret en basit haliyle, alım satım işlemlerinin internet üzerinden gerçekleştirilmesidir (Akpınar, 2017). E-ticaretin ortaya çıkma süreci birçok tartışmayı da beraberinde getirmiştir. Bu yüzden e-ticaret kavramı çeşitli araştırmacılar ve kurumlar tarafından farklı şekillerde ifade edilmiştir (Davis, 2003).

Genel anlamda 1970'lerde iş dünyası sözlüğüne giren e-ticaret, elektronik bağlantılar yoluyla gerçekleştirilen her türlü ekonomik faaliyeti içermekte olup aynı zamanda elektronik olarak desteklenen girişimci ağları ve işbirliği düzenlemelerini (elektronik ağlar) kapsamaktadır (Wigand, 1997). İktisadi İşbirliği ve Kalkınma Teşkilatı (OECD) e-ticareti kişi ve kurumların ürün alım satım işlemlerinde kullandıkları metin, ses ve görüntülerin dijital ortama yüklenmesi şeklinde tanımlamaktadır (Kazankaya, 2019). E-ticaret, alıcı, banka, sigorta, nakliye, elektronik noter, elektronik işletme (e-işletme) ve elektronik posta (e-posta) gibi unsurları içermektedir. Alıcı ve satıcı taraf arasındaki ticari işlemleri hızlandıran her türlü teknolojik ürün, elektronik ticaret aracı olarak adlandırılmaktadır. E-ticaret araçları; telefon, televizyon, faks, elektronik veri değişimi (EVD), elektronik para transfer sistemleri ve internettir (Akçi & Göv, 2015).

Pandemi koşulları da e-ticaretin artmasına neden olmuştur. İnsanlar Covid-19'un bulaşma riski ve devletlerin kısıtlama kararları sebebiyle kalabalık ortamlardan uzak durmuşlardır. Bu sebeple insanlar gereksinimlerini karşılamak için online alışveriş sitelerini tercih etmiştir (Toraman, 2021). Covid-19 pandemisi sebebiyle son zamanlarda e-ticaret sektöründe belirli ürün gruplarında talep artışı yaşanırken, bazı ürün gruplarının taleplerinde de azalmalar meydana gelmiştir (Güven, 2020). TÜBİSAD (2021) raporuna göre 2019 yılında 3,4 trilyon dolar olan küresel e-ticaret 2020'de 4,3 trilyon dolara, 2021'de ise 4,9 trilyon dolara yükselmiş ve pandemi nedeniyle 2020 yılında dünyada internet kullanan her beş kişiden dördü e-ticareti denemiş, değer zincirini destekleyici yeni iş modelleri ortaya çıkmış ve coğrafi anlamda tüketiciler farklı ve daha geniş satıcı ağına ulaşmıştır.

E-ticaret, farklı kişi ve kurumlar arasında gerçekleşmektedir. Ticaretin türüne ve durumuna göre bu taraflar değişmesine rağmen satıcılar, üreticiler, alıcılar, noterler, sivil toplum örgütleri, devlet kurumları gibi kuruluşlar e- ticaretin taraflarıdır (Akçi & Göv, 2015). E-ticaret iş modeli, bir işletmenin

başarılı bir şekilde işletilmesine ve bunun sektördeki mevcut ürünlerle nasıl ilişkili olduğuna ilişkin bir planı ifade etmekte olup e-ticaretin tarafları olan işletme (Business: B), tüketici (Consumer: C) ve devlet kurumlarının (Government: G) İngilizce karşılıklarının baş harflerinden B2B, B2C, B2G, C2B, C2C, C2G oluşmaktadır (Row, 2019). Kredi kartı, sanal kredi kartı, elektronik fon transferi, elektronik çek ve para, kapıda ödeme ve mobil ödeme e-ticaretteki ödeme yöntemleridir (Çelik & Uslu Divanoğlu, 2023). Teknolojinin gelişmesiyle e-ticaret artık insanların ayrılmaz bir parçası olan mobil cihazlar aracılığıyla yapılan e mobil ticarete dönüşmüş ve tüketiciler bilgisayarlara kıyasla mobil cihazlar aracılığıyla bu cihazlardan rahatlıkla ulaşabildikleri internet sayesinde çevrimiçi satın alma işlemlerine daha fazla zaman harcamaya başlamışlardır (Sardjono vd., 2021).

E-ticarette önemli olan unsurlardan birisi de satın alınan ürünlerin tüketiciye zamanında ve hasarsız bir şekilde ulaştırılmasıdır. Bu noktada lojistik kavramı ön plana çıkmaktadır. 1970'li yıllarda günümüzün modern lojistik anlayışının temelleri atılmıştır. Bu dönemde işletmelerin lojistik yönetimi faaliyetlerini gerçekleştirmesiyle birlikte fiziksel dağıtım ve fiziksel tedarik olarak ayrı şekillerde ele alınan işletme faaliyetlerinin gerçekte ortak faaliyetlerden meydana geldiği ve bu iki kavramın birlikte düşünülmesi gerektiği anlaşılmıştır (Biçer, 2007). 1976 yılında Amerikan Ulusal Fiziksel Dağıtım Yönetimi Milli Konseyi (NCPDM), fiziksel dağıtım kavramını; "hammadde, yarı mamul ve nihai ürünlerin üretim noktasından tüketim noktasına kadar etkin bir şekilde akışını planlamak, uygulamak ve kontrol etmek için geniş sayıda faaliyetleri içeren deyim" olarak tanımlanmaktadır (Yavuz, 2006).

Sunulan fiziksel dağıtım hizmetinin sorunsuz bir şekilde işlemesi gerekmektedir. Çünkü tüketicilerin sunulan hizmetin iyi ve kaliteli olması yönünde beklentileri mevcuttur. Hizmet kalitesi, "tüketicinin bir hizmetten beklentileri ile alınan hizmete ilişkin algıları arasındaki fark" olarak ifade edilmekte ve işletmelere rekabet avantajı sağlamaktadır (Han & Baek, 2004). Hizmet kalitesinin ölçülmesi, hizmet kalitesinin geliştirilmesi ve iyileştirilmesi sürecinin ilk aşamasını oluşturmaktadır (Gedik, 2017). Bu sebeple hizmet kalitesinin ölçümünde, kritik olay yöntemi, benchmarking (kıyaslama), istatiksel yöntemler, toplam kalite endeksi gibi çeşitli yöntemler kullanılmaktadır (Tarcan & Balçık, 2020). İlk olarak 2001 yılında Mentzer tarafından ortaya atılan lojistik hizmet kalitesi kavramı, tüketiciler tarafından algılanan lojistik hizmet kalitesinin yalnızca ürünlerin fiziksel dağıtımı ile ilgili olmadığına, özellikle satış sonrası süreçler ile ilişkili olduğuna vurgu yapmaktadır (Micu vd., 2013). Lojistik hizmet kalitesi, müşteri memnuniyetini sağlamak amacıyla fiziksel dağıtım ve tedarik faaliyetlerindeki hizmet kalitesi olarak tanımlanmaktadır (Bakan & Şekkeli, 2018). Lojistik hizmet kalitesi; bilgi kalitesi, personel iletişim kalitesi, fiziksel dağıtım kalitesi, sipariş işleme kalitesi, dakiklik, imaj, teknoloji ve sosyal sorumluluk bileşenlerinden meydana gelmektedir (Korucuk, 2018).

Lojistik hizmet kalitesi tüketicilere mekân ve zaman bakımından fayda sağlamakla birlikte tedarikçilere rekabet üstünlüğü kazandırmaktadır (Saura & Molina, 2011). Bienstock vd. (1997) dakiklik, mevcut olma ve teslimat durumu olmak üzere üç alt boyuttan meydana gelen fiziksel dağıtım hizmet kalitesi ölçeğini geliştirmişlerdir. Kalite, bu anlamda teslim edilen siparişin şekli ve bileşimi yani

teslim edilen ürünlerin durumu anlamına gelmektedir. Fiziksel dağıtım hizmet kalitesi aynı zamanda müşteri hizmetlerinin pazarlanmasından ürünlerin teslimine kadar uzanan daha geniş bir lojistik hizmetinin de parçası olup ürünün mevcut olması, sipariş teslim döngüsü süresinde dakiklik ve siparişlerin teslim edildiğindeki durumu olmak üzere üç somut sonuç unsuruna odaklanmaktadır (Rabinovich & Bailey, 2004). Azizi vd. (2014) de tüketicinin bakış açısından fiziksel dağıtım hizmetinin, malların mevcut olmasını garanti eden, bir tedarikçi tarafından sağlanan, alıcı için zaman ve yer faydası yaratan ve biçim faydasını garanti eden birbiriyle ilişkili faaliyetler paketi olarak tanımlandığını vurgulamaktadır. Sipariş edilen ürünlerin mevcut olması ve belirtilen ürünlerin doğru miktarda, hasarsız ve en önemlisi zamanında teslim edilmesi, tüketicilerin işletmelerin fiziksel dağıtım hizmeti kalitesine ilişkin yargılarını büyük ölçüde etkilemektedir (Bienstock vd., 1997). Tüketicilerin sunulan hizmeti kaliteli ve iyi olarak algılamaları hizmetten memnun olmalarına ve ürün veya markaya karşı sadakat geliştirmelerine de sebebiyet verebilmektedir.

2.2. E-Memnuniyet ve E-Sadakat Kavramları

Latincede "yeterli" anlamında kullanılan memnuniyet kavramı, bireylerin istek, beklenti ve gereksinimlerinin karşılanması sonucu bireylerde oluşan tatmin duygusu olarak tanımlanmaktadır (Crow vd., 2002). Tüketicilerin algıladıkları kalite ölçütünün bir sonucu olarak ortaya çıkan memnuniyet, tüketici sadakatinin göstergesi olarak da ifade edilmektedir (Boonlertvanic, 2019). Müşteri memnuniyetini oluşturan temel unsurlar algılanan hizmet kalitesi, beklenen hizmet kalitesi, müşteri şikâyetleri ve algılanan değer olmak üzere dört başlık altında değerlendirilmektedir. Müşteri şikâyeti müşteri memnuniyetinin çıktısını, algılanan değer, algılanan ve beklenen hizmet kalitesi ise müşteri memnuniyetinde neden sonuç ilişkisini göstermektedir (Çubukçuoğlu, 2021).

E-memnuniyet, son dönemlerde pazarlama alan yazınında üzerinde çok durulan bir konudur. E-memnuniyet ile ilgili ülkemizde ve diğer ülkelerde yapılan birçok çalışma (Anderson & Srinivasan, 2003; Bansal vd., 2004; Çallı vd., 2010; Faiz, 2018; Erçetin & Arıkan, 2020) bulunmaktadır. Teknolojik gelişmeler sonucunda işletmelerin müşterilerine sunduğu hizmetlerin internet ortamına taşınması, müşteri memnuniyeti kavramının bu kapsamda tekrar ele alınmasını zorunlu kılmıştır (Bakır, 2018). E-memnuniyet, müşterilerin elektronik ticaret sitesi üzerinden gerçekleştirdikleri satın alma deneyiminden hoşnut olması durumudur (Anderson & Srinivasan, 2003). Tang vd. (2015) e-memnuniyet kavramını, tüketicilerin herhangi bir e-ticaret sitesi ile ilgili ürün tarama ve satın alma deneyiminden tatmin olması olarak tanımlamaktadır. Chiu vd. (2009) ise e-memnuniyeti, müşterilerin online alışveriş tecrübelerine yönelik değerlendirmeleri olarak ifade etmektedir.

E-memnuniyet, online alışveriş sitelerinde kalite faktörlerinin belirlenmesi ve müşterinin satın alma esnasında veya satın alım sonrasında bu faktörlere olumlu tepki vermesi sonucu oluşmaktadır (Bozbay vd., 2016). Müşterilerin birden fazla ürünü aynı anda inceleyip karşılaştırma yapabilmesi ve ürüne hızlı bir şekilde ulaşması müşterilerin hizmetten duydukları memnuniyeti artırmaktadır. Online

alışveriş sitelerinden alışveriş yapan tüketicilerin memnuniyet seviyelerini yükselten diğer bir faktör de fiziksel dağıtım hizmetinin kalitesidir. İstenen ürünün stokta olması, ürünün hızlı ve hasarsız bir şekilde teslim edilmesi, iade olanaklarının kolay olması müşterinin yaptığı alışverişten daha çok tatmin olmasını sağlayacaktır. Schaupp ve Belanger (2005) ise, e-memnuniyeti oluşturan öncülleri alışveriş faktörü, ürün faktörü ve teknolojik faktörler olmak üzere üç grup altında değerlendirmektedir. Alışveriş faktörü; müşteri hizmetleri, satın alma ve teslimat kolaylığını; ürün faktörü ürün çeşitliliğini, değer algısını ve ürün ile ilgili bilgileri; teknolojik faktörler ise internet sitesi tasarımı, kullanım kolaylığı ve güvenlik gibi özellikleri içermektedir (Li vd., 2015).

Sadakat ise, müşterinin bir marka veya işletmeye olan bağlılığı yani bir nevi psikolojik olarak taahhütte bulunma veya adanmışlık durumudur (Erciş & Büyük, 2016). Sadakat kavramı genel olarak duygu ve hislerdeki sağlamlığı, gerçeğe uygunluğu, içten bağlılığı, ihanet etmemeyi ve samimi dostluğu ifade etmektedir (Koç, 2009). Müşteri sadakati ise, müşterinin kendisi için başka seçeneklerin bulunduğu bir ortamda belirli bir ürüne veya işletmeye karşı hissettiği duygusal bağlılık ve tesadüfi olmayan satın alma isteğidir (Bayuk & Küçük, 2007).

E-sadakat, tüketicilerin e-ticaret sitesinden sürekli alışveriş yapması sonucu oluşan olumlu tutum olarak tanımlanmaktadır (Anderson & Srinivasan, 2003). Bhaskar ve Kumar'a (2016) göre e-sadakat, tüketicilerin e-ticaret sitelerine yönelik sadakati ve bir sonraki alışverişlerinde yine aynı e-ticaret sitesini kullanma niyetleridir. E-sadakatin oluşumunda e-güven, e-memnuniyet, kullanım kolaylığı, e-ticaret platformunun kalitesi, ürün çeşitliliği, kişiselleştirme, algılanan değer, taahhüt ve web site tasarımı gibi faktörler önemli rol oynamaktadır (Aydın, 2021).

2.3. Lojistik Hizmet Kalitesi, E-Memnuniyet ve E-Sadakat İle İlgili Yapılan Çalışmalar

Alan yazın incelendiğinde lojistik hizmet kalitesi ile e-memnuniyet veya e-sadakat arasındaki ilişkiyi, e-memnuniyet ile e-sadakat arasındaki bağıntıyı veya bu değişkenleri etkileyen faktörleri irdeleyen çeşitli çalışmaların olduğu görülmüştür. Aktürk (2013), online alışveriş sitelerindeki e-mağaza imajı ve e-hizmet kalitesinin tüketicinin e-sadakat ve e-memnuniyet düzeyleri üzerinde anlamlı bir etkisi olduğunu belirtmiştir. Ayrıca e-mağaza imajı ile e-hizmet kalite boyutlarından işlemleri gerçekleştirme ve etkinlik boyutları arasında pozitif bir ilişkinin olduğunu tespit etmiştir. Uzel ve Tuna (2014), çalışmalarında Mentzer, Flint ve Kent'in tasarladığı lojistik hizmet kalitesi ölçeğini İstanbul'da yaşayan ve online alışveriş yapan tüketiciler üzerinde uygulayarak lojistik hizmet kalitesinin Türkiye'deki online alışveriş kullanıcılarının satın alma sonrası davranışsal niyetine etkisini belirlemeye çalışmışlardır. Araştırma sonucunda lojistik hizmet kalitesinin sipariş verme sürecinin kolay olması, siparişi takip edebilme imkanının olması ve sonrasında siparişin teslimat anındaki durumunun satın alma sonrasında ortaya çıkan davranışsal niyet ile ilişkili olduğu ortaya konulmuştur. İlhan (2021), online alışveriş yapan tüketicilerin lojistik hizmet kalitesi algısının müşteri memnuniyeti üzerinde olumlu etkisi olduğunu dile getirmiştir.

Araştırmanın hipotezlerinin oluşturulmasında doğrudan yararlanılan çalışmalar da olmuştur. Delfmann vd. (2002) tüketicinin e-memnuniyetinin yalnızca ürünün kendisine değil aynı zamanda müşteriye teslimat performansına da dayalı olduğunu, bu nedenle fiziksel dağıtım hizmet kalitesinin hizmet sunumunda önemli bir rol oynadığını ifade etmektedir. Karadeniz ve Işık (2014), e-ticaret siteleri tarafından sunulan lojistik hizmet kalitesinin, müşteri memnuniyetiyle olan ilişkisini inceledikleri araştırmada, müşterilerin lojistik hizmet kalite algılarının bilgi kalitesi, sipariş kalitesi, cevap verebilirlik ve zaman boyutlarında oluştuğunu ifade etmişlerdir. Ayrıca memnuniyet üzerinde sipariş kalitesi ve zaman boyutunun daha etkili olduğunu vurgulamışlardır. Hua ve Jing (2015), lojistik hizmet kalitesinin müşteri memnuniyetine etkisini irdeledikleri çalışmada, personel, satış sonrası ve teslimat hizmet kalitesinin müşteri memnuniyetini pozitif yönde etkilediği sonucuna ulaşmışlardır. Towers ve Xu (2016) stok yokluğunun müşteri memnuniyeti ve sadakati üzerinde önemli bir olumsuz etkiye sahip olduğunu belirtmektedir. Murfield vd. (2017) online alışveriş yapıp mağazadan teslim alan ve mağazadan ürün alıp evine teslimat isteyen tüketicilerle yaptığı çalışmada online alışveriş yapanlarda teslimat durumu ve dakikliğin tüketicinin memnuniyetini olumlu etkilediğini, ortaya koymuştur. Cotarelo vd. (2021) de online satın aldıkları ürünü mağazada teslim alanlar ile mağazadan ürün alıp evine teslimat isteyen yani çok kanallı pazarlamayı kullanan tüketicilerle yaptıkları çalışmada her iki durumda da dakikliğin memnuniyeti etkilediğini dile getirmiştir. Akıl ve Ungan (2022) tüketici memnuniyetini etkileyen e-ticaret lojistiği hizmet kalitesi faktörlerini belirlemeyi amaçladığı çalışmasında zaman, sipariş durumu, siparişin doğruluğu ve sipariş tutarsızlıklarının tüketici e-memnuniyeti üzerinde olumlu etkisi olduğunu bulmuştur. Araştırma sonuçları bağlamında "Online alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesi tüketicilerin e-memnuniyetini olumlu etkilemektedir" hipotezinin oluşturulması düşünülmüş, ancak araştırmada kullanılan fiziksel dağıtım hizmet kalitesi ölçeği üç alt boyuttan meydana geldiği için de hipotezler bu boyutlara uygun olarak tasarlanmıştır.

H1a: Online alışveriş yapan tüketicilerde dakiklik tüketicilerin e-memnuniyetini olumlu etkilemektedir.

H1b: Online alışveriş yapan tüketicilerde ürünlerin mevcut olma durumu tüketicilerin e-memnuniyetini olumlu etkilemektedir.

H1c: Online alışveriş yapan tüketicilerde teslimat durumu tüketicilerin e-memnuniyetini olumlu etkilemektedir.

Murfield vd. (2017) mağazadan alışveriş yapıp evine teslimat isteyen tüketicilerde sadece mevcut olmanın sadakati olumlu etkilediğini, online alışveriş yapanlarda ise dakiklik, mevcut olma ve teslim durumunun tüketici sadakati üzerinde doğrudan bir etkisinin bulunmadığını belirtmiştir. İlhan (2021), çalışmasında online alışveriş yapan tüketicilerin lojistik hizmet kalitesi algısının müşteri sadakatini olumlu etkilediğini tespit etmiştir. Çok kanallı pazarlama stratejilerini inceleyen Cotarelo vd. (2021) de online alışveriş yapıp mağazada teslimat isteyen tüketicilerde dakiklik ve mevcut olma

durumunun sadakati olumlu etkilediğini ortaya koymuştur. Bu sonuçlar neticesinde "Online alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesi tüketicilerin e-sadakatini olumlu etkilemektedir" hipotezinin oluşturulması düşünülse de araştırmada kullanılan fiziksel dağıtım hizmet kalitesi ölçeği üç alt boyuttan meydana geldiği için hipotezler bu boyutlara uygun olarak yazılmıştır.

H2a: Online alışveriş yapan tüketicilerde dakiklik tüketicilerin e-sadakatini olumlu etkilemektedir.

H2b: Online alışveriş yapan tüketicilerde ürünlerin mevcut olma durumu tüketicilerin e-sadakatini olumlu etkilemektedir.

H2c: Online alışveriş yapan tüketicilerde teslimat durumu tüketicilerin e-sadakatini olumlu etkilemektedir.

Murfield vd. (2017) çok kanallı pazarlamayı tercih eden tüketicilerde memnuniyetin sadakati olumlu etkilediğini ortaya koymuştur. Bakır ve Bekereci (2020), e-ticaret işletmelerinin müşterilerine sunmuş olduğu kullanıcı deneyiminin e-sadakat ve e-memnuniyete etkisini ayakkabı sektörü bağlamında irdelediği araştırmasında e-memnuniyet üzerinde kullanıcı kolaylığı ve kullanıcı verimliliği boyutlarının etkili olduğunu belirtirken, e-memnuniyetin de e-sadakati etkilediği sonucuna ulaşmıştır. Yıldız (2020), Faiz ve Kaplan (2020), Karabıyık (2021), Cotarelo vd. (2021) ve İlhan (2021) tüketicilerin memnuniyet düzeyleri arttıkça sadakatlerinde de artış olduğunu ortaya koymuşlardır. Akıl ve Ungan (2022) da çalışmasında tüketicilerin e-memnuniyetinin e-sadakatlerini olumlu etkilediğini tespit etmiştir. Bu çalışmaların sonucuna göre oluşturulan hipoteze aşağıda yer verilmiştir.

H3: Online alışveriş yapan tüketicilerin e-memnuniyeti e-sadakatlerini olumlu etkilemektedir.

3. ARAŞTIRMANIN YÖNTEMİ

Yöntem bölümünde araştırmanın amacı ve önemi, modeli, evreni ve örneklemi, veri toplama yöntemi, geçerlilik ve güvenilirlik bilgileri ile veri analiz yöntemine yer verilmiştir.

3.1. Araştırmanın Amacı ve Önemi

Küreselleşme ile birlikte bilgi ve iletişim teknolojilerinde yaşanan gelişmeler bireyleri ve toplumları etkilemiştir. Bu yaşanan gelişmelerin başında hiç şüphesiz internet yer almaktadır. İnternetin yaygın olarak kullanılmasıyla birlikte e-ticaret sektörü ortaya çıkmıştır. E-ticaret kavramı ticari faaliyette bulunan taraflar arasındaki ürün alma, ürün satma, evrak, para ve veri paylaşımının elektronik ortamda yapılması anlamına gelmektedir. Bu kavram, bilgisayar ortamında web sayfası oluşturmayı, ürün tanıtımı yapmayı, tüketicilere ürünler hakkında bilgi vermeyi ve ödeme işlerini kapsamaktadır (Alqeed, 2013). E-ticaret 7/24 kesintisiz hizmet vermesi bakımından geleneksel ticarete kıyasla daha çok tercih edilmektedir (Çoban vd., 2011). Son zamanlarda tüm dünyayı etkisi altına alan Covid-19 küresel salgını ile birlikte e-ticaret sektörü daha fazla ön plana çıkmıştır. Pandemi sebebiyle ortaya çıkan

sokağa çıkma kısıtlamaları dolayısıyla birçok insan giyim, gıda, teknolojik araç vb. ihtiyaçlarını e-ticaret siteleri vasıtasıyla karşılamaya başlamıştır.

E-ticaret siteleri aracılığıyla alışveriş işleminin tamamlanarak ürünün kısa sürede ve hasarsız bir şekilde tüketiciye ulaştırılması noktasında fiziksel dağıtım faktörü gündeme gelmektedir. Fiziksel dağıtım kapsamındaki depolama, stoklama, ambalajlama vb. alanlarda yaşanabilecek en ufak bir sorun bile e-ticaret işleminin aksamasına neden olabilmektedir. Bu anlamda e-ticarette fiziksel dağıtım önemli bir yere sahiptir. E-ticaret sitelerinde alışveriş işleminin başarılı bir şekilde gerçekleşebilmesi ancak fiziksel dağıtım sürecinin belli bir plan dahilinde sorunsuz bir şekilde yürütülmesi ile mümkün olmaktadır. Sorunsuz bir şekilde alışverişini tamamlayan tüketicilerde memnuniyet duygusu oluşacak ve o siteden sürekli alışveriş yaparak site ile aralarında sadakate dayalı bir bağ kurulacaktır. Diğer tüm işletmelerde olduğu gibi e-ticaret sitelerinin de en temel amaçlarından birisi mevcut olan sadık tüketicilerini kaybetmemek ve onların sayılarını artırmaktır. Bu noktada e-ticaret siteleri için de e-memnuniyet ve e-sadakat ihmal edilmemesi gereken kavramlardır.

Alan yazında Alan yazında fiziksel dağıtım hizmet kalitesi ile e-memnuniyet ve e-sadakat arasındaki ilişkiyi inceleyen sınırlı sayıda çalışma (Murfield vd.,2017; Cotarelo vd., 2021; Akıl & Ungan, 2022) bulunmaktadır. Bu çalışmaların ikisinde çok kanallı pazarlama stratejilerinde fiziksel dağıtım hizmet kalitesi alt boyutlarının e-memnuniyet ve e-sadakat üzerindeki etkisi incelenirken, diğerinde ise bu alt boyutların sadece e-memnuniyet üzerindeki etkisi araştırılmıştır. Üçünde de e-memnuniyet e-sadakat ilişkisine yer verilmiştir. Bu araştırmada ise online alışveriş yapıp evine teslimat isteyen tüketicilerde fiziksel dağıtım hizmet kalitesinin e-memnuniyet ve e-sadakat, e-memnuniyetin de e-sadakat üzerindeki etkisi incelendiği için, araştırmanın temel amacı, online alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesinin tüketicilerin e-memnuniyet ve e-sadakatleri üzerindeki etkisini ortaya koymak olarak belirlenmiştir. Araştırmanın konusu bakımından alan yazına ve e-ticaret sektörüne önemli katkılar sunacağı düşünülmektedir.

3.2. Araştırmanın Modeli

Araştırmanın alan yazın kısmında verilen bilgiler doğrultusunda bir model oluşturulmuştur. Araştırmanın modeli Şekil 1'de sunulmuştur. Şekil 1'e göre fiziksel dağıtım hizmet kalitesi dakiklik, mevcut olma ve teslimat durumu olmak üzere üç alt faktörden meydana gelmektedir ve fiziksel dağıtım hizmet kalitesinin e-memnuniyet ve e-sadakat üzerinde etkisi bulunmaktadır. Ek olarak e-memnuniyet de e-sadakati etkilemektedir.

Şekil 1. Araştırmanın Modeli
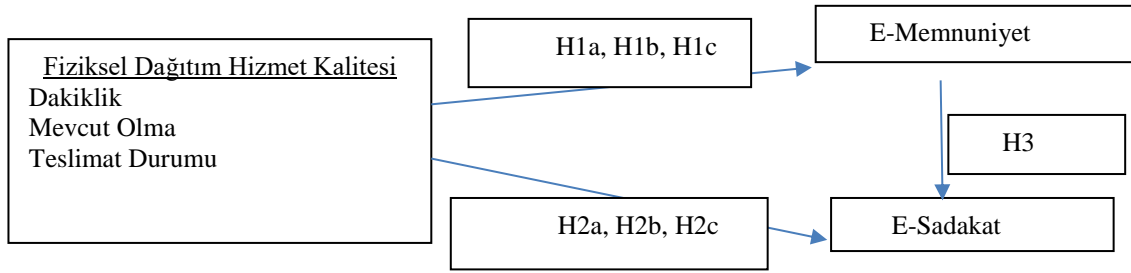
3.3. Araştırmanın Evreni ve Örneklemi

Evren kavramı çalışma evreni (genel evren) ve araştırma evreni şeklinde iki başlık altında incelenmektedir. Çalışma evreni, basitçe tanımlanabilen ancak kişi veya nesnelere ulaşımı zor, bazen de imkânsız olabilen çalışma grubu olarak açıklanırken, araştırma evreni ise, çalışma evreninin biraz daha sınırlandırılmış halidir (Gürbüz & Şahin, 2018). Araştırmanın evrenini 18 yaş ve üstü e-ticaret sitelerinden online alışveriş yapan tüketiciler oluşturmaktadır. Burada e-ticaret sitesi sadece e-ticaret platformlarında faaliyet gösteren siteleri değil, internet vasıtasıyla satış yapan bütün siteleri kapsamaktadır. Araştırmada belirli bir ürün grubunu satın alan tüketiciler değil, Murfield vd. (2017), Cotarelo vd. (2021) ile Akıl ve Ungan'ın (2022) çalışmalarında olduğu gibi e-ticaret sitelerinden herhangi bir ürün alan tüm tüketiciler evreni oluşturmaktadır. Evren olarak e-ticaret sektörünün tercih edilmesinin sebebi son zamanlarda gelişen teknolojiyle birlikte internet kullanımının artması ve bunun sonucunda da tüketicilerin e-ticarete yoğun olarak ilgi göstermeleridir. Ek olarak tüketiciler e-ticaret sitelerini kullanarak mağazalara gitmelerine gerek kalmadan istedikleri ürüne kolayca ulaşabilmektedirler. E-ticaret siteleri bu anlamda tüketicilere zaman ve maliyet bakımından avantaj sağlamaktadır. Bu sitelerde iade ve değişim seçeneğinin bulunması o alışveriş sitesine karşı güvenilirliği artırmaktadır. İçinde bulunulan Covid-19 salgını ile birlikte yasalarla ortaya konulan sokağa çıkma kısıtlamaları nedeniyle tüketiciler e-ticaret sitelerine yoğun ilgi göstermişler ve bu salgın döneminde tüketiciler gıda, giyim vb. ihtiyaçlarının önemli bir kısmını bu sitelerden karşılamışlardır (TÜBİSAD, 2020). Genellikle evrenin tamamına erişebilmek zaman ve maddi faktörlerden dolayı pek mümkün olmamaktadır. Bu sebeple örneklem belirlenerek araştırma örneklem üzerinden gerçekleştirilmiştir.

Araştırmanın evrenini oluşturan tüketici sayısının net rakamına ulaşmak mümkün olmamıştır. Ancak Akbulut ve Çapık (2022) yapısal eşitlik modeli 10-15 madde sayısı ile yapılıyorsa 100-200, 50 ifade söz konusu ise 450 katılımcıya gereksinim olduğunu belirtmiştir. Sayın ve Gelbal (2016) ise yapısal eşitlik modelinin uyum değerleri ile örneklem sayısı arasındaki ilişkiyi incelediği çalışmasında arzu edilen uyum değerlerinin 500 örneklem büyüklüğünden sonra sabit hale geldiğini belirtip yapısal eşitlik modeli analizlerinin en az 500 katılımcı ile yürütülmesini önermektedir. 988 anket analize tabi tutulduğu için gerekli olan örneklem büyüklüğüne ulaşıldığı düşünülmektedir.

Araştırmada tesadüfi olmayan örneklem tekniklerinden kolayda örneklem yöntemi tercih edilmiştir. Kolayda örneklem yönteminde, araştırmacı çalışmasına konu olan uygun kriterdeki

katılımcıların bulunduğu örneklem büyüklüğüne kolay bir şekilde ulaşarak araştırması için gerekli veriyi elde etmektedir (Gürbüz & Şahin, 2017). Bu yöntem araştırmacılara zaman ve ekonomik açıdan avantajlar sağlamaktadır. Kolayda örneklem yönteminin araştırmacılara sağladığı avantajların yanında bazı dezavantajları da bulunmaktadır. Kolayda örneklem yöntemi aracılığıyla ulaşılan veriler sadece elde edilen grubu temsil ettiği için ana kütle ile ilgili herhangi bir genelleme yapılamamaktadır (Haşıloğlu vd., 2015).

3.4. Araştırmanın Veri Toplama Yöntemi

Araştırma nicel bir araştırma olarak tasarlanmıştır. Araştırma için veri toplama aracı olarak anket yöntemi tercih edilmiştir. Diğer veri toplama yöntemlerine kıyasla anket yönteminde katılımcılara daha hızlı, kolay ve uygun maliyetli olarak ulaşılmaktadır (Büyüköztürk, 2015).

Online anket ise oluşturulan soru formlarının internet aracılığıyla katılımcılarla paylaşılarak veri toplanmasıdır. Bu anket yönteminin araştırmacılara sağladığı birçok avantaj bulunmaktadır. Araştırmacılar online anketler sayesinde katılımcılara kolay ve hızlı biçimde ulaşarak zamandan tasarruf sağlamaktadır. Online anketlerde veriler elde edildikten sonra herhangi bir veri girişi yapılmasına gerek kalmadan analiz için hazır hale gelmektedir (Wilson & Laskey, 2003). Ayrıca kırtasiye masrafı olmadığı için online anket yöntemi geleneksel ankete göre daha ekonomiktir. Online anketin zaman ve maliyet avantajından dolayı araştırmada online anket tekniği tercih edilmiştir.

Araştırma çerçevesinde e-ticaret sitelerinden online alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesinin tüketicilerin e-memnuniyet ve e-sadakatleri üzerindeki etkisini ölçmek için üç bölümden oluşan bir anket uygulanmıştır. Anketin birinci bölümünde tüketicilerin en çok tercih ettikleri e-ticaret sitelerinin fiziksel dağıtım hizmet kalitesini belirlemek için Bienstock, Mentzer ve Bird tarafından 1997 yılında geliştirilen "fiziksel dağıtım hizmet kalitesi" ölçeği kullanılmıştır. Anket 6'sı dakiklik, 5'i mevcut olma ve 4'ü teslimat durumu olmak üzere üç boyuttan ve 15 ifadeden oluşmaktadır. Anketin ikinci bölümünde ise Ting vd. (2016) çalışmalarında kullandıkları e-memnuniyet ve e-sadakat ile ilgili ölçeklere yer verilmiştir. E-memnuniyet ölçeğinde 7, e-sadakat ölçeğinde ise 8 ifade olmak üzere toplamda bu bölümde de 15 ifade bulunmaktadır. Araştırma kapsamında kullanılan ölçek ifadeleri 5'li Likert ölçeği (1: Kesinlikle Katılmıyorum … 5: Kesinlikle Katılıyorum) aracılığıyla ölçülmüştür. Rennis Likert ismiyle de bilinen bu ölçek katılımcılara çeşitli ifadeler veya sorular sorularak, katılımcıların bu ifadelere ve sorulara katılıp katılmadığının belirlenmesinde kullanılmaktadır (Coşkun vd., 2017). Sosyal bilimlerle ilgili araştırmalarda Likert tipi ölçekler veri sağlamada çok elverişli ve kolay olduğu için tercih edilmektedir (Mellor & Moore, 2014). Anketin son bölümünde ise katılımcıların demografik özelliklerine ait cinsiyet, yaş, gelir, eğitim, çalışma durumu, e-ticaret sitelerinden en çok hangisini kullandıkları, bu siteyi niye tercih ettikleri, kaç yıldır internetten alışveriş yaptıkları ve son bir yılda internet üzerinden kaç kez alışveriş yaptıklarını belirlemeye yönelik dokuz tane soruya yer verilmiştir. Bu soruların bazıları açık uçlu, bazıları da kategorik soru şeklinde oluşturulmuştur.

Araştırma için oluşturulan online anket formu 19 Mart- 29 Mayıs 2021 tarihleri arasında uygulanmıştır. Online anketler, e mail, sosyal medya gibi platformlar vasıtasıyla Türkiye'de yaşayan 18 yaş ve üzeri online alışveriş yapan tüketicilere ulaştırılmıştır. Katılımcılar tarafından 1115 anket yanıtlanmış, içerisinden 46 tanesi eksik ve hatalı doldurulması nedeniyle araştırma kapsamına alınmamıştır. Kalan 1069 anket için analiz öncesi uç değer incelemesi yapılmış ve bu inceleme sonucunda 988 anket analize tabi tutulmuştur.

3.5. Araştırmanın Geçerlilik ve Güvenilirliği

Araştırma kapsamındaki verilerin nasıl toplandığı, hangi yöntemler kullanılarak analiz edildiğine ek olarak araştırma için yararlanılan yöntemlerin güvenirliğine ve geçerliğine dikkat edilmelidir. Bu bağlamda bilimsel araştırmalarda güvenirlik ve geçerlik kavramları birbirinden bağımsız düşünülememektedir (Aziz, 2020). Güvenirlik, ölçüm işleminin tutarlılığı ile ilgili bir kavram olup araştırmaya veri sağlamak için kullanılan ölçüm araçlarının, aynı konu için farklı zaman diliminde, farklı katılımcılar ve şartlar altında aynı sonuca ulaşabilmesi olarak tanımlanmaktadır (Drost, 2011).

Bir ölçeğin güvenirliği test yeniden test, alternatif formlar ve içsel tutarlılık analizi ile ölçülebilmektedir. Test yeniden test yöntemi, bir araştırmadaki ölçüm işleminin belirli aralıklarla tekrar edilmesi sonucu elde edilen verilerin tutarlılığını tespit etmede kullanılmaktadır (Palmer vd., 2018). Çeşitli sebeplerle ölçüm işleminin iki veya daha fazla kez tekrar edildiği durumlarda bazı sıkıntılar yaşanabilmektedir. Bu gibi durumlarda test yeniden test yönteminin yerine güvenirlik yaklaşımlarından ikincisi olan alternatif form yöntemi tercih edilmektedir. Alternatif form yönteminde araştırmanın amacına uygun şekilde birbirine yakın nitelikte ifadelerin yer aldığı iki ayrı form oluşturularak kişilerin bu benzer formlara ne yanıt verdikleri tespit edilmektedir (Gürbüz & Şahin, 2018). Son olarak içsel tutarlılık analizi ile de ölçme aracında bulunan mevcut ifadelerin kendi aralarında tutarlı olup olmadığı belirlenmektedir (Tuna vd., 2012). Araştırmacılar, ölçeklerin güvenirliğini test etmede Cronbach Alfa yani güvenirlik katsayısından yararlanmaktadırlar. Cronbach Alfa katsayısı araştırmalardaki iç tutarlık analizlerinde yaygın olarak kullanılmaktadır. Araştırmalarda Cronbach Alfa katsayısının 0,7 ve 0,7'den büyük olması beklenmektedir (Kılıç, 2016). Bu araştırmada da alfa katsayısı tekniği ile araştırmanın güvenirliği test edilmiş ve sonuçlar Tablo 1'de sunulmuştur.

Tablo 1. Ölçeklerin Güvenirlik Durumu

	Fiziksel Dağıtım Hizmet Kalitesi Ölçeği	E Memnuniyet Ölçeği	E Sadakat Ölçeği
Faktör Analizinden Sonra	0,976	0,974	0,971
Faktör Analizinden Sonra Ölçek Rastgele	0,948	0,963	0,963
İkiye Ayrıldığında	0,962	0,941	0,926

Tablo 1, araştırmada kullanılan tüm ölçeklerin faktör analizinden sonraki alfa katsayılarını göstermektedir. Ek olarak faktör analizinden sonra ölçek rastgele ikiye ayrılmış ve tekrar güvenirlik analizi yapılmıştır. Cr. Alfa katsayısı gibi ölçeği rastgele ikiye ayırma da güvenirliği ölçmenin

yöntemlerinden birisidir. Tabloya göre en yüksek güvenirlik katsayısı 0,982 iken, en düşük 0,926'dır. Bu sonuçlar da araştırmanın güvenirliğinin oldukça yüksek olduğunu ortaya koymaktadır.

Geçerlik, araştırma kapsamındaki ölçüm aracının araştırma konusuna olan uygunluğu olarak tanımlanmaktadır. Bunun yanı sıra ölçüm aracının tarafsız olarak ölçme işlemini yerine getirmesi beklenmektedir (Aziz, 2020). Araştırmalarda geçerlik; kapsam geçerliği, yapı geçerliği ve görünüş geçerliği bakımından üç şekilde incelenmektedir. Kapsam geçerliği, bir bütün olarak ölçek ve ölçekte bulunan ifadelerin, araştırmanın amacına ne kadar hizmet verdiğini belirlemede kullanılmaktadır. Kendi aralarında bir ilişki olduğu tahmin edilen eleman veya elemanlar arasındaki bağlantı sonucu oluşan örüntü de yapı geçerliği kavramı ile açıklanmaktadır (Ercan & Kan, 2004). Görünüş geçerliği ise, araştırma kapsamındaki ölçek ifadelerinin tüm katılımcılar tarafından benzer şekilde kavranması şeklinde ifade edilmektedir. Ölçek ifadelerinin kolay okunması, anlaşılabilir ve net olması görünüş geçerliği bakımından çok önemlidir (Toy & Tosunoğlu, 2007).

Yapılan araştırmada kapsam geçerliğini sağlamak için araştırmacılar tarafından oluşturulan anket formu pazarlama ve araştırma alanında uzman iki akademisyene gösterilmiştir. Daha sonra görünüş geçerliği için anket formu 18 yaş ve üzeri online alışveriş yapan 30 tüketiciye yüz yüze ön test şeklinde uygulanmıştır. Akademisyenler ve online alışveriş yapan tüketicilerin anket ile ilgili düşünceleri ve yorumları dikkate alınarak anket formu yeniden düzenlenmiş ve katılımcılara uygulanmaya hazır hale getirilmiştir. Ayrıca doğrulayıcı faktör analizi ile araştırmanın yapı geçerliği test edilmiştir. Araştırma kapsamında yakınsama ve ayrışma geçerliği de incelenmiştir. 0,5'ten büyük olması beklenen AVE katsayısı yakınsama geçerliği ile ilgiliyken, değişkenler arasındaki korelasyon katsayılarının karesinin AVE değerinden küçük olması da ayrışma geçerliğinin sağlandığını göstermektedir (Hair vd., 2014). Değişkenlere ilişkin ölçüm modeli tablolarının altında yakınsama ve ayrışma geçerliği ile ilgili bilgiler verilmiştir.

3.6. Araştırmanın Veri Analizi

Araştırmanın analizinde tanımlayıcı istatistiki analiz ve yapısal eşitlik modeli kullanılmıştır. Ancak veriler analiz edilmeden önce ileride herhangi bir sorunla karşılaşılmaması için gözden geçirilmiştir. Öncelikle yanlış ve eksik doldurulduğu tespit edilen 46 anket analiz kapsamına alınmamıştır. Daha sonra "ortalama değer atama" yöntemi kullanılarak kayıp değeri az olan ölçekteki değişkenlere veri atanmıştır. Mahalonabis Uzaklıkları vasıtasıyla uç değer incelemesi yapılmış ve 81 anket analizden çıkartılmıştır. Yapılan tüm bu incelemeler sonucunda da analizler 988 anket üzerinden gerçekleştirilmiştir.

Yapısal eşitlik modeli yapmadan önce verilerin normal dağılıp dağılmadığını kontrol edebilmek için normallik analizinden yararlanılmıştır. Aminu ve Shariff (2014) çarpıklık değerinin 3'ten, basıklık değerinin ise 10'dan büyük mutlak değer almasının soruna neden olacağını bu nedenle, çarpıklık ve basıklık mutlak değerinin 3 ve 10'dan büyük olmaması gerektiğini belirtmiştir. Kwak ve Kim (2017) ise

örneklem sayısının 30 ve üzeri olduğu durumlarda "merkezi limit teoremi" gereğince verilerin normal dağıldığının kabul edilebileceğini dile getirmiştir. Verilerin basıklık ve çarpıklık değerleri +3 ve -3 aralığında bulunduğundan ve örneklem sayısı 988 olduğundan verilerin normal dağıldığı varsayılarak yapısal eşitlik modeli kullanılmıştır.

Yapısal eşitlik modelinde değişkenlerin ölçüm modeli uyum değerlerini sağlaması gerekmektedir. Alan yazında hem iyi hem de kabul edilebilir uyum değerleri bulunmaktadır. Bulgular kısmındaki uyum değerleri tablosunda bu değerler tablo altlarında kaynağı belirtilerek sunulmuştur. Model uyum değerlerine ulaşmak için modifikasyon yapmak gerekebilmektedir. Hair vd. (2017) faktör yüklerinin 0,708 ve üzerinde olmasının ideal kabul edildiğini, ancak 0,40'ın altında olmaması gerektiğini, böyle bir ifadenin olması halinde bunun ölçüm modelinden çıkartılıp analizin tekrar edilmesini dile getirmişlerdir. Ek olarak programın önerdiği modifikasyon indeksleri kontrol edilip ölçüm modelinden soru çıkartılarak, göstergelerin hata terimleri arasında kovaryans bağlantısı oluşturularak ya da ikisi birden yapılarak modifikasyon yapılabilmektedir (Yıldız, 2023). Araştırmada öncelikle faktör yükü 0,40'ın altında olan ifadeler analizden, çıkartılmış, daha sonra da programın önerdiği modifikasyonlar dikkate alınarak hem değişkenlerden ifade çıkartılmış hem de ifadeler arasında kovaryans bağlantısı yapılmıştır. Her bir değişkenin ölçüm modeli tablosunun altında da hangi işlemlerin yapıldığı açıklanmıştır.

4. ARAŞTIRMANIN BULGULARI

Bu kısımda araştırmaya katılanların demografik özellikleri ile kullanılan ölçeklerin doğrulayıcı faktör analizi ile yapısal eşitlik modeli sonuçlarına yer verilmiştir.

4.1. Araştırmaya Katılanların Demografik Özellikleri

Araştırmaya katılım sağlayanların %72,7'si kadın, %27,3'ü de erkektir. Katılımcıların %18,7'si 18-23 yaş, %55,9'u 24-29 yaş, %14,1'i 30-35 yaş, %11,1'i 36 yaş ve üstüdür. Araştırmaya katılanların %25,8'i 3000 TL ve altı, %20,3'ü 3001-4500 TL, %22'si 4501-6000 TL, %10,5'i 6001-7500 TL, %6,5'i 7501-8000 TL, %4,8'i 8001-10500 TL, %3,7'si 10501-12000 TL, %6,4'ü 12001 TL ve üstü aylık hane gelirine sahip olup %1,2'si ilköğretim, %6,2'si lise, %10,2'si ön lisans, %45,4'ü lisans ve %36,2'si lisansüstü eğitim görmüştür. %23,1'i kamu sektöründe, %26,5'i özel sektörde çalışırken, %0,6'sı emekli, %8,5'i ev hanımı, %32,2'si öğrencidir. Katılımcıların %9,9'u Hepsiburada, %4,3'ü N11.com, %6,2'si perakendecisi de olan online siteler, %1,9'u Amazon, %0,7'si Kitapyurdu ve %5,1'i diğer sitelerden alışveriş işlemini gerçekleştirirken, Trendyol katılımcılar arasında %72'lik bir oranla en çok alışveriş yapılan online alışveriş sitesidir. Araştırmaya katılım gösterenlerin %5,8'inin 1 yıldan az, %35'inin 1-3 yıl, %36'sının 4-6 yıl ve %23,2'sinin 7 yıldan fazla süredir internetten alışveriş yaptığı ve son bir yıl içerisinde online alışveriş yapma sıklığı dikkate alındığında %10,2 katılımcı 1-3 kez, %14,6 4-6 kez, %12,3 7-9 kez ve %62,9 katılımcı da 10'dan fazla alışveriş yapmıştır.

Katılımcılara e-ticaret sitelerinden neden alışveriş yaptıklarıyla ilgili bir soru da sorulmuştur. Bu soru katılımcılara açık uçlu olarak sorulduğu ve 988 katılımcı olduğu için cevapların hepsini yazmak mümkün olmamıştır. Bu nedenle sadece tesadüfi olarak seçilen 50 yanıta Şekil 2'de yer verilmiştir. Ancak hem cevapların tümü hem de şekil incelendiğinde verilen cevaplarda en fazla güvenilir, kolay, hızlı, çeşit, fiyat, iade ve kalite kelimelerinin tekrar ettiği dikkat çekmektedir. Bu kelimeler de Şekil 2'de sunulmuştur.

Şekil 2. E-Ticaret Sitelerinden Alışveriş Yapma Nedenleri

4.2. Araştırmada Kullanılan Ölçeklerin Testi

Tablo 2'de fiziksel dağıtım hizmet kalitesi ölçeğine ait uyum değerleri bulunmaktadır. Tablo incelendiğinde ölçeğin uyum değerlerinin belirtilen sınırlar dahilinde olduğu gözlemlenmiştir. Fiziksel dağıtım hizmet kalitesi ölçeği; dakiklik, mevcut olma ve teslimat durumu olmak üzere üç alt faktörden meydana gelmektedir. Dakiklik 6, mevcut olma 5 ve teslimat durumu 4 ifadeden oluşmaktadır. Gerçekleştirilen doğrulayıcı faktör analizi sonucunda dakiklik, mevcut olma ve teslimat durumu alt faktörlerinden birer tane ifade çıkartılmış, ayrıca mv2 ve mv3 arasında da kovaryans yapılmıştır.

Tablo 2. Fiziksel Dağıtım Hizmet Kalitesi Ölçeğinin Uyum Değerleri

Ölçekler	X^2	DF	X^2/df	GFI	CFI	RMSEA
Fiziksel Dağıtım Hizmet Kalitesi	243,209	50	4,864	0,960	0,990	0,063
İyi Uyum Değerleri			≤3	≥0,90	≥0,97	≤0,05
Kabul Edilebilir Uyum Değerleri			≤5	≥0,85	≥0,90	≤0,08

Kaynak: Meydan ve Şeşen (2015); Karagöz (2019)

Tablo 3'te fiziksel dağıtım hizmet kalitesi ölçek ifadelerine ait ortalama, faktör yükü, CR Alfa, AVE ve son olarak CR değerleri bulunmaktadır. AVE katsayısı yakınsama geçerliği ile ilgilidir, bu değerin 0,5'ten büyük olması, alfa katsayısı, CR ve faktör yüklerinin ise 0,70 ve üzerinde olması tavsiye edilmektedir (Hair vd., 2017). Alt faktörlere ait en düşük faktör yükü 0,665 iken, en yüksek faktör yükü ise 0,987'dir. Güvenirliğe ait alfa katsayıları incelendiği zaman alt faktörlerin güvenirliğinin oldukça yüksek olduğu görülmektedir. Dakiklik değişkeninin AVE katsayısı 0,87; ayrışma geçerliği için mevcut olma ile korelasyon katsayısının karesi 0,65, teslimat durumu ile 0,86, e- memnuniyet ile 0,58 ve e-sadakat ile 0,54'tür. Mevcut olmanın AVE katsayısı 0,73; ayrışma geçerliği için dakiklik ile korelasyon katsayısının karesi 0,65, teslimat durumu ile 0,60, e-memnuniyet ile 0,40 ve e-sadakat ile 0,38'dir. Teslimat durumu alt faktörünün AVE değeri 0,95; ayrışma geçerliği için dakiklik ile korelasyon

katsayısının karesi 0,86, mevcut olma ile 0,60, e- memnuniyet ile 0,58 ve e-sadakat ile 0,53'dür. Tüm değişkenlerin AVE katsayısı 0,5'ten büyük olduğu için yakınsama geçerliğinin, AVE katsayısı değişkenlerin birbiri ile olan korelasyonlarının karesinden büyük olduğu için de ayrışma geçerliğinin sağlandığı söylenebilmektedir. CR katsayıları ise 0,91-0,98 aralığında bulunmaktadır. CR katsayısı da istenilen değerlerdedir. Ek olarak teslimat durumu 4,33, dakiklik 4,10 ve mevcut olma 3,71 ortalamaya sahiptir. Buradan da katılımcıların en fazla teslimat durumuna önem verdikleri anlaşılmaktadır.

Tablo 3. Fiziksel Dağıtım Hizmet Kalitesi Ölçeğinin Ölçüm Modeli Sonuçları

Değişkenler	İfadeler	Kod	Ort	Fak. Yükü	CR. Alfa	AVE	CR
Dakiklik (D_K)	1.Sipariş işlemleri kısa sürede bitmelidir.	dk1		0,849			
	2.Teslimat çok hızlı olmalıdır.	dk2		0,927			
	3.Tedarikçimin ürünü kargoya teslim etme süresi kısa olmalıdır.	dk3		0,969			
	4.Tedarikçimin siparişimin iadesi ile ilgili işlemleri kısa sürmelidir.	dk4	4,10	0,962	0,971	0,87	0,97
	6.Tedarikçimin siparişimi bir araya getirmesi için geçen süre kısa olmalıdır.	dk6		0,961			
Mevcut Olma (M_V)	2.Tedarikçiler bulunduğum yerin yakınında depoya sahip olmalıdır.	mv2		0,665			
	3.Tedarikçiler olası sipariş artışlarına karşı ekstra stok bulundurmalıdır.	mv3	3,71	0,884			
	4.Sipariş edilen ürünlerin her bedeni stokta mevcut olmalıdır.	mv4		0,945	0,916	0,73	0,91
	5. Ürünler sürekli olarak stokta bulunmalıdır.	mv5		0,912			
Teslimat Durumu (D_R)	1.Tüm siparişler hasarsız teslim edilmelidir.	dr1		0,987			
	2.Tüm siparişler doğru olmalıdır.	dr2	4,33	0,987			
	4. Siparişler özelliklerine uygun şekilde paketlenmelidir.	dr4		0,956	0,984	0,95	0,98

Tablo 4 incelendiğinde e-memnuniyet ölçeğine ait uyum değerlerinin belirtilen sınırlar içinde bulunduğu anlaşılmaktadır. Ayrıca e-memnuniyet ölçeğinde 7 ifadeden 3 ifade çıkarılarak, ifade sayısı 4'e düşürülmüştür.

Tablo 4. E-Memnuniyet Ölçeği Uyum Değerleri

Ölçekler	X^2	DF	X^2/df	GFI	CFI	RMSEA
E-Memnuniyet Ölçeği	8,075	2	4,038	0,996	0,999	0,055
İyi Uyum Değerleri			≤3	≥0,90	≥0,97	≤0,05
Kabul Edilebilir Uyum Değerleri			≤5	≥0,85	≥0,90	≤0,08

Kaynak: Meydan ve Şeşen (2015); Karagöz (2019)

Tablo 5'te e-memnuniyet ölçeğinde yer alan ifadelerin faktör yükleri, ortalamaları, alfa katsayıları, AVE ve CR değerleri bulunmaktadır. E-memnuniyet ölçeğinin faktör yükleri, 0,931 ile 0,972 arasındadır. Ölçeğin ortalaması 3,87 olup alfa ve CR katsayıları istenen değerlerin oldukça üzerindedir. E-memnuniyet ölçeğinin AVE katsayısı 0,90; ayrışma geçerliği için dakiklik ile korelasyon katsayısının karesi 0,58, mevcut olma ile 0,40, teslimat durumu ile 0,58 ve e-sadakat ile 0,86'dır. Bu değerler göre yakınsama ve ayrışma geçerliği sağlanmıştır.

Tablo 5. E-Memnuniyet Ölçeğinin Ölçüm Modeli Sonuçları

Değişkenler	İfadeler ve Kodları	Ort.	Kod	Fakt. Yükü	CR. Alfa	AVE	CR
E-Memnuniyet (M_M)	1.Bu alışveriş sitesinden satın alma kararım akıllıca oldu.		mm1	0,953			
	2.Bu alışveriş sitesinin alışveriş deneyiminden memnun kaldım.	3,87	mm2	0,972			
	3.Bu alışveriş sitesinden alışveriş yapmaktan gerçekten keyif aldım.		mm3	0,947	0,974	0,90	0,97
	4.Bu alışveriş sitesinden aldığım üründen memnun kaldım.		mm4	0,931			

Tablo 6'da e-sadakat ölçeğinin uyum değerlerine yer verilmiştir. Tablo incelendiğinde e-sadakat ölçeğinin uyum değerlerinin belirtilen sınırlar kapsamında olduğu görülmektedir. E-sadakat ölçeğinden doğrulayıcı faktör analizi sonucu 2 ifade çıkartılmış, böylelikle ifade sayısı 6 olmuştur. Ayrıca sd5 ve sd8 ifadeleri arasında da kovaryans yapılmıştır.

Tablo 6. E-Sadakat Ölçeğinin Uyum Değerleri

Ölçekler	X^2	DF	X^2/df	GFI	CFI	RMSEA
E-Sadakat Ölçeği	24,848	8	3,106	0,992	0,998	0,046
İyi Uyum Değerleri			≤3	≥0,90	≥0,97	≤0,05
Kabul Edilebilir Uyum Değerleri			≤5	≥0,85	≥0,90	≤0,08

Kaynak: Meydan ve Şeşen (2015); Karagöz (2019)

Tablo 7'ye göre e-sadakat ölçeğinin faktör yükleri 0,825-0,969 aralığında bulunmakta olup CR 0,97 ve alfa katsayısı da 0,971'dir. E-sadakat ölçeğinin AVE katsayısı 0,85; ayrışma geçerliği için dakiklik ile korelasyon katsayısının karesi 0,54, mevcut olma ile 0,38, teslimat durumu ile 0,53 ve e-memnuniyet ile 0,86'dır. Burada sadece e-memnuniyet değişkeninde bir birimlik bir fark mevcuttur. Ancak diğer tüm değerler kabul edilebilir sınırlar dahilinde olduğu ve e-memnuniyet değişkeni ile olan fark da oldukça az çıktığı için ayrışma geçerliğinin sağlandığı kabul edilmiştir. Ek olarak ölçek 3,81 ortalamaya sahiptir.

Tablo 7. E-Sadakat Ölçeğinin Ölçüm Modeli Sonuçları

Değişkenler	İfadeler ve Kodları	Ort.	Kod	Fakt. Yükü	CR. Alfa	AVE	CR
E-Sadakat (S_D)	1.Bu alışveriş sitesini kullanmayı seviyorum.		sd1	0,949			
	2.Çevrimiçi alışveriş yapmam gerektiğinde bu web sitesi ilk tercihim.		sd2	0,926			
	3.Bu alışveriş sitesini başkalarına tavsiye ederim.	3,81	sd3	0,969	0,971	0,85	0,97
	4.Gelecekte de bu alışveriş sitesinden satın alım yapacağım.		sd4	0,951			
	5.Bana göre, bu site alışveriş yapmak için en iyi perakende web sitesidir.		sd5	0,886			
	8.Bu sitenin geleceğini gerçekten önemsiyorum.		sd8	0,825			

Tablo 8'de araştırmanın yapısal eşitlik modeli sunulmuştur. Modelin uyum değerlerinin hepsi kabul edilebilir sınırlar içerisindedir.

Tablo 8. Yapısal Eşitlik Modeli Uyum Değerleri

Ölçekler	x2	Df	x2/df	GFI	CFI	RMSEA
Uyum Değerleri	671,281	197	3,408	0,940	0,987	0,049
İyi Uyum Değerleri			≤3	≥0,90	≥0,97	≤0,05
Kabul Edilebilir Uyum Değerleri			≤5	≥0,85	≥0,90	≤0,08

Kaynak: Meydan ve Şeşen (2015); Karagöz (2019)

Tablo 9'da yapısal eşitlik modeli katsayıları görülmektedir. Bu katsayılar incelendiğinde dakiklik ve teslimat durumunun e-memnuniyeti ve e-memnuniyetin de e-sadakati olumlu olarak etkilediği anlaşılmaktadır. Standardize edilmiş katsayı tahmin değeri dakikliğin e-memnuniyeti etkilemesinde, teslimat durumunun e-memnuniyeti etkilemesinden daha yüksektir. Bu bulgu dakikliğin teslim durumundan daha çok e-memnuniyete neden olduğunu göstermektedir. Ayrıca e-memnuniyet de e- sadakati yüksek oranda olumlu olarak etkilemektedir. Bu sonuçlara göre araştırmanın H1a, H1c ve H3 hipotezleri desteklenmiştir. E-memnuniyetin %62'si fiziksel dağıtım hizmet kalitesinin alt boyutları, e-sadakatin de %93'ü bu alt boyutlar ve e-memnuniyet tarafından açıklanmaktadır. Şekil 3'te yapısal eşitlik modelinin görünümü sunulmuştur.

Tablo 9. Yapısal Eşitlik Modeli Katsayıları

Değişkenler	Standardize b	Standart hata	p	R²
Dakiklik-E-Memnuniyet	0,428	0,076	***	
Mevcut Olma- E-Memnuniyet	-0,010	0,043	0,834	0,62
Teslimat Durumu- E-Memnuniyet	0,376	0,065	***	
Dakiklik-E-Sadakat	0,014	0,044	0,763	
Mevcut Olma- E-Sadakat	-0,005	0,025	0,852	
Teslimat Durumu- E-Sadakat	0,036	0,037	0,370	0,92
E-Memnuniyet- E-Sadakat	0,923	0,023	***	

Şekil 3. Yapısal Eşitlik Modeli
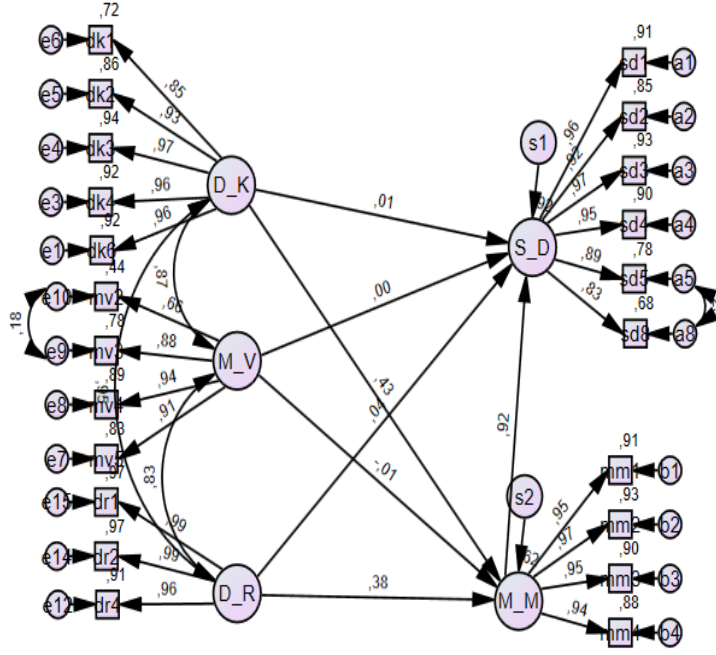
5. TARTIŞMA VE SONUÇ

Teknolojinin gelişmesi birçok alanda tüketicilerin hayatını etkilemiştir. Bu alanlardan bir tanesi de alışveriş olmuştur. Eskiden bir ürün satın almak için mağaza mağaza gezmek zorunda olan tüketiciler teknolojinin gelişmesi ile beraber bulundukları yerden alışveriş yapmaya başlamışlardır. Zaman ve mekân sınırının olmaması, birçok ürüne ulaşma kolaylığı, karşılaştırma yapabilme fırsatı, filtreleme özelliği ile istenen ürünleri daha çabuk listeleme olanağı tüketicilerin online alışverişi yoğun olarak kullanmalarına sebebiyet vermiştir.

Online alışverişte ürün seçilip sepete atıldıktan sonra ödemenin yapılmasıyla satın alma süreci sona ermemektedir. Tüketici için önemli olan diğer süreç satın alınan ürünlerin tüketicilere teslimatıdır. Bu da fiziksel dağıtım hizmetinin önemini ortaya koymaktadır. Ürün satın alındıktan sonra stokta yok denerek satışın iptal edilmesi, ürünün geç veya hasarlı teslimi tüketicinin online alışverişten duyduğu memnuniyeti azaltabilmektedir. Oysaki çoğu işletmenin temel amaçlarından birisi müşterilerin ürün, marka ya da satın alma sürecinden memnun kalarak işletmenin sadık müşterisi haline gelmesidir. Tüketici memnun oldukça işletmeye karşı olan sadakati de artacaktır. Memnuniyet ve sadakati etkileyen birçok faktör olmasına rağmen özellikle online satışlarda fiziksel dağıtım hizmet kalitesinin de önemli bir rol oynadığı düşünülmektedir. Bu nedenle bu araştırma online alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesinin tüketicilerin e-memnuniyet ve e-sadakatleri üzerindeki etkisini incelemek üzere yapılmıştır.

Araştırmaya katılanların çoğunluğunun kadın, 24-29 yaş aralığında, 3000 TL ve altı gelire sahip olduğu görülmüştür. Katılımcıların büyük kısmını Y kuşağı tüketicileri oluşturmaktadır. Öğrenci ve özel

sektör çalışanlarının sayıca fazla olduğu katılımcıların eğitim seviyeleri lisans olup 4-6 yıldan beri, yılda 10'dan fazla, yoğun olarak da Trendyol'dan alışveriş yapanlar ağırlıktadır. Ersoy (2017) da çalışmasında özellikle 26-35 yaş aralığında bulunan tüketicilerin daha çok online ürün satın aldıklarını ve en fazla 2-3 ayda bir online alışveriş yaptıklarını tespit etmiştir. Araştırma sonuçlarına göre tüketiciler güvenilir, kolay ve hızlı olması, çeşitlerin bolluğu ve kalitesi, fiyat uygunluğu ve iade kolaylığı gibi nedenlerle online alışverişi tercih etmektedirler. Bu sonuç İşler vd. (2014), Yağcı vd. (2017), Bozoğlu (2019) ile Pilatin ve Dilek'in (2021) çalışmalarının sonuçları ile paralellik göstermektedir.

Araştırmada yapılan faktör analizi sonucu fiziksel dağıtım ölçeği; dakiklik, mevcut olma ve teslimat durumu olmak üzere üç alt faktörden oluşmuştur. Katılımcıların sırasıyla teslimat durumu, dakiklik ve mevcut olmaya önem verdikleri sonucuna ulaşılmıştır. Bu sonuç Akıl ve Ungan'ın (2022) çalışma sonuçlarına benzerlik göstermektedir.

Fiziksel dağıtım hizmet kalitesinin alt boyutlarından dakiklik ve teslimat durumu tüketicilerin e-memnuniyetini olumlu olarak etkilemektedir. Hatta dakikliğin etkisinin teslimat durumununkinden daha fazla olduğu anlaşılmıştır. Karadeniz ve Işık (2014) zamanın, Hua ve Jing (2015) teslimat kalitesinin, Murfield vd. (2017) online alışveriş yapanlarda teslimat durumu ve dakikliğin, Cotarelo vd. (2021) çok kanallı pazarlamayı kullanan tüketicilerle yaptıkları çalışmada her iki durumda da dakikliğin ve son olarak Akıl ve Ungan (2022) zaman ve siparişin doğruluğunun tüketicinin e-memnuniyeti üzerinde olumlu etkisi olduğunu bulmuştur. Bu manada araştırmanın sonuçları bahsedilen çalışma sonuçlarını destekler niteliktedir. Tüketicilerin oldukça sabırsız olduğu bu çağda çoğu tüketici anında teslimat ve hızlı hizmet istediği için (Daugherty vd., 2019) bulunan sonuçlar pek de şaşırtıcı değildir. İşletmelerin bu sonuçları iyi değerlendirip gereken önlemleri almaları önem arz etmektedir.

Araştırma sonuçlarına göre fiziksel dağıtım hizmet kalitesinin hiçbir alt boyutu e-sadakati etkilememektedir. Çok kanallı pazarlama stratejisinde fiziksel dağıtım hizmet kalitesini araştıran Murfield vd. (2017) de çalışmalarında online olarak alışveriş yapan tüketicilerde fiziksel dağıtım hizmet kalitesinin hiçbir boyutunun sadakati etkilemediğini ortaya koymuştur. Cotarelo vd. (2021) online alışveriş yapıp mağazadan teslimat isteyen tüketicilerde dakiklik ve mevcut olma durumunun sadakati etkilediğini ancak online alışveriş yaparak teslimatı doğrudan evine isteyenlerde fiziksel dağıtımın hiçbir alt faktörünün sadakat üzerinde etkisi olmadığını dile getirmiştir. Sadakat duygusal bağlılıkla yakından ilişkili olduğu için dakiklik ve teslimat durumunun tüketicilerde her ne kadar e-memnuniyet sağlasa da tüketicilerin online alışveriş sitesine bağlılık hissetmesi için yeterli olmadığı anlaşılmaktadır.

Son olarak sonuçlardan e-memnuniyetin e-sadakati olumlu etkilediği anlaşılmıştır. Murfield vd. (2017), Bakır ve Bekereci (2020), Yıldız (2020), Faiz ve Kaplan (2020) ve Karabıyık (2021), Cotarelo vd. (2021) ile Akıl ve Ungan (2022) da çalışmalarında e- memnuniyetin e- sadakat üzerinde etkiye sahip olduğunu ortaya koymuştur. Bu noktada araştırmanın bulguları bu çalışmaların sonuçları ile paralellik göstermektedir.

5.1. Pratik ve Akademik Çıkarımlar

Araştırma sonuçlarından önemli yönetimsel çıkarımlar yapmak mümkündür. Araştırma sonuçlarına göre e-ticaret işletmeleri güvenilir olmaya, bol çeşit bulundurmaya, kaliteli ve uygun fiyatlı ürün sunmaya, iade süreçlerinin kolay olmasına önem vermelidir. Ek olarak sadece ürün satın alınana kadarki süreci değil, ürün tüketiciye teslim edilene kadarki süreci de iyi bir şekilde ve sorunsuz olarak yönetmelidir. Çünkü katılımcılar fiziksel dağıtım hizmet kalitesine de oldukça önem vermektedirler. Özellikle teslimat durumu ve dakiklik konusuna dikkat edilmelidir. Teslimat durumu ve dakiklik e-memnuniyeti etkilemektedir. Bu nedenle online alışveriş hizmeti sunan işletmeler siparişin tamamlanmasından hemen sonra süreci başlatmalı, olabildiğince hızlı bir şekilde de ürünü tüketiciye ulaştırmalıdır. Ürün tüketiciye vaat edilen süreden daha sonra teslim edildiğinde tüketici hayal kırıklığına uğrayabilmekte, üründen beklediği gibi yararlanamayabilmekte ve sırf bu nedenden dolayı diğer alışverişte başka bir online hizmet veren işletmeyi tercih edebilmektedir. Özellikle dayanıklılık ömrü kısa olan ürünlerde dakiklik işletmelerin daha da önem göstermesi gereken bir unsurdur.

Hızlılığın yanı sıra doğru ürünün hasarsız bir şekilde teslimi ve paketlenmesi de ihmal edilmemelidir. Bunu sağlamak için işletmeler özellikle paketleme ve taşıma sırasında gereken tüm önlemleri almalıdır. Kırılma ihtimali olan ürünlere özel koruyucu havalı ambalajlar kullanılabileceği gibi dayanıklılık ömrü kısa olan ürünlerde bozulmaya karşı önlem alınıp soğuk zincirle taşıma işleminin yapılması önem arz etmektedir.

Dakiklik ve teslimat durumunun e-memnuniyeti olumlu olarak etkilemesi işletmelerin fiziksel dağıtım hizmet sürecini siparişin alınmasından itibaren iyi bir şekilde yönetmesini gerektirmektedir. Akıl ve Ungan'ın (2022) çalışmalarında vurguladıkları gibi fiziksel dağıtım hizmet kalitesi ile tüketicinin memnuniyetini sağlamak isteyen işletmelerin teknoloji, tedarik zinciri altyapısı ve insan kaynağına daha fazla önem verip bu alanlara yatırım yapması gerekmektedir. Örneğin Covid 19 sürecinde tedarik zinciri alt yapısı ve teknolojinin ne kadar önemli olduğu daha iyi anlaşılmıştır. Bu nedenle işletmelerin dinamik ve sürekli değişebilen günümüz koşullarına uyum sağlamaları daha hızlı teslimat süreleri için artan taleplere cevap verebilecek, daha fazla koordinasyon içeren teknolojiye entegre dağıtım yapısı ile mümkün olmaktadır. Bu dağıtım yapısı süreci kolaylaştıran yazılımlar, dronlar, teslimat durumundaki hatayı en az indirecek robotlar ya da yapay zeka uygulamaları gibi araçlar sayesinde işlevsel hale getirilebilir. Teslim sürecinde rotanın optimize edilmesi, yakıt verimliliğinin artırılması ve teslim süresinin azaltılması gibi iyileştirmeler yapay zekanın lojistik süreçlerin en iyi şekilde kullanılmasını sağlarken aynı zamanda maliyetleri de minimize etmesine olanak vermektedir (Kahveci, 2023). Göçemen (2022) de, siparişlerin teslimatı için üretilen özel yazılımlar sayesinde teslimat rotasının optimize edilerek ürünlerin tüketicilere çok kısa sürede hatta belirli şehirlerde aynı gün içerisinde ulaşmasının mümkün hale geldiğini belirtmektedir.

İşletmeler tüketicilere hızlı teslimat için çok kanallı pazarlama stratejilerine ağırlık verebilir. Örneğin "online satın al, mağazadan teslim al" yaklaşımı tüketicinin siparişini bekleme sürecini kısaltıp

ürünlerin hasarsız ve doğru bir şekilde tüketiciye ulaşmasını kolaylaştıracaktır. Manser Payne ve Smith (2023) de online sipariş verip mağazadan teslim alma iş modelinin, hızlı ve rahat bir alışveriş süreci sağladığını, perakendecilerin müşterileriyle etkileşim kurması için yeni bir yöntem sunarak perakende sektörünü dönüştürme yeteneğine sahip çok kanallı bir temas noktası olduğunu vurgulamaktadır. Bu bağlamda siparişlerin daha hızlı teslim edilmesi için stokların tüketicilere daha yakın konumlandırılması, işletmelerin depolarını daha fazla yerde bulundurması önem arz etmektedir.

İşletmelerin en önemli amaçlarından birisi müşterilerinin bağlılığını artırmak olduğu için işletmeler müşterilerini memnun edecek dağıtım unsurlarına gereken hassasiyeti göstermeli, tüketicilerin siparişlerini hızlı ve sorunsuz bir şekilde teslim etmek için dağıtım modellerini gözden geçirip yeniden yapılandırmalı, bu doğrultuda da teknolojik yatırımlar yapmaktan kaçınmamalıdır. Tutundurma araçları kullanılarak teslimat süresinin kısalığı ve siparişlerin doğru ve hasarsız olarak tüketicilere teslim edildiği tüketicilere vurgulanmalı, reklamlarda özellikle bu iki konu gündeme getirilmelidir. Araştırma sonuçlarından görüldüğü üzere e-memnuniyet e-sadakati büyük oranda etkilemektedir. Memnun müşterinin zamanla sadık müşteri konumuna geleceği unutulmamalıdır.

Araştırmanın akademik çıkarımları da mevcuttur. İlk olarak bu araştırmanın konusu olan fiziksel dağıtım hizmet kalitesi dakiklik, mevcut olma ve teslimat durumu boyutlarıyla çok az çalışmada (Murfield vd.,2017; Cotarelo vd.,2021; Akıl & Ungan, 2022) kullanılmıştır. Bu araştırmada diğer çalışmalarla paralel sonuçlar bulunsa da değişkenlerin etki düzeyinin daha yüksek olduğu görülmüştür. İkinci olarak fiziksel dağıtım hizmet kalitesinin dakiklik ve teslimat durumu alt faktörlerinin müşteri memnuniyeti üzerindeki etkilerinin tespit edilip e-sadakat üzerinde bir etkinin bulunmaması akademisyenlerin daha ileri araştırmalar için bu faktörlere yönelmesine ya da bu değişkenlerle farklı değişkenlerin ilişkisinin incelenmesine neden olabilir.

5.2. Kısıtlar ve Sonraki Çalışmalara Öneriler

Araştırma bazı kısıtlara sahiptir. İlk olarak araştırmada anket yöntemi kullanılarak nicel veriler elde edilmiş, dakiklik ve teslimat durumunun e-memnuniyeti, e-memnuniyetin de e–sadakati etkilediği sonucuna varılmıştır. Gelecekteki çalışmalarda nicel yönteme ek olarak nitel yöntemler de uygulanarak sonuçlarla ilgili daha derinlemesine bilgiler elde edilebilir. 5N1K tarzı sorularla tüketicilerin dakikliğe ne kadar ve neden önem verdiği, ürünlerin ne kadar zaman sonra teslim edilmesini istediği, ürünü daha hızlı teslim almak için işletmeden neler beklediği, teslimat durumunun onlar için ne ifade ettiği, nasıl bir paketleme istendiği, bu koşulların tüketicinin online alışveriş site seçimini nasıl etkilediği gibi sorular sorulabilir. Araştırmada fiziksel dağıtım hizmet kalitesinin hiçbir alt faktörü e-sadakati etkileyememiştir. Yapılacak derinlemesine görüşme ile bunun nedenleri sorgulanabilir.

İkinci olarak bu araştırmada daha çok sipariş tamamlama kısmı ile ilgili olan fiziksel dağıtım hizmet kalitesi incelenmiştir. İleriki çalışmalarda sipariş tamamlamaya ek olarak e-iş kalitesi ve ürün kalitesi gibi değişkenlerin e-memnuniyet ve e-sadakat üzerindeki etkisi tespit edilmeye çalışılabilir.

Üçüncü olarak uluslararası çapta yapılacak çalışmalarla farklı ülkelerdeki tüketicilerin bu konulardaki beklentileri ortaya konabilir. Son olarak tüm bu etkilerde yaş ve cinsiyet gibi demografik değişkenlerin moderatör etkisi araştırılabilir.

For the study, ethics committee permission document dated February 2, 2021 and numbered E-66676008-302.14-103 was obtained from the Tarsus University Ethics Committee.

The study has been crafted in adherence to the principles of research and publication ethics.

The authors declare that there exists no financial conflict of interest involving any institution, organization, or individual(s) associated with the article. Furthermore, there are no conflicts of interest among the authors themselves.

The first author contributed to the research planning, literature review, data collection, and evaluation of the analysis results. The second author contributed to the analysis, discussion and results sections, as well as the method section.

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The Effect of Social Media Addiction, Nomophobia, and Netlessphobia on Students' Online Shopping Addictions During the Covid-19 Pandemic

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Abstract

The excessive use of internet-based technologies and social media platforms during the COVID-19 pandemic has caused problems such as social media addiction, nomophobia, netlesphobia, and online shopping addiction in individuals. This research aims to examine whether social media addiction, nomophobia, and netlessphobia affect students' online shopping addiction. An online survey was conducted on 439 students to test the research model and hypotheses. SPSS 25.0 packet program was used, and reliability, exploratory factor analysis, descriptive analyses, correlation and multiple regression analysis were applied to the data. Multiple regression analysis results revealed that social media addiction, nomophobia, and netlessphobia influence students' online shopping addiction.

Keywords: Online Shopping Addictions, Social Media Addiction, Nomophobia, Netlessphobia.

Article Type	Application Date	Admission Date
Research Article	April 12, 2023	May 8, 2024

1. INTRODUCTION

Governments have begun to impose restrictions, quarantines, and social distancing policies in the social, economic, and educational areas to mitigate the effect and growing prevalence of the COVID-19 pandemic (Koch et al., 2020). These applications have effectively adopted online activities instead of face-to-face activities and virtual realization of some activities in individuals' daily lives (Mouratidis & Papagiannakis, 2021).

Internet-based technologies have begun to be used for a variety of applications, including social communication, computer gaming, distance education, homework, and information gathering. Thus, it increased the average daily time spent on the Internet and online addiction (Öztürk & Ayaz-Alkaya, 2021). This situation has caused individuals to use smartphones more and experience nomophobia. However, it has also caused many individuals to experience fear of staying in environments without the Internet.

During the COVID-19 pandemic, social media platforms have become a source to look at news (Alheneidi et al., 2021) and have helped communicate with friends and family to reduce the anxiety and boredom of individuals (González-Padilla & Tortolero-Blanco, 2020). However, while social media has a beneficial role in this term, its overuse has increased the possibility of individuals becoming more reliant on social media (Zhao & Zhou, 2021). The cessation of the activities of retail stores has made online shopping the only way for individuals to meet their needs (Koch et al., 2020). This situation has revealed problems such as online shopping addiction in individuals (Sarıgedik & Ölmez, 2021).

This research aimed to see if social media addiction, nomophobia, and netlessphobia affect online shopping addiction. This research is structured into five main sections. The introduction, the first section, provides an overview of the study's purpose and background information. In the second section, the variables of social media addiction, nomophobia, netlessphobia, and online shopping addiction are discussed. In the third section, the effect of social media addiction, nomophobia, and netlessphobia on online shopping addiction was examined using data obtained from 439 undergraduate students who received their education distance or online during the COVID-19 period. During the data analysis phase, exploratory factor analysis was applied to assess the validity of the measurement scales, and reliability analysis was applied to evaluate their reliability. Descriptive analyses were applied to examine demographic information and participant responses to survey statements. Multiple regression analysis was applied to investigate whether there is an effect between the variables. SPSS package programme was used to analyse the data. In the last section of the study, the study was evaluated in general with the findings obtained and recommendations presented.

2. LITERATURE REVIEW

2.1. Social Media Addiction

In the literature, there are numerous definitions of social media. Safko (2010) defines social media by considering the words social and media separately. According to Safko, the word social refers to the instinct necessary for human beings to communicate with others from the moment they exist. Individuals need to be part of groups of like-minded people where they can freely share their ideas and experiences. On the other hand, the term media refers to technologies such as the telegraph and telephone used when communicating with other individuals. According to Kaplan and Haenlein (2010), social media is a collection of internet-based applications that enable users to create and share information and is founded on the ideological and technological foundations of Web 2.0. According to Lau (2017), social media are programmes, services, and systems that enable the reorganisation and sharing of generated material.

By using social media, individuals can gain many advantages. Drahošová and Balco (2017) The most important advantages of using social media are information exchange, communication, and data sharing. According to Yapraklı and Mutlu (2020), social media is essential for searching for products, obtaining information, and finding the latest news. With social media, individuals can be more knowledgeable in evaluating and selecting goods and services by researching goods and services through social media platforms before making a purchase decision. Sharma et al. (2018) state that individuals can obtain information through social media by establishing relationships with other users in line with their needs. Bekdemir and Tagrikulu (2018) emphasize that social media removes physical and economic barriers for individuals. Individuals can enter groups they cannot enter in real life and express themselves more easily with social media.

Despite its many advantages, undesirable results may occur after unconscious and excessive use of social media. According to Drahošová and Balco (2017), the most critical disadvantage is internet addiction. Social media use, which is highly related to internet addiction, stands out among young individuals, and excessive use can create psychological and social problems for youth (Çömlekçi & Başol, 2019). One of these problems is the fear of missing out (FoMO), a behavioural disorder that is common among individuals who spend a lot of time on social media. According to Hoşgör et al. (2017), FoMO comes from the fear of missing a post or a status update on social media by the individual's social circle or peers. It is seen that individuals with a high level of this fear become addicted to social media (Alt & BonielNissim, 2018). Cao et al. (2020) defined social media addiction as spending excessive time on social media sites. According to Hou et al. (2019), individuals suffering from social media addiction have an intense fear of social media as well as an uncontrollable want to check in and use social media.

2.2. Nomophobia

Technologies for communication and information have become an essential component of our daily lives (Yildirim & Correia, 2015; Gutiérrez-Puertas et al., 2019). With the spread of mobile devices, individuals quickly adopted these technologies (Yildirim & Correia, 2015), and as a result, new lifestyles and communication languages began to develop individuals (Gurbuz & Ozkan, 2020).

Smartphones make their daily lives easier by providing many advantages to their users (Gurbuz & Ozkan, 2020). Individuals have begun to use smartphones to execute many tasks at once, including shopping, e-mailing, watching movies, playing games, looking for data, and communicating with others, regardless of time or place. While using smartphones provides apparent benefits, such as meeting the basic needs of individuals, it can cause some problems (Yildirim & Correia, 2015). Smartphone overuse is related to smartphone addiction and problematic usage of these Technologies (Márquez-Hernández et al., 2020). As a result of problematic smartphone usage, the relationship quality of individuals can be adversely affected, causing the person to become disconnected from their environment (Gutiérrez-Puertas et al., 2019). Also, the anxiety and fear of being separated from the smartphone have caused a new disease known as nomophobia (Márquez-Hernández et al., 2020). King et al. (2013) emphasize that nomophobia is a disease of the modern world.

Nomophobia is a concept derived from the abbreviation of "NO MObilephone PHOBIA" (Yildirim & Correia, 2015; Yildirim et al., 2016). Nomophobia is the pathological fear of avoiding technology. It expresses the pain, worry, anxiousness, or misery that people experience when they lose communication with their mobile phones or computers (Bragazzi & Del Puente, 2014). Nomophobia is associated with the fear of losing communication with a mobile phone, leaving home without a mobile phone, or running out of charge (Márquez-Hernández et al., 2020).

Behind these fears and anxieties is the fear of getting used to the conveniences of smartphones and being deprived of the opportunities offered by smartphones (Yıldırım & Kişioğlu, 2018). Individuals experiencing nomophobia are expressed as nomophobic, and research results indicate that their number is increasing daily (Sarıbay & Durgun, 2019). Kaur et al. (2021) stated that the distinctive features of people with nomophobia are never turning off their phones, checking missed calls and messages repeatedly, and deliberately avoiding face-to-face communication. In case of their phone connections are cut, or their phone is unusable, nomophobics may experience physical problems such as panic attacks, breath shortness, tremors, increased heart rate, and neck and back pain. According to Gurbuz and Ozkan (2020), the obsession of nomophobic people with their smartphones can reach a level that negatively affects their daily behaviour. Sleep disorders, tension, and anxiety caused by nomophobic persons' excessive use of smartphones make them feel unpleasant and be less physically active.

Statistical results presented by We are Social support the study by Gurbuz and Ozkan (2020). When the results presented periodically by We are Social are examined, it is seen that the duration of

using mobile phones and spending time on the Internet with mobile phones has increased over the years. According to the July 2021 report, approximately 70% of the world's population uses mobile phones (5.27 billion), and an average of 3 hours and 36 minutes are spent on the Internet via mobile devices. (We Are Social, 2021). Gurbuz and Ozkan (2020) emphasize that smartphones are increasingly spreading among society from the old to the young and that they are an essential part of the lives of young people in particular. According to the Post Office research results, approximately 53% of the 2163 participants were nomophobic (Robinson, 2008). According to the research conducted by the SecurEnvoy research firm in 2012, 66% of the participants show nomophobia symptoms (SecurEnvoy, n.d.). Civek and Ulusoy founded that (2020) on the X and Y generations found that 7.9% of the participants were severe, 66% moderate, and 24.6% mild nomophobic. Considering that the age of using the phone is gradually decreasing, it is seen that recent studies on nomophobia generally focus on young people or students. Studies carried out by Yildirim et al. (2016), Türen et al. (2017) Gutiérrez-Puertas et al. (2019), Gurbuz and Ozkan (2020), Kaur et al. (2021) concluded that most of the young people or students who were the subject of the research were nomophobic. According to Gurbuz and Ozkan (2020), students spend a significant amount of their time on activities such as using social networks, watching videos, and playing games instead of the work they need to do. According to Çırak (2021), social media addiction affects the nomophobia undergraduate students in a significant and positive way.

2.3. Netlessphobia

With the rapid changes that have emerged with information and communication technologies, it has become easier for individuals to access information and communication internet technologies. (Yıldız et al., 2020). The Internet has become an essential part of individuals as it is vital for their lives. (Yıldırım & Kişioğlu, 2018; Kanbay et al., 2022). Internet technologies such as social networks, online shopping opportunities and virtual banking services have caused individuals to become addicted to the Internet (Güney, 2017) and to experience fear of being deprived of the Internet (Yıldırım & Kişioğlu, 2018; Sarıbay & Durgun, 2019).

The rise of social media and virtual communication settings has lessened people's face-to-face connection to each other, causing them to avoid being in a location without the Internet and to avoid being in a location without the Internet by distancing themselves from real life. (Kanbay et al., 2022). This situation has revealed the concept of Netlessphobia, which is expressed as the fear of being without the Internet (Yıldırım & Kişioğlu, 2018).

Netlessphobia is defined as an individual's inability to be in environments without internet connectivity, and their anxiety and worry due to the lack of Internet (Öztürk, 2015; Güney, 2017; Yıldırım & Kişioğlu, 2018; Kanbay et al., 2022). According to Güney (2017), it is not enough to describe netlessphobia as a phobia, and when this concept is considered together with "internet addiction" and "Nomophobia", it undertakes a complementary task. According to Sarıbay and Durgun (2019), the main

factor distinguishing netlessphobia from regular internet use is the intense desire to spend time online. It is not enough for individuals with netlessphobia to carry a smartphone, and individuals avoid entering environments where there is no internet and constantly check their social media accounts. Therefore, it can be said that nomophobia is related to netlessphobia and social media addiction.

2.4. Online Shopping Addiction

Addiction is expressed as the persistence of behaviour by enduring the negative consequences of a behaviour. It is seen that most of the behaviors exhibited today are a type of addiction (Arıduru Ayazoğlu et al., 2019). With the development of internet-based technologies, consumers' lifestyles have changed (Günüç & Doğan Keskin, 2016), and the Internet has become a suitable channel for shopping for goods and services (Duong & Liaw, 2021). Online shopping has taken place as an alternative way to traditional shopping for individuals (Günüç & Doğan Keskin, 2016).

Online shopping offers advantages such as finding products at the most affordable price by doing price research and comparisons for products (Günüç & Doğan Keskin, 2016), saving time, facilitating shopping, and reducing transaction costs for consumers (Doğan Keskin & Günüç, 2017). Developed phone applications enable individuals to enjoy browsing online shopping sites in their spare time, and this causes online shopping to become an addiction for individuals (Kaur et al., 2019).

Tanoto and Evelyn (2019) state that online shopping addiction is an uncontrollable impulse of the individual and behaviour that can harm an individual's life. Duong and Liaw (2021) state that online shopping addiction is related to the daily time spent online shopping. Online shopping addiction is characterized by behaviours such as the urge to spend excessive amounts of time and money, anger when not buying online, and lying to others about the amount of time or money spent on online shopping, according to Kaur et al. (2019). According to Zhao et al. (2017), internet shopping addiction has a negative impact on an individual's daily activities, social life, and financial standing.

3. METHODOLOGY

3.1. Research Purpose

The research aims to determine if social media addiction, nomophobia, and netlessphobia influence students' online buying addiction during the COVID-19 pandemic.

3.2. Research Population and Sample

Undergraduate students who actively use social media make up the research population. According to the Higher Education Institution, there were 6,950,142 students in Turkey during the 2022-2023 academic year (Yükseköğretim Kurulu, n.d.). According to Saunders et al. (2023), a sample size of 384 is sufficient for a population of 1,000,000 or more with a 95% confidence interval and 5% margin of error. According to Gegez (2015), when conducting a study involving multivariate analysis, including multiple regression analysis, it is recommended that the sample size should be at least ten times the

number of variables. The sample size for the survey was determined by the formula $n = \frac{NPQZ^2}{(N-1)d^2+PQZ^2}$ (Oktay et al., 2013). According to this formula, the minimum sample size was found to be 384. The data were collected from 439 participants between 1 October 2022 and 7 January 2023. Based on the information provided, the sample size of 439 individuals for this study is sufficient.

3.3. Hypotheses Development and Research Model

According to the We are Social 2021 July report, an average of 2 hours and 24 minutes is spent daily on social media. The reasons mentioned by participants for using social media include staying in touch with family and friends, reading news, being informed of what is going on, gaining information about things to do and purchase, and discovering items to buy (We Are Social, 2021). Therefore, individuals benefit from social media when they shop.

Considering the related studies, Genç (2015) found that the purchasing decisions of university students are affected by social media. Zhang et al. (2017) concluded that social media usage is associated with online shopping activities. Awobamise (2018) found that youth spending increased due to exposure to social media and online shopping. Duygun (2018) states that social media addiction affects consumer purchasing decisions. Safia et al. (2019) concluded that social media increases young people's desire to buy online. Uyar (2019) concluded that students who spend more time on social media affect their purchase intention. According to the findings of the study by Akçalı and Hacıoglu (2021), there is a substantial association between the frequency of social media use and the purchase behaviour variable. Demir and Cetin (2021) determined that social media addiction positively affects online shopping. Based on these studies, the following hypothesis was developed.

H_1: Social media addiction is effective on online shopping addiction.

The increase in the use of smartphones also has an impact on individuals' purchasing behaviour. Considering the related studies, Can (2019) found that nomophobia affects consumers' online shopping by affecting their consumption habits. Kadıoğlu and Koşar (2019) concluded that as the level of being nomophobic increases, online purchasing behavior increases. Albez and Şirin (2021) found a positive and significant effect between nomophobia and buying styles. Celep and Çorumlu (2022) concluded that there are positive explanations for nomophobia and online purchasing behaviour. Based on these studies, the following hypothesis was developed.

H_2: Nomophobia is effective on online shopping addiction.

According to Güney (2017), it is not enough to describe netlessphobia as a phobia, and when this concept is considered together with "internet addiction" and "Nomophobia", it undertakes a complementary task. According to Sarıbay and Durgun (2019), the main factor distinguishing netlessphobia from regular internet use is the intense desire to spend time online. It is not enough for individuals with netlessphobia to carry a smartphone, and individuals avoid entering environments

where there is no internet and constantly check their social media accounts. Therefore, it can be said that there is a relationship between nomophobia, netlessphobia and social media addiction. Armağan and Temel (2018) stated that online shopping addiction has common characteristics with internet addiction. Yakın and Aytekin (2019) concluded that internet addiction positively affects online purchasing behaviours.

H3: Netlessphobia is effective on online shopping addiction.

The research model was built in accordance with the information mentioned above.

Figure 1. The Research Model
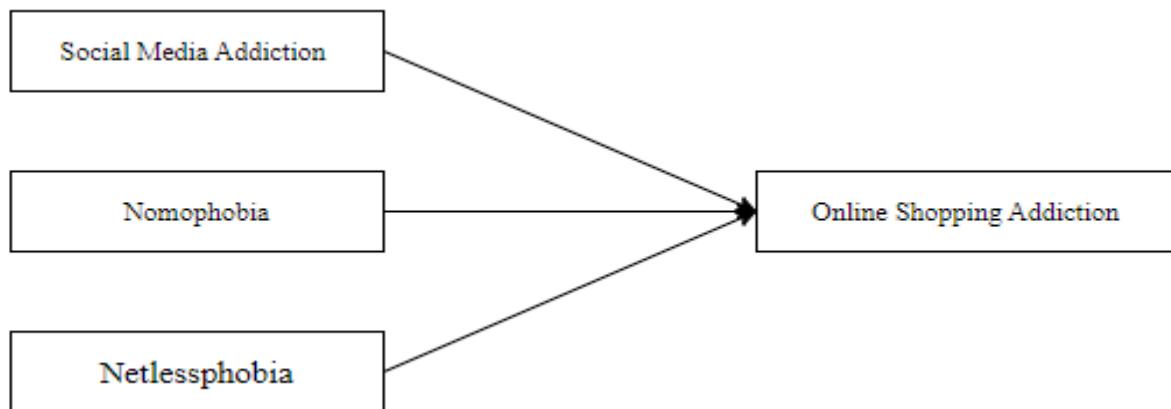
The study model contains four variables, as seen in Figure 1: social media addiction, nomophobia, netlessphobia, and online shopping addiction.

3.4. Procedure and Measures

The online survey used in the research consists of a 5-point Likert scale. The survey includes questions about demographic variables, questions about internet and social media use, online shopping addiction, nomophobia, netlessphobia and social media addiction.

The 6-item Social Media Addiction scale was obtained from the study conducted by Andreassen et al. (2016), the 20-item Nomophobia scale was obtained from the study by Yildirim and Correia (2015), the 12-item netlessphobia scale was obtained from the study by Kanbay et al. (2022), and the 18-item Online Shopping Addiction scale was obtained from the study by Zhao et al. (2017).

3.5. Data Analysis

The SPSS Statistic 25.0 package program was performed to conduct EFA, reliability analysis, descriptive analysis, correlation, and multiple regression analyses on 439 data.

3.6. Ethics Committee Approval Document

The ethics committee approval document for this study was obtained from Atatürk University Social and Human Sciences Ethics Committee (Permission Date: 10.12.2021, Number of Sessions: 19, Decision No: 234)

4. FINDINGS

4.1 Validity and Reliability Analyses

Exploratory factor analysis (EFA) was conducted to see whether the results obtained in this study, which was conducted with a different sample group, had a similar factor distribution to the scales used in the study. In the study, two statistical measures, such as Kaiser-Meyer-Olkin (KMO) and Bartlett's Test, were used to determine the suitability of the data set for factor analysis (Pallant, 2017). The number of factors was determined according to the eigenvalue. During factor analysis, the factor load limit was taken as 0.298 since the sample of the study was more than 300 and less than 600 (Field, 2013).

After the exploratory factor analysis, reliability analysis was performed to check the reliability of each of the factors and item-total correlations and Cronbach's Alpha values were examined.

4.1.1. Exploratory Factor Analysis (EFA) and Reliability Analysis for Social Media Addiction Variable

The results of the EFA and reliability analysis of the social media addiction variable are presented in Table 1.

Table 1. EFA and Reliability Analysis for the Social Media Addiction Variable

Items	Factor Loadings	Explained Variance	KMO	Bartlett's Test of Sphericity (p)	Cronbach's Alpha
SMA2	0.779				
SMA4	0.738				
SMA1	0.723				
SMA3	0.702	51.719	0.806	0.000	0.812
SMA5	0.701				
SMA6	0.667				

Table 1, shows that the Kaiser-Meyer-Olkin (KMO) value was (0.806) and Bartlett's Test of Sphericity value was p (Sig)=0.00 <0.05 for the 6 items of the social media addiction scale. Therefore, data are suitable for factor analysis. The social media addiction scale consists of 6 items and one dimension, and this dimension explains 51.719% of the total variance. The dimensional distribution of the items in this scale was found to have similar distributions with the study conducted by Andreassen et al. (2016). Cronbach's Alpha value was obtained as 0.812. According to this value, the social media

addiction scale is reliable. When the corrected item-total correlations are examined, it is seen that all values are greater than 0.30.

4.1.2. EFA and Reliability Analysis for Nomophobia Variable

The results of the EFA and reliability analysis of the nomophobia variable are given in Table 2.

Table 2. Exploratory Factor Analysis and Reliability Analysis for the Nomophobia Variable

Items	Factor Loadings	Explained Variance	KMO	Bartlett's Test of Sphericity (p)	Total Explained Variance	Cronbach's Alpha
Factor 1			0.949	0.000	66.579	0.943
Nomophobia18	0.852	49.570				
Nomophobia17	0.804					
Nomophobia19	0.795					
Nomophobia20	0.764					
Nomophobia16	0.663					
Nomophobia6	0.623					
Nomophobia9	0.533					
Nomophobia8	0.523					
Factor 2						
Nomophobia11	0.847					
Nomophobia13	0.832					
Nomophobia10	0.776	9.697				
Nomophobia15	0.750					
Nomophobia12	0.745					
Nomophobia14	0.732					
Factor 3						
Nomophobia2	0.835	7.312				
Nomophobia1	0.762					
Nomophobia3	0.742					
Nomophobia4	0.729					
Nomophobia7	0.498					

The exploratory factor analysis (EFA) conducted on the nomophobia scale excluded the item " Running out of battery in my smartphone would scare me " (Nomophobia 5) from the analysis due to the cross-loaded with a cross-load value of less than 0.10. Following this, an EFA was performed on the remaining 19 items. Table 2 shows that the Kaiser-Meyer-Olkin (KMO) value was (0.949) and Bartlett's Test of Sphericity value was p (Sig)=0.00 <0.05 for the 19 items of the nomophobia scale. Therefore, data are suitable for factor analysis. The Nomophobia Scale has 19 items and three dimensions, which explains 66.579% of the total variance. The first dimension explains 49.570% of the total variance, the second dimension explains 9.697%, and the third dimension explains 7.312%. The dimensional distribution of the items in this scale differs from the study conducted by Yildirim and Correia (2015).

Cronbach's Alpha value was obtained as 0.943. According to this value, the social media addiction scale is reliable. When the corrected item-total correlations are examined, it is seen that all values are greater than 0.30.

4.1.3. EFA and Reliability Analysis for Netlessphobia

The results of the EFA and reliability analysis of the netlessphobia variable are presented in Table 3.

Table 3. Exploratory Factor Analysis and Reliability Analysis for the Netlessphobia Variable

Items	Factor Loadings	Explained Variance	KMO	Bartlett's Test of Sphericity (p)	Cronbach's Alpha
Netlessphobia3	0.827				
Netlessphobia7	0.827				
Netlessphobia4	0.823				
Netlessphobia2	0.805	60.649	0.939	0.000	0.940
Netlessphobia1	0.795				
Netlessphobia9	0.784				
Netlessphobia8	0.779				
Netlessphobia6	0.777				
Netlessphobia5	0.777				
Netlessphobia10	0.746				
Netlessphobia12	0.709				
Netlessphobia11	0.681				

Table 3 shows that the Kaiser-Meyer-Olkin (KMO) value was (0.939) and Bartlett's Test of Sphericity value was p (Sig)=0.00 <0.05 for the 12 items of the netlessphobia scale. Therefore, data are suitable for factor analysis. The netlessphobia scale consists of 12 items and one dimension, and this dimension explains 60,649 % of the total variance. The dimensional distribution of the items in this scale was found to have similar distributions with the study conducted by Kanbay et al. (2022). Cronbach's Alpha value was obtained as 0.940. According to this value, the netlessphobia scale is reliable. When the corrected item-total correlations are examined, it is seen that all values are greater than 0.30.

4.1.4. Exploratory Factor Analysis and Reliability Analysis for Online Shopping Addiction Variable

The results of the exploratory factor analysis and reliability analysis of the online shopping addiction variable are presented in Table 4.

Table 4. Exploratory Factor Analysis and Reliability Analysis for the Online Shopping Addiction Variable

Items	Factor Loadings	Explained Variance	KMO	Bartlett's Test of Sphericity (p)	Total Explained Variance	Cronbach's Alpha
Factor 1						
OSA5	0.815					
OSA4	0.801					
OSA7	0.768					
OSA3	0.748					
OSA8	0.729	61.699				
OSA9	0.698					
OSA6	0.691					
OSA2	0.650					
Factor 2			0.957	0.000	69.719	0.958
OSA18	0.853					
OSA17	0.826					
OSA16	0.762					
OSA14	0.729					
OSA13	0.709	8.020				
OSA10	0.687					
OSA15	0.677					
OSA11	0.652					

The exploratory factor analysis (EFA) conducted on the online shopping addiction scale excluded the two items: " When I am not shopping online, I keep thinking about it" (OSA1) and "I will feel restless or depressed when attempting to shop online but unable to achieve" (OSA12) from the analysis due to they cross-loaded with a cross-load value of less than 0.10. Following this, an EFA was performed on the remaining 16 items. Table 4 shows that the Kaiser-Meyer-Olkin (KMO) value was (0.957), and Bartlett's Test of Sphericity value was p (Sig)=0.00 <0.05 for the 16 items of the online shopping addiction scale. Therefore, data are suitable for factor analysis. The online shopping addiction has 16 items with two dimensions, which explains 61.699% of the total variance. The first dimension explains 61,699% of the total variance, and the second dimension explains 8.020% of the total variance. The dimensional distribution of the items in this scale differs from the study conducted by Zhao et al. (2017). Cronbach's Alpha value was obtained as 0.958. According to this value, the online shopping addiction scale is reliable. When the corrected item-total correlations are examined, it is seen that all values are greater than 0.30.

4.2. Participants' Demographic Profiles

Participants' demographic profiles are presented as frequency and percentage in Table 5.

Table 5. Participants' Demographic Profiles

Demographic Variables		Frequency	%
Gender	Female	236	53.8
	Male	203	46.2
Age	1980-1999	167	38.0
	2000 and after	272	62.0
Income	1000 TL or less	222	50.6
	1001-2000 TL	80	18.2
	2001 +	137	31.2
COVID 19 disease	Yes	156	35.5
	No	283	64.5

According to Table 5, research participants generally consist of female students born in 2000 and later, have an income of 1000 TL or less, and are not exposed to COVID-19.

4.3. Participants' Internet and Social Media Usage Data

Table 6 shows the frequency analysis findings for the participants' Internet and social media usage.

Table 6. Information on Internet and Social Media Usage of the Participants

Questions		Frequency	%
How long have you been an internet user?	1 to 3 years	57	13.0
	4 to 6 years	134	30.5
	7 years and above	248	56.5
How many hours do you spend daily on the internet?	0-2 hours	76	17.3
	3-4 hours	183	41.7
	5-6 hours	113	25.7
	7 hours and more	67	15.3
Where do you usually access the Internet from?	From my home	146	33.3
	From the house of friends and relatives	9	2.1
	Cafe or restaurant	4	0.9
	From school	7	1.6
	From mobile phone	210	47.8
	From dormitory	62	14.1
	Other	1	0.2
For what purpose do you use the internet?	Academic research/doing homework	265	60.5
	Play a game	134	30.6
	Watching movies-tv, listening to music	174	39.7
	Chatting	216	49.3
	Using social media	300	68.5
	Online shopping	171	39
	Other	7	1.6
How long have you been using social media?	For less than one year.	26	5.9
	For 1-3 years	107	24.4
	4-6 years.	157	35.8
	More than 7 years.	149	33.9

How much time do you spend on social media each day?	1-2 hours	155	35.3
	3-4 hours	162	36.9
	5-6 hours	84	19.1
	7hours and more	38	8.7
What social networking platforms do you use?	Youtube	372	84.7
	Instagram	376	85.6
	WhatsApp	421	95.9
	Facebook	115	26.2
	Twitter	197	44.9
	Facebook Messenger	34	7.7
	Pinterest	64	14.6
	LinkedIn	35	8.0
	Snapchat	130	29.6
	TikTok	71	16.2
	Diğer	6	1.4
Which social media platform do you spend the most time on?	Youtube	53	12.1
	Instagram	175	39.9
	WhatsApp	163	37.1
	Facebook	4	0.9
	Twitter	23	5.2
	Pinterest	2	0.5
	LinkedIn	1	0.2
	Snapchat	5	1.1
	TikTok	13	3.0

According to Table 6, participants have used the Internet for at least 7 years, spent 3-4 hours a day on the Internet, and accessed the Internet through their mobile phones. Furthermore, participants have been active on social media for at least 7 years, spent 1-2 hours daily, actively used platforms such as WhatsApp, Instagram, and Youtube, and spent more time on WhatsApp and Instagram.

4.4. Correlation Analysis of The Variables in The Research Model

The relationship between social media addiction, nomophobia, netlessphobia, and online shopping addiction was discovered using Pearson correlation analysis. The correlation results are shown in Table 7.

Table 7. Correlation Analysis Results for Variables

Variables	1	2	3	4	Mean	S.D	Skewness	Kurtosis
1	1				2.6291	0.91380	0.144	-0.816
2	0.667**	1			2.8490	0.90049	0.004	-0.568
3	0.580**	0.749 **	1		2.5932	0.95944	0.279	-0.689
4	0.440**	0.416**	0.582**	1	2.0763	0.95058	0.719	-0.446

$p < 0.001$ (1= Social Media Addiction, 2= Nomophobia, 3= Netlessphobia, 4= Online Shopping Addiction)

According to Table 7, it was seen that there is a moderate, positive significant relationship between social media addiction and nomophobia (r= 0.667, p<0.001), netlessphobia (r= 0.580, p<0.001),

and online shopping addiction (r= 0.440, p<0.001). There is a strong, positive, and significant relationship between nomophobia and netlessphobia (r= 0.749, p<0.001), a moderate and positive significant relationship between online shopping addiction (r=0.416, p<0.001), and a moderate and positive significant relationship between netlessphobia and online shopping addiction (r=0.582, p<0.001).

The overall mean of the participant's responses to the statements on the social media addiction scale is 2.63. On this scale, the statement "My use of social media negatively affected my work/works." has the highest mean value with 2.80, and the statement "My attempts to stop using social media have failed." has the lowest mean value with 2.40.

The overall mean of the participant's responses to the statements on the nomophobia scale is 2.85. On the nomophobia scale, the statement " I'm afraid that if I don't have my phone, my family and/or friends will be unable to reach me." has the highest mean value with 3.19. The statement " When I do not have my phone with me, I feel uneasy because I cannot stay updated on social media and other online networks" has the lowest mean value with 2.50.

The overall mean of the participant's responses to the statements on the netlessphobia scale is 2.59. On this scale, the statement " I prefer to go to locations that have an internet connection." has the highest mean value with 2.96, and the statement " I can't bear being without the internet, even for a short period." has the lowest mean value with 2.26.

The overall mean of the participant's responses to the statements on the online shopping addiction scale is 2.08. In this scale, the statement "Recently, I feel the urge to shop more and more online." has the highest mean value with 2.39, and the statement "I cut down on the time I spend with my family and friends for my internet shopping." has the lowest mean value with 1.85.

Furthermore, the kurtosis and skewness values are between the two criteria for normality. This means that the distribution of all variables is normal George and Mallery (2010).

4.5. Research Model Testing

In order to understand whether the regression model is significant in estimating the online shopping addiction dependent variable and how well it fits the existing data, an ANOVA test was performed, and the results are presented in Table 8.

Table 8. ANOVA

The Dependent variable	Independent Variables	F	Sig.
Online shopping addiction	Social media addiction Nomophobia Netlessphobia	82,624	0.000

In Table 9, the F value was 82,624, and the p-value was 0.000. So, the research model was found to be statistically possible to predict the online shopping addiction variable with social media addiction, nomophobia, and netlessphobia.

4.6. Multiple Regression Analysis

Multiple regression analysis was used to investigate the connection between dependent and independent variables. The findings are shown in Table 9.

Table 9. Multiple Regression Analysis

Variables	Unstd. B	Std. Beta	T	P-Value	Hypothesis	Decision
Social media addiction	0.219	0.210	4,022	0.000	H_1	Accepted
Nomophobia	-0.164	-0.155	-2,421	0.016	H_2	Accepted
Netlessphobia	0.574	0.576	9,847	0.000	H_3	Accepted
Dependent variable: Online Shopping Addiction						

R= 0.602 R2= 0.363 Adjusted R^2 = 0.359 D.Watson = 1.521

In Table 9, the R-value = 0.602. The R^2 value =0.359. This value shows that independent variables can explain online shopping addiction by approximately 36%. The Durbin-Watson value was obtained as 1.521, and since this value is close to 2, indicates there is no autocorrelation detected in the sample. The biggest Beta coefficient = 0.576. This value shows that netlessphobia makes the strongest contribution to online shopping addiction when the effect of other variables in the model is kept constant and the standardized Beta value of nomophobia = (-0.155). This negative value shows that nomophobia negatively affects online shopping. H_1, H_2, and H_3 hypotheses were accepted as the significance values in the model and obtained were less than 0.05.

5. CONCLUSION

Individuals' remote activities with Internet-based technologies increased their dependency on the Internet and mobile technology throughout the COVID-19 pandemic, leading to nomophobia and anxiety about remaining in regions without the Internet. Over this period, people were more reliant on social media to achieve goals such as relieving tension and boredom and communicating with friends and close groups. This situation has influenced customer purchasing habits by affecting their lives. The study aimed to see how social media addiction, nomophobia, and netlessphobia affected online shopping addiction.

The research participants are mostly female students born in 2000 or later, with an income of 1000 TL or less and no history of COVID-19 illness. According to the study, the participants were students who had been internet users for 7 years or more, spent 3-4 hours daily on the Internet, and had mobile phone access. They have been using social media for over 7 years and spend 1-2 hours daily on it, primarily WhatsApp and Instagram.

Although the research participants' use of social media has a negative impact, participants are concerned about social media restrictions. The absence of the phone produces anxiety in the participants, and they are dissatisfied when they cannot access any information on their smartphones. They prioritize visiting areas with internet access and having a fully charged phone.

With the correlation analysis, it was concluded that all variables included in the study had significant relationships with each other. The variables with the highest correlation coefficient are netlessphobia and nomophobia. This result supports Güney's (2017) statement that netlessphobia is related to 'Nomophobia' and internet addiction.

To evaluate the effect between variables more comprehensively, multiple regression analysis was performed, and the following results were obtained:

Social media addiction was found to have an effect on online shopping addiction. As individuals' addiction to social media use increases, their online shopping addiction also increases. The lack of previous studies examining the effect between these two variables is one of the unique values of this study. In the context of consumer purchasing and online shopping behaviours, these results are consistent with the studies conducted by Zhang et al. (2017), Saleem and Ellahi (2017), Awobamise (2018), Duygun (2018), Voramontri and Klieb (2019), Uyar (2019), Demir and Çetin (2021) and Celep and Çorumlu (2022).

Nomophobia was found to have a negative effect on online shopping addiction. The increase in smartphone usage decreases online shopping addiction. The lack of previous studies examining the effect between these two variables is another unique value of this study. In the context of consumer purchasing and online shopping behaviours, these results are consistent with the studies conducted by Can (2019), Kadıoğlu and Koşar (2019), Deniz (2020), Albez and Şirin (2021) and Celep and Çorumlu (2022).

Netlessphobia was found to have an effect on online shopping addiction. There is no previous study addressing the purchase and consumption behaviour related to netlessphobia. The most important contribution of this study is that it is the first study to address netlessphobia on online shopping addiction. In addition, according to the findings of the study, the variable with the greatest effect on online shopping addiction was determined as netlessphobia. This reveals that netlessphobia is a strong variable affecting online shopping addiction.

In line with the results obtained in the study, the following suggestions can be made.

In today's world, the widespread use of the internet and social media has caused people to experience psychological problems such as social media addiction, nomophobia and netlessphobia, as well as online shopping addiction, as they carry their phones with them at all times and avoid environments without internet access. In such situations, individuals should seek professional help to

overcome them and develop new habits. They should also allocate specific times to disconnect from their phones and digital interactions by engaging in technology and digital detox.

The increasing use of internet-based technologies and smartphones and easy internet access have enabled individuals to join groups and express themselves more easily through social media by removing physical and economic barriers. However, the intensive use of phones and social media platforms causes a behavioural disorder known as "fear of missing out" (FoMO). This form of fear can affect various behaviours, including online shopping and consumption patterns. Businesses can, therefore, adapt this fear to their advertising to increase interest in their products and influence consumers' propensity to shop online.

The fact that nomophobic individuals spend more time on social media requires brands to pay attention to social media marketing strategies and produce content for these individuals via social media. It is important for brands to offer mobile-compatible websites and applications that contain detailed information for individuals who tend to search for information on the internet and social media before making a purchasing decision.

Since individuals with nomophobia, netlessphobia and social media addiction might have a high tendency to make unplanned purchases, companies can encourage them to be more inclined to online shopping by emphasizing promotions and scarcity messages in internet and social media advertisements.

In future academic studies, research can be conducted on the effect of these concepts on consumer behaviour, especially rational and irrational consumption behaviour. The independent variables in this study can be considered separately, and their effects can be examined separately in the context of online shopping addiction. Although this study focused on undergraduate students, in future research could be expanded to the general population and comparisons could be made with the findings of this study.

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Aile Varlık Düzeyi Ölçeği II'nin Türkçe Uyarlaması: Geçerlik ve Güvenirlik Çalışması

Adaptation of Family Affluence Scale II into Turkish: A Validity and Reliability Study

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Özet

Bu çalışmanın amacı öğrencilerin sosyoekonomik düzey (SED)'ini belirlemek için geliştirilen "Aile Varlık Düzeyi Ölçeği II'nin (AVDÖ II)" Türk üniversite öğrencilerinde geçerliğini ve güvenirliğini sınamaktır. Ölçek, Dünya Sağlık Örgütü'nün 1997 yılında yürüttüğü "Okul Çağı Çocuklarında Sağlık Davranışı (Health Behaviour in School-aged Children-HBSC)" başlıklı projede geliştirilmiş, 2001-2002 yıllarında aynı projede revize edilmiştir. Bu çalışmada da revize edilen form kullanılmıştır. Araştırma grubu 19-24 yaş arası 97 kadın ($\bar{X}_{yaş}$ =20,08, Ss =0,94 yıl) ve 143 erkek ($\bar{X}_{yaş}$ =20,29, Ss =1,23 yıl) toplam 240 ($\bar{X}_{yaş}$ =20,20, Ss =1,13 yıl) öğrenciden oluşmaktadır. Ölçekte; ailenin sahip olduğu araba sayısı, çocuğa ait oda olup olmadığı, son bir yılda aile ile kaç kez tatil amaçlı seyahat yapıldığı ve ailenin sahip olduğu bilgisayar sayısını soran dört madde bulunmaktadır. Yapı geçerliği için yapılan Açımlayıcı Faktör Analizi sonucunda varyansın %45,40'nı açıklayan tek faktörlü bir yapı elde edilmiştir. Elde edilen faktör yükleri 0,55 ile 0,73 arasında değişmektedir. Ayrıca, Rasch analizi sonuçları AVDÖ II'nin yapı geçerliğini desteklenmiştir. Eş zaman geçerliği için yapılan analiz sonucunda AVDÖ II'nin puanları ile SED ölçeği puanları arasında yüksek düzeyde anlamlı ilişki olduğu saptanmıştır (r =0,73, *p*<0,01). Ek olarak Yakınsak geçerlik için hesaplanan ortalama açıklanan varyans [average variance extracted (AVE)] ve bileşik güvenirlik [composite reliability (CR)], değerleri ölçeğin yakınsak geçerliğini desteklediğini göstermektedir (CR>AVE). Ölçeğin iç tutarlılığını belirlemek için hesaplanan Cronbach alfa katsayısının 0,59, CR katsayısının ise 0,77 olduğu bulunmuştur. Sonuç olarak, AVDÖ II'nin SED'i değerlendirmede kullanılabilecek geçerli ve güvenilir bir ölçme aracı olduğu söylenebilir.

Anahtar Kelimeler: Sosyoekonomik düzey, Ölçek uyarlama, Geçerlik, Güvenirlik.

Abstract

This study aimed to test the validity and reliability of the "Family Affluence Scale II (FAS II)", in Turkish university students to determine socioeconomic status. The scale was developed in the project titled "Health Behavior in School-aged Children-HBSC" conducted by the World Health Organization in 1997. The scale was revised in 2001-2002 and the revised form was used in this study. Two-hundred forty students aged 19-24, with 97 female ($\bar{X}_{age}$=20.08, SD =0.94 year) and 143 male students ($\bar{X}_{age}$=20.29, SD= 1.23 year) participated in the study. The scale consists of four questions asking about the number of cars owned by the family, whether there is a room for the child, the number of holiday trips with the family in the last year, and the number of computers owned by the family. Exploratory Factor Analysis computed for construct validity showed a single factor structure that explained 45.40% of the variance. The factor loadings ranged from 0.55 to 0.73. The analysis for concurrent validity revealed a significant positive correlation between FAS II and SES scale (r = 0.73, *p*<0.01). In addition, the average explained variance (AVE) and composite reliability (CR) values (CR>AVE) calculated for convergent validity show that the convergent validity of the scale was supported. Cronbach alpha reliability and CR coefficient were 0.59 and 0.77, respectively, indicating internal consistency of the scale. Our results show that FAS II is a valid and reliable measurement tool that can be used to measure the socio-economic level.

Keywords: Socio-economic status, Scale adaptation, Validity, Reliability

Article Type	Application Date	Admission Date
Research Article	April 14, 2023	March 26, 2024

EXTENDED SUMMARY

Research Problem

The socioeconomic status is an important variable linked to health status, attitudes, and tendencies. There are various scales developed both to determine socioeconomic status and to categorize different populations based on their economic standing. However, these scales present some important shortcomings due to mainly their scoring systems, the number of items, and the calculation of income level. To end this, Family Affluence Scale II (FAS II) was developed in 1997 and revised in 2004. However, the validity and reliability of the FAS II has yet to be tested in Turkish population.

Research Questions

Is the "Family Affluence Scale II (FAS II)" valid and reliable in determining the socioeconomic status of Turkish university students?

Literature Review

The socioeconomic status of individuals or families is recognized as a crucial factor affecting their health status, attitudes, and tendencies in the field of social sciences (Wani, 2019). Various scales have been developed to measure socioeconomic status, which enables researchers to categorize different populations based on their economic standing. For instance, Kalaycıoğlu et al. (2010) developed a comprehensive Socioeconomic Status scale, although its scoring system is intricate, and the number of items is relatively high. Moreover, discrepancies in professional status might lead to variations in scores obtained from the scale, which are disregarded in the scoring system of the scale. Furthermore, to calculate income level, the scale considers only an individual's earnings from their job, excluding external incomes, such as pensions and investments. Also, unemployed individuals were not included in the Kalayacıoğlu et al. (2010) study due to a lack of income. Hence, further research is needed to determine whether a validated socioeconomic scale, that considered the limitations of the previous scales, would be valid and reliable for the Turk population. Many institutions and organizations that can conduct studies related to socioeconomic status administered their own scales for assessment that highlights the need for a concise, reliable, and valid tool that can be used alongside other instruments in large-scale studies. In this regard, the Family Affluence Scale II (FAS II) was developed for the "Health Behavior in School-aged Children (HBSC)" project conducted by the World Health Organization in 1997 (Currie et al., 1997) and was later revised in 2001-2002 (Boyce & Dallago, 2004). Previous research utilizing the FAS II has reported higher response rates and ease of administration compared to traditional socioeconomic status measures (Molcho et al., 2007; Wardle et al., 2002; Boudreau & Poulin, 2009; Cho & Khang, 2010; Lin, 2011). Moreover, FAS II widely used in HBSC studies to explore socioeconomic inequalities in various health indicators (Currie et al., 2008). However, no study to date has tested the validity and reliability of the FAS II in Turkish population. Therefore, the present study aimed to evaluate the reliability and validity of the FAS II for determining the socioeconomic status of Turkish university students.

Methodology

The study utilized purposive sampling to identify a sample of 240 university students between the ages of 19 and 24 (Mage = 20.20, SD = 1.13 years) residing in various cities. Of the participants, 97 were females (Mage = 20.08, SD = 0.94 years), and 143 were males (Mage = 20.29, SD = 1.23 years). The participants completed the FAS II and Turkish Socio-Economic-Status Questionnaire (Bacanlı, 1997), which assessed socioeconomic status. FAS II, revised in 2001/2002, consists of four items: Does your family own a car, van, or truck? (No [0]; Yes, one [1]; Yes, two or more [2]) Do you have your own bedroom for yourself? (No [0]; Yes [1]) During the past 12 months, how many times did you travel away on holiday with your family? (Not at all [0]; Once [1]; Twice [2]; More than twice [3]) How many computers does your family own? (None [0]; One [1]; Two [2]; More than two [3]) Total scores of the FAS II were categorized into low (0-2), middle (3-5), and high (6-9) levels. The Turkish Socio-Economic-Status Questionnaire, developed by Bacanlı (1997), consisted of 12 items assessing parents' educational and occupational backgrounds, family size, housing characteristics, monthly income, household belongings (e.g., refrigerator, washing machine, television, computer), and whether the family was a landlord or a tenant. Total scores for this questionnaire ranged from 16 to 82.

Results and Conclusions

An exploratory factor analysis was conducted to evaluate the construct validity of FAS II. Results indicated that a single-factor structure accounted for 45.40% of the variance, and factor loadings ranged from 0.55 to 0.73. Differential item functioning and local independence assumptions were tested using the Rasch model to assess construct validity further. The Martin-Löf test indicated that the model was one-dimensional (LR = 16.425; p= 0.63). For the local independence assumption, the mean of correlations between item residuals was -0.30. The assumption of local independence was satisfied as no correlation exceeding 0,20 units from the mean correlation was evident (Robinson et al., 2019). The Andersen Likelihood Ratio test showed no significant differences in item function by gender (Andersen LR = 12.72; p= 0.122) or age (Andersen LR = 11.93; p= 0.154), thus

supporting the construct validity of FAS II. Additionally, the results of the Rasch analysis provided further evidence for the construct validity of FAS II. We tested the concurrent validity of the FAS II through correlations with the scores obtained from the Socio-Economic-Status Questionnaire (Bacanlı, 1997). The analysis indicated a significant positive correlation between FAS II and the Socio-Economic-Status Questionnaire scores (r = 0.73; $p<0.01$). This result supported the concurrent validity of the FAS II by demonstrating significant correlations between the two scales. In addition, Average Variance Extracted (AVE) and Composite Reliability (CR) values were calculated for convergent validity. The values calculated for convergent validity showed that the CR values of the scale were greater than the AVE values, showing the conditions were met. Internal consistency analysis revealed an acceptable Cronbach alpha value of 0.59 and CR value of 0.77 for the single-factor structure of the Turkish version of FAS II. Comparable reliability studies were conducted on both HBSC member and non-member countries, reporting a range of reliability coefficients from 0.31 to 0.58 (Liu et al., 2012; Lin, 2011; Boudreau & Poulin, 2009; Molcho et al., 2007; Pérez et al., 2021). The present study's findings align with these findings, demonstrating that the FAS II exhibits moderate internal consistency. In conclusion, the findings of this study support the use of FAS II as a valid and reliable tool for evaluating the socioeconomic status of the Turkish population. Furthermore, the scale's brevity and simplicity, comprised of just four questions, render it a practical and easily-scored measure that can be administered quickly. Therefore, the present study recommends FAS II for large-scale investigations, as it has demonstrated validity and reliability in the Turkish population. As a result, FAS II could serve as a more efficient alternative to lengthier socioeconomic status assessment tools or researcher-developed questionnaires.

1.GİRİŞ

Sosyoekonomik düzey (SED), sosyal bilimler alanında bir bireyin veya ailenin sağlık durumunu, düşünce, tutum ve eğilimlerini etkileyen önemli bir değişken olarak kabul edilmektedir (Wani, 2019). SED, uzun yıllardır yetişkin sağlığının belirleyicisi olarak incelenmiş ve istihdam, eğitim ve maddi zenginlik gibi kavramlar ile birlikte ele alınmıştır (Präg vd., 2016). Yapılan çalışmalar SED'in sağlıklı bir yaşam sürdürmek için önemli bir belirleyici olduğunu göstermektedir (Boudreau & Poulin, 2009; Boyce vd., 2006). Ayrıca, SED'in psiko-sosyal gelişime etki eden öznel iyi oluş (İşgör, 2017), pro-sosyal davranış (Çekin, 2013), yaşam doyumu (Dost, 2007), benlik saygısı (Demir & Duman, 2019) gibi birçok faktörlerle de ilişkili olduğu bilinmektedir. Bu nedenle SED'in değerlendirmesi hem sosyal hem de sağlık alanından birçok faktörün belirlenmesi açısından önem arz etmektedir. Bir bireyin sosyal statüsünün doğrudan ölçüsü olamamasından dolayı geçmişte pek çok araştırmacı tarafından SED'i ölçmek ve farklı popülasyonları sosyoekonomik duruma göre sınıflandırmak için çeşitli ölçekler geliştirilmiştir. Bu ölçeklerden Prasad ölçeği (1961), Kuppuswamy ölçeği (1976), Uday ölçeği (1964)'nin her ne kadar revize edilmiş güncel versiyonları olsa da madde sayısının fazla olması ya da dönemin fiyat endeksine bağlı olarak geliştirilmelerinden dolayı bazı sınırlılıkları söz konusudur (aktaran Singh, Sharma & Nagesh, 2017).

Türkiye'de ise 1997 yılında Bacanlı tarafından *Sosyoekonomik Düzey Ölçeği* geliştirilmiştir. Bu ölçek anne ve babanın eğitim düzeyi, ailedeki birey sayısı, oturulan evin ısıtma düzeni, anne ve babanın mesleği gibi soruların yer aldığı 12 maddeden oluşmaktadır. Bacanlı (1997) ölçek maddelerinden özellikle 6 ve 9. maddenin ileriki çalışmalarda yeniden düzenlenmesi gerektiğini belirtmiştir (Bacanlı, 1997). Ayrıca Türkiye Araştırmacılar Derneği (TÜAD) tarafından 2006 yılında *TÜAD Sosyo-Ekonomik Statü (SES) Ölçeği* geliştirilmiş ve ölçek 2012 yılında değişen ihtiyaçlara yanıt veren ve farklı değişkenlerin entegre edildiği maddeler eklenerek revize edilmiştir (TÜAD, 2012). Geliştirilen bu ölçek

soruların yapılarından ve tamamlanması gereken sürenin uzun olmasından (~ 20 dakika) dolayı her ne kadar yetişkin bireylerde uygulanabilir bir ölçek gibi görünse de çocuklarda ve ergenlerde kullanımı zorluk yaşanabilmektedir. Bu çerçevede incelebilecek diğer bir çalışma ise Kalaycıoğlu vd. (2010) tarafından geliştirilen *Sosyoekonomik Statü* ölçeğidir. Ancak, ölçeğin puanlamasının karmaşık, madde sayısının fazla ve mesleki statü farklılıklarına bağlı olarak ölçekten alınabilecek puanların farklı olabilme ihtimalinin göz ardı edilmiş olması nedeniyle farklı bir ölçme aracına ihtiyaç vardır. Ayrıca, ölçeğin puanlanmasında gelir düzeyi bireyin işinden elde ettiği kazanç ile hesaplanmaktadır. Oysaki birey çalışmasa bile yatırım, emekli maaşı gibi nedenlerle gelir elde edebilir. Ayrıca çalışmaya gelir yokluğu nedeniyle işsiz bireyler dahil edilmemiştir.

Alanyazın incelendiğinde, Türkiye'de SED'i ölçmek için genel kabul görmüş standart bir ölçeğe rastlanmamıştır. Bu alanda yapılan çalışmalar ve SED ile ilgilenen neredeyse her kurum ve kuruluş "kendi" ölçeğini kullanmaktadır. Geniş ölçekli, çok sayıda ölçme aracının kullanıldığı çalışmalarda SED'i değerlendirmek için kullanılabilecek, kısa, geçerli ve güvenilir bir ölçme aracına ihtiyaç duyulmaktadır.

Yukarıda örnek olarak sunulan ve Türkiye örneklemi için geliştirilmiş olan SED ölçeklerinin uzun olması, geniş ölçekli çalışmalarda kullanılmasının ve değerlendirilmesinin zor olması ve yürütülen her bir araştırma için araştırmacılar tarafından SED'i değerlendirmek amacıyla soruların hazırlanması gibi durumlar, araştırmalar planlanırken karşılaşılan zorluklardır. Bundan dolayı uluslararası geçerliği olan ve farklı ülkelerde yaygın bir şekilde kullanılan, kısa olması nedeniyle geniş ölçekli çalışmalarda kullanım kolaylığı olan AVDÖ II'nin Türk alanyazınına kazandırılması amacıyla bu çalışma planlanmıştır.

Aile Varlık Düzeyi Ölçeği (AVDÖ) (Family Affluence Scale), Dünya Sağlık Örgütü'nün 1997 yılında gençlerin sağlık ve refahını takip etmek amacıyla yürüttüğü "Okul Çağı Çocuklarında Sağlık Davranışı (Health Behaviour in School-aged Children-HBSC)" başlıklı projede SED'i değerlendirmek için kullanılmıştır (Currie vd., 1997). AVDÖ'nün gelişimi ilk olarak İskoç popülasyonunda yürütülen Carstairs ve Morris (1989) ve Townsend'in (1987) çalışmalarına dayanmaktadır. AVDÖ maddeleri, Townsend (1987) ve Carstairs ve Morris (1989) tarafından ailenin kullanabileceği maddi kaynakların derecesine ulaşmak için geliştirilen yoksunluk indekslerinden seçilmiş ve aile refahının bir ölçüsü olarak yorumlanmıştır.

1997/1998 HBSC araştırmasında (Currie vd., 1997) İskoç araştırmalara dayalı olarak geliştirilen AVDÖ'nün ilk formatı, kolayca yanıtlanan, üç maddeden oluşmaktadır. Bu maddeler çocuğun kendi yatak odasının olup olmadığı, ailenizin ve/veya sizin sahip olduğunuz araç sayısı ve ailenizle çıktığınız tatillerinin sayısını soran sorulardan oluşmaktadır (Currie vd., 1997). 2001/2002 HBSC araştırmasında, AVDÖ'nün üç maddesine ek olarak, *ailede bulunan bilgisayar sayısı* ile ilgili bir madde daha eklenmiş ve AVDÖ'nün dört maddelik ikinci versiyonu oluşturulmuştur (Boyce & Dallago, 2004).

AVDÖ ölçeğinin kullanıldığı çalışmalarda, geleneksel SED göstergelerine kıyasla AVDÖ'nün maddelerine yüksek yanıt oranları olduğu ve kolayca doldurulabilen bir ölçek olduğu bildirilmiştir (Molcho vd., 2007; Wardle vd., 2002; Boudreau & Poulin 2009; Cho & Khang, 2010; Lin, 2011). AVDÖ, son yıllarda da HBSC çalışmalarında çok çeşitli sağlık göstergelerindeki sosyoekonomik eşitsizlikleri incelemek ve açıklamak amacıyla yaygın olarak kullanılmaktadır (Currie vd., 2008). 2001/2002'de revize edilen AVDÖ II dört maddeden oluşmaktadır:

1. *Ailenizin ve/veya sizin sahip olduğunuz aracınız (araba, minibüs veya kamyonet) var mı?* Bu madde Carstairs ve Morris (1989) tarafından geliştirilen ve sağlıkta eşitsizlik araştırmalarında yaygın olarak kullanılan İskoç yoksunluk indeksinin bir bileşenidir.

2. *Kendinize ait odanız var mı?* Bu madde Townsend (1987) tarafından konut yoksunluğu olarak sınıflandırılan İskoç yoksunluk indeksinin bir bileşenidir.

3. *Son 1 yıl içinde ailenizle birlikte tatile gittiniz mi?* Bu madde, ev olanaklarından yoksun bırakmayı ölçen İskoç yoksunluk indeksinin bir bileşenidir (Townsend, 1987).

4. *Ailenizde kaç bilgisayar var?* Bu yeni madde zengin ülkelerde daha yüksek SED ailelerini tanımlamak için kullanılan bir bileşendir.

AVDÖ, uluslararası karşılaştırmalı çalışmalarda SED ile sağlık çıktıları arasındaki ilişkiyi ele almak için yaygın olarak kullanılan bir ölçektir (Currie vd., 2008; Maes vd., 2006; Pickett vd., 2005; Torsheim vd., 2004; 2006). Boyce vd. (2006), AVDÖ II' nin ulusal düzey de dahil olmak üzere büyük jeopolitik birimlerde sağlık değişkeni bağlamında bir yoksunluk belirteci olarak kullanılabileceğini göstermektedir. AVDÖ II birçok yönden bireyin sağlığı ile ilgili çalışmalar için değerli bir ölçme aracıdır. Bu nedenle ölçeğin Türk alanyazınına kazandırılması birçok alanda kullanılabilmesi adına yararlı olacaktır.

Alanyazın incelendiğinde, AVDÖ II'nin Boyce ve diğerleri (2006) tarafından 35 ülkeyi kapsayan kültürlerarası geçerliğini ortaya koyan çalışma sonrası, farklı çalışmalarda ölçeğin Çin (Liu, Wang, Wilberg vd., 2012), Tayvan (Lin, 2011), Güney Kore (Cho & Khang, 2010), Kanada (Boudreau & Poulin, 2009), İrlanda (Molcho vd., 2007; Kehoe & O'Hare, 2010), Arjantin, Meksika ve Guatemala (Pérez vd., 2021) popülasyonlarında geçerli ve güvenilir ölçme aracı olduğu rapor edilmiştir.

Sonuç olarak, bu ölçme aracının Türk alanyazınına kazandırılması, AVDÖ II'nin sözü edilen avantajlarından yararlanılarak daha geniş ölçekli çalışmaların ve özellikle çocuk, genç ve genç yetişkinlerde yapılacak araştırmaların planlanmasına katkı sağlayacağı düşünülmektedir. Ayrıca, bu durum bireylerin ulusal refah düzeylerinin uluslararası alanyazında kabul görmüş olan AVDÖ II ile değerlendirilmesinin önünü açacaktır. Bunula birlikte, AVDÖ II'nin Türk popülasyonuna uygulanabilmesi, Türk popülasyonuna özgü SED puanlarının ülke düzeyinde tek bir ölçme aracıyla elde edilmesini ve bu değerlerin farklı ülkelerle karşılaştırmasını mümkün kılacaktır. Bu doğrultuda, bu çalışmanın amacı, AVDÖ II'nin Türk popülasyonunda geçerli ve güvenirliğinin belirlenmesidir.

2. YÖNTEM

2.1. Araştırma Grubu

Çalışmanın örnekleminin belirlenmesinde, amaçlı örnekleme yöntemi kullanılmıştır. Araştırmaya dahil edilecek örneklem sayısı güç analizi (Bonett, 2002; Feldt, Woodruff & Salih, 1987), kullanılarak hesaplanmıştır. Cronbach alfa katsayısını 0,80 ve hata oranını 0,05 olacak şekilde yapılan analiz sonucunda, araştırma için gerekli en az katılımcı sayısının 143 olması gerektiği saptanmıştır. Ek olarak, Alanyazında Açımlayıcı Faktör Analizi (AFA) için örneklem sayısı, ölçekteki madde başına ideal olarak 20 örneklemin kullanılabileceği belirtilmiştir (Alpar, 2018). Ayrıca alanyazında AFA analizi için yaygın kullanımın değişken başına en az 10 ila 15 katılımcıdan veri toplanması gerektiği de ifade edilmektedir (Field, 2009). Bu bağlamda, çalışmaya farklı illerde ikamet eden (Ankara, Kırıkkale, Antalya, İzmir vb.) 19-24 yaş arası 97 kadın ($\overline{X}_{yaş}$ = 20,08, Ss =0,94 yıl) ve 143 erkek ($\overline{X}_{yaş}$ =20,29, Ss= 1,23 yıl) toplam 240 üniversite öğrencisi ($\overline{X}_{yaş}$ =20,20, Ss= 1,13 yıl) dahil edilmiştir.

2.2. Veri Toplama Araçları

Kişisel Bilgi Formu: Katılımcıların demografik özelliklerini (yaş, cinsiyet, ikamet ettiği il, ilçe vb.) belirlemeye yönelik Kişisel Bilgi Formu kullanılmıştır.

Aile Varlık Düzeyi Ölçeği II (Family Affluence Scale II): Ölçek Dünya Sağlık Örgütü'nün 1997 yılında yürüttüğü "Okul Çağı Çocuklarında Sağlık Davranışı (Health Behaviour in School-aged Children-HBSC)" başlıklı projede (Currie vd., 1997) geliştirilmiştir. 2001-2002 yıllarında aynı adlı projede ölçek revize edilmiştir (Boyce & Dallago, 2004) ve bu çalışmada revize edilen form kullanılmıştır. Ölçek maddeleri ve puanlaması şeklindedir:

1. *Ailenizin ve/veya sizin sahip olduğunuz aracınız (araba, minibüs veya kamyonet) var mı?* (Hayır (0); Evet, (1); Evet, iki veya daha fazla (2)).
2. *Kendinize ait odanız var mı?* (Hayır (0); Evet (1)).
3. *Son 1 yıl içinde ailenizle birlikte tatile gittiniz mi?* (Hiç (0); Bir kez (1); İki kez (2); İkiden fazla (3)).
4. *Ailenizde kaç bilgisayar var?* (Yok (0); Bir (1); İki (2); İkiden fazla (3)).

AVDÖ II toplam puanları 0-2 arasında ise düşük, 3-5 arasında ise orta, 6-9 arasında ise yüksek sosyo-ekonomik düzeyi göstermektedir. AVDÖ II'nin geçerliği, AVDÖ II ile diğer SED göstergeleri arasındaki ilişkiler Spearman korelasyonu (rhs), kullanılarak değerlendirilmiştir. 18 ülke ve bölgeden elde edilen veriler, Baba mesleği ile toplam FAS II puanları arasında orta düzeyde pozitif ilişkiler bulunduğu rapor edilmiştir (rhs$\geq$ 0,20, *p*<0,001) (Boyce & Dallago, 2004).

Sosyo- Ekonomik Düzey Ölçeği: Bacanlı tarafından 1997 yılında geliştirilen ölçek; anne ve baba eğitim durumu, ailede yaşayan kişi sayısı, oturduğu evin kime ait olduğu, evdeki oda sayısı, oturduğu evin ısıtma düzeni, ailenin ortalama aylık geliri, anne ve babanın mesleği, okuduğu lise, ortaöğretimi

boyunca masrafların nasıl karşılandığı, ailenin sahip olduğu eşyaların neler olduğu (buzdolabı, cep telefonu, ev vb.) bilgisini almaya yönelik 12 sorudan oluşmaktadır. Bu sorulardan ilk 11'inde işaretlenen seçeneğin puanı bulunmakta, 12'inci soruda ise kaç eşya varsa o kadar puan verilmektedir. Uygulama sonucunda her maddenin puanları toplanmakta ve toplam puan elde edilmektedir. Ölçekten alınabilecek en düşük puan 12 en yüksek puan ise 56' dır (12. soruda birer eşya varsayılarak). Ölçeğin iç tutarlılık (alfa) katsayısı 0,73 (12. soru ailenizin sahip oldukları eşyaları bildiren bu madde dışarıda bırakıldığında katsayı 0,75'e çıkmaktadır) olarak hesaplanmıştır. Ölçekteki maddelerin ortak varyansı ise %50 civarındadır.

2.3. Çeviri Prosedürü

Ölçeğin İngilizce orijinali, araştırmacılar tarafından Türkçeye çevrilmiştir. Çevirisi yapılan ölçek maddeleri, orijinal ölçek maddeleri ile karşılaştırılmış ve uzman görüşü alınarak Türkçe ölçeğin son şekli oluşturulmuştur. Madde sayısı az, maddeler anlaşılır ve psikolojik yapı içermediği için çeviri prosedüründe sadece uzman görüşü alınmıştır.

2.4. Verilerin Toplanması / Prosedür

Katılımcılar araştırmacılar tarafından çalışmaların amacı hakkında bilgilendirilmiştir. Araştırmacılar tarafından çalışmanın amacı ve ölçeklerin nasıl doldurulması gerektiğine ilişkin açıklamalar yapıldıktan sonra ölçekler, yüz yüze ders öncesinde sınıf ortamında uygulanmıştır. Katılımcılar, araştırmaya katılımın gönüllülük esasına dayalı olduğu ve sonuçların kesinlikle gizli tutulacağı konusunda sözlü ve yazılı olarak bilgilendirilmiştir. Ölçekler doldurulurken ölçeklerle ilgili karşılaşılabileceği sorunları doğrudan araştırmacılara danışılabileceği belirtilmiştir. Öğrencilerin ölçekleri tamamlaması yaklaşık 5-10 dakika sürmüştür.

2.5. Verilerin Analizi

AVDÖ II' nin yapı geçerliğinin belirlenmesi amacıyla Açımlayıcı Faktör analizi (AFA) yapılmıştır. Elde edilen verinin faktör analizi için uygunluğunu incelemek için Bartlett Testi ve örneklemin yeterliğini belirlemek için Kaiser-Meyer-Olkin (KMO) ölçütü kullanılmıştır. Yapı geçerliği ayrıca, madde işlev farklılığı (Differential Item Functioning-DIF) ve yerel bağımsızlık (local independence) varsayımları analiz edilerek Rasch modeli ile incelenmiştir. Rasch analizi, R 4.0.3 yazılımında eRm paketi kullanılarak gerçekleştirilmiştir. Kısmi kredi modeli (partial credit model) ile verinin Rasch modeline uyup uymadığı değerlendirilmiştir. İlk olarak yanıt kategorilerinin doğru sıralanıp sıralanmadığı madde karakteristik eğrileri ile incelenmiştir. Model uyumunu değerlendirmek için ki kare test istatistiği kullanılmıştır. Ki kare testinde maddeler için elde edilen p değerinin 0,05'ten küçük olması maddenin Rasch modeline uymadığını gösterir. Tek boyutluluk ve yerel bağımsızlık, Rasch modelinin temel varsayımlarıdır. Tek boyutluluk, derecelendirme ölçeğinin her seferinde bir özelliğe odaklanma ve ölçme yeteneğini ifade eder (Robinson vd., 2019). Tek boyutluluk (unidimensionality) varsayımı Martin Löf testi ile incelenmiştir. Martin Löf testi sonucunun istatistiksel

olarak anlamlı bulunması modelin tek boyutlu olmadığını göstermektedir (Verhelst, 2001). Yerel bağımsızlık varsayımı ise madde artıkları (residuals) arasındaki ilişkiler ile incelenmiştir. Artıklar arasındaki korelasyonların ortalamasının 0,3'ün üzerinde olması yerel bağımlılığı göstermektedir (Robinson vd., 2019).

Ölçülen özelliğin benzer seviyelerine sahip farklı katılımcı gruplarının (bu çalışmada yaş grubu ve cinsiyet), maddelere farklı yanıt verip vermediğini ortaya koyan madde işlev farklılığı (differential item functioning- DIF), Andersen testiyle değerlendirilmiştir. Örneklemdeki farklı alt gruplar, eşit düzeyde temel özelliklere sahip olsalar bile, maddelere farklı şekillerde yanıt verdiklerinde madde işlev farklılığı ortaya çıkar. Bu çalışmada cinsiyet ve yaş gruplarına göre madde işlev farklılığı incelenmiştir. Katılımcı grubu, ortanca yaşın (Ortanca yaş = 20; 20 yaş ve altı 20 yaş üzeri) altı ve üstü olmak üzere iki gruba sınıflandırılmıştır.

AVDÖ II'nin eş zaman geçerliği (concurrent validity), Bacanlı (1997) tarafından geliştirilmiş olan SED ölçeğinden elde edilen puanlar ile AVDÖ II puanları arasındaki ilişkiler Pearson korelasyon analizi ile ortaya konarak incelenmiştir. AVDÖ II'nin güvenirliği için, Cronbach alfa iç tutarlılık katsayısı, bileşik güvenirlik [Composite Reliability (CR)] katsayısı ve Rasch modelinden Kişi Ayırma İndeksi (Person Separation Index) güvenirlik katsayısı hesaplanmıştır.

Ek olarak, AVDÖ II'nin yakınsak geçerliğini test etmek için, Ortalama Açıklanan Varyans [(Average Variance Extracted (AVE)] ve Bileşik Güvenirlik (CR) Fornell ve Larcker'in (1981) yönergeleri doğrultusunda hesaplanmıştır. Yakınsak geçerliğin sağlanabilmesi için AVE'nin 0,5 veya daha yüksek olması, standartlaştırılmış faktör yüklerinin de 0,5 veya daha yüksek ve ideal olarak 0,7 veya daha yüksek olması gerekmektedir (Hair vd., 2014).

3. BULGULAR

Bu bölümde araştırma kapsamında elde edilen verilere ait korelasyon analizi, yapı geçerliği, eş zaman geçerliği ve güvenirlik bulguları yer almaktadır. AVDÖ II maddeleri ile toplam AVDÖ II puanı arasındaki karşılıklı korelasyonlar Tablo 1'de sunulmuştur.

Tablo 1. AVDÖ-II maddelerinin ve toplam AVDÖ puanına yönelik korelasyon analizi sonuçları

AVDÖ-II maddeleri	AVDÖ-Araba	AVDÖ-Oda	AVDÖ-Tatil	AVDÖ-Bilgisayar
AVDÖ-Oda	0,18*			
AVDÖ-Tatil	0,34*	0,19*		
AVDÖ-Bilgisayar	0,31*	0,26*	0,33*	
AVDÖ-TOPLAM	0,67*	0,47*	0,75*	0,75*

AVDÖ; Aile varlık düzeyi ölçeği. *$p<0,001$.

Ölçek maddelerine ait madde toplam puan korelasyonu 0,47 ile 0,75 aralığında yer almaktadır. AVDÖ II maddeleri ile toplam AVDÖ II puanı arasındaki karşılıklı korelasyonların sonuçları, orta ve

yüksek düzeyde ilişkili olduğunu göstermektedir (Tablo 1). Ayrıca AVDÖ II'nin tüm maddelerinin de birbiriyle ilişkili olduğu ortaya konulmuştur.

3.1. Yapı Geçerliği

3.1.1. Açımlayıcı Faktör Analizi Sonuçları

Elde edilen veri setinin faktör analizi için uygunluğunu incelemek için kullanılan Bartlett Testi ve örneklemin yeterliği için Kaiser-Meyer-Olkin (KMO) ölçütü sonuçları, veri setinin ve örneklemin faktör analizi için uygun olduğunu göstermiştir. Verilerin faktör analizine uygunluğu için KMO'nun 0,60'dan yüksek ve Barlett Testi'nin hesaplanan ki-kare değerinin istatistiksel olarak anlamlı çıkması gerekmektedir (Büyüköztürk, 2020; Alpar, 2018). Faktör analizi sonucunda, ölçeğin KMO değerinin 0,68, Barlett Küresellik Testi χ^2 değerinin ise 90,06 ($p<0,01$) olduğu bulunmuştur. Elde edilen bu değerler veri setinin faktör analizi için uygun olduğunu göstermektedir.

Açımlayıcı faktör analizi sonuçlarına göre elde edilen alt boyutların faktör yükleri, açıkladığı varyans ve öz değer sonuçları Tablo 2'de verilmiştir.

Tablo 2. AVDÖ II maddelerine uygulanan açımlayıcı faktör analizi sonuçları

Maddeler	Faktör 1	Öz Değer	Açıkladığı Varyans	Toplam Varyans
1. Ailenizin ve/veya sizin sahip olduğunuz aracınız (araba, minibüsü veya kamyon) var mı?	0,69			
2. Kendinize ait odanız var mı?	0,55			
3. Son 1 yıl içinde ailenizle birlikte tatile gittiniz mi?	0,71	1,81	45,40	45,40
4. Ailenizde kaç bilgisayar var?	0,73			

Tablo 2'de görüldüğü gibi AVDÖ II maddelerine uygulanan faktör analizi sonucunda, toplam varyansın %45,40'ını açıklayan tek faktörlü bir yapı elde edilmiştir. Ölçek maddelerine ilişkin faktör yükleri ise 0,55 (kendine ait odaya sahip olma) ile 0,73 (sahip olunan bilgisayar sayısı) arasında değişmektedir.

3.1.2. Rasch analizi sonuçları

Şekil 1'de görülen madde karakteristik eğrilerinde, madde yanıt kategorilerinin uygun sıralandığı ve grafikler incelendiğinde 0'dan 3'e kadar eğrilerin uygun sırada olduğu görülmektedir.

Şekil 1. Madde karakteristik eğrileri
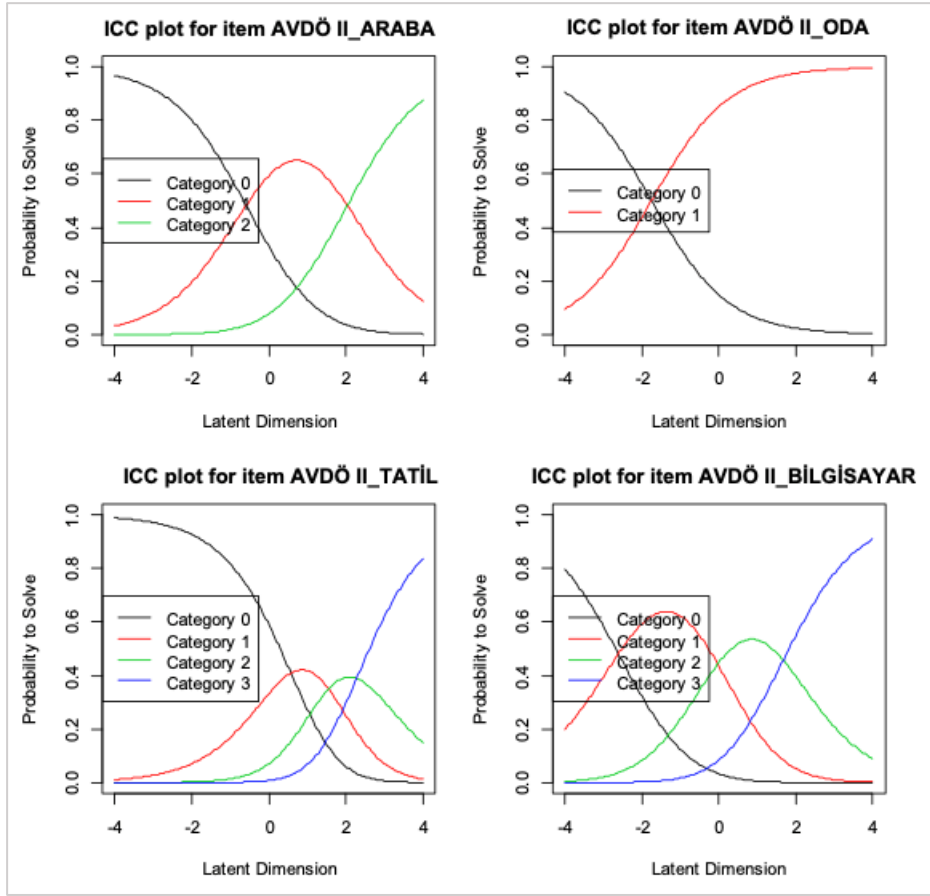
AVDÖ-II maddelerine uygulanan Rasch analizi sonuçlarına göre (Tablo 3), Ki kare testinde maddeler için elde edilen *p* değerinin istatistiksel olarak anlamlı olmadığı (*p*>0,05) görülmektedir (Tablo 3). Bu durum, tüm maddelerin Rasch modeline uyduğunu ve tek boyutluluk varsayımının sağlandığını göstermektedir. AVDÖ-II maddelerinin iç uyum (infit) ve dış uyum (outfit) istatistiklerinin yaklaşık olarak 0,60 ile 1,40 arasında olması, Rasch modeline uygunluğun diğer bir göstergesidir (Wright ve Linacre, 1994).

Tablo 3. AVDÖ-II maddelerine uygulanan Rasch analizi sonuçları

AVDÖ maddeleri	Ki kare	Sd	*p*	Dış uyum (Outfit)	İç uyum (Infit)	Dış uyum (Outfit) t	İç uyum (Infit) t
AVDÖ-Araba	186,62	230	0,984	0,81	0,81	-2,23	-2,30
AVDÖ-Oda	215,67	230	0,743	0,93	0,90	-0,23	-0,96
AVDÖ-Tatil	142,94	230	1,000	0,62	0,59	-2,96	-4,85
AVDÖ-Bilgisayar	166,08	230	0,999	0,72	0,72	-3,57	-3,52

Rasch modelinin varsayımlarından tek boyutluluğu incelemek için kullanılan Martin Löf testinin sonucu, modelin tek boyutlu olduğunu göstermiştir (LR = 16,425, *p*= 0,63). Yerel bağımsızlık varsayımı ile ilgili olarak, madde artıkları arasındaki korelasyonların ortalaması -0,30 bulunmuştur.

Ortalama korelasyondan 0,20 birimden daha yüksek korelasyon olmadığından yerel bağımsızlık varsayımının sağlandığı sonucuna varılmıştır (Robinson vd., 2019).

Madde işlev farklılığı için kullanılan Andersen'in olabilirlik oranı (likelihood ratio) testi sonucu, cinsiyet ve yaş gruplarında anlamlı farklılık bulunmadığından (cinsiyet için Andersen LR = 12,72. p= 0,122; yaş grubu için Andersen LR = 11.93, p= 0,154) bu gruplara yönelik madde işlev farklılığının ortaya çıkmadığı saptanmıştır.

3.1.3. Eş zaman Geçerlik

AVDÖ II' nin eş zaman geçerliği (concurrent validity), Bacanlı (1997) tarafından geliştirilmiş olan Sosyo ekonomik Düzey Ölçeği toplam puanları ile AVDÖ II toplam puanlarına uygulanan Pearson korelasyon analizi ile sınanmıştır. SED ölçeği ile AVDÖ II arasındaki korelasyon değeri incelendiğinde, ilişkinin (r = 0,73, p<0,01), yüksek düzeyde anlamlı olduğu görülmektedir.

3.1.4. Yakınsak Geçerlik

Ölçeğin yakınsak geçerliğini belirlemek için Ortalama Açıklanan Varyans (AVE) değeri, Bileşik Güvenirlik (CR) katsayısı hesaplanmıştır. AVE'nin 0,45 ve CR değerinin 0,77 olduğu belirlenmiştir. Bu sonuca göre AVE değerinin kritik değer olan 0,5'nin altında olduğu tespit edilmiştir. Ancak AVE değerinin 0,5'ten küçük fakat bileşik güvenirlik değerinin 0,6'dan büyük olduğu durumlarda yapının yakınsak geçerliğinin kabul edilebilir olduğu belirtilmektedir (Fornell & Larcker, 1981). Elde edilen bulgular incelendiğinde, AVE değerinin 0,50'nin altında olmasına rağmen CR değerinin (0,77) 0,6'dan büyük olduğu ve yakınsak geçerliğe ilişkin koşulların sağlandığı sonucuna varılmıştır.

3.2. Güvenirlik

Ölçek maddelerinin birbirleri ile ilişkili olarak aynı yapıyı ölçüp ölçmediğinin bir göstergesi olan iç tutarlık, Cronbach alfa ve Bileşik Güvenirlik (CR) katsayıları hesaplanarak değerlendirilmiştir. Elde edilen Cronbach alfa katsayısı 0,59'dur. Ayrıca, Kişi Ayırma İndeksi (KAİ) güvenirlik katsayısı da 0,65 olarak bulunmuştur. Ölçekte bulunan madde sayısı az olduğundan (4 madde) elde edilen katsayıların kabul edilebilir düzeyde olduğuna karar verilmiştir (Osburn, 2000; Tavakol & Dennick, 2011). CR katsayısı ise 0,77 olarak bulunmuştur. Hair vd. (2014) CR katsayısının 0,70'in üzerinde olduğu durumda güvenirliğin iyi düzeyde olduğunu belirtmektedirler. CR'ye ilişkin elde edilen bu bulgular, ölçeğin oldukça güvenilir olduğunu göstermektedir (CR> 0,70).

4. TARTIŞMA VE SONUÇ

Bu çalışmada, Boyce ve Dallago (2004) tarafından öğrencilerin SED'i ölçmek üzere revize edilen AVDÖ II'nin geçerlik ve güvenirliğinin saptanarak Türkçe' ye uyarlanması amaçlanmıştır. Üniversite öğrencilerinden oluşan bir örneklemde gerçekleştirilen bu uyarlama çalışması sonucu elde edilen bulgular, ölçeğin SED'i ölçebilecek düzeyde geçerlik ve güvenirliğe sahip olduğunu göstermektedir.

AVDÖ II' nin açımlayıcı faktör analizi sonucunda elde edilen faktör yük değerleri 0,55 ile 0,73 arasında değişmektedir. Bu sonuç faktör yüklerinin faktörü güçlü şekilde temsil ettiğini göstermektedir (Büyüköztürk, 2020). Alpar (2018) 0,30 ile 0,40 arasındaki faktör yüklerinin kabul edilebilir en düşük düzeydeki yükler, 0,50 ve üzerindeki yüklerin uygulama anlamlılığı olan yükler ve 0,70 ve üzerinde olan yüklerin yapıyı iyi açıklayabilen yükler olarak tanımlandığını belirtmektedir. Tabachnick ve Fidell (2014)'e göre ise, 0,71'lik (%50 varyans) faktör yükü mükemmel, 0,63'lük (%40 varyans) faktör yükü çok iyi, 0,55'lik (%30 varyans) faktör yükü iyi, 0,45'lik (%20 varyans) faktör yükü düşük ve 0,32'lik (%10 varyans) faktör yükünün zayıf olduğu ileri sürülmektedir. Bu durum, ölçekte yer alan maddelerin kullanılacak nitelikte olduğu seklinde ifade edilebilir. Ölçekteki tek faktörlü yapının açıkladığı toplam varyans miktarının %45,40 olduğu gözlenmiştir. Tavşancıl (2014), sosyal bilimlerde yapılan çalışmalarda toplam varyans oranının %40 ile %60 arasında değer almasının ölçeğin faktör yapısının güçlülüğüne işaret ettiğini belirtmektedir.

Yapı geçerliği, madde işlev farklılığını (Differential Item Functioning-DIF) ve yerel bağımsızlık (local independence) varsayımlarını incelenmek amacıyla yapılan Rasch modeli, iç uyum değerlerinin 0,59 ile 0,90 arasında olduğunu, dış uyum değerleri ise 0,62 ile 0,93 arasında olduğunu göstermiştir. Wright ve Linacre (1994) yapı geçerliğinden bahsedebilmek için uyum içi ve uyum dışı değerlerinin 0,6-1,4 aralığında olması gerektiğini rapor etmişlerdir. Bu bulgular, çalışmamız kapsamında uygulanan Rasch modeli analiz sonuçlarının kabul edilebilir aralıkta olduğunu göstermektedir.

Rasch modeli analizi sonucunda yerel bağımsızlık varsayımı ile ilgili olarak, madde artıkları arasındaki korelasyonların ortalaması -0,30 bulunmuştur. Robinson vd. (2019) tarafından önerildiği gibi bu sonuç, ortalama korelasyondan 0,20 birimden daha yüksek korelasyon olmadığından madde artıkları arasındaki ilişkinin geçerli olduğunu doğrulamakta ve ölçeğin tek boyutluluğunu ortaya koymaktadır. İncelenen çalışmalar içerisinde benzer analiz modelinin uygulandığı tek araştırma olan, ölçeğin Çin örneklemi üzerinde yapılan geçerlik ve güvenirlik çalışmasında, maddeler arasındaki yerel bağımsızlık varsayımının zayıf düzeyde anlamlı olduğu gösterilmişken (Liu vd., 2012), Türk popülasyonu üzerinde yapılan mevcut çalışmada maddeler arasındaki yerel bağımsızlık varsayımının daha kuvvetli olduğu bulunmuştur.

Madde işlev farklılığı sonuçları, tüm maddeler için cinsiyet ve yaş gruplarında anlamlı farklılık bulunmadığını ortaya koymaktadır. Çin örneklemi üzerinde yapılan geçerlik güvenirlik çalışması ile benzer olarak cinsiyet farkı bulunmazken (Liu vd., 2012), bu çalışmanın aksine yaş gruplarında anlamlı fark bulunmuştur (Liu vd., 2012; Molcho vd., 2007; Lin, 2011). Bu durumun bu çalışmada yer alan katılımcıların yaşlarının birbirine yakın olmasından kaynaklanabileceği şeklinde düşünülmüştür.

AVDÖ II ile Bacanlı (1997) tarafından geliştirilen SED puanları arasında eş zamanlı geçerliğinin incelenmesi amacıyla yapılan Pearson korelasyon analizi sonucunda, AVDÖ II ile Sosyo-ekonomik Düzey Ölçeği puanları arasında anlamlı ve pozitif yönlü bir ilişki (r = 0,73, $p < 0,01$) olduğu

bulunmuştur. Korelasyon katsayısının 0,90 ile 1,00 arasında çok kuvvetli, 0,80 civarında çok iyi, 0,70 ile 0,89 arasında kuvvetli (yüksek), 0,40 ile 0,69 arasında orta, 0,20 ile 0,39 arasında zayıf (düşük) ve 0,00 ile 0,19 ilişki yok ya da önemsenmeyecek düzeyde düşük ilişki olduğu belirtilmektedir (Alpar, 2018). Bu doğrultuda, mevcut çalışma kapsamında AVDÖ II'nin eş zamanlı geçerliğinin yüksek düzeyde olduğu söylenebilir. Bununla birlikte, AVDÖ II'nin SED'i ölçtüğü ve aynı yapıyı ölçen Sosyo Ekonomik Düzey Ölçeği ile desteklendiği saptanmıştır. Ayrıca ölçeğin yakınsak geçerliğini belirlemek için hesaplanan AVE değeri 0,45 bulunmuştur. Fornell ve Larcker (1981) AVE değerinin 0,5'ten küçük olduğu durumlarda, bileşik güvenirlik değerinin 0,6'dan büyük olmasının yakınsak geçerliğin kabul edilebilir koşulları sağladığını belirtmektedirler. Nitekim mevcut araştırmanın sonuçları AVDÖ II'nin yakınsak geçerliğinin desteklendiğini göstermektedir (CR>AVE).

İç tutarlık analizi sonucunda, AVDÖ II'nin Türkçe formunun tek faktörlü yapısına ilişkin Cronbach alfa değeri 0,59 olarak bulunmuştur. Bu değer ölçeğin genel iç tutarlık düzeyinin tatmin edici olduğunu göstermektedir. Ölçeğin tek faktörlü olması ve madde sayısının az olması durumunda alfa değerinin gerçek güvenirlikten daha düşük değer verdiği alanyazında yer alan çeşitli çalışmalarla gösterilmiştir (Osburn, 2000; Tavakol & Dennick, 2011). AVDÖ II'nin güvenirlik çalışmaları, birçok HBSC üyesi ülkede ve ayrıca bazı HBSC üyesi olmayan ülkelerde yapılmıştır ve sonuçlar, AVDÖ II maddelerinin orta düzeyde güvenirliğe sahip olduğunu göstermişlerdir. AVDÖ II'nin HBSC üyesi olmayan ülkelerde uyarlama çalışmaları incelendiğinde, Çin örnekleminde 0,58, Tayvan örnekleminde 0,32, Kanada örnekleminde 0,31 ve İrlanda örnekleminde 0,40 düzeyinde güvenirlik katsayıları bulunduğu belirtilmiştir (Liu, vd., 2012; Lin, 2011; Boudreau & Poulin, 2009; Molcho vd., 2007). Son yıllarda yapılan çalışmada ise, Cronbach alfa katsayısı Meksika için 0,47, Arjantin için 0,42 ve Guatemala için 0,31 olarak rapor edilmiştir (Pérez vd., 2021). Bu sonuçlar, mevcut çalışmada elde edilen değerle (Cronbach alfa = 0,59) benzerlik göstermektedir. Ölçeğin orta düzeyde iç tutarlılığa sahip olduğu görülmektedir. Ek olarak ölçeğe ait CR katsayısı 0,77 olarak bulunmuştur. CR katsayısı, 0,70'in üzerinde olduğunda güvenirliğin iyi düzeyde olduğu rapor edilmiştir (Hair vd., 2014). Bu çalışma kapsamında elde edilen CR değeri göz önüne alındığında, ölçeğin güvenirliğinin iyi düzeyde olduğu sonucuna varılmaktadır.

Sonuç olarak, AVDÖ II 'nin Türkçe formunun SED'i ölçmek için geçerli ve güvenilir bir ölçme aracı olduğu sonucuna varılmıştır. Soru sayısının az olması ve soruların anlaşılır olması nedeniyle kullanımı ve puanlaması kolay, pratik ve kısa zamanda uygulanabilen bir ölçek olması avantaj olarak değerlendirilebilir. AVDÖ II gibi geçerli ve yanıtlaması kolay bir SED ölçme aracının ülkemize kazandırılması, geniş ölçekli çalışmalarda SED'in değerlendirilmesinde kolaylık sağlayacaktır. Birçok alanda AVDÖ II, araştırmacılar tarafından SED'i ölçen uzun versiyonlu ölçme araçlarına ve araştırmacıların kendi geliştirdikleri sorular yerine alternatif olabilir.

Bu çalışma, AVDÖ II ölçeğinin Türk alanyazınına kazandırılması açısından öneme sahip olmakla birlikte bazı sınırlılıklar içermektedir. Bunlardan ilki, bu çalışmanın örneklemi farklı illerde

yaşayan 19-24 yaş aralığında olan 240 üniversite öğrencisinden oluşmaktadır. Gelecekteki çalışmalarda ölçeğin çocuk ve ergen bireyler gibi farklı popülasyonlarda daha fazla katılımcı ile uyarlanması, bulguların çeşitli örneklemlerde genellenebilirliği açısından önemlidir. Ayrıca, yapılan çalışmanın Türkiye'nin belirli bir bölgesinde toplandığı düşünüldüğünde, benzer çalışmaların Türkiye'nin genelini temsil edebilecek daha kapsamlı bir şekilde planlanması mevcut araştırma kapsamında sunulan bulguları güçlendirecektir. Araştırmanın diğer bir sınırlılığı ise yapı geçerliğinin "Açımlayıcı Faktör Analizi" ve "Rasch Modeli Analizi" ile incelenmesidir. Gelecekteki araştırmalarda bu ölçeği farklı geçerlik ve güvenilirlik ölçüm yöntemleri kullanarak incelemesi düşünülebilir. Örneğin, yapı geçerliği, MTMM (Multitrait-Multimethod Matrix) analizi ile incelenebilir. Ek olarak, kültürler ve gruplar arası ölçüm değişmezliği farklı yaş ve örneklem gruplarında incelenebilir.

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Could the Next Platform be the Transformational Platform and Tourism? A Platform Based Expansion Model in the Context of Global Sustainable Tourism

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Abstract

After the Second World War, the tourism industry started to turn into a global phenomenon with the development of the economy and globalization since 1950. The restoration of peace and stability in most of the post-war world, emergence of a strong middle class as a result of global financing and economic support, increased tendency to travel, use of idle large-capacity warplanes for civilian purposes are among the important factors ensuring the development and expansion of tourism. Moreover, decrease in long-distance transportation and travel costs, as well as technological development made significant contributions to facilitating access to larger markets, wider geographies, and destinations. In terms of sustainable tourism from 1950 to 2020, the global tourism activity, which caused problems due to conscious and / or unconsciously implemented tourism policies, led to an uncontrollable tourism mobility and geographical expansion with an increasing momentum. In the context of sustainable tourism, this model first analyzes the platform-based model and the geographical expansion model separately, and then synthesizes both models as a mixed model. In addition, this model deals with the development and change processes of global tourism, which is affected by positive and negative developments, and proposes a transformational tourism platform model that provides significant contributions to both the demand side (tourists) and the supply side (tourism industry).

Keywords: Platform Based Model, Geographical Expansion Model, Global Tourism, Sustainable Tourism, Transformational Platform, Transformational Tourism.

Article Type	Application Date	Acceptance Date
Research Article	October 17, 2023	March 5, 2024

1. INTRODUCTION

Global tourism has become one of the fastest growing and geographically expanding economic industries in the world over a period of 70 years, from 1950 to 2020. The business volume of tourism today equals and even exceeds that of oil exports, food products and the automobile industry (UNWTO, 2021a). As one of the most important industries of international trade, global tourism is one of the main sources of income for many underdeveloped countries, but also many developed ones as well. The phenomenon of global tourism has become a driving force for the sustainable socio-economic development of, especially, underdeveloped countries. Modern global tourism is closely related to human mobility for travel, geographical sprawl, and expansion, as well as economic development. In this context, it covers an increasing number of new destinations around the world.

Jafari's (2005) platform model, termed by Jafar Jafari himself as the "chronological/evolutionary thought platform" is a framework developed in 1990. It delineates attitudes towards tourism development and its effects that have the potential to create conflicts between individuals unconditionally supporting tourism and those issuing warnings against it. Each platform in the model defines a stage of action and thinking, outlining the changes and maturation process in this domain. The platforms in this model emphasize different perspectives and highlight how tourism is perceived, as well as the both negative and positive impacts it creates.

When destinations are examined individually, it is observed that there have been dramatic fluctuations in terms of decrease or increase in global, national, or regional contexts throughout the processes. According to Weaver (2001), the spatial expansion of global tourism in real geographical context has occurred in three different stages since 1950, as explained below. In the first stage, after World War II, in the 1950s, there was an increase in travel and tourism activities among the developed countries due to developments in war technology, communication, and transportation. In the second stage, gaining momentum in the 1960s, travel from developed countries to less developed countries became prominent. In the third stage, starting from the 1990s, travel both among less developed countries and within them, as well as travel to developed countries, has been significant.

This study deals with Jafari's (2005) platform model and Weaver's (2006) geographic expansion model on global tourism development, diffusion, and expansion in the context of sustainable tourism. In this study, it is aimed to analyze both models, synthesize both models as a mixed model and propose a new platform for the next process. In addition, another aim of this study is to reveal the development of global tourism from 1950 to 2020, which affected the development of these two models, with statistical data.

In the rest of this article includes a literature review on the subject in the next section. In the third part, the research method of the article and the data of the existing models are examined. In the

fourth chapter, a new mixed model proposal is made. The last section is devoted to the results explanations.

2. LITERATURE REVIEW

2.1. Global and Sustainable Tourism

Globalization is a multidimensional process that is constantly evolving and shaping the development of the World. With the disappearance of national and international distances, and due to rapid technological, social, economic, and political developments in the 20th century (Beck, 2000), the convergence of countries in political, social, economic, legal and cultural terms is, nowadays, expressed with the concept of globalization (Robertson, 1992) and the rebuilding process of the current world is called the "globalization process" (Buchholz et.al, 2009).

The rapid developments in communication technology that occurred with globalization, as well as the developments in speed, comfort, capacity and price factors of transportation vehicles, have played a major role in the development of international tourism (Mullings, 1999). The globalization of tourism is a result of the trend of economic globalization, technological developments in communication and transportation (Brondoni, 2016). In this context, global tourism can be defined as a "megatrend", with its social, cultural, and economic dimensions and consequences (Adejuwon, 1996). The widespread growth and expansion of tourism is used by many countries as a sustainable development strategy (Sinclair & Jayawardena, 2003). Development through tourism has evolved into a strategy used by governments to improve the well-being of local people, through income and job creation, and help destinations to move from a position of poverty or underdeveloped to a position of wealth or further development (Andriotis, 2000). Especially in recent years, the increase in the number of people with higher income and leisure time, the decrease in transportation and travel costs due to technological developments, the shortening of access times to distant destinations, the increase in the awareness of all touristic destinations of the globalized world of mass media and social media tools, have all been effective in the globalization of tourism (Tisdell, 2004). In this context, it is seen that international travels cause geographical expansion throughout the world, with the formation and development of global tourism distribution systems, marketing and product development practices (Heath, 2001; Mpofu, 2009).

Global tourism is the simultaneously largest scale movement of goods, services, and people in world economy. It is a significant catalyst for economic development and sociopolitical change. While global tourism increasingly accounts for ever greater segments of national and international economies, on the one hand, due to the increasing tourism mobility and the consequent expanding tourism geography and the consequences of this growth for sustainable economic, social-cultural and environmental interaction are diverse and uncertain.

Sustainable tourism, on the other hand, refers to sustainable practices in and by the tourism industry. It is an aspiration to acknowledge all impacts of tourism, both positive and negative. It aims to minimize the negative impacts and maximize the positive ones. Negative impacts to a destination include economic leakage, damage to the natural environment and overcrowding to name a few. Positive impacts to a destination include job creation, cultural heritage preservation and interpretation, wildlife preservation landscape restoration, and more. Additionally, it has been emphasized that sustainable tourism "refers to the environmental, economic, and socio-cultural aspects of tourism development, and a suitable balance must be established between these three dimensions to guarantee its long-term sustainability" (UNEP & UNWTO, 2005)

2.2 Tourism and Geography

According to the UNWTO, tourism is the activity of a person who travels to a place outside his or her usual place of residence for not less than a specified period of time, and whose main purpose is to travel, and not taking part in activity that involves generating income in the place visited (UNWTO, 1994). Considering the annual travel movement of billions of domestic and foreign tourists, tourism is a fundamental and intense geographical phenomenon that cannot be ignored by social scientists (Williams and Lew, 2015). In general, geography can be defined as the branch of science that studies the mutual relations between people and space. Moreover, studies in geography consider the mutual impact between humans and environment, but also focus on the study of space and the mutual relations between different spaces (Akova et.al, 2012). Tourism geography and geographical resources play a role in the emergence of functional tourism regions that can direct the existence and development of tourism.

World tourism is the scene of a tourist movement that takes place in very wide areas that we can explain with concepts such as intercontinental, interregional, international, overseas, and cross-border. This mobility, which occurs simultaneously in the form of domestic tourism and international tourism, becomes the subject of both tourism and tourism geography. According to Akdağ and Zafer (2011) it also shows that geography has a symbiotic and existential relationship with tourism. The expansion and development models of the tourism industry, which is constantly expanding and intensifying spatially, reveal that tourism has spread all over the world in the last 60 years with various tourism purposes. In this study, the development process of sustainable tourism has been created by using Jafari's Platform model together with the Geographical Tourism Expansion Model developed by Weaver.

3. RESEARCH METHODOLOGY

In this study, document analysis method was used for secondary data analysis. Document analysis is a qualitative research method used to analyze the content of written documents meticulously and systematically (Wach and Wach 2013). Document analysis, like other methods used in qualitative research, requires the examination and interpretation of data in order to make sense of a subject or to

create an understanding (Corbin & Strauss, 2008). In this context, document analysis is employed to uncover a phenomenon or model (Stake, 1995; Yin, 1994) and forms a combination in examining and evaluating a specific research topic, the same research phenomenon, or case (Denzin, 1970; Patton, 1990).

4. RESULTS

As of the end of 2019, international tourism activity has increased by 59 times from 25 million to 1 billion 461 million people, and tourism revenues have increased by 705 times from 2 billion 100 million dollars to 1 trillion 481 billion dollars (Holenk & Van Deijck, 1991; UNWTO, 1980; 2020a; 2020b). World Tourism Organization (UNWTO) data from 1950 to the end of 2019 regarding international tourism mobility and income, are shown in Table 1. The data for 2020 were calculated according to the WTO's forecast data. Considering that the annual tourism activity and income data between 1950 and 1960 were not found in both the WTO and literature, and that there was no international extraordinary crisis between these dates, the 10-year average annual mobility (Last mobility / Initial mobility)$^{1/(n-1)}$-1x100) and annual income (Last income / First income) $^{1/(n-1)}$ -1x100) data were determined. According to the latest data of the WTO, due to the extraordinary Covid-19 pandemic crisis that emerged in 2020, tourism activity and income fell by 74%, and the world tourism industry experienced its worst year (UNWTO, 2021b, 2021c). It is estimated that the travel mobility and income of world tourism started to increase positively in 2021 compared to 2020, entered a significant upward trend in 2022, and in 2023, it is estimated that it can reach the levels between 80 and 95 percent of 2019 data, and in 2024, it is predicted that 2019 data can be reached again. (UNWTO, 2023)

According to the table below (Table 1), the annual average increases in the development of world tourism between 1950 and 2019 are presented. Due to the Covid-19 pandemic, the tourism industry has unexpectedly suffered an extraordinary loss in terms of mobility and income. For this reason, in Table 2 below, 2020 data is excluded from the 10-year period mobility and income calculation. Although there was a slight shrinkage of 0.9% in 2001 and 1.7% in 2003 from 1950 to the present 2023, the globally unexpected huge shrinkage of 75%, due to the Covid-19 Pandemic in 2020, has never been caused by a previous epidemic outbreak (such as MERS or SARS) nor by regional wars and conflicts, or periods of global economic crises.

Table 1. International Annual Tourism Mobility (Arrivals) and Revenues Between 1950 and 2020

Year	Numbers of Tourists (millions)	Growth (%)	Tourism Revenues (billion$)	Growth (%)	Year	Numbers of Tourists (millions)	Growth (%)	Tourism Revenues (billion$)	Growth (%)
1950	25,3		2,1		1987	360,0	7.8	169,5	22.3
1951	27,9	10.6	2,3	12.5	1988	392,0	8.9	194,1	14.5
1952	30,9	10.6	2,6	12.5	1989	404,0	3.0	208,7	7.5
1953	34,2	10.6	2,3	12.5	1990	458,0	13.5	268,0	28.4
1954	37,8	10.6	3,3	12.5	1991	464,0	1.3	278,0	3.7
1955	41,8	10.6	3,7	11.5	1992	503,0	8.4	314,0	12.9
1956	46,3	10.6	4,2	12.5	1993	518,0	3.0	323,0	2.9
1957	51,2	10.6	4,7	12.5	1994	553,0	6.8	353,0	9.3
1958	56,6	10.6	5,3	12.5	1995	568,0	2.7	403,0	14.2
1959	62,6	10.6	6,0	12.5	1996	600,0	5.6	438,0	8.7
1960	69,3	10.6	6,7	12.5	1997	620,0	3.3	440,0	0.5
1961	75,3	8.7	7,3	8.0	1998	635,0	2.4	441,0	0.2
1962	81,3	8.0	8,0	9.6	1999	664,0	4.6	455,0	3.6
1963	90,0	10.7	8,8	10.0	2000	699,0	5.3	476,0	4.6
1964	104,5	16.1	10,0	13.6	2001	693,0	-0.9	464,0	-2.5
1965	112,7	7.8	11,6	16.0	2002	703,0	1.4	474,0	2.2
1966	119,7	6.2	13,3	14.7	2003	691,0	-1.7	523,0	10.3
1967	129,5	8.2	14,4	8.3	2004	763,0	10.4	623,0	19.1
1968	130,8	1.0	14,9	3.5	2005	802,0	5.1	680,0	9.1
1969	143,1	9.4	16,8	12.8	2006	846,0	5.5	742,0	9.1
1970	159,7	11.6	17,9	6.5	2007	903,0	6.7	856,0	15.4
1971	172,2	7.8	20,8	16.2	2008	922,0	2.1	944,0	10.3
1972	181,8	5.6	24,6	18.3	2009	880,0	-4.6	851,0	-9.9
1973	190,6	4.8	31,0	26.0	2010	940,0	6.8	928,0	9.0
1974	197,1	3.4	33,8	9.0	2011	995,0	5.9	1042,0	12.3
1975	214,3	8.7	40,7	20.4	2012	1035,0	4.0	1075,0	3.2
1976	220,7	3.0	44,4	9.1	2013	1087,0	5.0	1197,0	11.3
1977	239,1	8.3	55,6	25.2	2014	1133,0	4.2	1245,0	4.0
1978	257,4	7.7	68,8	23.7	2015	1186,0	4.7	1260,0	1.2
1979	274,0	6.4	83,3	21.1	2016	1235,0	4.1	1220,0	-3.2
1980	284,8	3.9	102,0	22.7	2017	1326,0	7.4	1340,0	9.8
1981	288,8	1.4	104,3	2.1.	2018	1401,0	5.7	1451,0	8.3
1982	286,8	-0.7	98,6	-5.5	2019	1460,0	4.2	1481,0	2.1
1983	284,4	-0.8	98,1	-0.5	2020*	380,0	-74.0	385,0	-74.0
1984	312,4	9.8	109,8	11.9	2021	415,0	9.2	622,5	61.5
1985	326,4	4.5	115,0	4.7	2022	963,0	132.0	1012,0	62.5
1986	334,0	2.3	138,6	20.5	2023	80-95 %	of the	2019 are	expected

Source: Data were created by the author by analyzing the UNWTO Reports Published between 1990 and 2020.

Note: *Data for 2020 were calculated in line with the statements made by the World Tourism Organization. It is seen that the data presented in the retrospective reports have been changed due to updating the data and/or different reasons in the World Tourism Organization reports. It should not be ignored that the constancy and accuracy of the data should not be accepted as absolute.

Table 2. Annual Development Mobility and Income Growth Rates of International Tourism by Periods

Periods	Mobility (Arrival) Increase Rate (%)	Revenue Increase Rate (%)
1. Period 1950-1959 (10 Years)	10.60	12.50
2. Period 1960-1969 (10 Years)	8.77	10.29
3. Period1970-1979 (10 Years)	5.97	19.18
4. Period1980-1989 (10 Years)	4.96	10.60
5. Period 1990-1999 (10 Years)	4.34	6.02
6. Period 2000-2009 (10 Years)	3.10	7.22
7. Period2010-2019 (10Years)	4.52	4.90
1950-2019 (70Years)	6.05	9.97

Source: Data were calculated by the Author

When Table 2 is examined, in the 10-year period covering the years 1950-1960, it is seen that there was a rapid increase in mobility (10.60%) and revenue (12.50%). Looking at the other periods (except for the third and sixth periods), it was found that positive increase continued with a decreasing momentum, the revenue increase rate was higher than the mobility one in every 10-year period. Especially in the third period, the revenue increase rate is 3 times higher than the mobility one.

The number of tourists participating in international travel at the end of every 10 years from 1950 to 2020 has increased with a steady and constantly increasing acceleration rate compared to the world population (Table 3). Especially as of the end of 2019, when the ratio of the number of international tourism mobility to the number of the world population is considered, it is understood that the mobility has increased by 19.02%.

Table 3. Relation Between International Mobility and World Population Growth (1950-2019)

Years	International Mobility (Arrival) Number	World Population (million)	Ratio of International (Mobility) Arrival Number to World Population (%)
1950	25,290,000	2.555	0.99
1960	69,290,000	3.020	2.29
1970	159,700,000	3.675	4.34
1980	284,800,000	4.428	6.43
1990	458,000,000	5.250	8.72
2000	699,000,000	6.052	11.55
2010	940,000,000	6.812	13.79
2019	1,460,000,000	7.673	19.02

By taking into consideration the above data and analyzing it from the perspective of the Jafari's Platform Model (2001, 2005, 2007) and Weaver's Geographical Expansion Model (2006), "Platform Based Expansion Model" is proposed in the current study. With this model, more holistic approach to the development of sustainable tourism paradigm and geographical expansion of tourism in the period until 2020 is taken. It is also considered significant to provide such summary considering the Covid-19 epidemic crisis, which is predicted to have a negative impact for a long time, potentially inducing new approaches and phases of tourism development and travel. In the future, it is thought that the tourism scholars will discuss and evaluate development and expansion processes of the international tourism industry as pre-Covid-19 pandemic, pandemic process and post-pandemic. It is inevitable that there will

be discussions about future tourism-related processes, which are difficult to predict for 2021 and beyond, and that these should be discussed in many ways and from different perspectives. In this study, since the data and developments including the end of 2019 will be discussed, developments and discussions about 2020 and beyond will be omitted.

There has been an average 56-fold increase in tourist mobility from 25 million in 1950 to more than 1 billion 400 million in 2019. In the context of this increase, when the arrivals by world regions are taken into account, it is seen that the world tourism geography has developed and expanded in many ways along with the tourism mobility. In Figure 1 and Table 4 have been showed how tourist arrivals have increased over the years shortly after the Second World War in 1950. As seen in Table 4, the highest rate of increase in tourism arrival mobility was realized in Asia-Pacific regions (1,715-fold). The Asia-pacific region is followed by the Middle East region (320-fold), the African region (134-fold), the European region (43-fold) and the Americas region (29-fold).

Figure 1. International Tourist Arrivals by World Region and Years
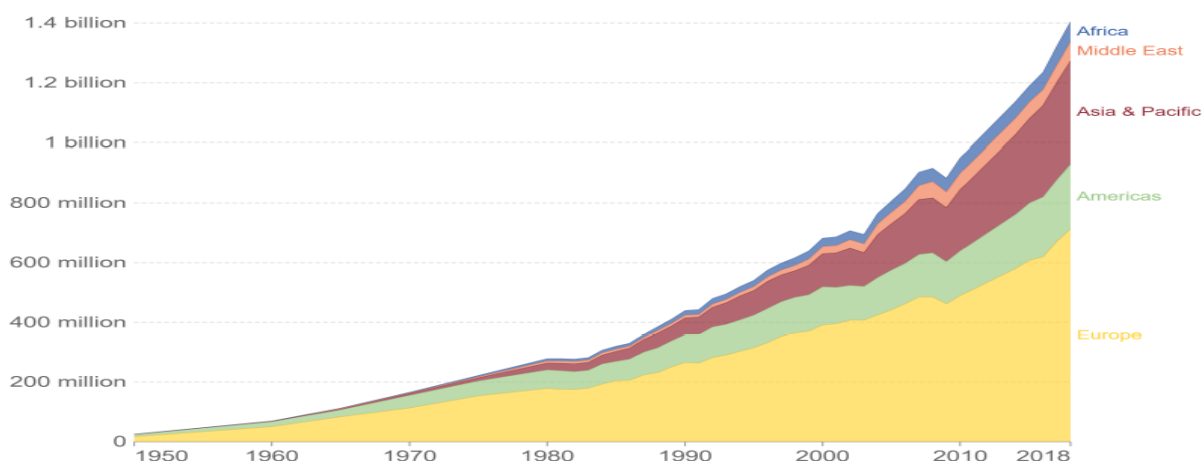
Source: UNWTO (2019a)

Table 4. International Tourist Arrivals by World Region and Years

Years / Region	Africa	Americas	Asia-Pasific	Europa	Middle East	World
1950	500,000	7,500,000	200,000	16,800,000	200,000	25,290,000
1960	800,000	16,700,000	900,000	50,400,000	600,000	69,290,000
1970	2,400,000	42,300,000	6,200,000	113,000,000	1,900,000	159,700,000
1980	7,200,000	62,300,000	23,000,000	178,500,000	7,100,000	284,800,000
1990	15,200,000	92,800,000	56,200,000	265,600,000	9,600,000	458,000,000
2000	27,900,000	128,200,000	110,600,000	391,000,000	24,400,000	699,000,000
2010	50,400,000	150,100,000	205,500,000	489,400,000	55,400,000	940,000,000
2018	67,000,000	217,000,000	343,000,000	713,000,000	64,000,000	1,460,000,000
Increase rate	134- fold	29-fold	1,715-fold	43-fold	320-fold	56-fold

Source: UNWTO (2019b)

5. PLATFORM BASED EXPANSION MODEL

After 1950s, tourism mobility increased and travel to distant countries and destinations became more economical, faster, and reliable. Thus, as a result of travels primarily from developed countries to developed and underdeveloped countries, there has been an increase in tourism mobility and an expansion in the touristic geographical area. In addition, transportation costs and opportunities have played a decisive role in the spread of touristic mobility to countries and destinations, with the development of elements such as railway networks, ship ports and/or large-scale airports that positively affected tourism movements. In particular, air transport had a great impact on the spread of tourism to distant countries and destinations, as well as the expansion of tourism geography.

Although geographical expansion through tourism-related mobility led to economic development in many countries and destinations, it also led to inequalities and differences between socio-economic classes. Especially during the expansion of tourism from developed countries to underdeveloped countries, foreign investments and controls caused a vicious circle of poverty in the form of "dependent development" of the economic structure in underdeveloped countries (Hunt, 1989; Potter et .al, 1999). In this context, industrial core powers (e.g. tour operators), representing developed capitalist countries gathering power in their hands, started exploitation of cultural and economic resources by creating dependency models with a neo-colonial approach of developing tourism regions suitable for mass tourism in these underdeveloped countries and destinations (Wilkinson, 1987).

The platform-based expansion model aims to reveal the development and geographical expansion of the global tourism industry in line with tourist travel mobility from 1950 to 2020 in the context of Jafari's platform model (2001, 2005, 2007) and Weaver's (2006) geographical expansion model. In this model, which is put forward by the synthesis of the two models about the globalization process of tourism, the historical, structural, and geographical change and development of tourism are discussed (Table 5). In this model, which is put forward by the synthesis of two models related to the globalization process of tourism, the historical, structural and geographical development and expansion of tourism from 1950 to 2009 are discussed in the first stage. In the second stage, the development and expansion dimensions of tourism in the globalization process from 2010 to 2019 are presented in line with the approach of the two models.

Table 5. Platform Based Geographical Expansion Model

	1950-1959 414 million people	1960-1969 1.056 billion people	1970-1979 2.107 billion people	1980-1989 3.276 billion people	1990-1999 5.588 billion people	2000-2009 7.902 billion people	2010-2019 11.798 billion people
Jafari's Platform Model	Advocacy Platform Sustainable Mass Tourism		Cautionary Platform Unsustainable Mass Tourism	Adaptive Platform Planned Alternative Tourism	Knowledge-Based Platform Sustainable Mass Tourism and Situational Alternative Tourism	Public Platform Public Responsible Tourism	Transformational Platform Transformational Alternative Tourism
Weaver's Geographical Expansion Model	1.Phase Travel Within and Between Developed Countries	2. Phase Travel from Developed Countries to Least Developed Countries			3. Phase Travel Within and Between Least Developed Countries and from Least Developed Countries to Developed Countries		4. Phase Within and Between Least Developed Countries Within and Between Developed Countries Between Developed and Least Developed Countries
Platform Based Geographical Expansion Model	Advocacy Geographical Expansion		Cautionary Geographical Expansion	Adaptive Geographical Expansion	Knowledge Based Geographical Expansion	Public Based Geographical Expansion	Transformational Based Geographical Expansion

5.1. Advocacy Geographical Expansion

In the first advocacy platform, the tourism industry was defended unconditionally due to its direct and indirect income generating effects, its potential to increase job opportunities and employment by using inexhaustible local resources, as well as its income multiplier effect in the economy. According to Jafari (2001), public institutions and agencies, private businesses, trade associations and individuals were interested in the direct or indirect economic prospects of tourism. These interest groups, especially the free market forces, emphasized the labor-intensive nature of tourism industry that provides benefits to other industries beyond its activity, producing the foreign currency that the country needs and making it a suitable alternative for the country.

Placed under such an enlarged spotlight, tourism has accelerated its development and promotion in both short and long-haul destinations. There was an increase in travel and tourism activities among and within the developed countries of the period. Intracontinental expansion started to occur in the

European continent, between developed countries such as England and France, as well as intercontinental geographical expansion between countries such as North America, Australia, and New Zealand. With the use of airplanes, trains and ships for civil transport, mass (general interest) tourism type has emerged, with the travels made in groups to certain destinations. It was emphasized that the tourism industry, ensures the sustainability of the said mass tourism with the claim that these are travels and tourism activities that do not exceed the environmental and socio-cultural carrying capacity of the region. In addition, the advocacy spatial expansion represents the beginning of the process in which mass travels and spatial expansion from developed countries to underdeveloped countries have started to take place since the 1960s.

During the advocacy expansion process (from 1950 to 1970), the activities of the tourism industry, as an economic savior, were considered sustainable. Until 1960s, tourism mobility, in a form of mass tourism, was primarily within and between developed countries. After 1960, the geographical expansion process began to increase, with tourism mobility starting to spread from developed countries to less developed ones.

5.2. Cautionary Geographical Expansion

Despite its contribution to economic development, tourism began to be criticized in a low tone towards the 1960s, due to its negative activities and effects. This criticism came as a result of serious research findings and routine observations, and position of the advocacy platform began to be challenged and questioned. According to Jafari (2001) weak criticism during 1960s turned into a serious cautionary platform in the 1970s. Members of the research community, particularly interested in the preservation of culture and nature in the public and private sectors, have contributed significantly to the formation of the cautionary platform. Among the economic costs incurred in the advocacy platform process are inflation, high leakage, seasonality effect, unemployment, spread of diseases, unbalanced economic development, sensitivity to economic fluctuations, dependence on the industry, reactive demonstrations, and similar (Jafari,2001). The socio-cultural costs of the tourism industry can be defined as causing misunderstandings, stereotypes, xenophobia, social pollution, commodifying values, threatening of a family structure, causing prostitution, increasing crime cases and conflict in the host community. Although environmental problems have not been mentioned much, the destruction of resources due to excessive use and environmental pollution were also included in the context of costs.

The cautionary platform emphasized the need to implement more carefully planned and better regulated tourism strategies to avoid the negative impacts and consequences of tourism. In his Destination Life Cycle Model, Butler (1980) assumes that the tourism industry includes the environmental and socio-cultural resources that enable it to exist and nourish it, but also the seeds that can cause its poisoning and destruction for the sake of economic gains. Like the Destination Life Cycle Model, cautionary platform is not against tourism, but against unplanned and irregular tourism.

According to the representatives of this platform, the tourism industry that engages in unplanned and irregular activities, ignoring the natural and socio-cultural environment, will inevitably face unsustainable mass tourism, preventing the sustainable growth and spatial expansion of destinations. In this context, it was emphasized that the state and governmental institutions should regulate and supervise the practices of the tourism industry. With tourism industry entering the phase of rapid development and expansion during the cautionary platform, travel from developed countries to underdeveloped ones, as well as travel activities between and within developed countries, began to force and exceed the carrying capacities of countries and destinations. Since 1970s tourism was questioned in terms of environmental, socio-cultural, and economic costs that increased, as well as for the unplanned and uncontrolled growth of the tourism industry. In this context, it was claimed that the mass tourism activities have reached an unsustainable level.

5.3. Adaptive Geographical Expansion

While advocacy and cautionary platforms were concerned with the impacts of the tourism industry from the polarized perspectives, the adaptive platform that emerged in the 1980s focused on planned alternative and adapted forms of tourism that could have less negative environmental, socio-cultural, and economic consequences. Adaptive platform proposed new types of tourism that are particularly sensitive to the host communities in the destinations and their natural and socio-cultural environments, while providing alternative options and experiences to tourists. Adaptive platform advocates for alternative types of tourism that are community-centered, use local resources, are relatively easy to manage, are constructive, benefiting both host communities and tourists alike, while also improving communication between the supply and demand fronts (Jafari, 2001). In this perspective, sustainable development was accepted among international organizations, practitioners, and academics for long-term initiatives, where alternative tourism types such as ecotourism, community-based tourism and volunteer tourism were defined and promoted (Johnsen, 2015). However, the recommendations and strategies of the adaptive platform should not be expected to replace globally produced mass tourism.

This platform is also the beginning of the process in which solution proposals are developed for eliminating the negative effects caused by mass (general interest) tourism. According to adaptive platform, alternative tourism is benign, while mass tourism is a malignant type of tourism. This is because alternative tourism is a small-scale, supply-centered, planned, and organized form of tourism that uses natural resources carefully, supporting local community-oriented and locally owned businesses. In the mid-1980s ecotourism, based on protection of natural environment, emerged as an alternative tourism type.

In the process of adaptive spatial expansion towards the end of the 1980s, it was seen that there were travels from developed countries to less developed countries. However, travel movements and tourism activities on the demand side, intense touristic movements in narrow time and space,

emphasized that the natural and socio-cultural carrying capacity was exceeded. Therefore, adaptive platform emphasized planned and regular alternative tourism process that should be implemented in the countries and destinations, despite the advocacy platform's argument for sustainable mass tourism and the one of cautionary platform for unsustainable mass tourism.

5.4. Knowledge-Based Geographical Expansion

The collective positions of the advocacy, cautionary and adaptive platforms were among the main conditions and forces that fostered a range of developments in tourism thinking (Jafari, 2001). Mostly handled by members of the academic/research communities, this knowledge-based platform aimed to position itself on a scientific basis, while also bridging with the other three platforms. In this context, it does not represent the addition to other perspectives, but a rather balanced view, with the emerging information environment that supports objectivity. The structure of tourism itself was systematically examined on this platform; added it to various research fields or disciplines; differentiated its place in this broader multidisciplinary context that produced and harbored it. Platform's main purpose is to contribute to the creation of a scientific knowledge about tourism in a holistic way, not only determining the factors affecting and/or affected by tourism. It is aimed to separate it from the previous concepts designed to measure the spread of tourism's mobility or its economic size and provide clearer definitions of tourism as a total system that envisages holistic practices (Jafari, 2001).

The knowledge-based platform emerged from the 1990s to the 2000s under the influence of various factors. Among these factors, there was widespread awareness and consensus among stakeholders that the tourism industry has evolved into a massive global industry, and that alternative tourism initiatives proposed by the adaptive platform are not a viable option for many destinations (Weaver, 2006). Ideologically polarized advocacy, cautionary and adaptive platforms have put forward views based on simplistic analyzes that are limited and biased towards the increasingly evolving and complex global tourism industry. Therefore, it was argued that a knowledge-based platform, with a holistic approach that brings together scientific methods, theories, and knowledge to accurately assess the tourism industry, is required. In this framework, it cannot be said that small-scale alternative tourism is superior or alternative to large-scale mass tourism due to its nature. What is best for a destination is practice based on scientific analysis, followed by appropriate planning and management strategies (Jafari, 2001).

As stated in the third stage of Weaver's (2006) geographical expansion model, which overlaps with Jafari's (2001) knowledge-based platform era, the spread of global tourism mobility has resulted from the emergence of a significant middle class, due to the positive effects of economic development on living standard in underdeveloped countries. In this process, there were travels to developed countries as well as travels between and within the underdeveloped countries. In particular, the knowledge-based platform argued that if mass tourism is planned and managed correctly, according to scientific methods,

it will be sustainable, minimizing negative and irreversible costs. In the absence of a regulatory framework, conditional alternative tourism types, which are implemented unconsciously, unplanned, and uncontrolled at the beginning of the destination life curve, may have a negative effect on the destination, such as more concentration and turning into a worse situation. It was stated that ecotourism is not always small-scale and is often not locally owned. Moreover, Butler (1999) emphasized that alternative tourism cannot replace traditional mass tourism but can only be a partial alternative to the most extreme forms of mass tourism. According to Weaver (2006), the decision on which type of tourism to adopt for a particular destination should be taken after a comprehensive scientific analysis of the destination's characteristics.

5.5. Public Based Geographical Expansion

In the emergence of this platform, the unsustainable feature of tourism industry mentioned above is emphasized, with focus on the necessity of possible public contributions to this industry, especially in countries and destinations whose economies are dependent on tourism, and highly vulnerable in time of crises (terrorism, epidemics, and economic crises, etc.). In this context, it is stated that governments, the most important public power, should become an important phenomenon that provides public benefit as a result of the high level of income and employment opportunities provided by the tourism industry. In particular, it is stated that tourism, as a multidisciplinary scientific research field, should attach importance to views and actions that prioritize public interests by importing the concepts and methods of other scientific fields.

The public platform emphasizes that all public stakeholders such as governments, non-governmental organizations, industries other than tourism, and local people should protect tourism. With the visionary mission of tourism commissions, the public platform proposes tourism that understands the socio-cultural reasons for existence, respects natural and cultural heritage, pursues well-planned and shaped goals, gives priority to tourism forms that are compatible with the identity of destinations, and develops scenarios for predictable and unpredictable situations. Moreover, according to this platform, tourism should be considered not only as an industry in the global village, where different nations are members of the world, but also as an important field of activity that benefits the local community and connects all hosts and guests. The public platform emphasizes that sustainability in tourism, the predictable and unpredictable future cannot be achieved with traditional parameters, and considering that tourism is a socio-cultural phenomenon, economic tool, geopolitical power, and an institutionalized practice, it is too important to be left alone without guidance (Jafari, 2004).

5.6. Transformational Based Geographical Development

The global dimension of tourism, which has especially natural, socio-cultural, and economic dimensions, has increased in this process, and tourism mobility has gained a multidimensional

acceleration among all countries: within and between developed countries, within and between underdeveloped countries, as well as between developed and underdeveloped countries (Table 5).

Due to the international tourism activity growing with an increasing momentum, it is generally accepted that in the tourism industry, in order to minimize the negative effects of tourism, it is necessary to turn to the supply-based tourism approach determined according to scientific data and indicators (UNWTO, 2004; WDI, 2020) instead of an unplanned and uncontrolled demand-based tourism approach. In particular, in the context of global tourism, the damages to the environment for tourism purposes, 6% of the total greenhouse gas released into the atmosphere are caused by tourism, 22% of the carbon dioxide (CO_2) released due to transportation is caused by tourism and as a result of these, global warming caused by climate change (UNWTO, 2008; UNWTO, 2019a) have played an important role in moving towards a transformational approach process in global tourism understanding.

The concept of transformation was first defined by Mezirow (1978) in an empirical study on transformational learning. The study identified the factors that hinder and facilitate the learning progress of the participants. Transformative Learning Theory, developed by Mezirow (1978), offered a plan for learning, change and growth for people who want to make life-changing changes. According to Mezirow (1978: 6), the transformational process is "the epistemology of thinking for themselves" and "redefining the world according to themselves" rather than acting according to beliefs, values and judgments formed by others. Today, Mezirow is considered to be the best-known writer and thinker on transformation (Mezirow et al., 2009; Cranton, 2006; Cranton & King, 2003). Ross (2010) defines personal transformation as a dynamic sociocultural and unique individual process; this process (a) begins with a confusing dilemma and includes choice, healing, and experience(s) of expanding consciousness towards the divine; (b) initiates a lasting change in identity structures through cognitive, psychological, physiological, emotional or spiritual experiences; and (c) the experiencer creates a constant change in the way one thinks, does, believes, or feels because of the novelty of the intersection between the experience and the experiencer's position in time.

In line with these principles, the transformation process can be defined as changing the behavior patterns of individuals, renewing their lifestyles, responding to injustices and unethical behaviors, and acting consciously against all these systems (Reisinger, 2015). In particular, being in contact with other people, communicating and connecting with different people in social environments are effective in the transformation process. Connecting and communicating with other people prepares the necessary conditions for people to question their own lives and to revive ideas about transformation. The transformation process begins for people with the need for new searches that will be in their consciousness, renewing themselves, communicating with different cultural identities, perceiving the exotic identities of other lives and completing themselves (Holland-Wade, 1998).

Kottler (1997) first introduced the term transformative travel to the scientific literature. He defined it as a process involving "the realization of something missing", driven by" intellectual curiosity", "emotional need", or "physical challenge" (Kotler, 1998: 26). In this context, there are many factors that trigger the desire for conversion as follows. Each individual becomes open to transformation by being affected by different factors according to his/her own character, business life, private life and environmental factors. However, although there are different reasons for the desire for transformation in the person himself, the factors that are basically affected for transformational travel are generally similar. In the figure 2, these elements are stated as the basic elements such as the increase in the level of emotional dissatisfaction, the desire for spiritual and physical change in themselves, the desire to complete themselves, the desire for change as a result of being influenced by different cultures, freedom and assuming a creative personality. Due to the different nature of people, it will be uncertain which or which of these elements will be affected. However, this process, which starts with the desire for transformation, will trigger transformational travel and ensure participation in transformational tourism (Reisinger, 2015).

Figure 2. The Relationship between Transformation Request and Travel Request
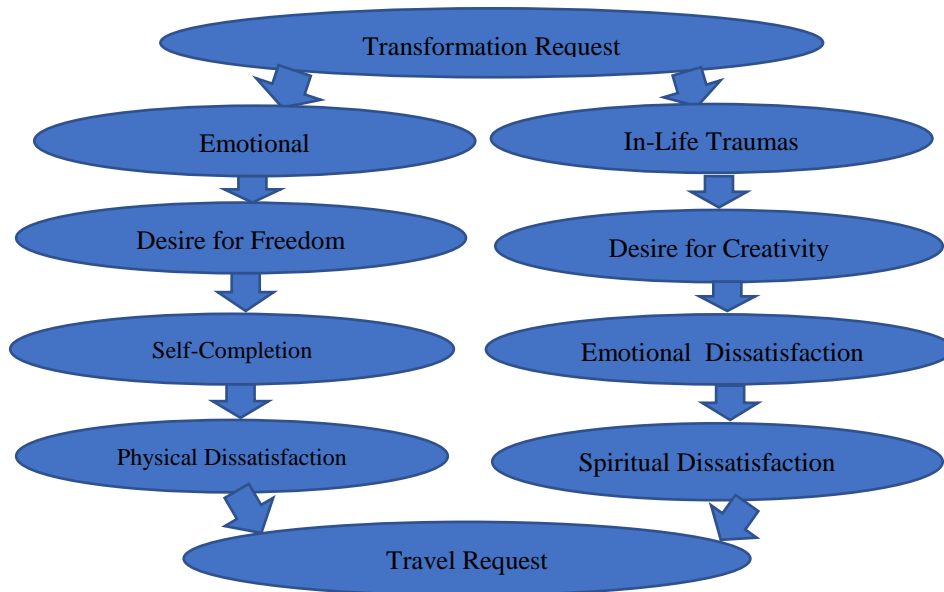
Source: Reisinger (2015)

On the demand side, transformative tourism is based on the concept of internal transformation or the tourist's personal perception. The tourist in question is in search of personal development that can be realized in areas such as well-being, spirituality and education during the holiday. Tourists want to return home with some personal vehicles enriched with travel experiences. In the transformational platform, it is possible for individuals to get rid of imposed and taught behaviors and attitudes, and to turn to active alternative tourism types from passive mass tourism in the context of self-actualization and self-actualization through learning and awareness. In the transformational platform process, the

understanding of heading to exotic destinations with an ethical and responsible tourism approach and experiencing the experience of discovering new places and societies is effective. In the figure 2, people are willing to participate in travel and tourism activities in order to satisfy their impulsive travel motivations in the context of the desire for transformation in order to meet their various intangible and tangible needs.

Transformational Tourism deals with the important issue of how travel and tourism can change human behavior and have a positive impact on the world. In addition, transformational tourism, this type of tourism, which has a sustainable, participatory, and humane structure, is expressed as the whole of tourism activities for the purpose of close interaction with other cultures, self-development, filling the spiritual gap, self-realization and renewal (Morgan, 2010). Transformational tourism is a structure that has emerged as a result of the personal transformation efforts of tourists and that supports development and innovations in individual life. It means that individuals travel with the aim of renewal and change in their own selves.

This process is a socio-cultural process that supports the unsatisfied feelings of people, whether sacred, spiritual or physical, with many different touristic products. It is expressed as a unique transformation process in which the travel and holiday purposes of the tourists are clear from the very beginning and they will apply the experiences they will experience in their own lives. It is aimed to renew the sense of listening, understanding, focusing, doing, believing, and feeling of the tourists participating in this tourism activity (Robledo & Batle, 2017). The aim is to transform some emotional or physical deficiencies that individuals cannot complete or are lacking in themselves. Changes in perceptions and attitudes are the reasons for people to travel (Reisinger, 2015).

In the context of transformational tourism activities, it is understood that tourism movements towards therapeutic geographies are gradually intensifying, and the global tourism geography is expanding in this direction (Figure 3).

Figure 3. Destinations of the Most Transformational Travels by Regions (%)
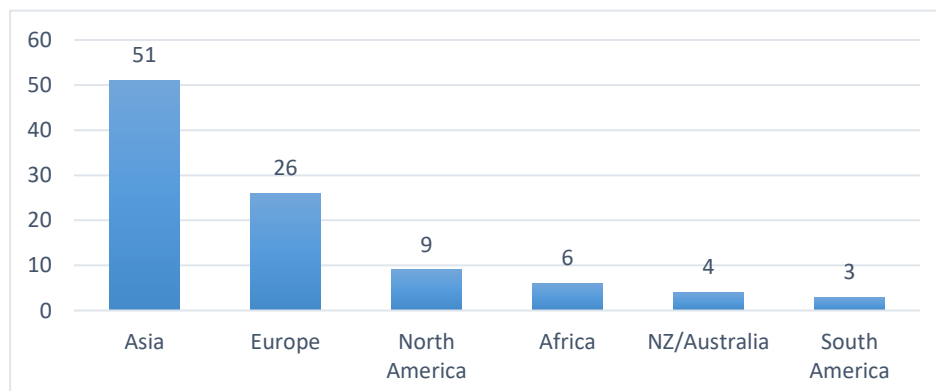
Source: UNWTO (2016)

Transformative therapy, which we can call spiritual encounters, includes travels that include religious and spiritual dimensions. The typology, education, income, awareness and motivation level of such tourists are high. The figure shows the travel motivations of transformational tourists (Figure 4).

Figure 4. Travel Motivations of Transformative Tourists
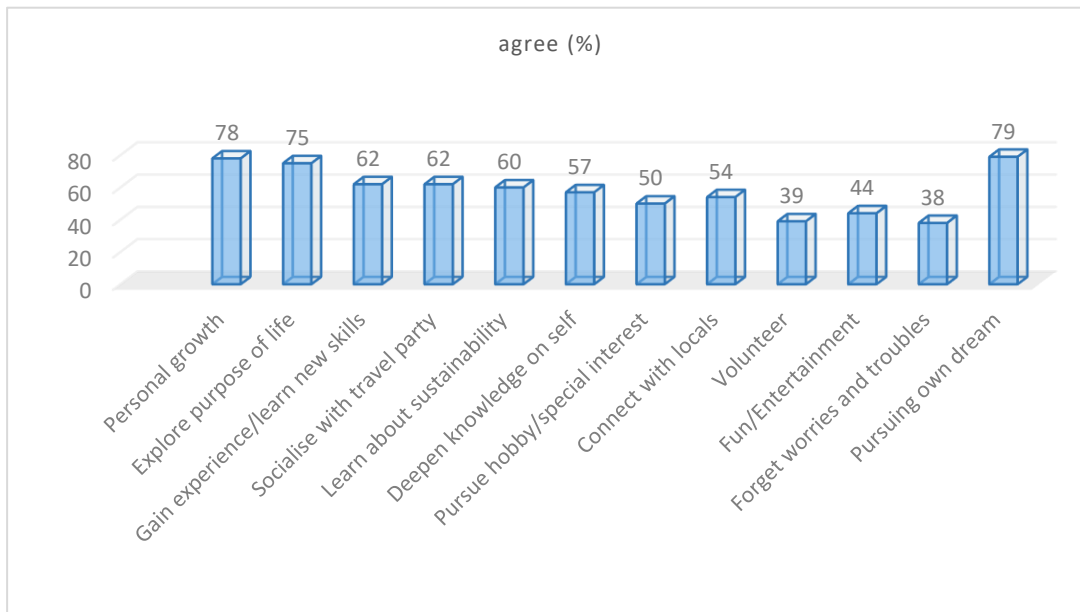
Source: UNWTO (2016)

It is a type of alternative tourism created by presenting many types of tourism that exist in the past and still today to tourists. It is offered for people who are in search of different vacation preferences of tourists. Its main purpose is to provide personal transformation, including different experiences and normal tourism activities, of people who need a holiday for the purpose of self-completion, renewal and development. In addition to relieving the tiredness of the whole year during their holidays, it aims to send tourists as a new and complete person by offering many activities such as relaxation, spa, physical healing, spiritual treatment and purification, meditation, to the environments where they will return. Transformational tourism aims to renew themselves mentally and physically. With the aim of realizing this situation, it is possible to use all tourism activities, and a tourism product is put forward to increase the satisfaction level of tourists with special mental and physical programs. Tourists participating in transformational tourism activities may prefer excursions and activities that meet their intellectual curiosity, emotional and psychological needs or help create a change in their own life, allow an opportunity to find their true self, and provide a physical challenge. Figure 5 shows the typology of transformational tourist.

Figure 5. Typology of Transformational Tourist

Unexpected / Unplanned

e.g.
Experience of Natural
disaster, or terrorism

e.g.
Experience between
tourists and local

Negative ← → Positive

e.g. Experience
of seeing the polluters in
nature-based tourism

e.g.
Comfortable
experience in a
holiday village

Expected / Planned
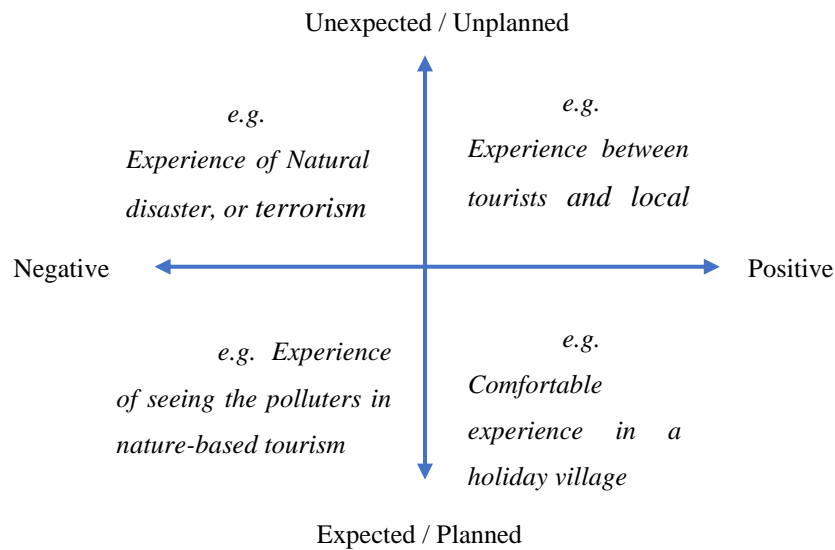
Source: Nandasena (2021)

In this process, global tourism mobility is experienced, especially from developed countries to developing countries with exotic destinations (Table 7). In addition, it is observed that the mobility of travel to both developing countries and developed countries has increased from countries experiencing economic growth such as China among developing countries. At the same time, it is seen that people living in developing countries participate in the domestic tourism movement within their own countries. Thus, there is a process of geographical expansion and expansion towards developing countries, especially in the context of tourism mobility. In global tourism, transformational tourism offers important opportunities to provide a sustainable tourism mobility that is sensitive to the natural and social environment in terms of ethics and social responsibility. Transformational tourism will contribute to the creation of a positive image of destinations that offer one or more touristic products together, which allows tourists with conscious purposes to provide experience.

In terms of supply side, this platform assumes that transformational tourism provides an important way out in the process of uncertainties due to social, economic and environmental crises that have arisen on a global and regional basis, as well as epidemics (such as Covid-19). In particular, transformational tourism evaluates tourism activities in terms of both the tourist (demand side) and the host (supply side), predicts to take a position according to the expected and unexpected experiences in these tourism activities, and proposes to develop multi-faceted strategies according to positive and negative situations in this process. In this context, transformational tourism provides significant contributions to sustainability in tourism (Figure 6).

Figure 6. Influence of Transformational Tourism Experiences to Sustainable Tourism
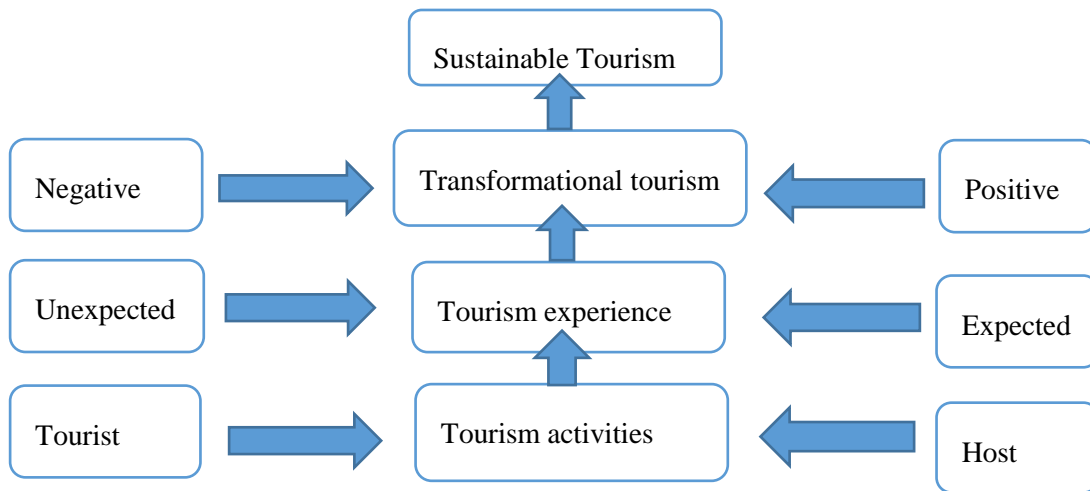
Source: Nandasena (2021)

6. CONCLUSIONS

Through the Platform Model, Jafari (2005) developed specific approach to evaluating development process of the tourism industry from 1950 to 2020 through different periods (advocacy, cautionary, adaptive, knowledge-based, and public). This model, which reveals the phases experienced by the rapidly and dynamically developing and globalizing tourism phenomenon in historical periods in a chronological and sociological dimension, has shed an important light on the development process of world tourism. Thanks to this light, it is an undeniable reality that it has made and will make significant contributions to the realization of more accurate and rational policies and practices regarding the sustainability of tourism in the future by evaluating the experiences of the past in terms of tourism literature with the situations experienced today with scientific methods. Applied to tourism in general, these platforms provide a useful framework for understanding the emergence and development of sustainable tourism in particular. It is important to recognize that each platform builds on previous platforms. Moreover, the emergence of each new platform does not mean that previous platforms have disappeared, or their impact has diminished, but rather emphasizes their co-existence within the contemporary global tourism sector.

In Weaver's (2006) Geographical Expansion Model, geographical expansion process of rapidly developing and increasing tourism mobility is explained. This Weaver's approach made a significant contribution to the understanding of the global, but also sustainable dimensions of tourism. In this context, the direction of tourism mobility and the extent of geographical expansion provide important contributions to the tourism literature in the context of tourism's past, current, and future geographical

expansion scenarios. In addition, Weaver (2006) also revealed the associated ideal tourism types for each platform developed by Jafari (2005), reflecting the philosophical perspective on sustainability.

With the Platform-Based Expansion Model, a synthesis approach has been put forward by analyzing the tourism policies and practices applied in the platform periods, as well as developments in the geographical expansion process. In the context of this modeled tourism mobility, the geographical expansion aspects related to the effects and results of the tourism types formed during the platforms' periods were discussed. In ensuring the sustainability of tourism, as a dynamic and globalizing industry, the platform-based expansion model is thought to contribute to the academic discussion of tourism-related platforms that emerged and will emerge in line with new developments, as well as to reveal the geographical expansion aspects of tourism mobility.

This model argues that between 2010 and 2020, individuals get rid of being alone in crowds and participate in transformational travels and tourism activities in order to realize their own existence, renew themselves and realize themselves in calm and exotic destinations. In this process, it is claimed that the orientation towards authentic, exotic and calm destinations accelerated with increasing momentum, with trips designed according to individual and unique travel routes instead of standardized package tours. At the same time, there is a touristic geographical expansion and spread towards developing countries where people with natural beauties and mystical vital beliefs and traditions live with tourism mobility that takes place in the context of transformational driving travel motivations.

According to the approach of this platform, it is thought that the perspectives of transformational platform-based tourism will be more respected after 2020 and will play a more important role in ensuring sustainability in tourism due to the Covid-19 epidemic that emerged in 2019 and quickly turned into a pandemic. In this context, future studies may contemplate on what will happen after the Covid-19 pandemics, how will tourism geographical expansion continue and in which direction, as well as how it will affect future approaches and efforts towards establishing sustainable tourism forms and development. From the available numerical data and figure, it is evident that period of the Covid-19 pandemic will be recorded in the history as a serious decreasing (or even stopping) point. It seems inevitable that the perspective of transformational tourism is needed in order to get rid of this historical economic and social breakdown process experienced in the tourism industry, as in all industries, quickly and with the least damage.

As a result, Jafari's (2001) platform model and Weaver's (2006) geographic expansion model have made important contributions to understanding the development and expansion of global sustainable tourism. This new synthesis model, which is a synthesis of these two separate models, will make an important contribution to addressing the environmental and socio-cultural sustainability of global sustainable tourism together.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

Analysis of the Effect of Reduced Corporate Income Tax Implementation on Employment in Turkey *

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Abstract

This paper investigates the effect of regional differences in corporate income tax reduction rates on employment within the scope of the reduced corporate income tax implementation put into effect in 2009. The implementation aims to encourage and increase investments, production, employment, and large-scale investments to increase international competitiveness, foreign direct investment and support Research and Development (R&D) activities, and eliminate regional development differences by reducing corporate income tax rates by region. This paper focuses on employment outcome in particular. The analysis relies on the "TurkStat Household Labor Force Survey Micro Dataset" in 2004-2021 for Turkey. Difference in Differences (DID) and Difference in Differences with Propensity Score Matching (DID-PSM) methods were used in the impact analysis of the tax policy discussed in the study. We employ DID and DID-PSM methods, designating respondents in regions with the highest corporate income tax reduction rates as treated subjects, and those with the lowest corporate income tax reduction rates as control subjects. The effects of regional differences in corporate income tax reduction rates on employment have been empirically demonstrated. The findings show that the regional differences in corporate income tax reduction rates on employment significantly and positively affect employment.

Keywords: Reduced Corporate Income Tax, Difference-in-Differences, Propensity Score Matching, Regional Tax Policies, Employment Outcomes, Household Labor Force Survey.

Article Type	Application Date	Admission Date
Research Article	October 26, 2023	June 26, 2024

1. INTRODUCTION

Factors such as regional disparities and insufficient investments have a negative impact on employment at a regional level (Taylor and Bradley,1997; Arestis and Mariscal,1998). In relatively underdeveloped regions, fostering employment and investments requires the implementation of selective macroeconomic policies (Toktaş et al., 2013). Recently, macroeconomic policies aimed at addressing the lack of investment and alleviating development disparities between regions, with the aim of fostering employment, have become increasingly significant. Tax incentives designed to enhance employment and investments are also categorized as part of these macroeconomic policies (Porsse et al., 2014).

In recent years, Turkey has implemented various policies to promote employment and facilitate investments. One such policy is the reduced corporate income tax, introduced through Article 9 of Law No. 5838 on February 18, 2009. One of the aims of this policy is to enhance employment. In this study, we aim to uncover the impact of regional differences in the corporate income tax reduction rates on employment within the scope of the reduced corporate income tax implementation. In the research conducted by the Republic of Turkey Ministry of Industry and Technology, General Directorate of Development Agencies, known as the "Socio-Economic Development Ranking of Provinces and Regions (2017)," provinces are classified into 6 regions based on their socio-economic development levels in Turkey. In the study, provinces from Region 1 and Region 6, where the corporate income tax reduction rate is implemented at the highest and lowest levels among the regions determined in the socio-economic development ranking research, are incorporated into the analysis. The underlying hypothesis suggests that the impact on the employment level is most pronounced when the reduction rate difference among regions is at its maximum level.

The paper is organized as follows after the introduction. In section 2, the framework of reduced corporate income tax implementation is briefly summarized. Section 3 reviews the earlier studies on employment incentive programs, including tax incentives. In Section 4, comprehensively outlines the methodology. Subsequently, in Section 5 we provide a description of the dataset and equation used in the empirical analysis. Empirical results are presented in Section 6. Eventually, section 7 discusses the main findings, constraints, and suggestions for further studies.

2. THE FRAMEWORK OF REDUCED CORPORATE INCOME TAX IMPLEMENTATION

Reduced corporate income tax implementation forms an essential component of the investment incentive system. The investment incentive system has a structure that considers the characteristics and potentials of the provinces, is regionally graded, and is supported by various incentive tools (Yavan, 2011, pp. 79-80). Below we delve into the regions involved in the reduced corporate income tax implementation, the reduction rates, and the discrepancies in these rates among the various regions.

Table 1. Classification of Provinces by Region (2017)

Region 1	Region 2	Region 3	Region 4	Region 5	Region 6
Ankara	Aydın	Adana	Afyonkarahisar	Bayburt	Ağrı
Antalya	Balıkesir	Burdur	Aksaray	Çankırı	Adıyaman
Bursa	Bilecik	Düzce	Amasya	Erzurum	Ardahan
Eskişehir	Bolu	Gaziantep	Artvin	Giresun	Batman
İstanbul	Çanakkale (Except Bozcaada and Gökçeada districts)*	Karaman	Bartın	Gümüşhane	Bingöl
İzmir	Denizli	Kırıkkale	Çorum	Kahramanmaraş	Bitlis
Kocaeli	Edirne	Kütahya	Elazığ	Kilis	Diyarbakır
Muğla	Isparta	Mersin	Erzincan	Niğde	Hakkari
Tekirdağ	Karabük	Rize	Hatay	Ordu	Iğdır
	Kayseri	Samsun	Kastamonu	Osmaniye	Kars
	Kırklareli	Trabzon	Kırşehir	Sinop	Mardin
	Konya	Uşak	Malatya	Tokat	Muş
	Manisa	Zonguldak	Nevşehir	Tunceli	Siirt
	Sakarya		Sivas	Yozgat	Şanlıurfa
	Yalova				Şırnak
					Van

Source: Republic of Turkey Ministry of Industry and Technology, General Directorate of Development Agencies (2019), "Socio-Economic development ranking of provinces and regions (2017)".

Within the reduced corporate income tax implementation, the degree to which the corporate income tax rate is reduced for investments varies based on regions. Table 1 illustrates the regions formed based on the provinces' socioeconomic development rankings, and identifies the provinces included within these regions.

Table 2. Investment Contribution Rates and Corporate Income Tax Reduction Rates in the Incentive System (Year 2012)

	Started investing after 31/12/2013			
	Regional Incentive Implementations		**Large Scale Investments**	
Regions	Investment Contribution Rate (%)	Corporate Income Tax Reduction Rate (%)	Investment Contribution Rate (%)	Corporate Income Tax Reduction Rate (%)
1	10	30	20	30
2	15	40	25	40
3	20	50	30	50
4	25	60	35	60
5	30	70	40	70
6	35	90	45	90
	Started investing until 31/12/2013			
	Regional Incentive Implementations		**Large Scale Investments**	
Regions	Investment Contribution Rate (%)	Corporate Income Tax Reduction Rate (%)	Investment Contribution Rate (%)	Corporate Income Tax Reduction Rate (%)
1	15	50	25	50
2	20	55	30	55
3	25	60	35	60
4	30	70	40	70
5	40	80	50	80
6	50	90	60	90

Source: Council of Minister's Decree No. 2012/3305 on Government Subsidies for Investments.

Table 2 contains the corporate income tax reduction rates to be applied and investment contribution rates for investments to be executed within the scope of large-scale investments and regional incentive practices. As indicated in Table 2, the highest reduction rate is applied in Region 6, identified as the relatively least developed region, while the lowest reduction rate is implemented in Region 1, recognized as the most developed region.

3. LITERATURE REVIEW

There are many studies investigating the effects of public policies such as tax or investment incentive programs. As we discussed in our study, some of them are also focused on tax policies (Giovanis et al. 2021; Hazman and Büyükben, 2020; Turner and Blagg, 2018; Ranchhod and Finn, 2016; Ljungqvist and Smolyansky,2014; Shuai and Chmura, 2013), while the others investigate the investment effects (Öz and Buyrukoğlu, 2017; Selim et al., 2014; Yavuz, 2010; Akan and Arslan, 2008; Bondonio and Greenbaum; 2006; Schalk and Untiedt, 2000). Many of the studies focus on the effects of policies on employment, in common.

In the literature review, it is evident that this subject had not previously undergone analysis utilizing advanced microeconometric methods. Additionally, there is a scarcity of research employing microeconometric methods to assess the impact of tax policies in Turkey. Following the literature review, it became evident that there were relatively few studies directly addressing the research topic. The studies by Shuai and Chmura (2013) and Ljungqvist and Smolyansky (2014) bear resemblance to our study.

Ljungqvist and Smolyansky (2014) conducted an analysis of the effects of changes in corporate income tax rates in the USA between 1969 and 2010 on employment and wages. They employed the DID method, which includes the spatial discontinuity approach. The findings revealed that during the period between 1969 and 2010, increases in corporate income tax rates were associated with notable declines in both employment and wage income. On the other hand, corporate income tax reductions were found to stimulate economic activity only when implemented during economic recessions.

Shuai and Chmura (2013) conducted a comparison of employment changes between states that enacted corporate income tax reductions and those that did not, for the period from 1990 to 2012 in USA. They employed the fixed-effect panel regression model method. The authors found that the employment growth rate in the states that implemented reduced corporate income tax rates during the period examined in the analysis is greater than that in states without such reductions.

Giovanis et al. (2021) investigated the effects of employment subsidy programs (income tax withholding allowance and social security premium support) on employment, wages, working hours and labor force participation by using DID and DID-PSM methods in Turkey for the 2008-2016 period. Findings show that these employment subsidy programs have a significant and positive effect on emphasized employment outcomes.

Turner and Blagg (2018) examined the effect of personal income tax changes, implemented in Kansas State compared to border neighboring states, on private sector employment using the DID method with 2004:1Q-2014:4Q quarterly data. Findings showed that the income tax changes made in Kansas State don't have a statistically significant effect on employment in the short term compared to border neighboring states.

Schalk and Untiedt (2000) aimed to analyze the effects of regional investment incentives on regional factor demand (investment and workforce), economic growth and income per capita between 1978-1989 using the panel time series method in West Germany. Consequently, findings showed that regional investment incentive practices have a positive effect on investments as well as increasing employment. However, the effects of regional investment incentives on economic growth and income per capita determined were insignificant.

Bondonio and Greenbaum (2006) investigated the effect of commercial investment incentives, granted by the European Regional Development Fund, on employment in northern and middle Italy between 1984-1998. DID method was used in their study. The authors found that these incentives have a positive and significant effect on employment.

Akan and Arslan (2008) examined the effects of investment incentives on sectoral employment levels using the time series analysis method between 1980-2006 in Turkey. They found that there is a linear and positive relationship between investment incentives and employment.

Yavuz (2010) discussed the impact of investment incentives on private sector investments and employment using the time series regression analysis method for the 1980-2008 period in Turkey. Findings indicate that the investment incentive policies have a positive and significant effect on employment.

Selim et al. (2014) aimed to analyze the effect of investment incentive certificates and fixed investments on employment using a panel regression model at the provincial level for the 2001-2012 period in Turkey. According to findings, it was revealed that both fixed investments and the number of investment incentive certificates have a statistically significant and positive effect on employment.

Balkan et al. (2016) examined the impact of the employment program implemented in 2008, with the objective of boosting registered employment among young men (aged 18-29) and women over 18 years old in Turkey. They used the DID method in their study. The study's findings indicated that the employment program led to a greater increase in the employment probability of women when compared to the control group.

Ranchhod and Finn (2016) examined the effect of "Employment Tax Incentive" on youth unemployment using the DID method with the 2011:1Q-2014:2Q quarterly data in South Africa. The findings show that "Employment Tax Incentive" does not have a statistically significant effect on youth employment in the short run.

Öz and Buyrukoğlu (2017) conducted an analysis of the influence of investment incentive policies that were implemented in Turkey from 1980 to 2012 on various macroeconomic variables. They employed the Vector Autoregressive Model method in their study. The authors concluded that the investment incentive policies carried out in Turkey between 1980 and 2012 had a significant and positive impact on both employment and economic growth.

Hazman and Büyükben (2020) investigated the impact of tax incentives applied in the provinces in the TR33 region in Turkey (Afyonkarahisar, Kütahya, Manisa, Uşak) between 2004 and 2017 on local economic growth and employment. The authors employed a panel regression model in their study. The results indicated that the VAT exemption has a positive effect on local economic growth, while customs duty exemption doesn't have a statistically significant effect. In terms of employment, it was observed that neither VAT exemption nor customs duty exemption has a statistically significant effect.

Reaching a consensus among the outcomes of studies examining the effects of tax and investment incentive programs on factors such as employment and economic growth can be challenging. However, upon reviewing the studies included in the literature, it is generally evident that the impact of tax and investment incentives on factors like employment and economic growth in Turkey is statistically significant and positive. The literature highlights a scarcity of studies that illuminate the economic consequences of tax incentives. Within this context, it is anticipated that this study may offer a valuable contribution to both the existing literature and policymakers.

4. METHODOLOGY

Evaluating the achievement of objectives through impact assessments of public policies, programs, or projects is highly significant from various aspects. The choice of impact assessment method depends on factors like the type of data, the temporal aspect, and how the observational units are integrated into the program. Impact assessment methods are categorized into two groups in basic: qualitative and quantitative methods. Among quantitative methods, there are two main divisions: pre-program and post-program methods. Pre-program methods encompass micro simulations, while post-program methods are classified into experimental and non-experimental methods. (Polat and Aktakke, 2017, p. 22). The DID and DID-PSM methods employed in this study are included in the category of post-program, non-experimental quantitative methods. The utilization of both methods in the study serves the purpose of validating the obtained results and ensuring the reliability and robustness of the findings.

The DID method has become one of the most popular research methods utilized to evaluate the causal effects of policy interventions. In its standard format, there are two different time periods and two different groups (treatment and control). In the first period, the relevant policy is not implemented in any of the groups. In the second period, while the policy is applied in one of the groups (treatment), the policy is not implemented in the other group (control). The DID method is based on comparing the

difference between the mean value of any variable belonging to the treatment and control groups in the pre-policy period and the difference in the post-policy period from each other (Callaway and Sant'Anna, 2021, p. 200).

Table 3. DID Estimator

	Before	After	After - Before
Control	β_0	$\beta_0 + \delta_0$	δ_0
Treatment	$\beta_0 + \beta_1$	$\beta_0 + \delta_0 + \beta_1 + \delta_1$	$\delta_0 + \delta_1$
Treatment - Control	β_1	$\beta_1 + \delta_1$	δ_1

Source: Wooldridge, 2013:457.

Table 3 above illustrates the calculation of the DID estimator, which characterizes the impact of the policy in the DID method. The coefficients δ0 for the control group and δ0+δ1 for the treatment group are estimated by calculating the differences between the post-policy observations and their pre-policy values for both treatment and control groups. The difference between these coefficients is denoted as δ1 and is referred to as the DID estimator.

The Propensity Score Matching (PSM) method is widely used in non-experimental studies to reduce selection bias. First introduced by Rosenbaum and Rubin in 1983, the PSM method aims to stabilize the treatment and control groups based on several fundamental characteristics. This process helps make the observations in the treatment and control groups as similar as possible (Stuart et al., 2014, p. 171). Heckman et al. (1997) demonstrate that limiting the sample with propensity scores provides eradicates the selection bias problem and provides robust results.

If the dependent variable is a Bernoulli random variable consisting of values 1 and 0, it will be appropriate to use logit or probit regression. There are no restrictions on independent variables in these models. Since logit and probit models are estimated with the maximum likelihood estimation method, assumptions such as a normal distribution of residuals, constant error variance, or linearity are not required. While "logistic odds" is used in the logit model, the "Gaussian" distribution function is used in the probit model (Mert, 2016, p. 180). The origins of the logit model date back to the 19th century. Belgian mathematician Verhulst used this model to explain the population calculations of countries in three articles published between 1838 and 1847 (Cramer, 2003, p. 4).

The logit model is based on the logistic cumulative distribution. Odds ratios or marginal effects are used to interpret the coefficients of variables in the logit model. In the logit model, the marginal effects obtained from estimation are interpreted as probabilities (Emeç, 2021, pp. 49-55). The function used in the logit model is given in the equation below.

$$P_i = \frac{1}{1 + e^{-z_i}} = \frac{e^z}{1 + e^z} \qquad (1)$$

In the equation, while z_i can assume values within the range of $-\infty$ to $+\infty$, P_i takes values in a range between 0 and 1. A non-linear relationship exists between P_i and z_i. The equation above indicates the probability of an event occurring. The probability of an event not occurring is shown as $(1 - P_i)$. According to the equation provided earlier, the probability of an event not occurring can be derived as shown in the following equation:

$$(1 - P_i) = \frac{1}{1 + e^{z_i}} \tag{2}$$

In the logistic model, the ratio of the probability of an event occurring to the probability of it not occurring shows the odds ratio and is formulated as in equation 3.

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{z_i}}{1 + e^{-z_i}} \tag{3}$$

The equation employed to estimate the logit model is presented in equation 4 below.

$$L_i = ln\left(\frac{P_i}{1 - P_i}\right) = \beta_1 + \beta_2 X_i + u_i \tag{4}$$

The logarithm of the odds ratio is a linear function of the coefficients in the equation. It is significant here that the coefficients, not the variables, are linear (Gujurati and Porter, 2014, pp. 553-558).

In the probit model, which is grounded in utility theory and the rational choice approach, the normal cumulative distribution function is employed (Cebeci, 2012, p. 130). The probit model is a cumulative distribution function utilized to explain the behavior of binary dependent variables, just like the logit model. In the logit model, the logistic cumulative distribution function is employed, whereas in the probit model, the basis is the normal cumulative distribution function (Gujurati and Porter, 2014, p. 566). Equation 5 presents the normal cumulative distribution function employed in the probit model, assuming that the variable z follows a normal distribution with a mean μ and a variance of σ^2 (Tarı, 2016, p. 252):

$$F_{(Z)} = \int_{-\infty}^{Z_0} \frac{1}{\sqrt{2\pi\sigma}} e^{-(z-\mu)/2\sigma^2} \tag{5}$$

5. DATASET AND MODEL

TURKSTAT-HLFS data is employed in the empirical analysis, for the period 2004-2021 The research includes data from 2004 onwards because the HLFS has been published annually at the Nomenclature of Territorial Units for Statistics (NUTS) 2 level since 2004. We employ repeated cross-sectional surveys. Pooled cross-sectional data is very important for assessing the impact of a policy. It

is possible to measure the impact of the policy with two cross-sectional data sets collected before and after the policy (Wooldridge, 2013, p. 454). The survey includes a comprehensive set of questions that capture significant individual characteristics. In the study, both individual and regional-level control variables are used which may have an impact on employment. Within these variables, gender, age, marital status, and education are indicators of individual characteristics. Labor force participation rate and inflation rate are included in as regional variables at the NUTS 2 level.

Table 4. Variable Definitions

Variables	Variable Definitions	Source
Employment	A dummy variable that takes value 1 if the individual is employed and 0 if the individual is unemployed.	
Gender	A dummy variable taking values 1 for males and 2 for females	
Age	A continuous variable taking values between 15-64	TURKSTAT- HLFS (2004-2021)
Marital Status	A categorical variable taking values 1 for singles, 2 for married, 3 for divorced and 4 for widowed.	
Education	A categorical variable that takes values between 1-6 and indicates the individual's education level gradually.	
Labor Force Participation Rate	Ratio of the labor force to the total working age population	Central Bank of the Republic of Turkey, Electronic Data Delivery System
Inflation Rate	The rate of increase in prices over a given period of time	

Given that the dependent variable employment is binary, logit and probit models are suitable for estimation. The equation is estimated with the DID method using logit and probit models.

$$\text{Emp}_{i,j,t} = \beta_0 + \beta_1 \text{Treat}_{i,j,t} + \beta_2 \text{Post}_{j,t} + \beta_3 \text{Treat}_{i,j,t} * \text{Post}_{j,t} + \beta_4 X + \Phi_j + \Psi_t + u_{i,j,t} \qquad (6)$$

In equation (6) Emp represents the employment status of individuals. The employment variable in the equation above is a dummy variable that takes values 1 and 0, expressing the employment status of individuals. It takes the value 1 if the individual is employed and 0 if unemployed. In the sample obtained from the data set, there is data for each individual i living in region j at time t. Post variable indicates the policy period. And taking value 1 for the period of post reduced corporate income tax implementation, in particular in 2009 and after. However, for the pre-period of reduced corporate income tax implementation, takes a value 0. Treat variable takes value 1 whether the individual lives in one of the provinces of Region 6 illustrated in Table 5. Otherwise, if an individual lives in one of the provinces of Region 1 demonstrated in Table 5, takes a value of 0. The treat*post variable is an interaction term formed by multiplying the treat and post variables. The coefficient of the treat*post variable in the equation is described as the DID estimator. When assessing the effectiveness of reduced corporate income tax implementation, the coefficient of the treat*post variable is considered. Sets Φ_j

denote the province-region fixed effects, on the other hand Ψ_t represents the time-year fixed effects. Within the equation, the term u_{ijt} represents the error term. In the equation, the variable X is a vector of explanatory variables that could influence employment independently of the policy's effect. These explanatory variables include socio-demographic factors like gender, age, marital status, and education, as well as macro-level variables such as the inflation rate and labor force participation rate.

We choose the provinces with the highest and lowest reduction rates among the provinces at the NUTS 2 level, under the reduced corporate income tax implementation. Thus, it is aimed to evaluate explicitly possible effects of the change in corporate income tax reduction rate by selecting the provinces with the highest and lowest discount rates in the reduced corporate income tax implementation.

Within the regions listed in Table 2, it is the provinces in the region 1 that receive the lowest reduction rate. Among the provinces in the region 1, only Istanbul, Izmir, and Ankara are included in the study. This is because the other provinces in the region 1 implement different reduction rates for provinces within their group based on the NUTS 2 classification. Likewise, Adıyaman and Bingöl provinces, which are part of the provinces in region 6 with the highest corporate income tax reduction rates, are excluded from the study for the same reason. The provinces in the treatment and control groups are listed in the Table 5 below.

Table 5. Treatment and Control Groups

Treatment		Control
Region 6		**Region 1**
Ağrı	Kars	Ankara
Ardahan	Mardin	İstanbul
Batman	Muş	İzmir
Bitlis	Siirt	
Diyarbakır	Şanlıurfa	
Hakkâri	Şırnak	
Iğdır	Van	

Source: Council of Minister's Decree No. 2012/3305 on Government Subsidies for Investments.

Even though the reduction rate for the reduced corporate income tax implementation is regionally determined, our study aims to analyze its effects on individuals' employment. Nevertheless, factors beyond the region or province of residence may also play a role in enhancing the employment prospects of individuals. The assumption is that the individual characteristics of those who benefit from the reduced corporate income tax implementation remain constant. PSM method is employed to mitigate any potential selection bias that may persist, even when demographic and socioeconomic conditions are considered in the selection of provinces for the control and treatment groups. Subsequently, we generate a new sample from individuals in both the control and experimental groups which exhibits greater similarity in their characteristics. Then we estimate the equation with this refined sample for robust results.

6.EMPIRICAL RESULTS

Analyses are conducted using DID and DID-PSM methods. Logit and probit model estimates of DID and DID-PSM methods are presented in the table below.

Table 6. DID and DID-PSM Estimates (Logit and Probit)

Dependent Variable: Employment	DID		DID-PSM	
	Logit	Probit	Logit	Probit
Treat	-0.2192***	-0.1402***	-0.3494***	-0.2082***
	(0.0151)	(0.0089)	(0.0396)	(0.0232)
Post	-0.3015***	-0.1785***	-0.5963***	-0.3647***
	(0.0235)	(0.0139)	(0.0631)	(0.0371)
Treat*Post	**0.1568***	**0.1021***	**0.2953***	**0.1862***
	(0.0095)	**(0.0056)**	**(0.0425)**	**(0.0248)**
Gender (Reference: Male)	-2.0185***	-1.1912***	-1.9932***	-1.1741***
	(0.0039)	(0.0022)	(0.0068)	(0.0039)
Age	0.3225***	0.1851***	0.2233***	0.1287***
	(0.0011)	(0.0006)	(0.0017)	(0.0010)
Marital Status (Reference: Single)				
Married	0.0178***	0.0073**	0.3138***	0.1670***
	(0.0059)	(0.0034)	(0.0098)	(0.0056)
Divorced	0.3225***	0.1739***	0.2438***	0.1213***
	(0.0135)	(0.0078)	(0.0369)	(0.0209)
Widowed	-0.1033***	-0.0576***	-0.0244	-0.0383**
	(0.0172)	(0.0096)	(0.0281)	(0.0157)
Education (Reference: Literate but not graduated from any educational institution)				
Primary School	-0.0173***	-0.0224***	-0.0189**	-0.0071
	(0.0062)	(0.0036)	(0.0084)	(0.0049)
Secondary School	0.1141***	0.0536***	0.0392***	0.0145**
	(0.0070)	(0.0041)	(0.0010)	(0.0057)
High School	0.0717***	0.0368***	0.0609***	0.0376***
	(0.0073)	(0.0043)	(0.0107)	(0.0064)
Vocational High School	0.4845***	0.2836***	0.3333***	0.2062***
	(0.0085)	(0.0049)	(0.0157)	(0.0092)
Higher Education	1.1202***	0.6337***	1.0519***	0.6168***
	(0.0075)	(0.0043)	(0.0134)	(0.0076)
Labor Force Participation Rate	0.0333***	0.0197***	0.0362***	0.0220***
	(0.0009)	(0.0005)	(0.0001)	(0.0006)
Inflation Rate	-3.5011***	-2.1297***	-4.6161***	-2.7755***
	(0.2208)	(0.1305)	(0.5001)	(0.2951)
Number of Obs,	1,924,030	1,924,030	680,588	680,588
Wald Test	371,903.55	425,869.54	130579.05	146439.55
Pseudo R-Square	0.2316	0.2293	0.2180	0.2165

Note: Robust standard errors are within parentheses. *** and ** indicate significance levels at 1% and 5% respectively.

Based on the estimations, it's evident that the regional differences in corporate income tax reduction rates have a positive and statistically significant effect on employment. While the study mainly focuses on the effects of reduced corporate tax implementation on employment outcomes, we also present the estimates for the individual and regional level control variables. In the study, it is observed that females are less likely to be employed compared to males in all cases. When assessing the relationship between age and employment, it is observed that individuals' aging has a positive impact on their likelihood of being employed. When examining the impact of marital status on the employment

variable, it becomes apparent that married and divorced individuals are more likely to be employed compared to those who are single. On the other hand, individuals who are widowed are less likely to be employed in comparison to those who are single. Education is another control variable that represents the individuals' education level. We find that higher levels of educational attainment are linked with a higher likelihood of being employed, except for primary school. Moreover, it is found that the higher the education level, the more likely the individual is to be employed.

While the control variables above represent individual characteristics, the labor force participation rate and inflation rate are macro-level variables. According to the findings, the labor force participation rate has a positive effect on employment, while the inflation rate has a negative effect on employment.

Table 7. Marginal Effects of the DID and DID-PSM Estimation (Logit and Probit)

	DID		DID-PSM	
Dependent Variable: Employment	Logit	Probit	Logit	Probit
Treat	-0.0521***	-0.0541***	-0.0772***	-0.0762***
	(0.0036)	(0.0034)	(0.0088)	(0.0085)
Post	-0.0717***	-0.0689***	-0.1318***	-0.1335***
	(0.0056)	(0.0054)	(0.0140)	(0.0136)
Treat*Post	**0.0373*** **	**0.0394*** **	**0.0653*** **	**0.0682*** **
	(0.0023)	**(0.0022)**	**(0.0094)**	**(0.0091)**
Gender (Reference: Male)	-0.4800***	-0.4594***	-0.4406***	-0.4298***
	(0.0009)	(0.0008)	(0.0015)	(0.0014)
Age	0.0767***	0.0714***	0.0493***	0.0471***
	(0.0002)	(0.0002)	(0.0004)	(0.0004)
Marital Status (Reference: Single)				
Married	0.0042***	0.0028**	0.0694***	0.0611***
	(0.0014)	(0.0013)	(0.0021)	(0.0020)
Divorced	0.0767***	0.0671***	0.0539***	0.0444***
	(0.0032)	(0.0030)	(0.0082)	(0.0077)
Widowed	-0.0246***	-0.0222***	-0.0054	-0.0140**
	(0.0041)	(0.0037)	(0.0062)	(0.0057)
Education (Reference: Literate but not graduated from any educational institution)				
Primary School	-0.0041***	-0.0086***	-0.0042**	-0.0026
	(0.0015)	(0.0014)	(0.0018)	(0.0018)
Secondary School	0.0271***	0.0207***	0.0087***	0.0053**
	(0.0016)	(0.0016)	(0.0021)	(0.0021)
High School	0.0170***	0.0142***	0.0135***	0.0138***
	(0.0017)	(0.0016)	(0.0024)	(0.0023)
Vocational High School	0.1152***	0.1094***	0.0737***	0.0755***
	(0.0020)	(0.0019)	(0.0035)	(0.0034)
Higher Education	0.2663***	0.2444***	0.2325***	0.2258***
	(0.0018)	(0.0017)	(0.0030)	(0.0028)
Labor Force Participation Rate	0.0079***	0.0076***	0.0080***	0.0080***
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
Inflation Rate	-0.8324***	-0.8214***	-1.0204***	-1.0161***
	(0.0525)	(0.0503)	(0.1105)	(0.1080)
Number of Obs,	1,924,030	1,924,030	680,588	680,588
Pseudo R-Square	0.2316	0.2293	0.2180	0.2165

Note: Robust standard errors are within parentheses. *** and ** indicate significance levels at 1% and 5% respectively.

In Table 6, both logit and probit model estimates are illustrated for DID and DID-PSM methods. Furthermore, we report marginal effects of the DID and DID-PSM estimates in Table 7 both for logit and probit models. As the study focuses on uncovering the effects of the reduced corporate income tax implementation, only the interpretations of the marginal effects of the treat*post variable are provided below.

Based on the estimates, considering the marginal effects from both logit and probit analyses using the DID and DID-PSM methods, it is evident that the regional differences in corporate income tax reduction rates have a positive and statistically significant impact on employment. Marginal effects are estimated through logit and probit models using the DID method. According to estimates, individuals residing in the provinces in the treatment group are 3.73% and 3.94%, respectively, more likely to be employed in comparison to individuals living in the provinces in the control group. Marginal effects are also estimated through logit and probit models using the DID-PSM method. According to estimates, individuals residing in the provinces in the treatment group are 6.53% and 6.82%, respectively, more likely to be employed in comparison to individuals living in the provinces in the control group.

According to the findings, it is evident that the average employment difference between individuals living in provinces from Region 6 and Region 1 decreased after the reduced corporate income tax implementation, as compared to the pre-implementation period. The findings indicate that this implementation is effective in improving the employment status of individuals residing in Region 6. The findings of the study are in line with other former studies (Ljungqvist and Smolyansky, 2014; Shuai and Chmura, 2013), which also investigate the effects of regional differences in corporate income tax reductions on employment. According to the findings, it is verified that the reduction in the corporate tax rate affects the employment outcome positively in treated regions.

7. CONCLUSION

Evaluating the impact of public policies is crucial in ensuring that public resources are allocated to the most appropriate policies. As a result of policy evaluation, if the intended objectives are not met, the policy may be terminated, and public sources could be allocated to enable more efficient and effective ones. Given the significance of policy evaluation, it is anticipated that establishing measurable objectives for the reduced corporate income tax implementation and consistently assessing the outcomes based on a predetermined schedule may enhance the evaluation process.

The reduced corporate tax implementation is expected to have a positive impact on both investment and employment, in line with the basic thesis of the supply-side economics view. When the previous studies are evaluated, it can be seen that the findings are compatible with the expectations. In the study, it is aimed to reveal the effect of differences in corporate tax reduction rates on employment between the provinces selected in Region 1 and Region 6 within the scope of reduced corporate tax implementation. Based on the findings from both DID and DID-PSM methods, it is determined that

variations in reduction rates among regions have a positive and statistically significant impact on employment from 2004 to 2021. According to the study, individuals who reside in provinces in Region 6, where a higher corporate income tax reduction rate is implemented, are more likely to be employed than individuals who reside in Region 1.

It is derived from the impact assessment results of the reduced corporate tax implementation that it increases the employment level and has positive effects on the income and living conditions of the region. Another aim of reduced corporate tax implementation is to reduce the development gap between regions in terms of investment, employment, income distribution and living conditions. In order to enhance the effectiveness of the implementation for achieving predetermined goals; increasing infrastructure investments, providing energy support and land support, etc. thought to be useful to carry out supportive policies in conformity. On the other hand, rather than policies based solely on region-based differentiation, it is thought that selective policy practices could be more effective by increasing the competitiveness of regions. Besides, resources could be allocated to more efficient policies by comparing the benefits of current policies with alternative ones.

The study is constrained by the fact that it is based on repeated cross-sectional data. Due to the data structure, we are unable to assess the long-term effects of the reduced corporate income tax implementation on employment outcomes. It is expected that the panel data format may be advantageous for future studies analyzing the long-term effects of reduced corporate income tax implementation on employment.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

The Possibilistic Mean-Variance Model with Uncertain Possibility Distributions

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Abstract

The possibilistic mean–variance (MV) model is the counterpart of Markowitz's MV model in the possibility theory. This study aims to examine the possibilistic MV model when the possibility distributions of stock returns are uncertain triangular fuzzy numbers. We define an uncertainty vector and use its ellipsoidal uncertainty set in a minimax optimization problem to model this uncertainty. We also show that this minimax optimization problem reduces to a strictly convex minimization problem. Thus, unlike the possibilistic MV model, we get diversified optimal portfolios uniquely with our approach. After laying down the theoretical points of our approach, we illustrate it with a real-world example in the literature by using a software package for convex optimization. To the best of our knowledge, this is the first paper that considers uncertain possibility distributions in the possibilistic MV model.

Keywords:** **Convex Optimization, Fuzzy Set, Normal Distribution, Portfolio Selection, Possibility Theory, Triangular Fuzzy Number.

Article Type	Application Date	Admission Date
Research Article	November 10, 2023	June 11, 2024

1. INTRODUCTION

Although Markowitz's MV model introduced by Markowitz (1952) has deeply influenced the portfolio theory, it is not preferred in practice due to estimation errors (Goldfarb & Iyengar, 2003). Estimating the mean vector is a more significant problem (DeMiguel et al., 2009; Garlappi et al., 2007). Hence, the robust MV model is proposed where this vector belongs to an uncertainty set (Garlappi et al., 2007). When the ellipsoidal uncertainty set is used, this model mainly provides that an efficient portfolio approaches the minimum variance portfolio (Garlappi et al., 2007). In addition, the box-type uncertainty set ignores the correlation matrix of variables. A Bayesian approach introduced by Jorion (1986) can be used to minimize the impact of estimation errors by using a common value. This model mainly provides that the efficient portfolio approaches the minimum variance portfolio if the common value is chosen as the mean of the minimum variance portfolio (Garlappi et al., 2007). Ding's minimax portfolio selection model depends on minimizing the maximum loss when the stock returns vector's joint probability distribution is an elliptical distribution as in the models mentioned above (Ding, 2006). However, the literature questions this assumption (Chicheportiche & Bouchaud, 2012).

Young's minimax portfolio selection model is another alternative to Markowitz's MV model (Young, 1998). It is related to the game theory. It depends on past data without the assumption of elliptical distribution. However, the past data may not contain necessary information for the future. The possibilistic MV model is a notable alternative to Markowitz's MV model (Carlsson et al., 2002). This model enables us to model the imprecise probability and use expert knowledge. Here, possibility distributions are used to model the uncertainty of the stock returns. This model and its solution are examined in many papers, such as Taş et al. (2016), Zhang et al. (2009), Corazza and Nardelli (2019), Göktaş and Duran (2020a). There are also many studies in which possibilistic models are used, such as Zhang (2007), Li et al. (2015), Göktaş & Duran (2019), Göktaş & Duran (2020b), Sui et al. (2020a), Sui et al. (2020b), Hu et al. (2021), Huang et al. (2022), Deng & Lin (2022), Göktaş (2023), Saki et al. (2023), Guillaume at al. (2024). Some of these models are reviewed by Zhang et al. (2018), Mandal & Thakur (2024). On the other hand, to the best of our knowledge, no study considers uncertain possibility distributions in this model. Though it is assumed that the possibility distributions are exactly known in the literature of possibilistic portfolio optimization, this assumption is generally invalid (Hu et al., 2021). Thus, the primary motivation of our paper is to consider not only the uncertainty of stock returns but also the uncertainty of possibility distributions in the portfolio selection.

To fill this gap in the literature, we examine the possibilistic MV model when the possibility distributions are uncertain triangular fuzzy numbers. We define an uncertainty vector and use its ellipsoidal uncertainty set in a minimax optimization problem to model the uncertainty. We also show that this minimax optimization problem reduces to a strictly convex minimization problem. Thus, unlike the possibilistic MV model, we get diversified optimal portfolios uniquely. Furthermore, we derive theoretical results about our approach based on the possibilistic portfolio optimization and robust (worst-

case) portfolio optimization frameworks. Our paper's originality comes from being the first paper that considers uncertain possibility distributions in the possibilistic MV model.

We organize the rest of the paper as follows. Section 2 gives theoretical points of the possibilistic MV model and our approach under certain assumptions. Section 3 illustrates our approach with the real-world example in the literature using CVX, a MATLAB software for convex optimization. (See Grant and Boyd (2008) for further information.) We conclude the paper with Section 4.

2. METHODS

In this section, we consider the portfolio selection problem where x is the weight vector of the portfolio and its feasible set (F) is as below, like Carlsson et al. (2002). There are at most n stocks in the portfolio and x_i is the weight of the ith stock.

$$F = \left\{ x : \sum_{i=1}^{n} x_i = 1 \wedge x_i \geq 0, \forall i \right\} \tag{1}$$

The possibility theory is related to the fuzzy sets and probability theories. It gives the lower and upper bounds for the imprecise probability. Possibility distributions are usually given with fuzzy numbers (Dubois, 2006; Souliotis et al., 2022). We assume that the possibility distributions of stock returns are given with triangular fuzzy numbers. The graph of the membership function of triangular fuzzy number (-0.2, 0, 0.1) is given in Figure 1.

Figure 1. The graph of the membership function of the triangular fuzzy number
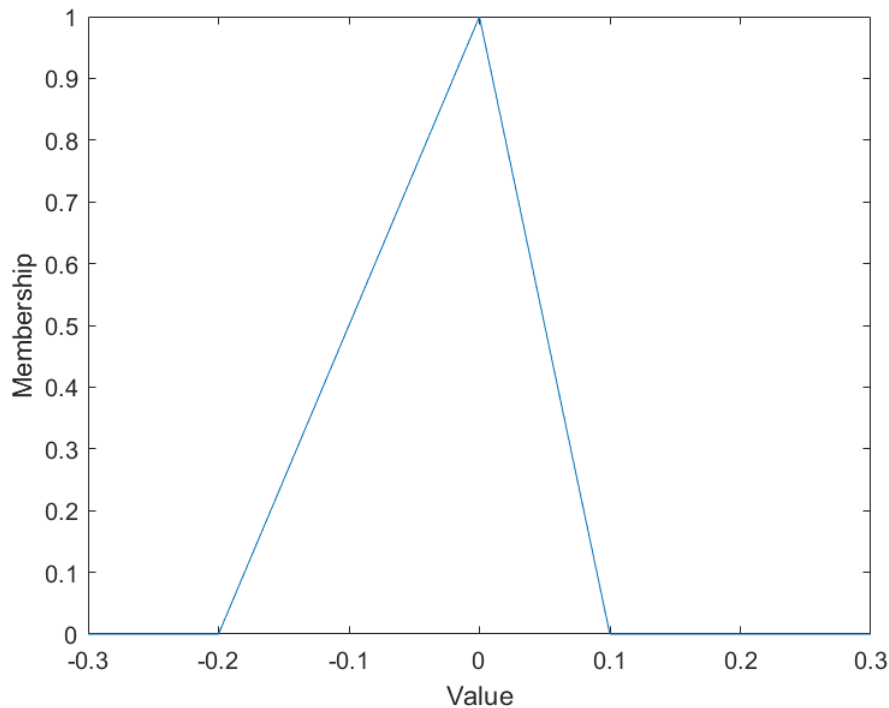
When the ith stock return's possibility distribution is (a_i, b_i, c_i), the possibilistic mean and standard deviation of portfolio return are found as below, respectively (Carlsson et al., 2002). a_i, b_i and

c_i can be taken as equal to the sample minimum, mean and maximum statistics, respectively (Taş et al., 2016). The second expression in (2) implies that the possibilistic correlation matrix consists of only ones under the triangular fuzzy numbers assumption (Corazza & Nardelli, 2019).

$$PM(x) = \sum_{i=1}^{n} x_i \left(\frac{a_i + 4b_i + c_i}{6} \right)$$

$$PSD(x) = \sum_{i=1}^{n} x_i \left(\frac{c_i - a_i}{2\sqrt{6}} \right)$$

(2)

For several reasons, we prefer to use triangular fuzzy numbers rather than trapezoidal fuzzy numbers. Firstly, it is more intuitive to use triangular fuzzy numbers since their parameters correspond to the worst-case, base-case and best-case predictions for the stock returns, respectively. Secondly, it is more practical since we can use linear or convex optimization tools in this case. We note that the weighted sum method gives the exact efficient frontier in this case. Thirdly, the possibilistic correlation depends on the cores and supports of trapezoidal fuzzy numbers (Corazza & Nardelli, 2019). However, this may cause misleading results since these are not related to the correlation structure of the stock returns vector. On the other hand, the use of triangular fuzzy numbers corresponds to the uncertain correlation structure of the stock returns vector. Thus, the possibilistic MV model considers the worst-case scenario.

Based on (2) and the weighted sum method, the possibilistic MV model can be given with the following linear minimization problem as in this study where β is in [0,1] (Göktaş & Duran, 2019; Göktaş & Duran, 2020a). In the portfolio selection problem, β (1-β) is the weight of the first (second) objective, which is to maximize (minimize) the possibilistic mean (standard deviation). When β is equal to 1, the investor is risk-neutral. When β decreases, the investor's degree of risk aversion increases. (If the investor were a risk lover, the second objective would be maximizing the possibilistic standard deviation instead of minimizing it.)

$$\min_{x \in F} (-\beta) PM(x) + (1-\beta) PSD(x)$$

(3)

The maximum performance portfolio (MPP) can be defined as below, where P(x) is the performance function. It is also an optimal solution of (3) for the unknown β value.

$$\max_{x \in F} \left(P(x) := \frac{PM(x)}{PSD(x)} \right)$$

(4)

The optimal solution of (3) is found analytically (Göktaş & Duran, 2019; Göktaş & Duran, 2020a). If the objective function is minimum for only one stock, then the optimal portfolio (OP) consists of only this stock. If the objective function is minimum for multiple stocks, then OPs consist of their convex combinations. In this case, alternative optimal solutions exist (Göktaş & Duran, 2019; Göktaş & Duran, 2020a). Similar results are also valid for MPP. (When f(x)=0 in (14), MPP is found. Due to

the Fundamental Theorem of Linear Programming, either the optimal solution is a corner point of the feasible set, i.e. a unique stock, or alternative optimal solutions exist.)

In this study, we assume that the ith stock return's possibility distribution is equal to $(a_i+\Theta_i, b_i+\Theta_i, c_i+\Theta_i)$ where a_i, b_i and c_i are determined based on the past data like in Taş et al. (2016). Θ_i is the uncertainty parameter for the ith stock return and the uncertainty vector's (Θ) joint probability distribution is normal. We also assume that its mean vector (μ_Θ) and positive definite covariance matrix ($\sum_\Theta$) are determined based on expert knowledge. Its α-confidence region is found as below, where k_α is the square root of the α-quantile of the chi-square distribution with n degrees of freedom (Ding, 2006; Studer, 1999). (5) is an ellipsoidal uncertainty set with the center μ_Θ. When an element of μ_Θ is positive (negative), the expert is optimistic (pessimistic) about the future return of the corresponding stock with respect to its past returns. $\sum_\Theta$ is related to the variability of Θ with respect to these beliefs (μ_Θ) since $\sum_\Theta$ determines the Mahalanobis distance between Θ and μ_Θ (Breuer, 2006; Breuer & Csiszar, 2013). Here, Θ^T is the transpose of the Θ vector and $\sum^{-1}$ is the inverse of the $\sum$ matrix.

$$S = \left\{ \theta : \left(\theta - \mu_\theta\right)^T \Sigma_\theta^{-1} \left(\theta - \mu_\theta\right) \le k_\alpha^2 \right\} \tag{5}$$

Based on (2) and our assumption that $X_i \sim (a_i+\Theta_i, b_i+\Theta_i, c_i+\Theta_i)$, we find the possibilistic mean and standard deviation of portfolio return as below. That is, the possibilistic standard deviation remains the same due to the translation invariance property (Carlsson & Fuller, 2001).

$$
\begin{aligned}
PM\left(x,\theta\right) &= \sum_{i=1}^{n} x_i \left(\frac{\left(a_i + \theta_i\right) + 4\left(b_i + \theta_i\right) + \left(c_i + \theta_i\right)}{6} \right) \\
&= \sum_{i=1}^{n} x_i \left(\frac{a_i + 4b_i + c_i}{6} \right) + \sum_{i=1}^{n} x_i \frac{6\theta_i}{6} = PM\left(x\right) + \sum_{i=1}^{n} x_i \theta_i \\
PSD\left(x,\theta\right) &= \sum_{i=1}^{n} x_i \left(\frac{\left(c_i + \theta_i\right) - \left(a_i + \theta_i\right)}{2\sqrt{6}} \right) \\
&= \sum_{i=1}^{n} x_i \left(\frac{c_i - a_i}{2\sqrt{6}} \right) = PSD\left(x\right)
\end{aligned}
\tag{6}
$$

Based on (6) and the weighted sum method, we define the possibilistic MV model with uncertain possibility distributions as below, where β is again in [0,1], F is defined in (1) and S is defined in (5).

$$\min_{x \in F} \max_{\theta \in S} \left(-\beta\right)\left[PM\left(x\right) + \sum_{i=1}^{n} x_i \theta_i \right] + \left(1 - \beta\right) PSD\left(x\right) \tag{7}$$

This minimax optimization problem is equivalent to the following convex minimization problem. (8) is strictly convex when β is not equal to 0. (8) reduces to (3) when β is equal to 0.

$$\min_{x \in F} \left[\left(-\beta\right) PM\left(x\right) + \left(1 - \beta\right) PSD\left(x\right) - \beta \min_{\theta \in S} \sum_{i=1}^{n} x_i \theta_i \right] \tag{8}$$

We define the following minimization problem over the ellipsoidal uncertainty set. We know that (9) is related to the risk measure called Maximum Loss (ML) (Studer, 1999). Due to the scenario analysis approach, we can say that ML considers the most severe scenario from the plausible scenario set (S) (Breuer, 2006).

$$\min_{\theta \in S} \sum_{i=1}^{n} x_i \theta_i \tag{9}$$

The optimal solution of (9) is found as below by using the Karush-Kuhn-Tucker (KKT) conditions (Ding, 2006; Studer, 1999). As in this study, it is the most severe scenario in S and can be called the worst-case scenario.

$$\theta^*(x) = \mu_\theta - \frac{k_\alpha}{\sqrt{x^T \Sigma_\theta x}} \Sigma_\theta x \tag{10}$$

Then, the optimal value of an objective function of (9) is found as below, where E() and var() are the expectation and variance operators in the probability theory, respectively (Ding, 2006; Studer, 1999).

$$f(x) := x^T \mu_\theta - k_\alpha \sqrt{x^T \Sigma_\theta x} = E(x^T \theta) - k_\alpha \sqrt{\text{var}(x^T \theta)} \tag{11}$$

Furthermore, we find that (7) is equivalent to the following convex minimization problem. We call its optimal solution as the worst-case optimal portfolio (WOP).

$$\min_{x \in F} (-\beta) \left[PM(x) + f(x) \right] + (1 - \beta) PSD(x) \tag{12}$$

We define the maximum worst-case performance portfolio (MWPP) as below where WCP(x) is the worst-case performance function. It is also an optimal solution of (12) for the unknown β value.

$$\max_{x \in F} \left(WCP(x) := \frac{PM(x) + f(x)}{PSD(x)} \right) \tag{13}$$

When at least one portfolio's worst-case performance (WCP) is positive, we can find MWPP by standardizing the optimal solution of (14) since the objective function of (13) is a homogeneous function of x (Goldfarb & Iyengar, 2003; Tütüncü & Koenig, 2004). Clearly, (14) is a strictly convex minimization problem. To solve (12) and (14), the CVX/MOSEK solver can be used in MATLAB as in this study (Grant & Boyd, 2008).

$$\begin{aligned} &\min \left(-PM(x) - f(x) \right) \\ &s.t.\, PSD(x) = 1 \\ &\quad\, x_i \geq 0, \forall i \end{aligned} \tag{14}$$

Remark: In this study, we assume that the joint probability distribution of Θ is normal. Anyone can generalize the theoretical results derived in this section for the other elliptical distributions with finite moments. When another elliptical distribution is used, k_α is replaced by another positive constant c_α. Everything remains the same except for this (Breuer, 2006). See Embrechts et al. (2002) for further information about the elliptical distributions.

Remark: The possibilistic MV model (with uncertain possibility distributions) considers the asymmetry in the past data like Young's minimax model, unlike the other models mentioned in this study. The elliptical distribution of the stock returns vector (uncertainty vector) is determined based on the expert knowledge in Ding's minimax model (in our approach). We believe that modeling the uncertainty vector is simpler. That is, the ease of use of our approach is higher.

When there are no restrictions that x_i is nonnegative in (1), the PM(x) and PSD(x) functions are found as below (Carlsson & Fuller, 2001; Carlsson et al., 2002). In this case, the possibilistic MV model does not give a bounded optimal solution (Corazza & Nardelli, 2019). On the other hand, our approach may give a bounded optimal solution due to f(x) given in (11). It may be applicable, unlike this model, even if there are no restrictions on the short positions. We note that (12) and (14) remain convex minimization problems because the absolute value and sum operations preserve the convexity. (The first constraint of (14) changes to PSD(x)≤1, but it is always tight at an optimal solution due to the risk-return trade-off.)

$$PM(x) = \sum_{i=1}^{n} x_i \left(\frac{a_i + 4b_i + c_i}{6} \right)$$

$$PSD(x) = \sum_{i=1}^{n} |x_i| \left(\frac{c_i - a_i}{2\sqrt{6}} \right)$$

(15)

It is obvious that when the joint probability distribution of Θ is another elliptical distribution with the same first two moments, we have the same WOP for a different confidence level than α. Using Proposition 1 of Breuer and Csiszar (2013), we can show that a similar result is also valid for μ_Θ. Let the reference distribution be $N(\mu_\Theta, \sum_\Theta)$. Then, using the relative entropy constraint, the worst-case joint probability distribution of Θ is found as below for $E(x^T\Theta)$, where d is the upper bound for the distance to the reference distribution.

$$\theta \square N\left(\mu_\theta - \sqrt{2d} \, \frac{\sum_\theta x}{\sqrt{x^T \sum_\theta x}}, \sum_\theta \right)$$

(16)

By using (16) instead of $N(\mu_\Theta, \sum_\Theta)$, we find f(x) as below for the given confidence level c. By comparing (11) and (17), we see that the same WOPs are derived when the scalars before the square root expressions are equal. Based on this information, we remark that it is more essential to determine $\sum_\Theta$. Thus, the expert may focus on its determination rather than the others.

$$f(x) = x^T \left(\mu_\theta - \sqrt{2d} \frac{\sum_\theta x}{\sqrt{x^T \sum_\theta x}} \right) - k_c \sqrt{x^T \sum_\theta x} = x^T \mu_\theta - \left(k_c + \sqrt{2d} \right) \sqrt{x^T \sum_\theta x} \qquad (17)$$

3. RESULTS AND DISCUSSION

In this section, we illustrate our approach with the real-world example given by Zhang (2007) and Huang et al. (2022), where there are five stocks (X1, X2, X3, X4, X5) and the possibility distributions are as below in the possibilistic MV model. Clearly, in our approach, they are shifted by Θ_i for all i due to the uncertainty in the possibilistic means where the uncertainty vector's (Θ) joint probability distribution is normal with mean vector μ_Θ and positive definite covariance matrix $\sum_\Theta$.

$$
\begin{aligned}
X_1 &\sim (0.019, 0.073, 0.16) \\
X_2 &\sim (0.03, 0.105, 0.207) \\
X_3 &\sim (0.042, 0.138, 0.261) \\
X_4 &\sim (0.042, 0.168, 0.33) \\
X_5 &\sim (0.04, 0.208, 0.421)
\end{aligned} \qquad (18)
$$

Then, we calculate the possibilistic means and standard deviations with the performances as in Table 1 using the formulas given in (2) or (4). We show the best values in bold. We get X3 when x equals the column vector $(0, 0, 1, 0, 0)^T$.

Table 1. The possibilistic MV model's metrics

Stocks	P. Mean	P. Std. Dev.	Performance
X1	0.079	**0.029**	2.727
X2	0.110	0.036	3.031
X3	0.143	0.045	**3.188**
X4	0.174	0.059	2.960
X5	**0.216**	0.078	2.771

Based on Table 1 and the information given in Section 2, we uniquely calculate some OPs as in Table 2. As we expect, they are not diversified.

Table 2. Some optimal portfolios

Stocks	OP for β=1	OP for β=0	MPP
X1	0	1	0
X2	0	0	0
X3	0	0	1
X4	0	0	0
X5	1	0	0

We get the possibilistic MV model's efficient frontier as in Figure 2. We find that all stocks are an OP with some β values. The possibilistic mean (standard deviation) increases with the increase in β. The efficient frontier consists of consecutive line segments due to the linearity in (2).

Figure 2. The possibilistic MV model's efficient frontier
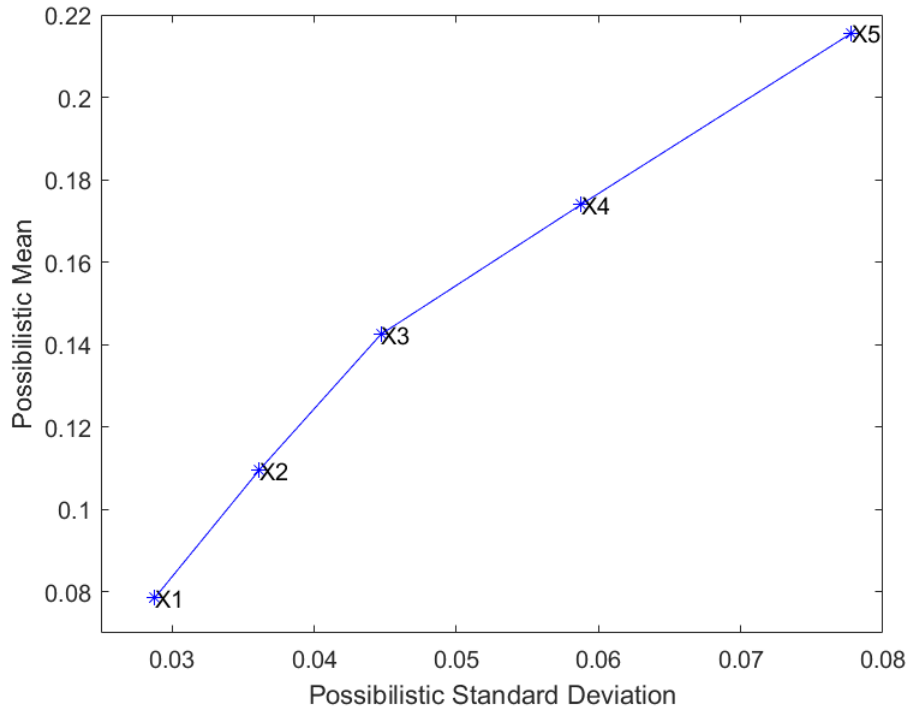
We determine that μ_Θ is equal to the column vector $(0.02, 0.01, 0, -0.01, -0.02)^T$, whereas $\sum_\Theta$ is as in Table 3. We set the confidence level (α) as 0.9 in this study. Then, we find k_α as 3.039 based on the normal distribution assumption. Due to μ_Θ, we can say that the expert is optimistic (pessimistic) about the future returns of X1 and X2 (X4 and X5) with respect to the possibility distributions given in (18). We note that the probabilistic standard deviation vector of Θ is equal to the column vector $(0.03, 0.02, 0.02, 0.02, 0.03)^T$ while $\Theta1$ and $\Theta2$ ($\Theta4$ and $\Theta5$) are negatively correlated each other.

Table 3. The covariance matrix of the uncertainty vector (Θ)

Stocks	X1	X2	X3	X4	X5
X1	0.0009	-0.0003	0	0	0
X2	-0.0003	0.0004	0	0	0
X3	0	0	0.0004	0	0
X4	0	0	0	0.0004	-0.0003
X5	0	0	0	-0.0003	0.0009

WOP1 (WOP2) is an abbreviation of WOP for $\beta=1$ (for $\beta=0.5$). We uniquely find WOP1, WOP2 and MWPP as in Table 4 using CVX/MOSEK solver in MATLAB for (12) or (14). The WOPs are diversified, unlike the OPs. Even if there are no restrictions that x_i is nonnegative in (1), we get the same WOPs due to the effect of f(x) given in (11). We remark that the possibilistic MV model does not give a bounded optimal solution in this case.

Table 4. Some worst-case optimal portfolios

Stocks	WOP1	WOP2	MWPP
X1	0	0.090	0.201
X2	0	0.180	0.355
X3	0.020	0.161	0.216
X4	0.553	0.350	0.167
X5	0.427	0.218	0.061

In Table 5, we give the $\Theta^*(x)$ vectors for the WOPs by using (10). When this information and (18) are combined, the worst-case possibility distributions of stock returns are derived for the WOPs. These vary from portfolio (x) to portfolio (x).

Table 5. The $\Theta^*(x)$ vectors for the WOPs

Parameters	WOP1	WOP2	MWPP
Θ_1	0.02	0.010	-0.007
Θ_2	0.01	-0.007	-0.020
Θ_3	-0.002	-0.024	-0.031
Θ_4	-0.034	-0.038	-0.028
Θ_5	-0.075	-0.054	-0.022

In Figure 3, we roughly give the efficient frontier in our approach. We see that X2, X3, X4 and X5 are not a WOP for any β. (WOP for β=0 consists of only X1.)

Figure 3. The efficient frontier in our approach
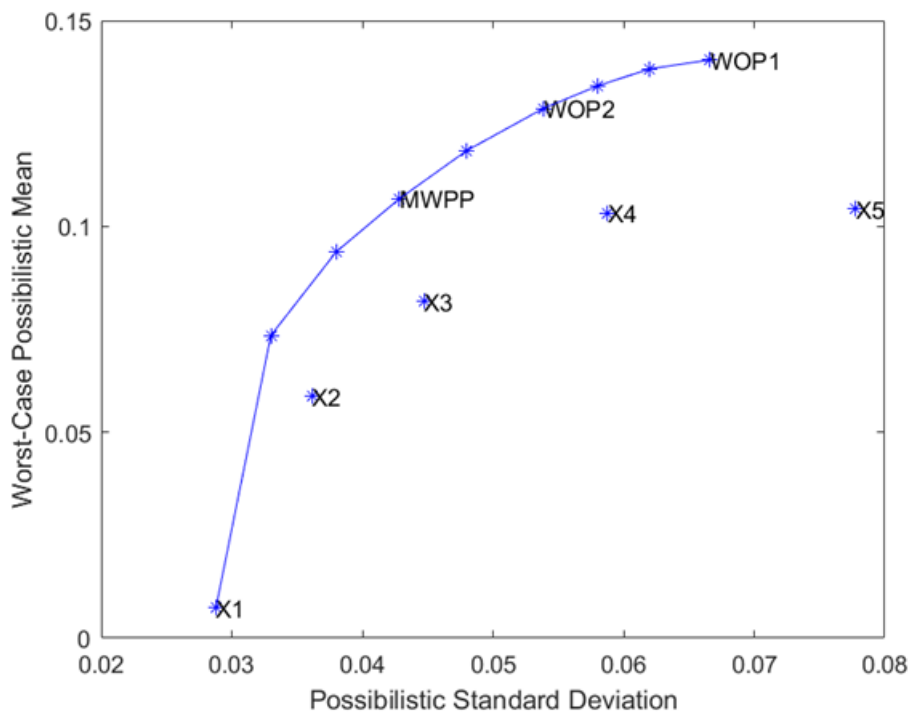
We compare the WOPs and the OPs in Table 6 using the formulas (4) or (13). The WOPs, except for X1, have sufficient performance and worst-case performance, unlike the OPs. Spearman's rank

correlation coefficient equals Pearson's linear correlation coefficient of the ranks (Akinyi et al., 2022; Li et al., 2022). In the example, we find it to be 0.429, which is not high. These two measures do not give similar results in the example.

Table 6. Comparisons of the OPs and the WOPs

Portfolio	Performance Value	Performance Rank	Worst-Case P. V.	Worst-Case P. R.
MWPP	2.988	3.	2.491	1.
WOP2	2.928	5.	2.388	2.
WOP1	2.869	6.	2.109	3.
X1	2.727	8.	0.255	8.
X2	3.031	2.	1.625	6.
X3	3.188	1.	1.828	4.
X4	2.960	4.	1.756	5.
X5	2.771	7.	1.341	7.

Based on Table 2, Table 4 and Table 6, we remark that the WOPs, except for X1, are more appropriate for conservative investors since they are robust to the worst-case scenario and more diversified by definition. This is like the relationship between Markowitz's MV model and the robust MV model proposed by Garlappi et al. (2007).

In Table 7, we give WOP1 for the different confidence levels. The weight of X5 (X3) decreases (increases) with the increase in the confidence level (α).

Table 7. WOP1 for the different confidence levels

Stocks	$\alpha=0$	$\alpha=0.25$	$\alpha=0.5$	$\alpha=0.9$	$\alpha=0.95$	$\alpha=0.99$	$\alpha=0.999$
X1	0	0	0	0	0	0	0
X2	0	0	0	0	0	0	0
X3	0	0	0	0.020	0.048	0.086	0.115
X4	0	0.497	0.531	0.553	0.543	0.530	0.519
X5	1	0.503	0.469	0.427	0.409	0.385	0.366

In Table 8, we give WOP2 for the different confidence levels. The weight of X5 (X2) decreases (increases) with the increase in α.

Table 8. WOP2 for the different confidence levels

Stocks	$\alpha=0$	$\alpha=0.25$	$\alpha=0.5$	$\alpha=0.9$	$\alpha=0.95$	$\alpha=0.99$	$\alpha=0.999$
X1	0	0.011	0.053	0.090	0.096	0.105	0.113
X2	0	0.077	0.131	0.180	0.189	0.201	0.211
X3	0	0.174	0.167	0.162	0.161	0.159	0.158
X4	0	0.447	0.396	0.350	0.342	0.331	0.322
X5	1	0.291	0.253	0.218	0.213	0.204	0.197

In Table 9, we give MWPP for the different confidence levels. The weight of X3 decreases with the increase in α, whereas the weights of X4 and X5 increase with the increase in α.

Table 9. MWPP for the different confidence levels

Stocks	α=0	α=0.25	α=0.5	α=0.9	α=0.95	α=0.99	α=0.999
X1	0	0.277	0.254	0.201	0.190	0.175	0.164
X2	0	0.476	0.442	0.355	0.337	0.312	0.293
X3	1	0.248	0.249	0.216	0.207	0.196	0.187
X4	0	0	0.055	0.167	0.187	0.214	0.235
X5	0	0	0	0.061	0.079	0.103	0.122

Shannon's entropy can be used as a diversification measure. It takes values between 0 and ln(n). Diversification level increases with the increase in Shannon's entropy (Kamaludin et al., 2021; Lam et al., 2021). (Since n equals 5 in the example, ln(n) equals 1.609.) Table 10 gives Shannon's entropy values for the different confidence levels. We note that the diversification levels (Shannon's entropy values) of the WOPs increase with the increase in the confidence (conservativeness) level. This is because, the increase in the confidence level improves the effect of f(x) given in (11).

Table 10. The Shannon's entropy values for the different confidence levels

WOP	α=0	α=0.25	α=0.5	α=0.9	α=0.95	α=0.99	α=0.999
WOP1	0	0.693	0.691	0.770	0.843	0.915	0.956
WOP2	0	1.055	1.214	1.491	1.522	1.552	1.566
MWPP	0	1.271	1.435	1.519	1.529	1.542	1.551

Based on the last four tables, we say that the WOPs are sufficiently diversified even if the confidence (conservativeness) level is not high.

Let the maximum error matrix (V) be positive semi-definite. That is, its eigenvalues are nonnegative. Since $\sum_\Theta$ is positive definite, it is a fact that $V+\sum_\Theta$ is also positive definite. That is, its eigenvalues are positive. Based on the framework given in Tütüncü and Koenig (2004), we can make the worst-case analysis for $var(x^T\Theta)$ by only using $V+\sum_\Theta$ in (10)-(11) instead of $\sum_\Theta$. This is because, $var(x^T\Theta)$ is maximized for any portfolio (x) when the positive definite covariance matrix of Θ is equal to $V+\sum_\Theta$ due to the restrictions on the short positions. See Proposition 3 of Tütüncü and Koenig (2004). In the example, we take V as $0.0009*A_{5x5}$, where A_{5x5} consists of only ones. (The maximum element of $\sum_\Theta$ is equal to 0.0009 as shown in Table 3.) Then, we find the WOPs as in Table 11.

Table 11. The results of the worst-case analysis for $var(x^T\Theta)$

Stocks	WOP1	WOP2	MWPP
X1	0	0	0
X2	0	0	0
X3	0	0.105	0.146
X4	0.550	0.516	0.505
X5	0.450	0.380	0.349

In the previous section, we remark that it is more essential to determine Σ_Θ. By comparing the information given in Table 4 and Table 11, we say that the WOPs may change highly and get close to WOP1 with the increase in $var(x^T\Theta)$. It is consistent with the fact that $var(x^T\Theta)$ affects WOP1 more than the other WOPs. We note that WOP1 is found by maximizing the worst-case possibilistic mean.

It can be useful to analyze the certainly known and uncertain possibility distributions together. In this context, we consider five additional stocks, of which possibility distributions are certainly known, for the portfolio selection problem. We present their information in Table 12.

Table 12. The information for the additional stocks

Stocks	P. Mean	P. Std. Dev.	Performance
X6	0.10	0.06	1.667
X7	0.11	0.07	1.571
X8	0.12	0.08	1.500
X9	0.13	0.09	1.444
X10	0.15	0.15	1.000

Since X4 has a higher possibilistic mean and lower possibilistic standard deviation than these stocks, they are not an optimal portfolio for the possibilistic MV model. That is, the efficient frontier in Figure 2 does not change. On the other hand, the optimal portfolios in our approach may change as shown in Table 13.

Table 13. Some worst-case optimal portfolios for the extended example

Stocks	WOP1	WOP2	MWPP
X1	0	0.090	0.201
X2	0	0.180	0.355
X3	0	0.161	0.216
X4	0	0.350	0.167
X5	0	0.218	0.961
X6	0	0	0
X7	0	0	0
X8	0	0	0
X9	0	0	0
X10	1	0	0

By comparing Table 4 and Table 13, we see that WOP2 and MWPP do not change unlike WOP1. WOP1 is not diversified like OPs. That is, our approach may give undiversified portfolios when the certainly known and uncertain possibility distributions are used together. We also remark that our approach may not give unique solutions in this case. On the other hand, Tikhonov's regularized problem can be used to approximate the unique optimal solution closest to the origin (Beck and Sabach, 2014; Ketabchi et al., 2021).

4. CONCLUSION

This study proposes an approach to cope with uncertain possibility distributions in the possibilistic MV model under certain assumptions. To the best of our knowledge, this is the first paper that considers this problem. After laying down the theoretical points of our approach, we give a real-world example. We show that our approach may be applicable, unlike the possibilistic MV model, even if there are no restrictions on the short positions. The main limitation of our approach is that there is no formal procedure to determine the uncertainty vector's (Θ) joint probability distribution. In addition, our approach may be unpreferable for the portfolio selection problems including the high number of stocks since the primary determinant of its success is the quality of the expert knowledge. The main strength of our approach is that it captures uncertainty's two aspects (fuzziness and randomness) since it depends on possibility and probability theories. In addition, we uniquely get diversified optimal portfolios with our approach, unlike the possibilistic MV model. Furthermore, our approach considers various future scenarios based on the determined confidence (conservativeness) level. For these reasons, our approach may be an alternative to the possibilistic MV model. Another limitation of our approach is that it only considers the possibilistic mean vector's uncertainty. As future research, our approach can be extended by using multiple uncertainty vectors to model the possibilistic mean and standard deviation vectors' uncertainty together.

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Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

Corporate Governance of Banks, The Key for Trust: A Bibliometric Analysis

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Abstract

Corporate governance aims to create a transparent, fair, accountable, and responsible management environment for all stakeholders. Due to the significant role of banks in the economy, corporate governance in banks is indispensable for establishing trust, which is crucial for them to survive. Albeit numerous bibliometric analyses have been found solely on banks or corporate governance, there needs to be more bibliometric analysis on the corporate governance of banks. Thus, this study aims to explore the research works of corporate governance, particularly of banks, by conducting a bibliometric analysis from 2003 to 2022. The results show that the interest in corporate governance in banks increased, especially after the 2008 financial crisis, and the studies focused on the board structure-bank performance and board structure-risk appetite relations. Additionally, corporate governance has emerged as an essential topic in Islamic banking since the 2010s.

Keywords: Corporate Governance, Corporate Finance, Banks, Banking, Islamic Banking, Bibliometric Analysis

Article Type	Application Date	Admission Date
Research Article	November 19, 2023	June 11, 2024

1. INTRODUCTION

Corporate governance (CG) is the institutional and market-based regulations that direct the managers, who decide about the operation of the business, as well as maximize the benefit they will provide to them as a result of business activities, to make decisions in order to maximize the value of the business for all the stakeholders (Denis et al.,2003). Corporate governance consists of a set of rules, controls, policies and decisions implemented to take care of corporate behavior (Ulusoy et al., 2022). CG consists of two parts. The first part is made of the institution's own abilities, such as financial structure, performance measures and shareholders. The second part, however, is composed of market, legal framework, and rules (Kendirli et al., 2010).

Although the foundations of CG date back a century, its importance has increased considerably since the end of the 90's, with its inclusion in the agendas of various global organizations after financial crises. According to one of these global organizations, OECD, the purpose of corporate governance is to help create the environment of trust, transparency and accountability necessary to improve long-term investment, financial stability and integrity of businesses, thereby enabling stronger growth (OECD, 2015). Contrary to this situation, financial crises have developed in environments where accountability and transparency are ignored.

The most important negative effects of financial crises are damage to trust in financial institutions. Lack of "trust" can paralyze financial markets (Guiso et al., 2009). Loss of trust in any sector can affect that sector and the other sectors which are associated with it. In this instance, the effect of loss of trust can be limited. However, when bank trust declines, it damages the entire economic system. The main reason for this is the role of banks in the economy. While banks ensure that unused funds are used effectively and safely, they also enable users to reach the resources they need for production or consumption with the funds they collect. When the trust in banks decreases, the ability of banks to collect funds weakens, their existing fund assets begin to decrease, and they have difficulty in lending. In this case, banks cannot play their crucial role in the economy, creating problems for the entire economic system (Bubbico et al., 2012). In addition, different from other sectors, special applications for banks, such as deposit insurance, aim to eliminate the problems that may occur in the monitoring of banks. However, these applications can also delay the visibility of potential glitches. For this reason, the regulations on banks may cause various weaknesses in other points. That's why good corporate governance and monitoring is vital in banks (Mülbert, 2009). For these reasons, it is necessary to focus on banks and corporate governance, the cornerstone of trust in banks (John et al., 2016).

It is important to determine corporate governance principles and to accept and apply these principles with the widest possible participation. Cadbury Report (1992), OECD CG Principles (2004, 2015), Sarbanes-Oxley Act (SOX, 2002), European Commission Recommendation (2005), Basel Committee Principles (2006, 2008) are the results of international efforts. The multitude of stakeholders and their role in the economy enlarges the sphere of influence of the problems they will experience and

requires banks to be followed carefully. Among these regulations and recommendations, Basel Committee Decisions focus on banks, stating that effective corporate governance is essential for the continuation of a sound financial system and has a key role in improving the country's economic conditions.

Such regulations, recommendations, practices, and their effects have caused many researchers to focus on this area. Considering the academic development, the number of academic studies in corporate governance has increased significantly. The main motivation of researchers working in this field is to conduct studies that will guide regulatory and supervisory authorities and practitioners for the construction of the healthiest corporate governance systems. This study focuses developing corporate governance literature particularly for banks. Thus, the aim of this study is to explore the research works of corporate governance particularly of banks by conducting bibliometric analysis from 2003 to 2022. Albeit numerous bibliometric analyses have been found solely on banks or corporate governance, there needs to be more bibliometric analysis on corporate governance of banks. Therefore, this study will be the first to bibliometrically analyze the topic and help researchers in future studies.

The analyses made within the scope of the study show that there has been an increase in the production of publications in this field, especially after the 2008 financial crisis. During this period, many researchers started to work on the subject in order to understand the causes of the crisis and to draw the necessary lessons. When we look at the production of articles by countries, the UK and the USA are at the forefront both in the number of publications and in studies with co-authors from different countries. The reason for this is that those are the countries where vital regulations are made in the field of working environment and corporate governance (Cadbury Report, 1992; Sarbanes-Oxley Act, 2002). In the co-citation analysis, in which the articles in the bibliography of the examined articles were examined, a two-cluster structure was reached. While the studies of the authors in one of these two clusters are the articles that form the foundations of the field of corporate governance, it is seen that the studies in the other cluster focus on corporate governance especially for banks. Similarly, in the co-word analysis where the use of keywords is examined together, words such as ownership structure, agency, investor production, which are the basic concepts of corporate governance, are in one cluster, while words such as Islamic banking, bank performance related to corporate governance in banks, corporate bank governance are in the other cluster. According to the co-word analysis, Islamic banking is the most common among other keywords. The fact that the average year of publication of 49 studies in the field of Islamic banking is 2019 shows that the field is a relatively new topic and is advancing rapidly. When the reasons for this are examined, the rapid growth of Islamic banking and corporate governance studies specific to conventional banks can be reconsidered for Islamic banking. In other words, studies in conventional banking can be a guide for studies in Islamic banking. Malaysia is important for corporate governance in Islamic banking. Malaysian researchers have strong ties to the UK on co-authorship.

Malaysia has also established co-authoring ties with other Islamic countries. For this reason, the country acts as a bridge between the UK and Islamic countries in Islamic banking.

The structure of this article is as follows. Section 2 explains the research design in terms of data extraction process and the methodology, Section 3 provides the bibliometric and visual results, and Section 4 contains the main conclusions and limitations.

2. RESEARCH DESIGN

2.1. Data Extraction

For this study, the data was extracted from Web of Science (WOS) electronic database, a broad, multidisciplinary online database that gives users access to a number of citation databases (e.g. Science Citation Index Expanded (SCIE), Social Sciences Citation Index (SSCI), Emerging Sources Citation Index (ESCI). This database is commonly preferred in bibliometric studies as it only incorporates the publications with the highest standards and adheres to the most relevant publications with useful metadata (e.g. titles, keywords, abstracts, references, authors, journals and citations (Grueso-Gala et al., 2022; Galetta et al, 2022; Alam et al., 2021; Garrigos et al. 2018; Gaviria-Marin et al. 2019; Bartolacci et al. 2020 and Zhang et al. 2019; Effah et al., 2023).The data extraction steps for determining the final sample is shown below in Figure 1.

Figure 1. Data Extraction Steps

Search in Web of Science (WOS) "corporate governance" (Abstract) AND "bank" OR "banking" (keywords)
499 Publications

▼

Publications in English
484 Publications

▼

Document Type as Article
408 Articles

▼

WOS Categories (Business, Finance, Economy, Management)
358 Articles

▼

After the re-evaluating the listed publications
285 Articles
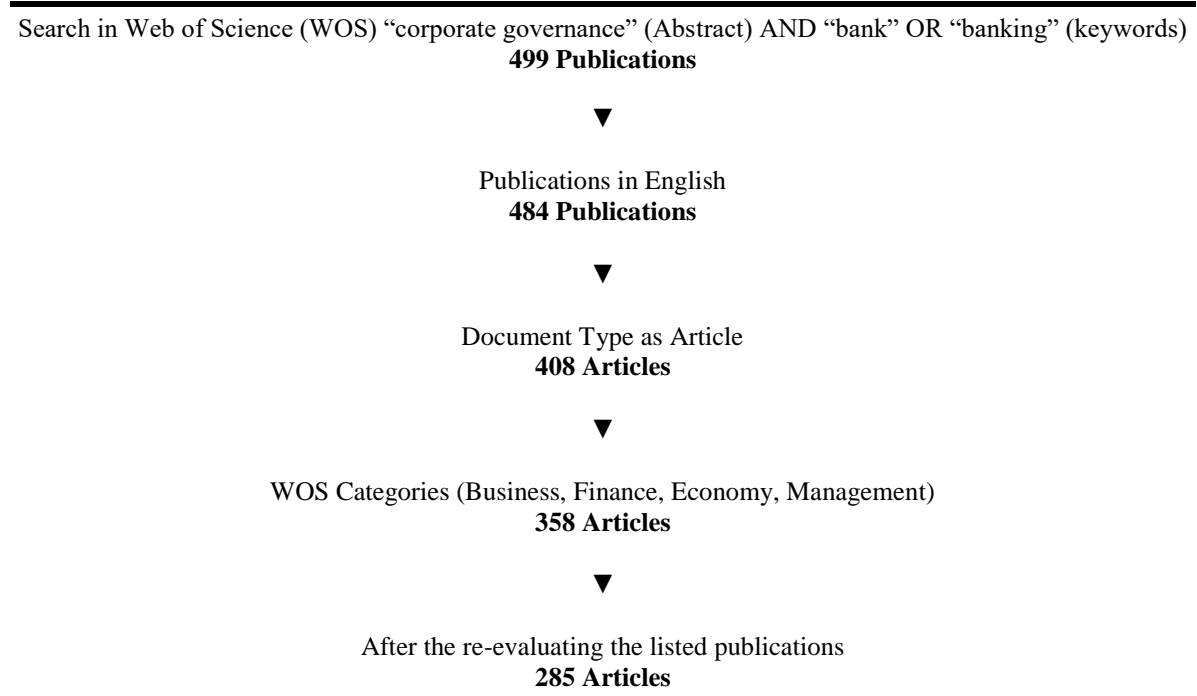
Search criteria can significantly affect the results of the study. Initially, academic publications on the research topic from 2003 to 2022 were retrieved from WOS on 5th of April, 2023. In order to reach as many articles as possible, search terms "corporate governance" in abstracts AND "bank" OR "banking" among the authors keywords were entered, yielding initially 499 publications and further

refined to the ones in English with 484 publications. The documents were then filtered by categories including "Business Finance", "Business", "Economy" and "Management" resulting in 358 documents. Proceedings papers, book chapters and early access documents apart from the articles were also included in the refined sample. All available data (author, title, source, abstract) offered by WOS were exported as BibTeX. The data was also downloaded as Microsoft Excel file to carefully screen the titles and abstracts of all studies for relevance and finally 285 documents were determined to be the final sample in the study. As can be seen, 73 studies (358-285) were excluded at the last stage because the authors made their own evaluations with the information they obtained in their previous studies on the subject. For example, studies focused on the board structure of businesses, not banks, such as the relationship between the board structures of enterprises and their bank selections, are excluded. Figure 1 above represents the data extraction process of this study.

2.2. Methodology

In this research, bibliometric analysis, known as the qualitative and quantitative research analysis technique, was employed to assess the impact of particular academics, research groups, countries, institutions, and scientific publications on the literature of a particular field. Generally, the goal of bibliometric analysis is to synthesize vast amounts of bibliometric data to illustrate the state of the intellectual structure and emerging trends in a field of research (Donthu et al., 2021a). By mapping large volumes of unstructured research works based on the most popular publications, this technique becomes especially useful for scholars before starting the literature review to uncover emerging trends in the extant literature. Hence, it provides a road map for researchers to identify the most influential studies in a particular field clearly and objectively (Zupic et al., 2015; Krauskopf, 2018; Effah et al., 2023; Galetta et al., 2022). Moreover, it guides researchers for future studies by identifying the research gaps (Zainuldin et al, 2022). Bibliometric analysis is an easier and more reliable method to process hundreds of articles compared to other text analysis methods, such as content analysis (Feng *et al*., 2017). Therefore, well-conducted bibliometric studies enable academics to (1) get a comprehensive picture of the research topic, (2) discover knowledge gaps, (3) generate original research questions, and (4) articulate their intended contributions to the subject (Donthu et al., 2021a).

This analysis's popularity is increasing among scholars due to its ease of usage with software such as Biblioshiny, Gephi, VOSviewer, Leximancer, Citespace, and scientific databases like Scopus and Web of Science. Its popularity in social science research rose as well since it helps to reveal high-impact studies from immense amounts of scientific and objective data such as the number of citations and publications, occurrences of keywords and topics (Donthu et al., 2021a; Alam et al., 2021; Khan et al., 2021). A summary of bibliometric techniques used in this study is illustrated in Figure 2.

Figure 2. A Summary of Bibliometric Techniques Used in This Study
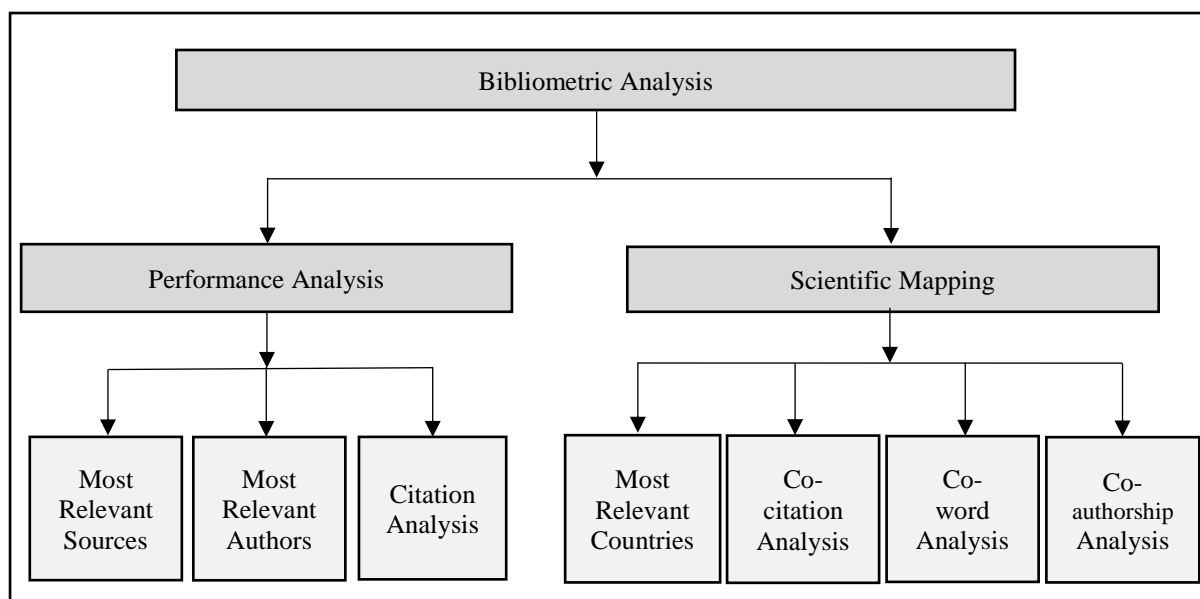
Source: Author's own scheme

Performance analysis and science mapping are two main techniques used in bibliometric analysis (Cobo et al., 2011; Donthu et al, 2021a; Alam et al., 2021). Performance analysis, also known as descriptive analysis aims to assess the research performance of scientific constituents (e.g., authors, affiliations, countries, and journals) in a particular field (Zupic et al., 2015; Zainuldin et al., 2020; Alam et al., 2021; Donthu et al., 2021a). Science mapping evaluates the connections between research constituents and the intellectual interactions that include the relational techniques of citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and co-authorship analysis through visualized representations (Baker, Kumar, & Pandey, 2021; Cobo et al., 2011; Zainuldin et al., 2020). It allows detection of patterns that would not be possible to find using traditional research techniques (Yamaguchi et al., 2023). A summary of bibliometric techniques used in this study is illustrated in Figure 2.

For the bibliometric analysis, the Biblioshiny, a web interface in the free R Bibliometrix Package (R), was utilized. Hence, all the data was exported in Bibtex format to R for data analysis in Biblioshiny. Biblioshiny allows for conducting various analyses through visualizations (Mougenot et al.,2023).

3. RESULT AND ANALYSIS

3.1. Performance Analysis

Performance analysis is the hallmark of bibliometric studies (Donthu et al., 2021b; Alam et al., 2021). In this section, descriptive analysis results for variables such as annual scientific production trend, most relevant journals, authors, most productive countries, and most cited documents are discussed, using the data set obtained from WOS in April 2023. Furthermore, citation per publication and h-index that combines both citations and publications is also used to measure the performance of research

constituents. This section introduces the metrics for performance analysis retrieved from Biblioshiny given below in Table 1.

Table 1. Main Information about Data

Description	Results
Timespan	2003:2022
Sources (Journals, Books, etc.)	143
Documents	285
Annual Growth Rate %	20.39
Document Average Age	6.3
Average citations per document	22.57
References	11,495
Document Types	
Article	260
Article; Book Chapter	3
Article; Early Access	14
Article; Proceedings Paper	8
Document Contents	
Keywords Plus (ID)	472
Author's Keywords (DE)	873
Authors	
Authors	618
Authors of Single-Authored Docs	59
Authors Collaboration	
Single-Authored Documents	59
Documents per Author	0.46
Authors per Document	2.17
Co-Authors per Document	2.38
Degree of Collaboration	0.90
Collaboration Coefficient	0.54
Collaboration Index	2.47

Source: Biblioshiny

As shown in Table 1, the results show 285 articles with different types; journal article, article as book chapter, article as early access and article as proceedings papers. All publications were published from 2003 to 2022. The 14 early-access articles are included in the data to ensure the completeness of the data for a comprehensive trend analysis. The number of authors who contributed to the research area is 618, of which 59 were published solely. The collaboration index of 2.47 reveals that nearly 2 authors published one article, in other words the researchers are collaborative enough in this area with an average collaboration coefficient of 0.54 (between 0 and 1). Besides, the average number of citations per document is 22.57 and the total number of references disclosed in the papers is 11,495.

3.1.1. Annual Scientific Production Trend

This section demonstrates annual scientific production regarding the topic of corporate governance for banks. Figure 3 illustrates the publication trend over the period studied with an annual growth rate of 20.39%.

Figure 3. Annual Scientific Production, 2003-2022
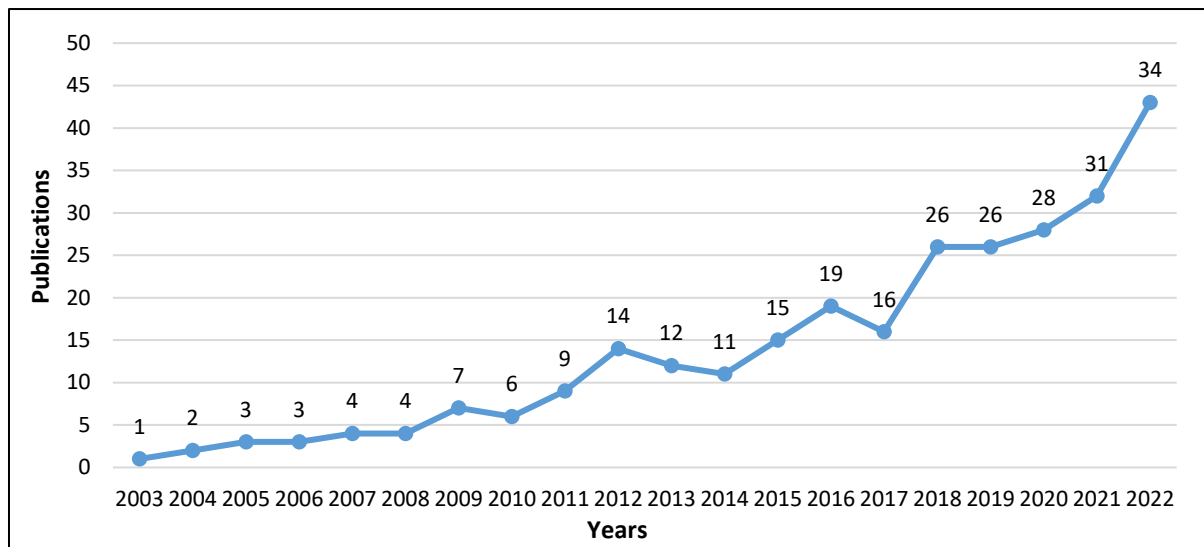
The first article that was published in 2003 by Cornett MM et.al. was about the effect of corporate governance mechanisms in reducing the manager-shareholder conflict to enter value-destroying bank acquisitions. The number of published articles between 2003 and 2008 was quite low. Since 2009, the number of publications has started to increase. Although the annual production number decreases from time to time, it is seen that the interest in the field has increased and the curve is moving upwards. The increasing trend after 2009 shows that interest in the subject has increased after the global financial crisis. Following a significant decrease in 2017, a noticeable upward trend started in 2018 reaching its apex with 34 publications in 2022.

3.1.2. Most Relevant Sources, Authors

This section demonstrates the most relevant journals and authors regarding corporate governance for banks.

Table 2. Most Relevant Sources

Rank	Journal	h_index	g_index	TC	TP
1	Corporate Governance-The Int. Journal of Business in Society	12	19	363	21
2	Journal of Banking & Finance	10	10	1,349	10
3	Corporate Governance-An International Review	6	9	272	9
4	Journal of Asian Finance Economics and Business	3	7	59	8
5	Managerial Finance	7	8	133	8
6	Emerging Markets Finance and Trade	4	6	90	6
7	International Journal of Disclosure and Governance	2	2	11	5
8	International Journal of Islamic and Middle Eastern Fin. and Mng.	3	5	125	5
9	Journal of Corporate Finance	4	5	170	5
10	Journal of Finance Regulation and Compliance	2	3	14	5

Source: Biblioshiny **TC:** Total Citation **TP:** Total Publication

Table 2 shows the top ten journals with the greatest number of papers published in the field. With 82 out of the 285 total articles published, these top 10 journals account for nearly 29% of all publications and 40% of total citations with 2,586 citations. Corporate Governance-The International Journal of Business in Society is the most relevant, productive journal with 21 articles (7.4%) and 363 citations distinct enough from the others. Regarding the number of times its articles cited related to the topic, Journal of Banking & Finance lead the ranking. Albeit this journal had 10 publications, the number of citations was 1,349. Corporate Governance - An International Review is in third place with 9 publications and 272 citations, followed by Journal of Asian Finance Economics and Business and Managerial Finance published 8 articles each but the latter received 133 citations and the former received 59 citations over the period. Emerging Markets Finance and Trade had 6 and the remaining journals, namely the International Journal of Disclosure and Governance, International Journal of Islamic and Middle Eastern Finance & Management, Journal of Corporate Finance and Journal of Financial Regulation and Compliance had 5 publications each.

Table 3. Most Relevant Authors by Total Publications

Rank	Authors	TOTAL PUBLICATION (TP)	TOTAL CITATION (TC)	TC/TP	PUBLICATION YEAR
1	Hasan I	5	211	42.2	2011
2	Mollah S	4	297	74.25	2015
3	Gallo A	4	67	16.8	2015
4	El-Chaarani H	3	13	4.3	2022
5	Fang Y	3	179	59.7	2011
6	Lin CY	3	33	11.0	2018
7	Marton K	3	179	59.7	2011
8	Orazalin N	3	93	31.0	2016
9	Zhang Y	3	19	6.3	2012
10	Abraham R	2	13	6.5	2022

Source: Biblioshiny

Table 3 below displays the top ten influential authors with the highest publications among 618 authors. The contribution of top ten authors to the research area is 11.5% (33 articles). Hasan I and Mollah S are the most relevant authors in terms of total publications with 5 and 4 articles, respectively. After Gallo A in the third rank with 4 publications and 67 citations, 6 authors, namely, El-Chaarani H, Fang Y, Lin Cy, Marton K, Orazalin N and Zhang Y published 3 articles each in the field, and the last author had 2. Additionally, 17% of the total citations are made up of the following top ten authors where Mollah S, Hasan I, Fang Y and Marton K are seen to be the first four.

3.1.3. Geographic Distribution

A total of 52 countries, based on the corresponding authors' countries, contributed to the field of research.

Table 4. Top Ten Countries by Documents and Citations

Rank	Country by Documents	Documents	Rank	Country by Citations	Citations
1	United Kingdom	32	1	USA	2651
2	USA	29	2	Germany	510
3	China	17	3	United Kingdom	332
4	India	16	4	China	282
5	Indonesia	15	5	Sweden	246
6	Italy	13	6	Spain	155
7	Spain	11	7	Australia	147
8	Tunisia	11	8	Belgium	126
9	Germany	9	9	Finland	126
10	Malaysia	8	10	Korea	124

Source: Biblioshiny

Table 4 shows the top ten countries that have contributed to the research area by documents (56%) and citations (73%). As seen in the table, United Kingdom, as the most prolific country, published 32, USA published 29 and China as in the third rank published 17 articles, accounting for 27% of the total papers. Based on the table, in terms of citations, the United States was the main contributor with 2,651 citations, followed by Germany (510) despite being ninth in total publications and United Kingdom (332). Moreover, Figure 4 depicts both the productivity of the countries and the collaboration between them.

Figure 4. Country Collaboration Map
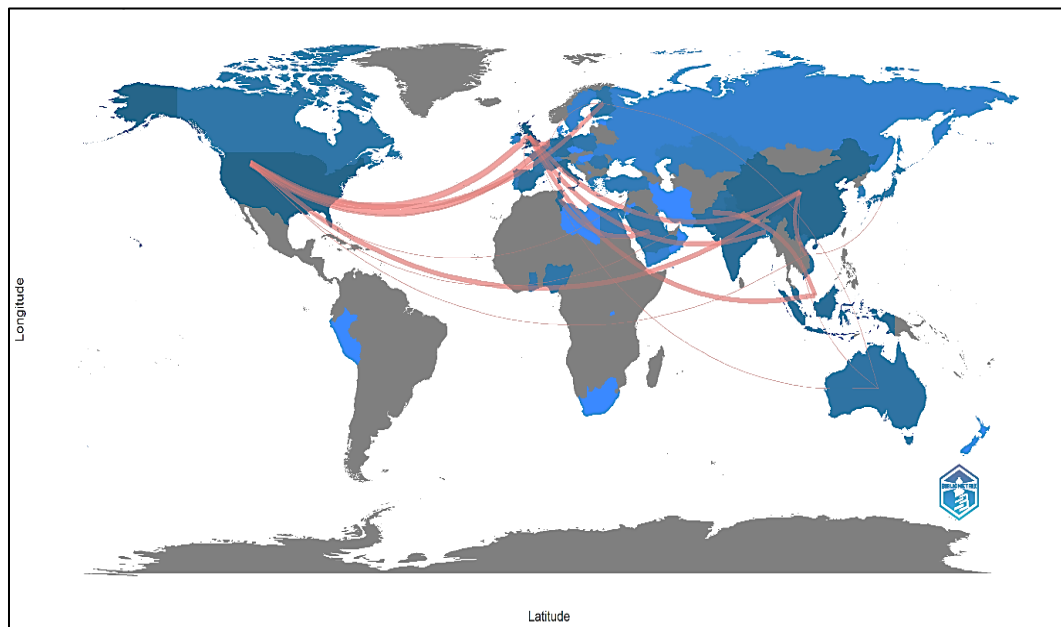
Source: Biblioshiny

The intensity of the color shows productivity, the circle size reflects the number of publications by country, and the thickness of the lines represents the degree of collaboration. Regarding collaboration, scholars from the United States, Western and Northern Europe and China show a great cooperation.

For further collaboration analysis, co-authorship analysis by countries was utilized and displayed in Figure 5 with five clusters. The node in the analysis represents the influential countries of authors and the lines between them represent the degree of collaboration.

Figure 5. Co-authorship Analysis by Countries Map
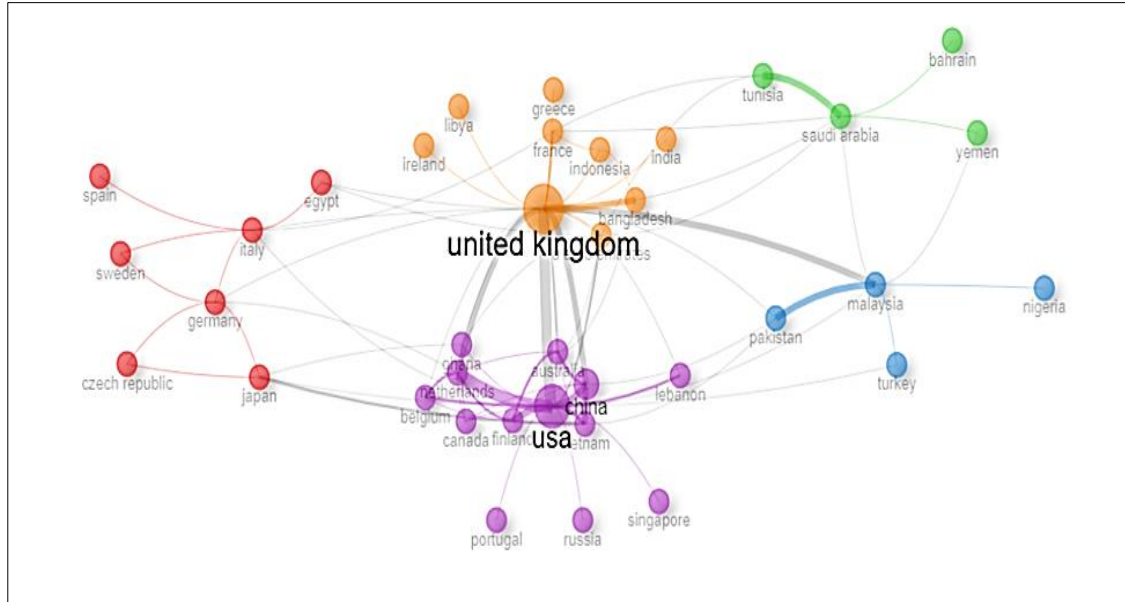
Source: Biblioshiny

The first cluster is led by United Kingdom and also includes Indonesia, India, United Arab Emirates, France, Bangladesh, Greece, Ireland and Libya. USA is the leading country, together with China, Vietnam, Australia, Lebonan, Canada, Finland, Ghana, Portugal, Netherlands, Belgium, Russia, and Singapore. Third cluster is a group from mainly European countries such as Italy, Spain, Germany, Sweden, the Czech Republic and also Japan, and Egypt. Malaysia, Pakistan, Nigeria and Turkey are in the fourth cluster. The last cluster consists of Tunisia, Saudi Arabia, Yemen and Bahrain. United Kingdom in the first cluster and the United States in the second cluster which are placed in the center of the map are the top publishing countries with the highest collaboration of 22 and 19, respectively. Those countries mainly not only collaborate within their cluster, but also with the ones in other clusters. These results could be verified with Table 4 listing USA as the top country with 2,651 citations and a production frequency of 97 and United Kingdom ranks the fourth with 280 citations and a production frequency of 96. USA mostly collaborated with United Kingdom, Netherlands, China and Finland whereas Bangladesh, China, Malaysia and Netherlands are the countries that United Kingdom collaborated.

3.2. Science Mapping

Science mapping analysis aims to show how various research components are connected in terms of their structural and intellectual networks. This section of the analysis shows the results of citation analysis, co-citation analysis, co-word and co-authorship analysis. Citation analysis makes it

possible to examine the most significant works in a field of study to learn about the intellectual dynamics of that topic (Donthu et al., 2021a). Co-word analysis models the frequency of co-occurrence of keywords used in scientific publications related to the subject (Whittaker, 1989). It then visualizes these results by revealing the interactions between the keywords (Callon et al., 1991; Su et al., 2010). Co-citation was introduced by Small (1973) as the most helpful measure of relatedness because when two publications are cited together in the references list of another article, they are connected by a co-citation network (Donthu et al., 2021a; Zainuldin et al., 2020). In other words, it shows that the works that are frequently referenced together have comparable themes (Hjørland, 2013). Co-authorship analysis is conducted to examine the social interactions or relationships among authors and their impacts on the development of the research field (Donthu et al., 2021a).

3.2.1. Citation Analysis

Citation analysis, which demonstrates the relevance of documents by the number of citations received, is the essential method of scientific mapping. This analysis enables the researchers to find the most significant documents in the research area and therefore understand the intellectual dynamics of the research area (Galetta et.al, 2022; Feng et.al, 2017; Alam et.al, 2021). Table 5 presents the top twenty influential documents in the field.

Table 5. Top Twenty Most Cited Articles

Rank	Document	DOI	TC	TC/Year
1	Laeven L, 2009, J Financ Econ	10.1016/j.jfineco.2008.09.003	1392	92.80
2	Aebi A, 2012, J Bank Financ	10.1016/j.jbankfin.2011.10.020	393	32.75
3	Berger A, 2006, J Bank Financ	10.1016/j.jbankfin.2005.05.015	309	17.17
4	Mollah S, 2015, J Bank Financ	10.1016/j.jbankfin.2015.04.030	240	26.67
5	Mikes A, 2009, Manage Account Res	10.1016/j.mar.2008.10.005	201	13.40
6	Grove H, 2011, Corp Gov	10.1111/j.1467-8683.2011.00882.x	150	11.54
7	Chen Y, 2011, Aestimatio	*N/A**	116	8.92
8	Fang Y, 2014, J Bank Financ	10.1016/j.jbankfin.2013.11.003	110	11.00
9	De Haan, J. and Vlahu, R, 2016, J Eco Sur	10.1111/joes.12101	110	13,75
10	Becht M, 2011, Oxf Rev Econ Policy	10.1093/oxrep/grr024	102	7.85
11	Ahn S, 2009, J Bank Financ	10.1016/j.jbankfin.2008.08.013	89	5.93
12	Bhagat S, 2015, J Bank Financ	10.1016/j.jbankfin.2015.06.018	86	9.56
13	Peni E, 2012, J Financ Serv Res	10.1007/s10693-011-0108-9	84	7.00
14	Anginer D, 2018, J Financ Econ	10.1016/j.jfineco.2018.06.011	80	13.33
15	Berger An, 2017, Manage Sci	10.1287/mnsc.2016.2422	80	11.43
16	Qian M, 2015, J Corp Financ	10.1016/j.jcorpfin.2014.10.006	76	8.44
17	Hinson R, 2010, Int J Bank Mark	10.1108/02652321011085176	73	5.21
18	Garcia-Herrero A, 2006, Cesifo Econ Stud	10.1093/cesifo/ifl006	67	3.72
19	Bose S, 2018, Asia Pac J Manag	10.1007/s10490-017-9528-x	57	9.50
20	Yeh Yh, 2013, Pac-Basin Financ J	10.1016/j.pacfin.2012.08.003	54	4.91

Notes: *Articles without DOI numbers according to WOS database

Nine of them have more than 100 citations. The article written by Laeven L. (2009) received the highest number of citations (n=1,392) and the highest number of citations per year (92.8) standing out from the remaining ones. The article was about the effects of the same regulation on bank risk-taking depending on the bank's corporate governance structure. Aebi (2012) and Berger (2006) rank second and third with 393 and 309 citations, respectively. The former investigated whether risk management-related corporate governance mechanisms are associated with better bank performance during the financial crisis of 2007/2008 and the latter studied the effect of leverage on agency costs and thereby its influence on firm performance. From the table, it can also be derived that, nearly 51% of the total citations were received during 2006-2009 (n=2,058). This is primarily due to the highest citations received by Laeven L., Mikes A. and Ahn S. in 2009.

The article written by Mollah and Zaman differs from its predecessors among the widely cited studies. This study, titled "Shariah supervision, corporate governance and performance: Conventional vs. Islamic banks", has been one of the studies that steered the field of corporate governance in Islamic banking.

3.2.2. Co-Citation Analysis

Co-citation analysis is a science mapping technique in which two publications are cited together in a third one (Small, 1973). Since other publications often cite these two publications together, these two publications likely have something in common (Benckendorff et al., 2013). In this way, researchers can identify critical scientific publications, research trends, the structure of scientific disciplines, and their change over time. Briefly, co-citation analysis is a very useful tool for mapping the science of the citation field (Vanraan, 1990). The analysis shows the intellectual structure of the research field by grouping the most related works into thematic clusters. Through the analysis of those clusters, scholars can understand the main streams of research and at the same time discover the new routes in the area by focusing on the papers that were left out of those clusters. Different types of co-citation can be utilized such as document co-citation analysis, author co-citation analysis and journal co-citation analysis. Figure 6 displays the co-citation analysis map in two clusters (red and blue).

Figure 6. Co-citations Analysis Map
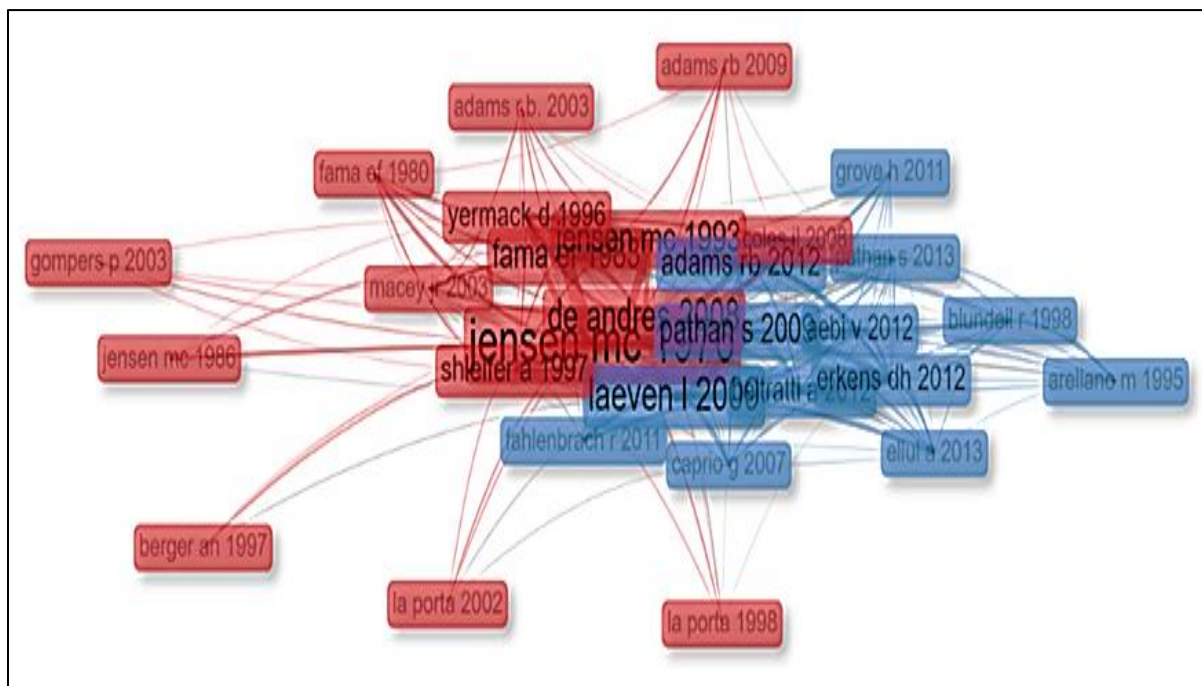
Source: Biblioshiny

In the red cluster, there are pioneering studies in the field of research. In these studies, the concept of corporate governance has been explained where especially the agency problem was the main focus (e.g. Jensen and Meckling's Theory of the firm: Managerial Behaviour, Agency Costs and Ownership Structure, Fama's Agency Problems and Residual Claims). In order to solve the agency problem, the duties and structures of the board of directors have begun to be discussed in the articles (e.g. Coles' Boards: Does One Size Fit All). The documents in this cluster were published between 1976 and 2009, with the average year of publication being 1996. While this cluster forms the basis for corporate governance, it also contains the first studies in the field of corporate governance of banks (e.g. Macey's The Corporate Governance of Banks, Adams' Is Corporate Governance Different for Bank Holding Companies).

The studies in the blue cluster focus on corporate governance practices, in particular for banks. In particular, the relationship between the structure of the board of directors and bank performance or bank risk has been studied. Documents in this cluster were published between 1995 and 2013, and the average year of publication is 2009. As seen in the citation analysis, the most cited publication in the field of corporate governance in banks is the work published by Laeven and Levine (2009) and is included in this cluster. This study, the subject of which is the effect of regulations on different ownership structures, has attracted attention after the global crisis. This study has been cited together with studies focusing on the risk appetite of banks (e.g. Pathan's Strong boards, CEO power and bank risk-taking, Aebi's Risk management, corporate governance, and bank performance in the financial crisis, Beltratti's The credit crisis around the globe: Why did some banks perform better?)

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3.2.3. Co-Word Analysis

The purpose of co-word analysis is to determine frequently used keywords and their relations (e.g. together the existence of keywords in the same article) (Whittaker, 1989; Grueso-Gala et al., 2022). The distance between terms in the co-word map shows the relatedness. In other words, it connects keywords when they appear in the same document (Donthu et al., 2021a). Hence, co-word analysis, like co-citation analysis, assumes that words that commonly occur together have a thematic association with one another. Keywords allow scholars to identify the conceptual structure of a discipline without referring to the full text of the articles (Romo-Fernández et al., 2013). It then visualizes these results by revealing keyword interactions (Callon et al., 1991; Su et al., 2010).

For the analysis, keyword plus was considered which is provided in R. Keyword plus is a list of words determined by artificial intelligence to facilitate traditional keyword and title access. A merge list was created to collect words used with the same meaning under one word, and a remove list to remove words that did not make sense from the map. For example, the words Islamic banking, Islamic bank, shariah bank, shariah banking are combined as "Islamic banking". Also, the words that indicate methods such as; model, impact, pay were removed. The co-word analysis map in two clusters (red and blue) is shown in Figure 7.

Figure 7. Co-Word Analysis Map
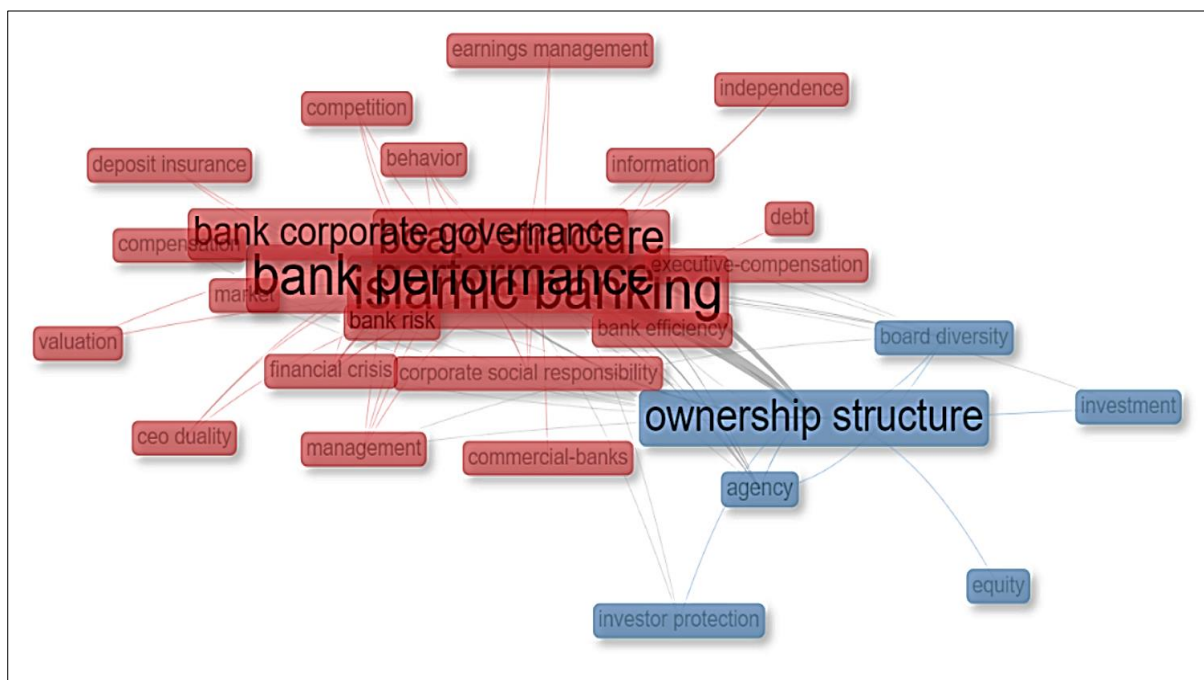
Source: Biblioshiny

As a result of the co-word analysis made in the R program, the shape with 2 clusters was reached. Words in the same clusters are frequently used together. Keywords such as "agency, ownership structure, investor, investor production" are included in the cluster shown in blue. This cluster shows similarities with the red cluster reached in the co-citation analysis. We have mentioned that in the red

cluster reached by co-citation analysis, there are articles that deal with the subject in a comprehensive manner in the formation of the field. The keywords in the blue cluster we reached in the co-word analysis are also the basic keywords of corporate governance.

Keywords such as "Islamic banking, bank performance, bank corporate governance" stand out in the red cluster, which results from the co-word analysis. Betweenness measures the capacity of a keyword to connect other keywords in data transmission within the network, such as an intermediary (Sedighi, 2016). Keywords such as "Islamic banking, bank performance, bank corporate governance" stand out in the red cluster, which is reached as a result of the co-word analysis. Islamic banking has the highest betweenness value in this cluster. In order to understand this situation, we examined the studies on Islamic banking within the scope of the study. 49 out of 285 articles were on Islamic banking. The average year of publication of these studies is 2019. The differences between conventional banking and Islamic banking and the rapid growth of Islamic banking have led researchers to work in Islamic banking (Zaher et al., 2001). According to The Banker Database data, while conventional banking will grow by single digits as a percentage, Islamic banking will grow by double digits in 2023 (The Banker Database, 2022).

With the perspective of Islamic banking, the subject of corporate governance in banks began to be studied later than the subject of corporate governance in conventional banking. For researchers focusing on this field, it has been seen that the relationship analyses made in the field of conventional banking should be re-evaluated from an Islamic point of view. For this reason, studies in the field of corporate governance in conventional banking enabled the testing of ready-made relationship models for the field of Islamic banking. Thus, corporate governance studies in Islamic banking have increased more rapidly in less time.

3.2.4. Co-Authorship Analysis

Co-authorship analysis shows research collaboration among authors. Figure 8 displays the map of co-authorship with 11 clusters. Out of 618 authors, 31 collaborated in this research field. Clustering is made up of at most 5 authors. The first cluster comprises 5 authors collaborating and is led by Hasan, among the top ten most relevant authors shown in Table 3. The other authors in this cluster are Fang, Lin, Marton and Chen. Mollah, Keasey and Mobarek are in the second and Gallo, Battaglia and D'amato are in the third cluster. The remaining clusters except 8, 9 and 10 have only 2 authors that have common publications.

Figure 8. Co-Authorship Analysis – Cluster
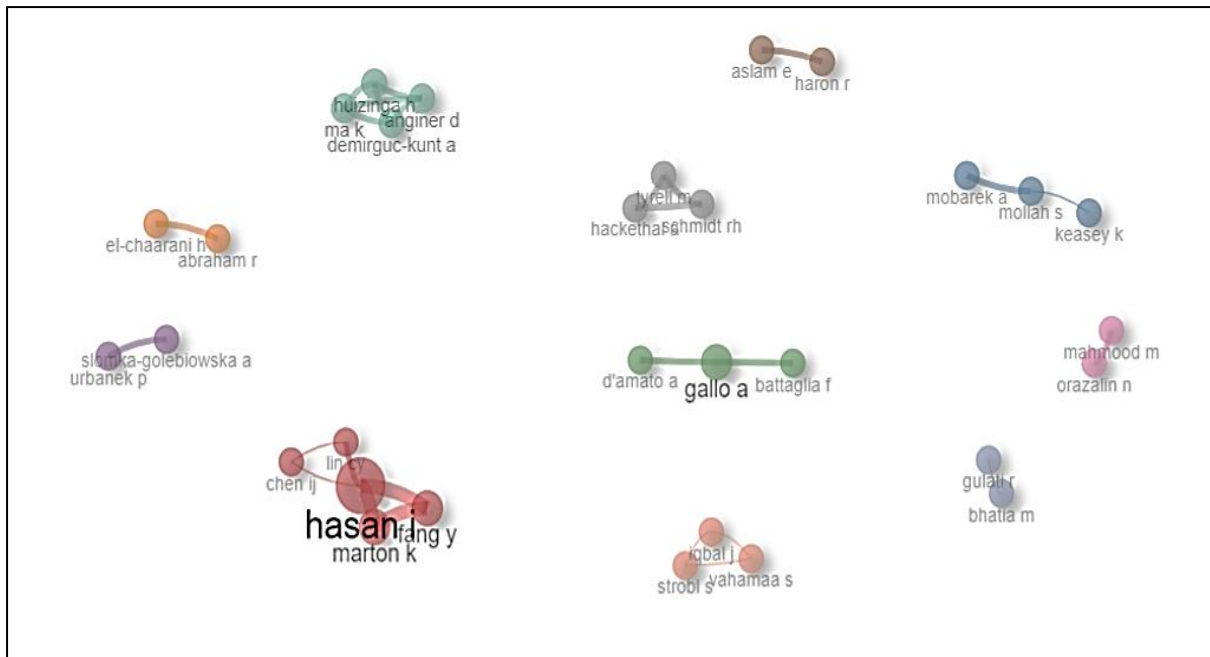
Source: Biblioshiny

Since co-authorship analysis also examines intellectual collaboration at the organization level this section explains the results of co-authorship network analyses, specifically by institutions are explained in this section. In other words, it shows the authors' institutional ties. Figure 9 exhibits the co-authorship analysis results by institutions.

Figure 9. Co-Authorship Analysis – Institutions
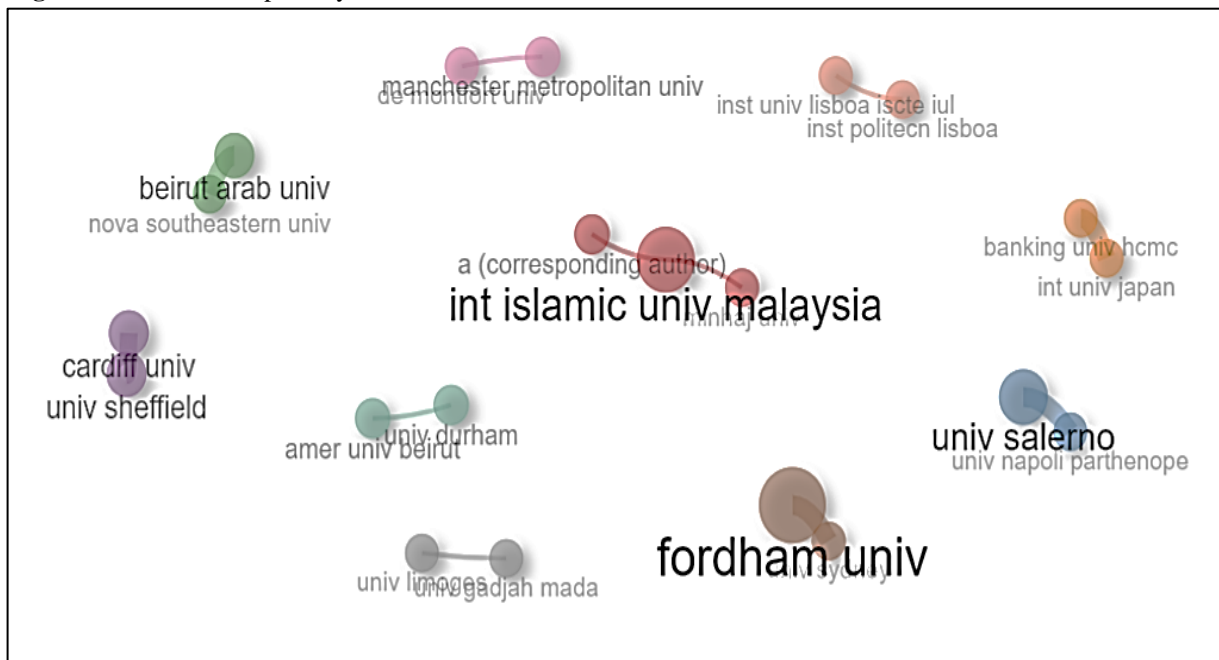
Source: Biblioshiny

As seen in Figure 9, 21 out of 160 institutions are collaborating related to the research topic. The figure includes 10 clusters each cluster has 2 affiliations except the corresponding author existing

in the cluster where International Islamic University Malaysia is the leader. Fordham University is the most influential institution collaborated with University of Sydney, followed by International Islamic University Malaysia. It is noteworthy that these institutions' countries were listed among the top ten list in Table 4.

4. CONCLUSION

Bibliometric analysis, frequently encountered in the literature, allows researchers to see the invisible based on the data of studies conducted in a particular area and a specific period. The results obtained from the analyses facilitated the understanding of the field. The reason why bibliometric analysis is frequently used in the literature is that analyses can be done in a short time with various programs. However, to interpret the analysis results and discover the unseen, the researchers need to know the subject and interpret the bibliometric analysis results with the support of content analysis when necessary. Considering the academic development, the number of academic studies in the corporate governance field is increasing. In this study, as a first in the literature, articles on corporate governance specific to banks were obtained from the Web of Science (WOS) database and analyzed. They focuse primarily on the banking sector because corporate governance in banks is handled differently from other sectors. The reasons for this differentiation are that banks are the key institutions that fulfill the function of transferring funds in the economy, the number of stakeholders is very high, and the problems they experience are not only a sectoral problem but have the potential to affect the entire economy and even the global financial system. In this sense, the banking sector is central to all other sectors. This study aims to support researchers in better analyzing the concept of corporate governance within banking-related research.

The analyses made within the study show that there has been an increase in the production of publications in the field, especially after the 2008 financial crisis. During this period, a financial crisis occurred due to banks and other financial institutions attracted by the returns of risky assets. Many researchers have started to work on the subject to understand the causes of the crisis and learn the necessary lessons.

Most articles on the field were published in the Corporate Governance-International Journal of Business Society. The total number of citations received by the articles published in the Journal of Banking & Finance, the second-ranked journal, is more than that of the articles published in the Corporate Governance-International Journal of Business Society.

Iftekhar Hasan is the author who has done the most work on the subject. Hasan made his first publication on the subject in 2011. He has worked with prominent researchers in corporate governance, such as Hasan, Fang, Marton, and Nguyen, who are co-authors. Hasan's study at Fordham University has made this institution one of the most important universities in the field.

Regarding the production of articles on the subject of the countries, the UK, USA, and China are the countries that produce the most. When co-authored studies are examined based on their countries, the UK and USA are also at the forefront of producing publications with researchers from other countries. It provides a positive interpretation of the research environment in these countries. These countries are also the countries where vital regulations in the field of corporate governance are made (Cadbury Report, 1992; Sarbanes-Oxley Act (SOX), 2002). Therefore, they come to the fore with both research and regulations.

The USA ranks first, considering the number of citations of the produced publications. The article "Bank Governance, Regulation, and Risk Taking" prepared by Levin and Levin and published in 2009, has the largest share in the total number of citations of publications produced in the USA. This article, written after the financial crisis, revealed that regulations affected bank structures differently.

In the co-citation analysis, in which the articles included in the bibliography of the examined articles were examined, a two-cluster structure was reached. While the authors' studies in one of these two clusters are the articles that form the foundations of the field of corporate governance, it is seen that the studies in the other cluster focus on corporate governance, particularly for banks. Similarly, in the co-word analysis, which analyzes the use of keywords together, words such as ownership structure, agency, and investor production, which are the basic concepts of corporate governance, are in one cluster, while words such as Islamic banking, bank performance, corporate bank governance, which are related to corporate governance in banks, are in the other cluster.

Islamic banking is the most frequently included with other keywords in the co-word analysis. 49 out of 285 articles are related to corporate governance in Islamic banking. The fact that the average year of publication of 49 studies is 2019 shows that the field is a relatively new title and is progressing rapidly. When the reasons for this are examined, the rapid growth of Islamic banking and the studies on corporate governance specific to conventional banks can be reworked for Islamic banking. In other words, studies in the field of conventional banking can be a guide for studies in the field of Islamic banking.

Malaysia is important in corporate governance in Islamic banking. Malaysian researchers have strong relations with the UK in the co-authorship. Malaysia has also established co-authoring ties with other Islamic countries. For this reason, it acts as a bridge between the UK and Islamic countries in Islamic banking. Although the UK is not an Islamic country, it is crucial regarding financial size and literary production in Islamic finance.

Limitations

This study has three key limitations; firstly, albeit there are other databases to collect data, Web of Science was chosen because it incorporates the publications with the highest standards. Secondly, in the search process, additional keywords could be selected to reach further articles. Thirdly, to elaborate

further on the topic, other methodologies such as meta-analysis and systematic literature review could be conducted.

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A Study on the Effect of Employee Empowerment on Work Engagement

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Abstract

In addition to public institutions and organizations, businesses must value their employees in order to maintain their existence for a long time. If there is success in an organization, it does not only belong to the managers; employees also have an important role in this success. Therefore, organizations are required to carry out activities to increase the competencies and professional development of their employees. The study was conducted with 115 employees working in Uşak Courthouse. As a result of the study, it was determined that there was a positive and significant relationship between the sub-dimensions of employee empowerment and the sub-dimensions of work engagement. It was found that employee empowerment is the antecedent of work engagement. The results of the research revealed that organizations that want to have employees who work with enthusiasm and have high organizational commitment should engage in employee empowerment activities.

Keywords: Employee, employee empowerment, work engagement, Uşak, Courthouse.

Article Type	Application Date	Admission Date
Research Article	November 23, 2023	May 15, 2023

1. INTRODUCTION

Employee empowerment in organizations has an important place among modern management practices. In modern society, the success of organizations is evaluated based on the satisfaction rate of the target audience. Organizational employees play a major role in the high satisfaction rate of the target audience. The attitudes and behaviors of employees are seen as an effective factor in the positive perception of the organization. The increase in the satisfaction rate of the target audience depends on the satisfaction of the organization's employees to work in that organization. Valuing the employees of the organization, giving importance to their personal rights, organizing regular trainings for their competencies and professional development are important activities that increase the satisfaction rate. These activities include employee empowerment. Every organization requires its employees to fulfill their work passionately, to have high corporate loyalty and to work devotedly for the organization. In this context, this study aims to reveal the relationship between employee empowerment and work engagement. The sample of the study consists of employees working in the administrative departments of Uşak Courthouse. In the study, t-Test, Independent Groups ANOVA test, Pearson Correlation analysis, linear and multiple regression tests were conducted. Analyses were made on the findings obtained as a result of the study and various suggestions were presented.

2. LITERATURE REVIEW

2.1 Employee Empowerment

In today's organizations, success depends on caring about employees and empowering them. Employee empowerment, which is one of the modern management concepts (Coşkun, 2002, p. 219), is defined as giving the employee the authority to use initiative to make decisions on behalf of the organization. It is a concept emerged by global competition and changes in order to meet the need of organizations to successfully manage the process of organizational adaptation to changing conditions (Çuhadar, 2005, p. 1). Employee empowerment is giving this power to employees who do not have the power to make decisions by including them in decision-making processes (Cunningham & Baldrig, 1996, p. 2). Employee empowerment emerged from the need to show the necessary flexibility in order to adapt to change and innovation in organizations and became a popular management concept in the 1990s (Sanjay, 2001, p. 157). Globalization, increased competition, increased consumer awareness, changes in customer expectations and demands have led to changes in the understanding of human resources management in organizations and accordingly, the importance of employee empowerment in human resources management has gradually increased (Akçakaya, 2010, p. 146; Yüksel & Erkutlu, 2003, p. 131). The aim of employee empowerment in organizations is to ensure that the person doing the job has a say in the decisions related to that job and thus to benefit from the experience of the closest employee to the job (Akçakaya, 2010, p. 148). Based on the view that the person who does a job will be the person who knows that job best, in employee empowerment, the job can be improved by giving employees the opportunity to communicate the problems and suggestions about their work to decision

makers (Yüksel & Erkutlu, 2003, p. 132). With empowerment, a belief can be formed in the employee that the scope of the work and the role related to that work can be determined by him/her and thus an environment suitable for more active work can be prepared (Doğan & Kılıç, 2007, p. 55). Employee empowerment in organizations can also be seen as a new motivational tool for employees and a new approach that envisages performance enhancement. In this sense, it is aimed to make the employee more participative, to eliminate the control pressure on him/her and to make him/her more energetic by integrating him/her with the work (Doğan, 2006, p. 230). According to Harvey and Bown (1996), employee empowerment is basically seen as a need for organizations to adapt to changing competitive conditions. In order to meet this need, it is emphasized that the presence of employees with high performance in organizations and the inclusion of employees in decision-making processes have become more important. From this perspective, employee empowerment emerges as a method that increases the organization's ability to adapt to changing conditions and provides competitive advantage to the organization (Çavuş, 2008, p. 1289). Other objectives of employee empowerment in terms of organizations are to be able to carry out the work and transactions related to the field of activity of the organization effectively, to ensure that the organization can meet the demands in a short time and to increase its effectiveness in achieving its goals (Akçakaya, 2010, p. 148). Spreitzer (1996), who focuses on the psychological dimension of employee empowerment, explains this situation with 4 dimensions. These dimensions are meaning, competence, self-determination and impact. Supporting Thomas and Velthouse's (1990, p. 670) model, Spreitzer named the "choice" dimension as " self-determination".

Meaning: Spreitzer (1996) explains this dimension as the consistency between employees' beliefs, values and ideas about their jobs. According to Avolio et al. (2004), empowering employees helps them to attribute more meaning to their work and to feel this meaning. This meaningfulness is the value of the employee's goal and purpose as it is evaluated in relation to the standards (Thomas & Velthose, 1990). It is important that the employee's work has meaning for him/her. Because in this framework, the employee becomes attached to his/her work, contributes more to the place where he/she works and the importance he/she attaches to his/her work increases. The meaningful motivation of the employee towards work increases the interest and passion for work (May et al., 2004; Olivier & Rothmann, 2007; Nelson & Simmons, 2003).

Competence: This dimension refers to employees having the skills and knowledge to fulfill the requirements of their job (Spreitzer, 1996). In the study, it was determined that the "competence" dimension of psychological empowerment is the antecedent of the "vigor" and " absorption" dimensions of work engagement. According to Ryan and Deci (2001), the employee's competence and self-confidence to achieve work-related goals are related to the increase in intrinsic motivation and happiness. The fact that employees are engaged in their jobs means that they are in a position to fulfill the job demands in the organization (Llorens et al., 2007). In this context, Maslach et al. (2001) found that there is a significant relationship between "competence" and " engagement".

Self-determination: This dimension refers to situations where the employee can make decisions on his/her own, act freely and determine the future of the task (Spreitzer, 1996). In order to create engaged employees in the work environment, it is important to focus on the dimensions of meanin, competence and self-determination, to increase the value given to employees, to create a positive workplace environment (May et al., 2004), to improve their competence by providing regular trainings to employees, and to encourage employees to make self-determined decisions (Gagne & Deci, 2005).

Impact: Spreitzer (1996) defines this dimension as the level of influence the employee has on the strategic and executive outcomes of their work. As a dimension, "impact" is stated that employees' behaviors make a difference in organizations and are beneficial in terms of work engagement (Spreitzer et al., 1997).

Several studies on staff empowerment have been conducted in the academic field. For example, in a study conducted with employees in a public institution, it was determined that employees' perceptions of employee empowerment and commitment levels were high (Oktay & Çelebi, 2019). In another study conducted with teachers, it was determined that all dimensions of the employee empowerment scale were at a high level and all dimensions were related to each other (Şanlı et al., 2018).

2.2. Work Engagement

Every organization wants its employees to fulfill their jobs enthusiastically. In order for employees to fulfill their jobs enthusiastically, managers of organizations should value their employees, care about the opinions and suggestions of employees, and engage in activities that create organizational commitment in employees. The concept of engagement in work has emerged as a particularly individual-oriented approach (Çankır, 2016, p. 3). The emergence of the concept is based on studies on occupational burnout, and two views are dominant to explain the concept (Çalışkan, 2014, p. 370). Accordingly, the first view is that engagement in work and burnout are opposite to each other, that is, burnout will manifest itself as engagement in work decreases. The second view is that engagement in work is the antithesis of burnout and that they are independent concepts (Topaloğlu et al., 2019, p. 60-61). According to Schaufeli et al. (2002), work engagement is defined as a state of mind that draws attention to emotional states such as positive, satisfying, enthusiastic dedication to work during the performance of the work. Erickson (2005), on the other hand, explained work engagement as the level of commitment of the employee to his/her work and the degree of participation in his/her work. Schaufeli et al. (2002) conceptualize work engagement through three constructs: dedication, vigor and absorption.

Dedication: A state characterized by enthusiasm towards one's work, a state in which one is inspired by one's work; it shows that one derives meaning from the execution of the work by nurturing feelings of pride (Schaufeli, 2012, p. 4). It is also a conceptual expression that there is a strong bond with the job (Turgut, 2011, p. 156). Dedication is when a person is completely immersed in his/her work

and has difficulty in detaching himself/herself from work (Bakker et al., 2014, p. 19; Schaufeli et al., 2002, p. 75).

Vigor: It is characterized by the mental and intellectual energy, mental motivation and endurance that a positive emotional-motivational state of satisfaction created by a positive emotional state of self-sacrificing in the employee, the willingness to put effort into one's work, not getting tired easily and persevering in the face of difficulties (Schaufeli et al., 2002, p. 74).

Absorption: It is the continuation of a person's work without a break in happiness and excitement due to his/her focus on his/her work (Lin, 2010). In other words, absorption is a deep immersion in one's work by feeling deeply committed to it (Eldor & Vigoda-Gadot, 2017).

Based on this definition, Daderman and Basinska (2016) argued that there is a strong sense of belonging and dedication at the basis of work engagement; employees who lose these feelings will result in situations that result in behaviors that reduce time, effort, earnings and morale. Plessis and Boshoff (2018) claim that employees with high levels of engagement will put more effort into their work and connect with their work more energetically and effectively, producing positive results at both individual and organizational levels. In the study conducted by Alessandri et al. (2018), it was determined that the level of work engagement emerged as employees being more proactive and dynamic, being sensitive to new information and working harder. In this context, it is emphasized that employees' having the power to do something different in their work environment plays an important role in work engagement (Yoo & Arnold, 2014). In a study conducted to determine the effect of sustainability quality perception on work performance and to reveal the mediating role of work engagement in this effect, it was determined that sustainable quality perception affects work performance directly and indirectly through work engagement (Şahin & Çankır, 2019). In another study, a positive and significant relationship was found between organizational identification and the sub-dimensions of the concept of passion for work, which are vigor, dedication and absorption. In addition, it was determined that work engagement reduces the employee's intention to quit (Balcı & Ağ, 2020). In the study conducted to reveal the effect of the dimensions of psychological empowerment on the dimensions of work engagement, it was determined that the sub-dimension of psychological empowerment was significant with all sub-dimensions of work engagement. In the same study, it was determined that the impact sub-dimension was not significant with the sub-dimensions of work engagement. In the same study, it was determined that the competence sub-dimension was significant with the vigor and absorption sub-dimensions of work engagement, while the self-determination sub-dimension was significant with the vigor and dedication sub-dimensions of work engagement (Örücü & Hatipoğlu, 2018).

3. METHOD

3.1 Purpose and Importance of the Research

This study aims to determine the effect of employee empowerment on work engagement. For this purpose, the relationship between "competence, meaning, self-determination and impact", which

are the sub-dimensions of employee empowerment, and "vigor, dedication and absorption", which are the sub-dimensions related to work engagement, were examined. The research is considered important in terms of revealing the relationship between employee empowerment and work engagement and providing suggestions based on the results. With this research, an answer to the question "Does employee empowerment have an effect on work engagement?" is sought. The sub-questions determined in the context of the main question of the research are as follows:

1. Are there any significant differences between the mean scores and sub-dimensions of employee empowerment and work engagement scales and demographic factors such as age, gender, seniority and working conditions (position, seniority, etc.)?

2. Is there a significant relationship between the mean and sub-dimensions of the employee empowerment scale and the mean and sub-dimensions of the work engagement scale?

3. Does employee empowerment have a significant effect on work engagement?

3.2 Population and Sample of the Study

The population of the study consists of a total of 196 judicial service employees working in Uşak Courthouse affiliated to Uşak Judicial Jurisdiction and First Instance Courts Commission in the fulfillment of judicial services. The data required to test the hypotheses of the study were collected through a questionnaire. Simple random sampling method was used to determine the sample. Within the scope of the research, 115 employees participated in the questionnaires applied within the scope of the research and all of the questionnaire forms obtained were evaluated. The study was based on the minimum sample size table. According to Gürbüz and Şahin (2016, p. 131), at a level of certainty of 5%, the sample size is considered to be capable of representing the universe. In the research; factors such as cost, institutional structure of courthouses, judicial vacation, employees not participating in the research on the grounds of excessive workload and the difficulty of reaching employees due to the fact that employees have to use their annual leave during the summer period are the limitations of the study.

3.3 Data Collection Tools and Reliability Analysis

In the questionnaire form used in the study, the statements prepared for the employee empowerment and work engagement scales were included. In the questionnaire, 12 more questions were added to reveal demographic characteristics. The demographic questions include gender, age, educational status, marital status, hometown and number of children, total working time, salary, staff, employment type and working unit. A 5-point Likert scale was used in the employee empowerment and work engagement scales. The scale developed by Spreitzer (1996) and adapted into Turkish by Sürgevil et al. (2013) was used to measure employees' perception of employee empowerment. The scale includes the dimensions of "meaning, competence, self-determination and impact". There are three statements in each dimension and twelve statements in total. The second scale of the study is the engagement scale. It was developed by Schaufeli et al. (2002). The validity and reliability of the scale was then conducted by researcher Turgut (2011). There are 17 statements in the scale. 6 statements are about vigor, 5

statements are about dedication and 6 statements are about absorption. In order to determine the levels of both scales, the averages of the variables were calculated and the average value for employee empowerment scale was determined as 3.48 and the average value for work engagement scale was determined as 3.61. Reliability analysis was performed in the study, and Cronbach's Alpha coefficient was determined as 0.76 for the employee empowerment scale and Cronbach's Alpha coefficient was determined as 0.91 for the work engagement scale. Since the reliability rate obtained from all of the scales was greater than 0.70, it was deemed appropriate to conduct the analyzes. Table 1 shows the findings regarding the reliability of the scales in their sub-dimensions.

Table 1. Reliability of the Scales

Variables	Cronbach's Alpha
Employee Empowerment	**0,76**
Meaning	0,79
Competence	0,83
Self-determination	0,85
Impact	0,89
Work Engagement	**0,91**
Vigor	0,87
Absorption	0,79
Dedication	0,89

3.3 Data Analysis

The data obtained within the scope of the study were analyzed. In the research, normality tests were performed on the data set and since it was understood that it showed normal distribution; independent groups ANOVA test, t-Test, Pearson Correlation analysis and finally linear and multiple regression tests were performed from parametric tests.

4. FINDINGS

The research was conducted on 115 courthouse employees working in Criminal Courts, Civil Courts, Public Prosecution Office, Commission Office, Enforcement Offices, Criminal Court of Peace units. The majority of the participants in the research are between the ages of 24 and 41 and marital status are single. Employees have job titles such as Registrar Manager, Vice Manager, Clerk of the Court, Bailiff. Tables and findings related to the research are given below.

Table 2. Demographic data of the participants

Demographic Characteristics	Groups	N	%
Age	18-23	5	4,30
	24-29	21	18,30
	30-35	30	26,10
	36-41	28	24,30
	42-47	18	15,70
	48-53	8	7,00
	54-59	5	4,30
	Total	115	100,00
Gender	Male	43	37,40
	Female	72	62,60
	Total	115	100,00
Marital Status	Married	33	28,70
	Single	82	71,30
	Total	115	100,00
Hometown	Yes	65	56,50
	No	50	43,50
	Total	115	100,00
Staff	Registrar Manager	17	14,80
	Vice Manager	5	4,30
	Clerk of the Court	75	65,20
	Bailiff	11	9,60
	Other	7	6,10
	Total	115	100,00
Employment Unit	Criminal Courts	30	26,10
	Civil Courts	33	28,70
	Public Prosecution Office	28	24,30
	Commission Office	11	9,60
	Enforcement Offices	11	9,60
	Criminal Court of Peace	2	1,70
	Total	115	100,00

When the demographic data of the participants were analyzed, it was determined that 62,60% (n=72) were female and 37,40% (n=43) were male. In terms of age, 4,30% (n=5) of the participants were between 18-23 years old, 18,30% (n=21) between 24-29 years old, 26,10% (n=30) between 30-35 years old, 24,30% (n=28) between 36-41 years old, 15,70% (n=18) between 42-47 years old, 7,00% (n=8) between 48-53 years old, 4,30% (n=5) between 54-59 years old. 71.30% (n=82) of the participants were single and 28.70% (n=33) were married. It was determined that 56,50% (n=65) were from Uşak province and 43,50% (n=50) were not from Uşak. According to the staff status, 65.20% (n=75) are clerk

of the court, 14.80% (n=17) are registrar manager, 9.60% (n=11) are bailiffs, 6.10% (n=7) other and 4.30% (n=5) are vice manager. According to the unit of employment, 28.70% (n=33) were civil courts, 26.10% (n=30) criminal courts, 24.30% (n=28) public prosecution offices, 9.60% (n=11) commission offices, 9.60% (n=11) enforcement offices, and 1.70% (n=2) criminal court of peace.

4.1 Anova and T-Test

Independent sample Anova test was performed to determine whether the level of employees' participation in the scales varied in terms of employee status, and it was determined that it was not significant at 95% confidence level. Employee empowerment (p = 0,234; P > 0.05) and work engagement (p = 0,498; P > 0.05) levels were analyzed. In other words, it was determined that there was no significant relationship between the status of the employees and employee empowerment and work engagement. Independent sample Anova test was performed to determine whether the level of participation of employees in the scales differed according to the unit of employment and it was determined that it was not significant at 95% confidence level. Employee empowerment (p=0,431; P> 0.05) and work engagement (p=0,179; P> 0.05) levels were determined. In other words, no significant relationship was found between the unit of employment and employee empowerment and work engagement. Independent sample T-test was performed to determine whether the level of participation of employees in the scales differed according to gender and it was determined that it was not significant at 95% confidence level. It was determined as employee empowerment (p=0,527; P> 0.05) and work engagement (p=0,336; P> 0.05). In other words, there was no significant relationship between the gender of the employees and employee empowerment and work engagement. Independent sample T-test was performed to determine whether the level of participation of employees in the scales differed according to their hometown status and it was determined that it was not significant at 95% confidence level. Employee empowerment (p=0,660; P> 0.05) and work engagement (p=0,734; P> 0.05) were found. In other words, it was determined that there was no significant relationship between the hometown of the employees and employee empowerment and work engagement. Independent sample T-test was conducted to determine whether the level of participation of employees in the scales differed according to marital status and it was determined that it was not significant at 95% confidence level. Employee empowerment (p=0,511; P> 0.05) and work engagement (p=0,113; P> 0.05) were determined. In other words, there was no significant relationship between the marital status of the employees and employee empowerment and work engagement.

4.2 Correlation Analysis

The relationship between the sub-dimensions of "meaning, competence, self-determination and impact" within the framework of the employee empowerment scale, the relationship between the sub-dimensions of "vigor, dedication and absorption" within the framework of the work engagement scale and the relationship between these dimensions and demographic data were revealed.

Table 3. Correlation Analysis Data

		1	2	3	4	5	6	7	8	9
Meaning mean score of employee empowerment	r.	1								
	sig.									
Competence mean score of employee empowerment	r.	,304**	1							
	sig.	,001								
Self-determination mean score of employee empowerment	r.	,073	,151	1						
	sig.	,437	,107							
Impact mean score of employee empowerment	r.	-,007	-,206*	,483**	1					
	sig.	,942	,027	,000						
Mean score of employee empowerment scale	r.	,469**	,368**	,807**	,666**	1				
	sig.	,000	,000	,000	,000					
Vigor mean score of work engagement	r.	,474**	,236*	,390**	,251**	,550**	1			
	sig.	,000	,011	,000	,007	,000				
Dedication mean score of work engagement	r.	,595**	,162	,272**	,230*	,504**	,793**	1		
	sig.	,000	,083	,003	,014	,000	,000			
Absorption mean score of work engagement	r.	,391**	,324**	,269**	,013	,369**	,517**	,426**	1	
	sig.	,000	,000	,004	,894	,000	,000	,000		
Mean score of work engagement scale	r.	,573**	,282**	,368**	,200*	,562**	,919**	,877**	,747**	1
	sig.	,000	,002	,000	,032	,000	,000	,000	,000	
Age 30	r.	,126	,247**	,051	-,055	,118	,228*	,144	,248**	,241**
	sig.	,181	,008	,585	,563	,208	,014	,126	,007	,009
Child 33	r.	-,146	,105	,120	,016	,044	,099	,015	,188*	,115
	sig.	,121	,266	,203	,865	,637	,294	,877	,045	,222
Education 34	r.	-,014	,273**	-,017	,003	,067	-,029	-,143	-,027	-,076
	sig.	,880	,003	,858	,974	,474	,761	,129	,775	,418
Service 36	r.	-,047	,159	,007	-,093	-,008	,126	,107	,067	,118
	sig.	,618	,090	,943	,324	,936	,179	,254	,474	,207
Public work 37	r.	-,036	,258**	,019	-,019	,067	,142	,007	,140	,113
	sig.	,702	,005	,838	,839	,477	,131	,937	,136	,230
Income 38	r.	-,068	,222*	,204*	,098	,190*	,175	-,025	,153	,120
	sig.	,469	,017	,029	,300	,042	,062	,790	,102	,203
Employment Unit 41	r.	-,041	-,165	,143	,207*	,110	,056	-,076	-,006	-,008
	sig.	,662	,077	,126	,026	,243	,554	,421	,950	,934

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

According to the results of the analysis, it was determined that there was a positive and significant relationship between the employee empowerment scale and the sub-dimensions of meaning, competence, self-determination and impact, respectively 0.469; 0.368; 0.807; 0.666 at 0.00 significance level (p < 0.01). A positive and significant relationship was found between the scale of work engagement and employee empowerment meaning, competence, self-determination and impact sub-dimensions, employee empowerment, work engagement vigor, dedication, and absorption sub-dimensions at the 0.00 significance level with the ratios of 0.573; 0.282; 0.368; 0.200; 0.562; 0.919; 0.877; 0.747 respectively

(p < 0.01). There is a positive and significant relationship between the competence sub-dimension of employee empowerment and education, working in the public sector and income at the rate of 0.273, 0.258, 0.222 respectively (p < 0.05). There is a positive and significant relationship of 0,207 between the impact sub-dimension of employee empowerment and the unit of employment. It was determined that there was an inverse relationship of -0,206 between the impact sub-dimension and competence sub-dimension of employee empowerment (p < 0,05). Among the demographic data, it was determined that there was a positive and significant relationship between age and employee empowerment competence, work engagement intensity and work engagement, respectively; 0,247; 0,228; 0,248; 0,241 (p < 0,05). Among the demographic data, it was determined that there was a positive and significant relationship of 0.188 between the number of children and the intensity sub-dimension of work engagement (p < 0.05). The high number of children of the employees may bring more commitment to their work. Among the demographic data, it was determined that there was a positive and significant relationship between income and the sub-dimensions of employee empowerment self-determination and work engagement vigor at the rates of 0,204 and 0,190 (p < 0,05). Satisfactory income status of employees can be characterized as a feature that will contribute to their autonomous decision-making and being vigorous in the work environment.

4.3 Regression Analysis

Linear regression analysis was conducted to reveal the effect of the independent variable on the dependent variable. When the realization of the assumptions required for regression analysis was examined; it was determined that there was a relationship between the dependent variable and the independent variable (p = 0.000; p < 0.05). The distributions were found to be normal, and finally, the Durbin-watson value, which is used to determine the autocorrelation status and is considered normal if it is between 1-3, was 2.244 in the study. This indicates that autocorrelation, that is, the relationship between the independent variable and the dependent variable, is not at a high level. After all these assumptions were fully realized, the regression analysis interpretation was started.

Table 4. Regression Analysis Data

Independent Variable	B	Standard Error	t	P	R^2
Employee empowerment	0.756	0,105	7,226	0.000	0,31

Durbin Watson=2,244   F= 52.213, p=0.000

From the examination of the table, 31% (R^2 = ,310) of the change in the dependent variable, work engagement, is explained by the independent variable of employee empowerment (β = ,756). In other words, it is understood that employee empowerment is a positive and significant determinant (R^2 = ,310, P < 0.00) of the participants' work engagement. As it can be understood from here, employee empowerment constitutes 31% of the variables that increase work engagement. The remaining 69% is explained by the variables that we did not include in the model. If the R^2 value is higher than 40%, it

means that our model is applicable to real life, and this value shows how much the independent variable explains the dependent variable, that is, the strength of our model. Based on the results of the regression analysis, the regression equation for predicting work engagement was determined as work engagement = 0.979 + 0.756 * employee empowerment. If organizations want to increase their employees' work engagement, they should give importance to employee empowerment activities. It is seen that a one unit increase in employee empowerment positively affects employees' engagement for work by 0,756 units.

Table 5. Multiple Regression Analysis

Independent Variable	Dependent Variable	R	R²	F	P	β	T	P	VİF
Meaning	Work Engagement	0.668	0.446	22.137	0.000	0.507	7.004	0.000	1.106
Self-determination	Work Engagement	0.668	0.446	22.137	0.002	0.178	0.269	0.02	1.426
Competence	Work Engagement	0.668	0.446	22.137	0.203	0.102	0.094	0.203	1.253
Impact	Work Engagement	0.668	0.446	22.137	0.274	0.094	0.06	0.274	1.459

Durbin-watson= 2,211

The relationship between the "meaning" sub-dimension among the sub-dimensions of employee empowerment and work engagement was found to be significant (F = 22,137; p = 0,000; p < 0.005). It is important that employees attach importance to the "meaning" sub-dimension in order to increase their interest and work engagement.

The relationship between the " self-determination" sub-dimension among the sub-dimensions of employee empowerment and work engagement was found to be significant (F = 22,137; p = 0.02; p < 0.005). The fact that employees are decision makers in the work environment may increase the work engagement. The aforementioned two variables explain 44.6% of work engagement. 56.4% of work engagement is explained by other variables not included in the model. The t-test results regarding the significance of the regression coefficients were analyzed and it was seen that both "meaning" and "self-determination" sub-dimensions were significant predictors of work engagement (meaning sub-dimension p = 0.000; p < .005; self-determination sub-dimension p = 0.02; p < 0.005). The sub-dimensions "competence" and "impact" do not have a significant effect (competence sub-dimension p = 0,102; impact sub-dimension p = 0,274, p > 0.05). When the "meaning" sub-dimension is increased one unit, it is seen that it has a positive effect on work engagement with a strength of 0.507. When the "self-determination" sub-dimension is increased one unit, it is seen that it has a positive effect on work engagement with a strength of 0.178.

5. CONCLUSION

Today, the success of organizations cannot be considered separately from their employees. In other words, if an organization has a successful performance, employees have a great contribution to this success. Every manager of an organization expects his/her employees to work with enthusiasm and to be self-sacrificing towards his/her organization. However, in order to have enthusiastic employees, organizational managers should also engage in employee empowerment activities. In this direction, the

relationship between employee empowerment and work engagement was revealed in this study. Within the scope of the research, the study was conducted with 115 employees working in Uşak Courthouse. As a result of the research, it was determined that there was a positive and significant relationship between the employee empowerment sub-dimensions, except for the "competence and impact" sub-dimensions, and work dedication sub-dimensions. The results obtained are similar to those of Salanova et al. (2005) and Laschinger et al. (2009). In the study, the lowest value of " impact" and the highest value of "competence" gave the same result with the research findings of Jose and Mampilly (2014). Similarly, in a study conducted with teachers, it was found that all dimensions of the employee empowerment scale were at a high level and all dimensions were related to each other (Şanlı et al., 2018). Therefore, organizations should pay attention to the dimensions of meaning, competence, self-determination, and impact, which are determined as the sub-dimensions of employee empowerment, and make efforts to create employees who are competent, self-determined and enjoy working in the workplace, and who fulfill their duties by loving their work and giving importance to their work.

In terms of regression analysis results, it was determined that employee empowerment is the antecedent of work engagement. In the study, it was determined that the "competence" dimension of psychological empowerment is the antecedent of the "vigor" and " absorption" dimensions of work engagement. In another study, Maslach et al. (2001) found a significant relationship between "competence" and " engagement". In this context, it is important for organizations to make their employees competent. The competencies of employees can be increased by organizing various trainings on this subject. In this way, organizations can have employees who work with enthusiasm.

In terms of the results of regression analysis within the scope of the study, it was determined that the "self-determination" dimension of psychological empowerment is the antecedent of the "vigor" and "dedication" dimensions of work engagement. In the work environment, employees' ability to make decisions on their own and act freely (autonomy) will result in a more vigorous and dedicated employee. It is important for organizations to focus on the dimensions of meaning, competence and self-determination, increase the value given to employees, and create a positive workplace environment (May et al., 2004) in order to create enthusiastic employees in the work environment. Organizations should also provide regular trainings to employees to improve their competencies and encourage them to make autonomous decisions (Gagne & Deci, 2005). In the study, it was determined that the " impact" dimension of psychological empowerment did not have an antecedent in the dimensions of work engagement. However, in the study conducted by Spreitzer et al. (1997), it was determined that the " impact" dimension creates a difference in the behavior of employees in organizations and is beneficial in terms of work engagement.

This study conducted for courthouse employees revealed the relationship between employee empowerment and work engagement. Since the study was conducted only in Uşak province, it constitutes a limitation. In future studies, more than one city can be included in the study and similarities

and differences between cities can be revealed. Organizational managers can be trained on employee empowerment and their sensitivity can be increased. It is important to encourage employees to make independent decisions, to increase the value they place on their work, and to create opportunities to ensure their professional competence. These elements contribute to employees feeling psychologically strong and can also increase their contribution to the organization.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

Analysis of G20 Countries in terms of Scientific Publication Performances

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Abstract

The achievement of countries in generating scientific publications is also a reflection of their efforts in the scientific domain. The quantitative volume of these publications is not a criterion alone, but the fact that they are a source of inspiration for other scientists carrying out their studies in other countries is an important indicator in terms of evaluating the quality of publications. Based on this emphasis on scientific publications, this research aimed to assess the performance of nineteen G20 countries upon scientific publication data issued by The SCImago Journal & Country Rank and covering the years 1996-2022. The evaluation criteria do not only consist of the number of scientific documents, but also number of citable documents, number of citations, number of self-citations, number of citations per document and H-index values. Fuzzy Step-wise Weight Assessment Ratio Analysis (Fuzzy SWARA) method is employed to determine the priorities of the criteria with the participation of ten researchers from different scientific disciplines. As an outcome of the application of this method, the order of importance of the criteria is determined as H-index, number of citable documents, number of citations per document, number of citations, number of documents and self-citation. The performance order of nineteen countries is performed by using the CODAS-LN method, which includes a logarithmic normalization version of the COmbinative Distance-based ASsessment (CODAS) method and is a very convenient approach in cases where the data is not normally distributed. The results revealed that the United States has a superior position in terms of scientific publication performance, while the United Kingdom, Germany, Canada and France are aligned in the top five order. The consistency of the applied method is also confirmed by two different sensitivity analyses.

Keywords: Scientific Publication, G20 Countries, Fuzzy SWARA, CODAS-LN

Article Type	**Application Date**	**Admission Date**
Research Article	October 27, 2023	June 11, 2024

1. INTRODUCTION

Scientific publications generated within a nation serve as pivotal indicators of the level of recognition and esteem that relevant country holds within the scientific community. The quality of the publications, on the other hand, contributes to the progress of science and gives idea about scientific disciplines at the forefront in that country. Moreover, these milestones hold significant importance as they enable external stakeholders to assess the country's strategies regarding innovation, technological advancement, intellectual depth, perspective on research and development activities, and the emphasis placed on collaborative work among scientists. Besides, the quality of such publications are highly favourable tools for enabling international collaborations in the scientific field. While scientific publications with high quality content attract international attention among scientists involved in the same fields, they also have the characteristics of an important instrument in terms of ensuring mutual knowledge transfer. As a consequence, the quality level of a particular country's scientific publications is an evidence for that country's endeavour to achieve a strong scientific position at the international level, beyond its own borders.

The G20 countries, which are also known as the Group of Twenty, encompass the nations that possess the most formidable economies in the contemporary global landscape. This group comprises Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Türkiye, the United Kingdom, and the United States (Huang et al., 2023; Mar'I et al., 2023) as illustrated in Figure 1. The countries in the Group possess approximately 85 per cent of the global Gross Domestic Product (GDP) and cover two-thirds of the world's population. The main objective of these countries can be summarized as the promotion of financial stability and sustainable economic growth through mutual exchange of views and cooperation. Moreover, the G20 Community has become a forum that aims to offer solutions on addressing issues such as trade disputes and problems in front of investments. G20 countries, which are geographically located across different continents but have different concerns and priorities, are perceived as a professional platform that bears responsibility for global economic and social issues. Furthermore, they also aim to design a road map in the pursuit of common solutions to ensure social welfare around the world.

Undoubtedly, scientific research plays a crucial role in the economic well-being and living standards of contemporary societies, making significant contributions to the advancement of global science. The level of prosperity that developed countries have reached today is a concrete outcome of the contribution and support they have provided to scientific research. From this point of view, the level of prosperity achieved by the G20 countries is a result of their orientation towards development and innovation on the basis of scientific studies. G20 countries, renowned for their robust financial resources, extensive infrastructure, and exceptional expertise, consistently prioritize investment in cutting-edge technological research. Moreover, they proactively propose incentive policies to facilitate

the global transfer of knowledge. Considering the World Bank's 2022 data (World Bank, 2023), it is evident that the deep efforts of these countries in the scientific field are in a direct relationship with their Gross Domestic Product (GDP) values. Recognizing that scientific research is the most important initial point to increase the level of social welfare and quality of life, the success achieved by the G20 countries can easily be observed through their economic indicators.

Figure 1. Map of G20 Countries

From this perspective, the primary objective of this study is to analyze the performance of G20 countries, which lead the world economy, in terms of their capacity to generate scientific publications. In line with The SCImago Journal & Country Rank data covering the period between 1996 and 2022, these countries mentioned are evaluated not only in terms of number of documents, but also in terms of number of citable documents, number of citations, number of self-citations, number of citations per document and H-Index parameters. The importance levels of these parameters are determined by participation of ten researchers involved in different scientific disciplines by using the Fuzzy Step-wise Weight Assessment Ratio Analysis (Fuzzy-SWARA) method and then the logarithmic version of COmbinative Distance-based ASsessment (CODAS-LN) method is utilized for ordering these countries. Ultimately, sensitivity analyses with different approaches are carried out to determine the robustness of the multi-criteria decision-making (MCDM) method used.

The remaining sections of the study discuss the following topics and content. Section 2 provides a comprehensive literature review of previous research studies relevant to the current study. In Section 3, the proposed methods are presented in detail. Section 4 includes a detailed examination of a real-life problem application along with sensitivity analyses. Finally, Section 5 focuses on the conclusion of the study and suggestions for future research.

2. LITERATURE REVIEW

Considering the previous studies on the scientific publication performance of G20 countries, Lin et al. (2018) analyzed the relationship between the number of scientific publications available in

Web of Science and Gross Domestic Product data of the same countries. In addition, a hierarchical clustering analysis of G20 countries is carried out by taking the scientific fields of publications into account.

In order to minimize the freight costs of companies dealing with coal production and marketing, Xiang et al. (2022) aimed to determine the criterion weights by using the trapezoidal fuzzy SWARA method in the process of selecting the most appropriate logistics company. To facilitate the selection of medical tourism travel destinations for Iranian citizens, Ghasemi et al. (2021) aimed to determine the weights of five main criteria and twenty sub-criteria by fuzzy SWARA method for prioritization process of eight different countries. In seeking to propose solutions to effectively minimize risks in the sustainable remanufacturing supply chain, Ansari et al. (2020) aimed to weight twenty-four sub-criteria according to their level of importance, whereby environmental, economic and social risks were considered as the main criteria. In an attempt to identify the barriers to administrative transformation in the organizational structure of an airport and to determine the order of importance of these impediments, a prioritization of seven criteria was carried out by Ghasemian Sahebi et al. (2020). Finally, Epifanić et al. (2020) aimed to prioritize the effects of school administrators, school infrastructure, students' prior knowledge, teachers' merit, quality of the curriculum, students' motivation and the quality of the teaching process on students' learning outcomes in Serbia.

In order to take advantage of the logarithmic transformation in cases where the criterion values differ significantly and the data are not normally distributed, the CODAS-LN method was proposed by Biswas and Pamucar (2021) and this method was used to measure the performance of smartphones. In the literature review, no other publication utilizing this method is coincided.

Some other researches conducted with the traditional form of SWARA and CODAS methods can be summarized as in Table 1;

Table 1. Literature Review for SWARA and CODAS Methods

Author	Subject
(Işık et al., 2023)	Determination of the causality relationship between financial performance and premium production of non-life insurance companies
(Şaylan et al., 2023)	Determination of four different marketing strategies in line with expert opinions
(Koca et al., 2022)	Analysing the drivers and challenges of circular economy in the apparel industry through SWARA and BWM methods
(Kumar et al., 2022)	Spray Painting Robot Selection
(Karabašević et al., 2016)	Personnel selection
(Zolfani et al., 2013)	Identification of critical and vital criteria in producing products

(Anand et al., 2023)	Identification of prominent smell factors around different software development environments
(Dominguez et al., 2023)	Machine selection to increase process and product quality in the pastry sector
(Wankhede et al., 2023)	Selection of natural composites for use in substitution of synthetic materials
(Kumari & Acherjee, 2022)	Selection of non-conventional machining process
(Wei et al., 2021)	Green supplier selection

3. METHODS

The Step-wise Weight Assessment Ratio Analysis (SWARA) method used in the criteria weighting stage of the study was introduced by Kersuliene, Zavadskas and Turskis in 2010 (Keršulienė et al., 2010). In SWARA method, the relative importance and initial prioritization of alternatives for each criterion are determined in line with the opinion of decision makers and then the relative weight of each criterion is determined (Alinezhad & Khalili, 2019, Chapter 14, p. 99). For evaluations and calculation of criterion weights, all experts acting as a Decision Maker (DM) have a significant role in SWARA method. During the evaluation process, each DM determines the level of importance for each criterion and assigns a rank to all the criteria. In a nutshell, each expert uses their individual knowledge and experience (Zolfani & Šaparauskas, 2013). Although SWARA method is perceived as a subjective evaluation process, it is a very meaningful approach in terms of the contribution of each decision maker to the process in line with their own expertise and experience (Stanujkic et al., 2015). Therefore, this method is preferred due to its distinctive feature and importance levels for each criterion are determined in accordance with the opinions of ten academics who have publications in the fields of engineering, economics, social sciences, medicine and basic sciences.

COmbinative Distance-based ASsessment (CODAS) method, which is used to perform success rankings of G20 countries in terms of scientific publication performance, was introduced to the literature by Ghorabaee, Zavadskas, Turskis and Antucheviciene in 2016. The proposed method measures an alternative's overall performance by Euclidean and Taxicab distances from the negative ideal point. While Euclidean distance is the primary measure of assessment in this approach, use of Taxicab distance is also taken into consideration in case that the Euclidean distances between two alternatives are quite close to each other. In addition, a threshold parameter determines the proximity of Euclidean distances (Ghorabaee et al., 2016). From this perspective, the CODAS approach emerges as a highly convenient method for assessing and ranking the scientific publication performance of the G20 countries. However, a logarithmic transformation becomes unavoidable if the data are not normally distributed (Feng et al., 2014; Zavadskas & Turskis, 2008). Given that our data does not display a normal distribution as depicted in Figure 2, it is preferred to utilize the CODAS-LN (Biswas & Pamucar, 2021) approach in this study instead of traditional versions as it represents a similar version of the CODAS method.

Figure 2. Normality Test of Data
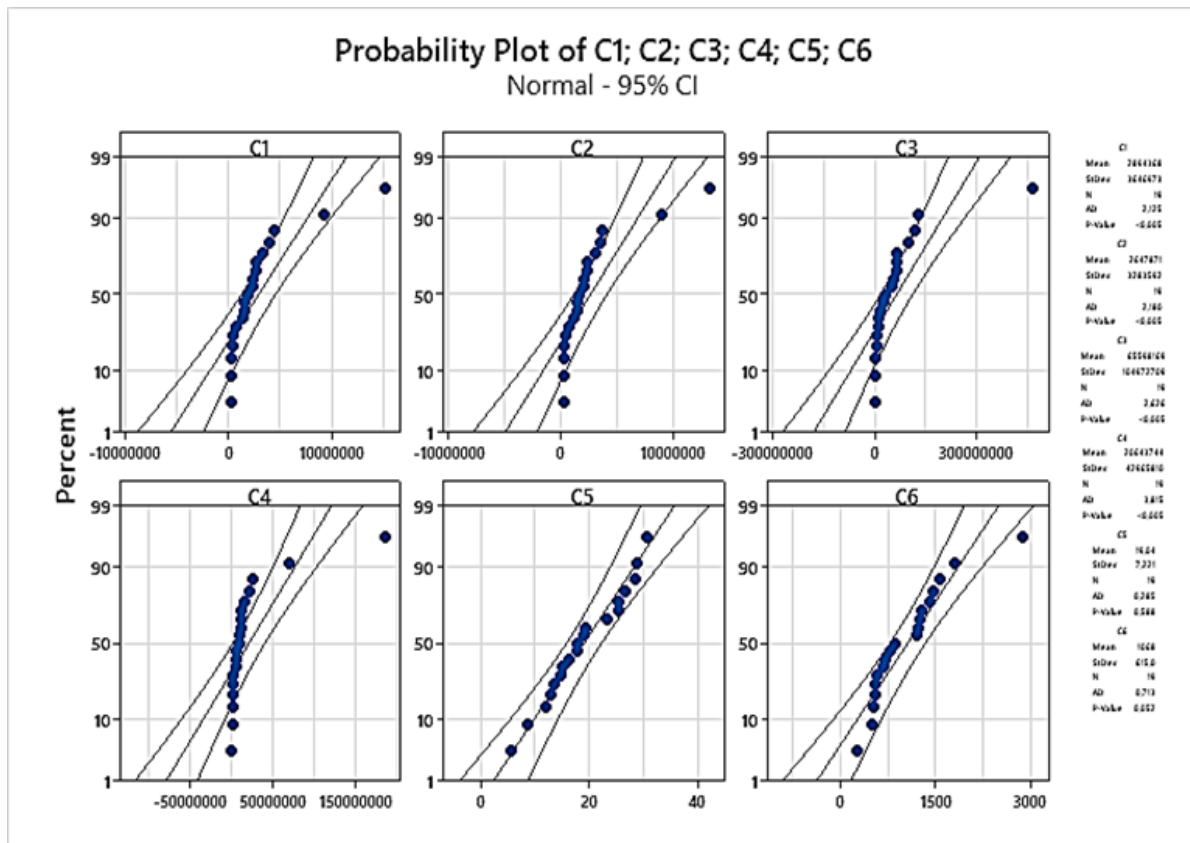
In the last stage of the study, a sensitivity analysis is carried out by gradually changing the criteria weights (Yazdani et al., 2019; Qahtan et al., 2023) and by conducting different MCDM methods (Pamucar et al., 2021; Puška et al., 2022; Bouraima et al., 2023) to confirm the robustness of the ranking method. Different MCDM methods are employed including ARAS (Zavadskas & Turskis, 2010), EDAS (Ghorabaee et al., 2015), MABAC (Pamucar & Ćirović, 2015), MAIRCA (Pamucar et al., 2018), MAUT (Keeney et al., 1979), WASPAS (Zavadskas et al., 2012), WEDBA (Rao & Singh, 2011) and MARCOS-LN (Komasi et al., 2023) to realize a comparison among the orders obtained by each approach.

The flowchart of the research is summarized as illustration in Figure 3.

Figure 3. Flowchart of the Research
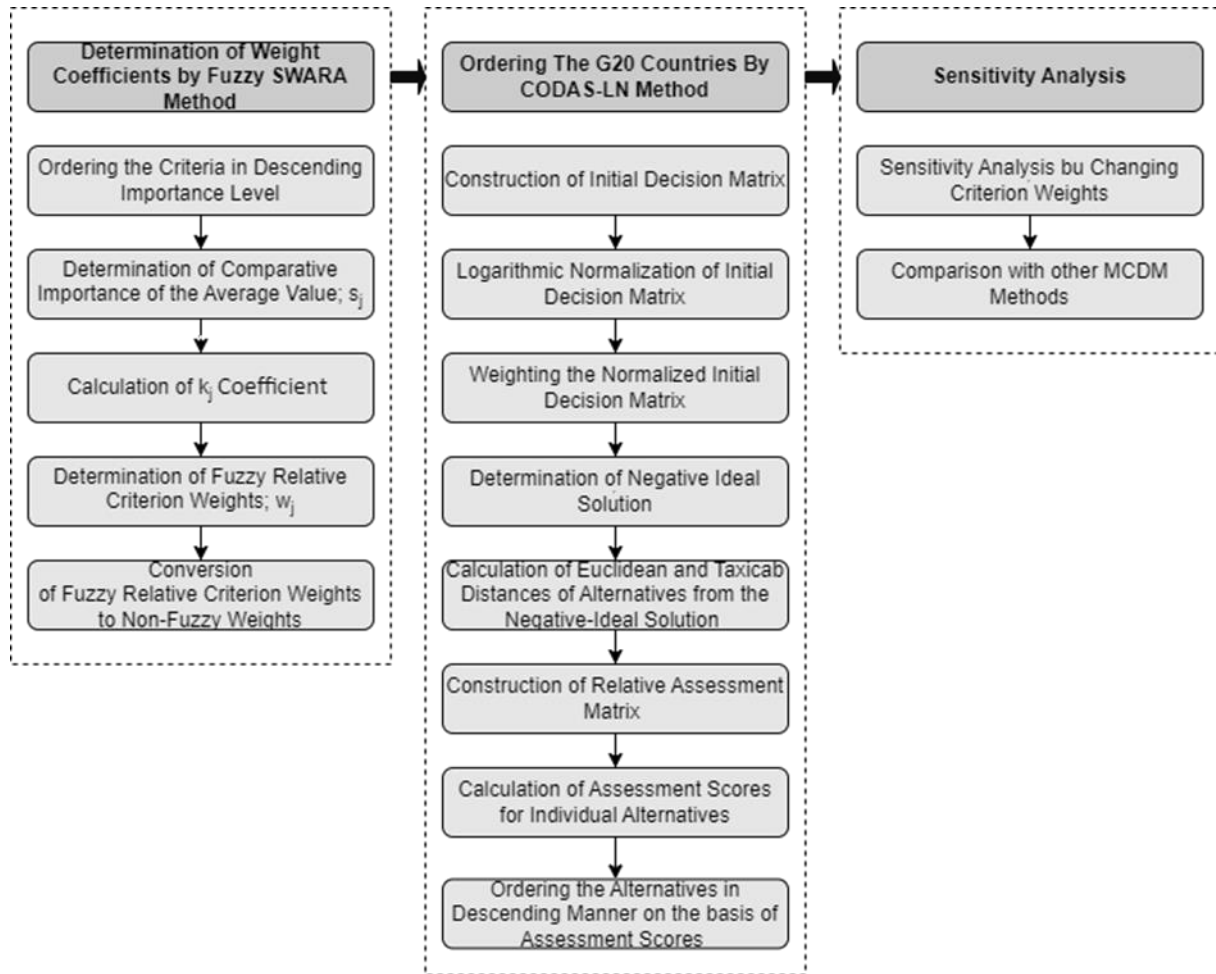
3.1. Fuzzy SWARA Method

While SWARA is a very worthwhile method in terms of reflecting the experience and profession of the experts involved in the decision-making process, application of fuzzy logic generates more expressive results when there are no strict boundaries among the criteria in terms of their significance level. Therefore, the significance levels and weights of the criteria are determined by following the steps specified below, using the linguistic scale presented in Table 2 (Mavi et al., 2017).

Table 2. Linguistic Scale

Linguistic Scale	Response Scale
Equally Important	(1, 1, 1)
Moderately Less Important	(2/3, 1, 3/2)
Less Important	(2/5, 1/2, 2/3)
Very Less Important	(2/7, 1/3, 2/5)
Much Less Important	(2/9, 1/4, 2/7)

Step 1. Ranking the criteria from the most important to the least important by taking the order of their significance into account.

Step 2. Beginning from the second criterion j, a comparison is performed between the previous criterion $j-1$ by taking the linguistic scale into account. By doing so, the $\tilde{s}_j$ value, which is the comparative importance of the average value, is obtained. In fuzzy approach, the $\tilde{s}_j$ value is indicated as $\tilde{s}_j = (\tilde{s}_j^l, \tilde{s}_j^m, \tilde{s}_j^u)$.

Step 3. Calculation of $\tilde{k}_j$ coefficient through Equation (1).

$$\tilde{k}_j = \begin{cases} 1 & , j = 1 \\ \tilde{S}_j + 1 & , j > 1 \end{cases} \qquad \tilde{k}_j = (\tilde{k}_j^l, \tilde{k}_j^m, \tilde{k}_j^u) \tag{1}$$

Step 4. Determination of recalculated fuzzy weights $\tilde{q}_j$ through Equation (2).

$$\tilde{q}_j = \begin{cases} 1 & , j = 1 \\ \dfrac{\tilde{q}_{j-1}}{\tilde{k}_j} & , j > 1 \end{cases} \qquad \tilde{q}_j = (\tilde{q}_j^l, \tilde{q}_j^m, \tilde{q}_j^u) \tag{2}$$

Step 5. Determination of fuzzy relative criterion weights $\widetilde{\omega}_j$ through Equation (3).

$$\widetilde{\omega}_j = \frac{\tilde{q}_j}{\sum_{k=1}^n \tilde{q}_k} \qquad \widetilde{w}_j = (\widetilde{w}_j^l, \widetilde{w}_j^m, \widetilde{w}_j^u) \tag{3}$$

Step 6. Conversion of the fuzzy relative criterion weights $\widetilde{\omega}_j$ to non-fuzzy (crisp value) w_j according to the Centre of Area (COA) method through equation (4).

$$w_j = \frac{w_j^l + w_j^m + w_j^u}{3} \tag{4}$$

The basic arithmetic operations with the triangular fuzzy numbers should be carried out in accordance with the following principles indicated in Table 3 (Kaufmann & Gupta, 1988, p. 28).

Table 3. Arithmetic Operations with Triangular Fuzzy Numbers

Addition	$\tilde{A}_1 \oplus \tilde{A}_2 = (l_1 + l_2, m_1 + m_2, u_1 + u_2)$
Subtraction	$\tilde{A}_1 \ominus \tilde{A}_2 = (l_1 - u_2, m_1 - m_2, u_1 - l_2)$
Multiplication	$\tilde{A}_1 \otimes \tilde{A}_2 = (l_1 . l_2, m_1 . m_2, u_1 . u_2)$
Division	$\tilde{A}_1 \oslash \tilde{A}_2 = (l_1/u_2, m_1/m_2, u_1/l_2)$
Multiplication by a fixed number	$k \otimes \tilde{A} = (k.l, k.m, k.u)$
Reverse operation	$\tilde{A}^{-1} = (l, m, u)^{-1} \approx (1/u, 1/m, 1/l)$

3.2. CODAS-LN Method

The application steps of this multi-criteria decision-making method, which recommends the use of logarithmic normalisation approach in case that the available data do not display a normal distribution, are listed as follows (Biswas & Pamucar, 2021).

Step 1. Construction of initial decision matrix.

$X = \left[x_{ij}\right]_{mxn}$ $\qquad m: number\ of\ alternatives$
$\qquad\qquad\qquad\qquad n: number\ of\ criteria$

Step 2. Logarithmic normalization of initial decision matrix by Equation (5) and Equation (6).

$R = \left[r_{ij}\right]_{mxn}$ $\qquad R: normalized\ decision\ matrix$

$$r_{ij} = \frac{\ln(x_{ij})}{\ln(\prod_i^m x_{ij})} \qquad\qquad for\ benefit\ criteria \qquad\qquad (5)$$

$$r_{ij} = \frac{1 - \dfrac{\ln(x_{ij})}{\ln(\prod_i^m x_{ij})}}{m - 1} \qquad\qquad for\ cost\ criteria \qquad\qquad (6)$$

Step 3. Weighting the normalized initial decision matrix by Equation (7).

$$R^* = [r_{ij}^*]_{mxn} \qquad\qquad R^*: weighted\ normalized\ decision\ matrix$$

$$r_{ij}^* = w_j . r_{ij} \qquad\qquad w_j: weight\ of\ the\ j^{th}\ criterion \qquad\qquad (7)$$

Step 4. Determination of negative ideal solution by Equation (8).

$$S^- = [s_j^-]_{1xn} \qquad\qquad S^-: negative\ ideal\ solution\ matrix$$

$$s_j^- = \min_i r_{ij}^* \qquad\qquad s_j^-: negative\ ideal\ solution\ of\ the\ j^{th}\ criterion \qquad\qquad (8)$$

Step 5. Calculation of Euclidean and Taxicab distances of alternatives from the negative-ideal solution by Equation (9) and Equation (10).

$$E_i = \sqrt{\sum_{j=1}^n (r_{ij}^* - s_j^-)^2} \qquad\qquad E_i: Euclidean\ distance\ of\ i^{th} alternative \qquad\qquad (9)$$

$$T_i = \sum_{j=1}^n |r_{ij}^* - s_j^-| \qquad\qquad T_i: Taxicab\ distance\ of\ i^{th} alternative \qquad\qquad (10)$$

Step 6. Construction of relative assessment matrix by Equation (11).

$$R_a = [h_{ik}]_{mxm} \qquad\qquad R_a: relative\ assesment\ matrix$$

$$h_{ik} = (E_i - E_k) + (\psi . (E_i - E_k) . (T_i - T_k)) \qquad k = 1,2,\dots,m \qquad\qquad (11)$$

The parameter ψ indicates the threshold function representing the equality of Euclidean distances between two alternatives where;

$$\psi(d) = \begin{cases} 1; & |x| \ge \tau \\ 0; & |x| < \tau \end{cases}$$

The term τ corresponds to a threshold parameter which is recommended as $\tau = 0,02$ (Keshavarz-Ghorabaee et al., 2016).

Step 7. Calculation of assessment scores for individual alternatives by Equation (12).

$$H_i = \sum_{k=1}^n h_{ik} \qquad\qquad k = 1,2,\dots,m \qquad\qquad (12)$$

Step 8. Ordering the alternatives in descending manner on the basis of assessment scores.

3.3. Sensitivity Analysis

In order to determine the robustness of the applied ranking method, sensitivity analysis, which involves gradually changing the most important criterion weights, is employed. Estimating how much influence the most important criterion has on the ranking performance of the proposed model is the key objective of conducting a sensitivity analysis. The following steps will be implemented during the execution of the method (Pamucar et al., 2020);

Step 1. Selection of the criterion with highest priority and listing the remaining criteria.

Step 2. Determination of weight coefficient of elasticity by Equation (13).

$$\alpha_c = \frac{w_c^0}{W_c^0} \tag{13}$$

α_c: weight coefficient of elasticity

w_c^0: original weights of criteria excluding the most important criterion

W_c^0: sum of the original weights of the criteria excluding the most important criterion

The parameter α_c is defined as the weight coefficient of elasticity, which represents the relative exchange of the remaining weights in response to certain shifts in the weight of the most influential criterion. At this stage, it should be noted that the value of the weight elasticity coefficient for the most important criterion (α_s) should always be considered as 1. In calculations following the most important criterion, the proportion of changing weights will remain fixed.

Step 3. Determination of the amount of change in the weight values of the criteria.

The parameter Δx represents the amount of change in the weight values of the criteria in line with the relevant weight coefficient of elasticity. Unless the shift in the weight of the most important criterion is realised within certain limits, the weights of the remaining criteria may be generated as negative values and this situation will violate the proportionality constraint for weights. The upper and lower limits for Δx are set between the negative value of the most important criterion and the maximum amount of weight change as indicated in Equation (14).

$$-w_s^0 \leq \Delta x \leq min\{w_c^0/\alpha_c\} \tag{14}$$

w_s^0: original weight of the most important criterion

Δx: amount of change in the weights of the criteria

Step 4. Calculation of new criterion weights for different scenarios.

New criterion weights are determined by means of Equation (15) and Equation (16).

$$w_s = w_s^0 + \alpha_s . \Delta x \qquad ; for\ the\ most\ important\ criterion \tag{15}$$
$$w_c = w_c^0 - \alpha_c . \Delta x \qquad ; for\ the\ remaing\ criteria \tag{16}$$

α_s: weight coefficient of elasticity for the most importanrt criterion = 1

w_c: *recalculated weights of criteria excluding the most important criterion*

w_s: *recalculated weight of the most important criterion*

An important point to note is that the criteria weights obtained according to each scenario must comply with the condition that $\sum w_s + \sum w_c = 1$.

4. PERFROMANCE EVALUATION OF G20 COUNTRIES

In this study, the contributions of nineteen G20 countries, with the exception of the European Union, to scientific research is analysed, and each country's performance is evaluated. The countries taken into consideration are Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Türkiye, United Kingdom and United States and these countries correspond to the alternatives used in the decision matrices. Furthermore, the parameters as Number of Documents, Number of Citable Documents, Number of Citations, Number of Self-Citations, Number of Citations per Document and H-Index used in the evaluation express the criteria of the same decision matrices as indicated in Table 4.

Table 4. List of Criteria

	CRITERION	**CRITERION TYPE**
$C1$	Number of Documents	benefit
$C2$	Number of Citable Documents	benefit
$C3$	Number of Citations	benefit
$C4$	Number of Self Citations	benefit
$C5$	Number of Citations per Document	benefit
$C6$	H-Index	benefit

4.1. Determination of Priorities and Weights of Criteria

The weighting process of the criteria is carried out by participation of ten academics as decision makers from the fields of engineering, economics, social sciences, medicine and basic sciences, and the prioritisation proposal according to linguistic scale are submitted by each. Comparative importance of the average value $\tilde{s}_j$, $\tilde{k}_j$ coefficient, recalculated fuzzy weights $\tilde{q}_j$ and fuzzy relative criterion weights $\tilde{\omega}_j$ are determined by means of Equation (1), Equation (2) and Equation (3) by taking the arithmetic operations with triangular fuzzy operations into consideration and are summarized in Table 5.

Table 5. $\tilde{s}_j$, $\tilde{k}_j$, $\tilde{q}_j$ and $\tilde{\omega}_j$ Values Obtained by Fuzzy SWARA Method

		$\tilde{s}_j$			$\tilde{k}_j$			$\tilde{q}_j$			$\tilde{\omega}_j$		
		l	*m*	*u*	*l*	*m*	*u*	*l*	*m*	*u*	*l*	*m*	*u*
DM1	$C5$				1.000	1.000	1.000	1.000	1.000	1.000	0.436	0.472	0.513
	$C6$	1.000	1.000	1.000	2.000	2.000	2.000	0.500	0.500	0.500	0.218	0.236	0.257
	$C3$	0.667	1.000	1.500	1.667	2.000	2.500	0.200	0.250	0.300	0.087	0.118	0.154
	$C1$	0.400	0.500	0.667	1.400	1.500	1.667	0.120	0.167	0.214	0.052	0.079	0.110
	$C2$	0.400	0.500	0.667	1.400	1.500	1.667	0.072	0.111	0.153	0.031	0.052	0.079
	$C4$	0.222	0.250	0.286	1.222	1.250	1.286	0.056	0.089	0.125	0.024	0.042	0.064
DM2	$C6$				1.000	1.000	1.000	1.000	1.000	1.000	0.477	0.494	0.511
	$C3$	1.000	1.000	1.000	2.000	2.000	2.000	0.500	0.500	0.500	0.239	0.247	0.256

Table 5. (Continued)

		$\tilde{s}_j$			$\tilde{k}_j$			$\tilde{q}_j$			$\tilde{\omega}_j$		
		l	*m*	*u*	*l*	*m*	*u*	*l*	*m*	*u*	*l*	*m*	*u*
	C5	1.000	1.000	1.000	2.000	2.000	2.000	0.250	0.250	0.250	0.119	0.123	0.128
	C2	0.667	1.000	1.500	1.667	2.000	2.500	0.100	0.125	0.150	0.048	0.062	0.077
	C1	0.400	0.500	0.667	1.400	1.500	1.667	0.060	0.083	0.107	0.029	0.041	0.055
	C4	0.222	0.250	0.286	1.222	1.250	1.286	0.047	0.067	0.088	0.022	0.033	0.045
DM3	C2				1.000	1.000	1.000	1.000	1.000	1.000	0.387	0.467	0.562
	C5	0.667	1.000	1.500	1.667	2.000	2.500	0.400	0.500	0.600	0.155	0.233	0.337
	C6	0.667	1.000	1.500	1.667	2.000	2.500	0.160	0.250	0.360	0.062	0.117	0.202
	C1	0.400	0.500	0.667	1.400	1.500	1.667	0.096	0.167	0.257	0.037	0.078	0.145
	C3	0.286	0.333	0.400	1.286	1.333	1.400	0.069	0.125	0.200	0.027	0.058	0.112
	C4	0.222	0.250	0.286	1.222	1.250	1.286	0.053	0.100	0.164	0.021	0.047	0.092
DM4	C6				1.000	1.000	1.000	1.000	1.000	1.000	0.367	0.432	0.518
	C2	0.667	1.000	1.500	1.667	2.000	2.500	0.400	0.500	0.600	0.147	0.216	0.311
	C1	0.400	0.500	0.667	1.400	1.500	1.667	0.240	0.333	0.429	0.088	0.144	0.222
	C5	0.400	0.500	0.667	1.400	1.500	1.667	0.144	0.222	0.306	0.053	0.096	0.158
	C3	0.400	0.500	0.667	1.400	1.500	1.667	0.086	0.148	0.219	0.032	0.064	0.113
	C4	0.286	0.333	0.400	1.286	1.333	1.400	0.062	0.111	0.170	0.023	0.048	0.088
DM5	C2				1.000	1.000	1.000	1.000	1.000	1.000	0.387	0.467	0.562
	C1	0.667	1.000	1.500	1.667	2.000	2.500	0.400	0.500	0.600	0.155	0.233	0.337
	C6	0.667	1.000	1.500	1.667	2.000	2.500	0.160	0.250	0.360	0.062	0.117	0.202
	C5	0.400	0.500	0.667	1.400	1.500	1.667	0.096	0.167	0.257	0.037	0.078	0.145
	C3	0.286	0.333	0.400	1.286	1.333	1.400	0.069	0.125	0.200	0.027	0.058	0.112
	C4	0.222	0.250	0.286	1.222	1.250	1.286	0.053	0.100	0.164	0.021	0.047	0.092
DM6	C2				1.000	1.000	1.000	1.000	1.000	1.000	0.392	0.472	0.569
	C3	0.667	1.000	1.500	1.667	2.000	2.500	0.400	0.500	0.600	0.157	0.236	0.341
	C6	0.667	1.000	1.500	1.667	2.000	2.500	0.160	0.250	0.360	0.063	0.118	0.205
	C5	0.400	0.500	0.667	1.400	1.500	1.667	0.096	0.167	0.257	0.038	0.079	0.146
	C1	0.400	0.500	0.667	1.400	1.500	1.667	0.058	0.111	0.184	0.023	0.052	0.104
	C4	0.222	0.250	0.286	1.222	1.250	1.286	0.045	0.089	0.150	0.018	0.042	0.085
DM7	C6				1.000	1.000	1.000	1.000	1.000	1.000	0.392	0.472	0.569
	C3	0.667	1.000	1.500	1.667	2.000	2.500	0.400	0.500	0.600	0.157	0.236	0.341
	C2	0.667	1.000	1.500	1.667	2.000	2.500	0.160	0.250	0.360	0.063	0.118	0.205
	C1	0.400	0.500	0.667	1.400	1.500	1.667	0.096	0.167	0.257	0.038	0.079	0.146
	C5	0.400	0.500	0.667	1.400	1.500	1.667	0.058	0.111	0.184	0.023	0.052	0.104
	C4	0.222	0.250	0.286	1.222	1.250	1.286	0.045	0.089	0.150	0.018	0.042	0.085
DM8	C2				1.000	1.000	1.000	1.000	1.000	1.000	0.353	0.413	0.493
	C3	0.667	1.000	1.500	1.667	2.000	2.500	0.400	0.500	0.600	0.141	0.207	0.296
	C1	0.400	0.500	0.667	1.400	1.500	1.667	0.240	0.333	0.429	0.085	0.138	0.211
	C5	0.286	0.333	0.400	1.286	1.333	1.400	0.171	0.250	0.333	0.061	0.103	0.164
	C6	0.286	0.333	0.400	1.286	1.333	1.400	0.122	0.188	0.259	0.043	0.077	0.128
	C4	0.222	0.250	0.286	1.222	1.250	1.286	0.095	0.150	0.212	0.034	0.062	0.105
DM9	C6				1.000	1.000	1.000	1.000	1.000	1.000	0.344	0.403	0.481
	C2	1.000	1.000	1.000	1.667	2.000	2.500	0.400	0.500	0.600	0.138	0.201	0.289
	C1	0.667	1.000	1.500	1.400	1.500	1.667	0.240	0.333	0.429	0.083	0.134	0.206
	C5	0.400	0.500	0.667	1.286	1.333	1.400	0.171	0.250	0.333	0.059	0.101	0.160
	C3	0.286	0.333	0.400	1.222	1.250	1.286	0.133	0.200	0.273	0.046	0.081	0.131
	C4	0.222	0.250	0.286	1.000	1.000	1.000	0.133	0.200	0.273	0.046	0.081	0.131
DM10	C6				1.000	1.000	1.000	1.000	1.000	1.000	0.432	0.467	0.507
	C5	1.000	1.000	1.000	2.000	2.000	2.000	0.500	0.500	0.500	0.216	0.233	0.254
	C3	0.667	1.000	1.500	1.667	2.000	2.500	0.200	0.250	0.300	0.086	0.117	0.152
	C2	0.400	0.500	0.667	1.400	1.500	1.667	0.120	0.167	0.214	0.052	0.078	0.109
	C1	0.286	0.333	0.400	1.286	1.333	1.400	0.086	0.125	0.167	0.037	0.058	0.085
	C4	0.222	0.250	0.286	1.222	1.250	1.286	0.067	0.100	0.136	0.029	0.047	0.069

The arithmetic mean of the fuzzy weight coefficients for each criterion is computed and the crisp values of these fuzzy weights are calculated by means of the Centre of Area method expressed in Equation (4). The ultimate criteria weights obtained by the application of fuzzy SWARA method are summarised in Table 6.

Table 6. Crisp Criterion Weights

C1	C2	C3	C4	C5	C6
0.106	0.252	0.143	0.052	0.158	0.290

Considering the numerical values in Table 6, it is revealed that the most important criterion is determined as H-Index ($C6$). The most important criterion, H-Index, is followed by Number of Citable Documents ($C2$), Number of Citations per Document ($C5$), Number of Citations ($C3$), Number of Documents ($C1$) and Number of Self Citations ($C4$). In this respect, the priority order of the criteria is summarised as $C6 > C2 > C5 > C3 > C1 > C4$.

4.2. Ranking the Performance of G20 Countries in terms of Scientific Publications

On the basis of the SCImago Journal & Country Rank data covering the period from 1996 to 2022, this research is carried out depending on the scientific publication indicators of each country. Relevant data, which is the reference source of the study and will also be used as the initial decision matrix $X = [x_{ij}]_{mxn}$, is presented in Table 7.

Table 7. Initial Decision Matrix

	Country	C1	C2	C3	C4	C5	C6
A1	Argentina	277,943	259,333	5,259,896	904,800	18.92	534
A2	Australia	1,877,629	1,649,784	50,051,440	8,960,215	26.66	1,276
A3	Brazil	1,328,702	1,255,994	19,520,361	5,787,274	14.69	729
A4	Canada	2,281,865	2,037,734	66,166,875	10,119,371	29.00	1,460
A5	China	9,239,029	9,080,674	118,957,559	68,874,802	12.88	1,210
A6	France	2,647,084	2,443,975	67,490,155	12,213,066	25.50	1,420
A7	Germany	3,873,344	3,548,032	99,121,817	21,401,170	25.59	1,584
A8	India	2,636,181	2,425,509	31,553,699	10,603,600	11.97	795
A9	Indonesia	311,467	303,489	1,756,261	493,086	5.64	288
A10	Italy	2,353,407	2,124,484	54,884,768	11,744,998	23.32	1,255
A11	Japan	3,331,619	3,174,415	64,389,095	14,594,565	19.33	1,236
A12	Mexico	448,756	419,131	6,808,913	1,203,511	15.17	563
A13	Russian Federation	1,592,214	1,549,285	13,720,248	4,515,841	8.62	702
A14	Saudi Arabia	356,058	342,343	5,767,151	937,928	16.20	517
A15	South Africa	410,007	369,466	7,279,740	1,379,596	17.76	597
A16	South Korea	1,497,603	1,451,865	26,838,401	4,585,098	17.92	863
A17	Türkiye	838,530	779,735	11,280,898	2,197,485	13.45	562
A18	United Kingdom	4,502,915	3,775,825	127,998,813	25,755,418	28.43	1,815
A19	United States	15,188,630	13,318,470	467,519,124	185,959,311	30.78	2,880

Since all criteria used in the study are benefit oriented, only the Equation (5) is applied for logarithmic normalisation and the calculated values of the elements in the normalized decision matrix $R = [r_{ij}]_{mxn}$ are presented in Table 8.

Table 8. Normalized Decision Matrix

	Country	C1	C2	C3	C4	C5	C6
A1	Argentina	0.04616	0.04615	0.04747	0.04603	0.05402	0.04842
A2	Australia	0.05319	0.05300	0.05438	0.05372	0.06032	0.05513
A3	Brazil	0.05192	0.05199	0.05150	0.05225	0.04937	0.05082
A4	Canada	0.05391	0.05379	0.05524	0.05413	0.06186	0.05617
A5	China	0.05906	0.05932	0.05704	0.06057	0.04695	0.05472

Table 8. (Continued)

	Country	C1	C2	C3	C4	C5	C6
A6	France	0.05446	0.05446	0.05530	0.05476	0.05950	0.05596
A7	Germany	0.05586	0.05584	0.05648	0.05664	0.05956	0.05680
A8	India	0.05444	0.05443	0.05297	0.05429	0.04561	0.05148
A9	Indonesia	0.04658	0.04674	0.04411	0.04399	0.03178	0.04366
A10	Italy	0.05403	0.05394	0.05467	0.05463	0.05786	0.05500
A11	Japan	0.05531	0.05543	0.05516	0.05536	0.05441	0.05489
A12	Mexico	0.04792	0.04793	0.04826	0.04698	0.04996	0.04882
A13	Russian Federation	0.05259	0.05277	0.05041	0.05142	0.03957	0.05052
A14	Saudi Arabia	0.04707	0.04718	0.04776	0.04615	0.05116	0.04817
A15	South Africa	0.04759	0.04746	0.04847	0.04744	0.05285	0.04928
A16	South Korea	0.05236	0.05253	0.05247	0.05147	0.05302	0.05212
A17	Türkiye	0.05023	0.05023	0.04981	0.04900	0.04775	0.04881
A18	United Kingdom	0.05642	0.05607	0.05726	0.05726	0.06150	0.05785
A19	United States	0.06089	0.06074	0.06124	0.06390	0.06296	0.06141

The weighted matrix $R^* = [r_{ij}^*]_{mxn}$ in Table 9 is obtained by multiplying the criterion weight values calculated by the Fuzzy SWARA method and the elements of normalised matrix by means of Equation (7).

Table 9. Weighted Normalized Decision Matrix

	Country	C1	C2	C3	C4	C5	C6
A1	Argentina	0.004895	0.011625	0.006790	0.002379	0.008510	0.014030
A2	Australia	0.005641	0.013351	0.007779	0.002777	0.009503	0.015976
A3	Brazil	0.005506	0.013096	0.007366	0.002701	0.007778	0.014726
A4	Canada	0.005718	0.013548	0.007901	0.002798	0.009747	0.016277
A5	China	0.006264	0.014941	0.008159	0.003131	0.007397	0.015858
A6	France	0.005776	0.013717	0.007910	0.002831	0.009374	0.016215
A7	Germany	0.005924	0.014065	0.008079	0.002928	0.009384	0.016459
A8	India	0.005774	0.013710	0.007576	0.002806	0.007185	0.014919
A9	Indonesia	0.004940	0.011772	0.006309	0.002274	0.005007	0.012651
A10	Italy	0.005730	0.013587	0.007819	0.002824	0.009116	0.015939
A11	Japan	0.005865	0.013961	0.007889	0.002862	0.008572	0.015905
A12	Mexico	0.005082	0.012073	0.006904	0.002429	0.007871	0.014148
A13	Russian Federation	0.005577	0.013292	0.007211	0.002658	0.006235	0.014641
A14	Saudi Arabia	0.004992	0.011884	0.006831	0.002385	0.008061	0.013958
A15	South Africa	0.005047	0.011955	0.006933	0.002452	0.008327	0.014279
A16	South Korea	0.005553	0.013232	0.007505	0.002661	0.008353	0.015103
A17	Türkiye	0.005327	0.012652	0.007125	0.002533	0.007523	0.014144
A18	United Kingdom	0.005983	0.014123	0.008191	0.002960	0.009689	0.016763
A19	United States	0.006458	0.015298	0.008759	0.003303	0.009919	0.017795

The negative ideal solution values for each criterion $S^- = [s_j^-]_{1xn}$ is obtained using equation (8) and the values are presented in Table 10.

Table 10. Negative Ideal Solution Values for Each Criterion

	C1	C2	C3	C4	C5	C6
s_j^-	0.004895	0.011625	0.006309	0.002274	0.005007	0.012651

Table 11 summarizes the Euclidean distance E_i and Taxicab distance T_i of alternatives from the negative-ideal solution calculated through Equation (9) and Equation (10).

Table 11. Euclidean and Taxicab Distances of Alternatives

	Country	E_i	T_i
A1	Argentina	0.003797	0.005469
A2	Australia	0.006101	0.012266
A3	Brazil	0.003977	0.008412
A4	Canada	0.006542	0.013227
A5	China	0.005746	0.012988
A6	France	0.006309	0.013061
A7	Germany	0.006651	0.014078
A8	India	0.004111	0.009210
A9	Indonesia	0.000153	0.000191
A10	Italy	0.005901	0.012253
A11	Japan	0.005704	0.012293
A12	Mexico	0.003325	0.005745
A13	Russian Federation	0.003110	0.006853
A14	Saudi Arabia	0.003376	0.005350
A15	South Africa	0.003772	0.006233
A16	South Korea	0.004669	0.009645
A17	Türkiye	0.003245	0.006542
A18	United Kingdom	0.007090	0.014948
A19	United States	0.008578	0.018771

Relative assessment matrix $R_a = [h_{ik}]_{mxm}$ is constructed by Equation (11) and assessment scores for individual alternatives H_i are calculated by Equation (12) sequentially. In line with the values obtained, the performance order of the G20 countries, which are included as alternatives in the study, is illustrated in Table 12 and Figure 4.

Table 12. R_a Matrix. H_i Values and orders of Alternatives

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	H_i	Rank
A1	0.0000	-0.0023	-0.0002	-0.0027	-0.0019	-0.0025	-0.0029	-0.0003	0.0036	-0.0021	-0.0019	0.0005	0.0007	0.0004	0.0000	-0.0009	0.0006	-0.0033	-0.0048	-0.0200	13
A2	0.0023	0.0000	0.0021	-0.0004	0.0004	-0.0002	-0.0006	0.0020	0.0059	0.0002	0.0004	0.0028	0.0030	0.0027	0.0023	0.0014	0.0029	-0.0010	-0.0025	0.0238	6
A3	0.0002	-0.0021	0.0000	-0.0026	-0.0018	-0.0023	-0.0027	-0.0001	0.0038	-0.0019	-0.0017	0.0007	0.0009	0.0006	0.0002	-0.0007	0.0007	-0.0031	-0.0046	-0.0166	12
A4	0.0027	0.0004	0.0026	0.0000	0.0008	0.0002	-0.0001	0.0024	0.0064	0.0006	0.0008	0.0032	0.0034	0.0032	0.0028	0.0019	0.0033	-0.0005	-0.0020	0.0321	4
A5	0.0019	-0.0004	0.0018	-0.0008	0.0000	-0.0006	-0.0009	0.0016	0.0056	-0.0002	0.0000	0.0024	0.0026	0.0024	0.0020	0.0011	0.0025	-0.0013	-0.0028	0.0170	8
A6	0.0025	0.0002	0.0023	-0.0002	0.0006	0.0000	-0.0003	0.0022	0.0062	0.0004	0.0006	0.0030	0.0032	0.0029	0.0025	0.0016	0.0031	-0.0008	-0.0023	0.0277	5
A7	0.0029	0.0006	0.0027	0.0001	0.0009	0.0003	0.0000	0.0025	0.0065	0.0008	0.0009	0.0033	0.0035	0.0033	0.0029	0.0020	0.0034	-0.0004	-0.0019	0.0342	3
A8	0.0003	-0.0020	0.0001	-0.0024	-0.0016	-0.0022	-0.0025	0.0000	0.0040	-0.0018	-0.0016	0.0008	0.0010	0.0007	0.0003	-0.0006	0.0009	-0.0030	-0.0045	-0.0141	11
A9	-0.0036	-0.0059	-0.0038	-0.0064	-0.0056	-0.0062	-0.0065	-0.0040	0.0000	-0.0057	-0.0056	-0.0032	-0.0030	-0.0032	-0.0036	-0.0045	-0.0031	-0.0069	-0.0084	-0.0892	19
A10	0.0021	-0.0002	0.0019	-0.0006	0.0002	-0.0004	-0.0008	0.0018	0.0057	0.0000	0.0002	0.0026	0.0028	0.0025	0.0021	0.0012	0.0027	-0.0012	-0.0027	0.0200	7

Table 12. (Continued)

	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	H_i	Rank
A11	0.0019	-0.0004	0.0017	-0.0008	0.0000	-0.0006	-0.0009	0.0016	0.0056	-0.0002	0.0000	0.0024	0.0026	0.0023	0.0019	0.0010	0.0025	-0.0014	-0.0029	0.0162	9
A12	-0.0005	-0.0028	-0.0007	-0.0032	-0.0024	-0.0030	-0.0033	-0.0008	0.0032	-0.0026	-0.0024	0.0000	0.0002	-0.0001	-0.0004	-0.0013	0.0001	-0.0038	-0.0053	-0.0290	16
A13	-0.0007	-0.0030	-0.0009	-0.0034	-0.0026	-0.0032	-0.0035	-0.0010	0.0030	-0.0028	-0.0026	-0.0002	0.0000	-0.0003	-0.0007	-0.0016	-0.0001	-0.0040	-0.0055	-0.0331	18
A14	-0.0004	-0.0027	-0.0006	-0.0032	-0.0024	-0.0029	-0.0033	-0.0007	0.0032	-0.0025	-0.0023	0.0001	0.0003	0.0000	-0.0004	-0.0013	0.0001	-0.0037	-0.0052	-0.0280	15
A15	0.0000	-0.0023	-0.0002	-0.0028	-0.0020	-0.0025	-0.0029	-0.0003	0.0036	-0.0021	-0.0019	0.0004	0.0007	0.0004	0.0000	-0.0009	0.0005	-0.0033	-0.0048	-0.0205	14
A16	0.0009	-0.0014	0.0007	-0.0019	-0.0011	-0.0016	-0.0020	0.0006	0.0045	-0.0012	-0.0010	0.0013	0.0016	0.0013	0.0009	0.0000	0.0014	-0.0024	-0.0039	-0.0034	10
A17	-0.0006	-0.0029	-0.0007	-0.0033	-0.0025	-0.0031	-0.0034	-0.0009	0.0031	-0.0027	-0.0025	-0.0001	0.0001	-0.0001	-0.0005	-0.0014	0.0000	-0.0038	-0.0053	-0.0305	17
A18	0.0033	0.0010	0.0031	0.0005	0.0013	0.0008	0.0004	0.0030	0.0069	0.0012	0.0014	0.0038	0.0040	0.0037	0.0033	0.0024	0.0038	0.0000	-0.0015	0.0426	2
A19	0.0048	0.0025	0.0046	0.0020	0.0028	0.0023	0.0019	0.0045	0.0084	0.0027	0.0029	0.0053	0.0055	0.0052	0.0048	0.0039	0.0053	0.0015	0.0000	0.0708	1

Figure 4. H_i Values of Alternatives
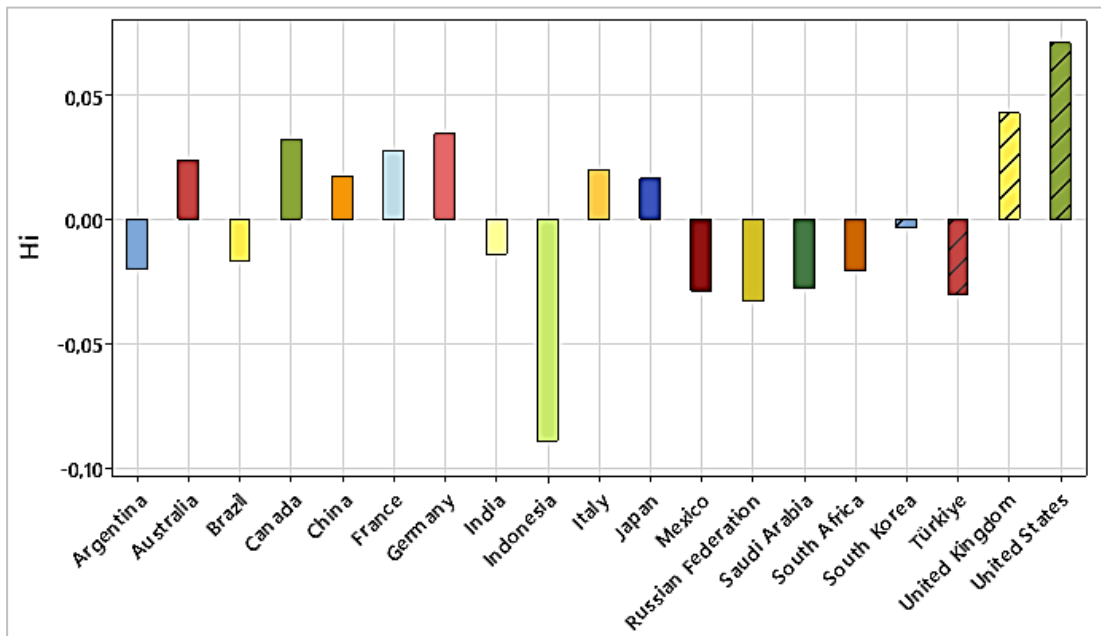
According to the data in Table 12 and Figure 4, the United States stands in the first position in terms of the scientific publication performance of G20 countries. United States is followed by United Kingdom, Germany, Canada, France, Australia, Italy, China, Japan, South Korea, India, Brazil, Argentina, South Africa, Saudi Arabia, Mexico, Türkiye, Russia and Indonesia.

4.3. Sensitivity Analysis of the Method Employed

C6, determined as the most important criterion in line with the process steps proposed by the method, is assigned to the first row of the column and the other criteria are allocated into the remaining rows. The weight coefficient of elasticity α_c is calculated by means of Equation (13) and the limits within which the most important criteria will be exposed to change is determined by means of Equation (14) as represented in Table 13.

Table 13. α_c and Δx Values for Each Criterion

Criteria	w_i	α_c	Δx
$C6$	0.2898	1	
$C1$	0.1061	0.1493	0.71021
$C2$	0.2519	0.3547	0.71021
$C3$	0.1430	0.2014	0.71021
$C4$	0.0517	0.0728	0.71021
$C5$	0.1576	0.2218	0.71021

In accordance with Equation (14), the limits of variation for the most important criterion are set as $-0.2898 \leq \Delta x \leq 0.7102$. The weight of the most important criterion is altered within the limits of calculated interval by means of Equation (15) involving twenty-two different scenarios (S) and the corresponding change in the weights of remaining criteria are determined by Equation (16) as represented in Table 14.

Table 14. Recalculated Criterion Weights Within Limited Interval

	Δx	w_6	w_1	w_2	w_3	w_4	w_5	$\sum w_i$
$S1$	-0.2898	0.0000	0.1493	0.3547	0.2014	0.0728	0.2218	1.000
$S2$	-0.25	0.0398	0.1434	0.3405	0.1934	0.0699	0.213	1.000
$S3$	-0.20	0.0898	0.1359	0.3228	0.1833	0.0662	0.2019	1.000
$S4$	-0.15	0.1398	0.1285	0.3051	0.1732	0.0626	0.1908	1.000
$S5$	-0.10	0.1898	0.121	0.2873	0.1632	0.059	0.1797	1.000
$S6$	-0.05	0.2398	0.1135	0.2696	0.1531	0.0553	0.1686	1.000
$S7$	0.00	0.2898	0.1061	0.2519	0.143	0.0517	0.1576	1.000
$S8$	0.05	0.3398	0.0986	0.2341	0.133	0.0481	0.1465	1.000
$S9$	0.10	0.3898	0.0911	0.2164	0.1229	0.0444	0.1354	1.000
$S10$	0.15	0.4398	0.0837	0.1987	0.1128	0.0408	0.1243	1.000
$S11$	0.20	0.4898	0.0762	0.181	0.1028	0.0371	0.1132	1.000
$S12$	0.25	0.5398	0.0687	0.1632	0.0927	0.0335	0.1021	1.000
$S13$	0.30	0.5898	0.0613	0.1455	0.0826	0.0299	0.091	1.000
$S14$	0.35	0.6398	0.0538	0.1278	0.0725	0.0262	0.0799	1.000
$S15$	0.40	0.6898	0.0463	0.11	0.0625	0.0226	0.0688	1.000
$S16$	0.45	0.7398	0.0389	0.0923	0.0524	0.0189	0.0577	1.000
$S17$	0.50	0.7898	0.0314	0.0746	0.0423	0.0153	0.0466	1.000
$S18$	0.55	0.8398	0.0239	0.0568	0.0323	0.0117	0.0355	1.000
$S19$	0.60	0.8898	0.0165	0.0391	0.0222	0.008	0.0244	1.000
$S20$	0.65	0.9398	0.009	0.0214	0.0121	0.0044	0.0134	1.000
$S21$	0.70	0.9898	0.0015	0.0036	0.0021	0.0007	0.0023	1.000
$S22$	0.7102	1.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.000

The order of the countries is recalculated using the new criteria weights that emerged by applying these twenty-two different scenarios and is illustrated in Figure 5.

Figure 5. Sensitivity Analysis of MCDM Method
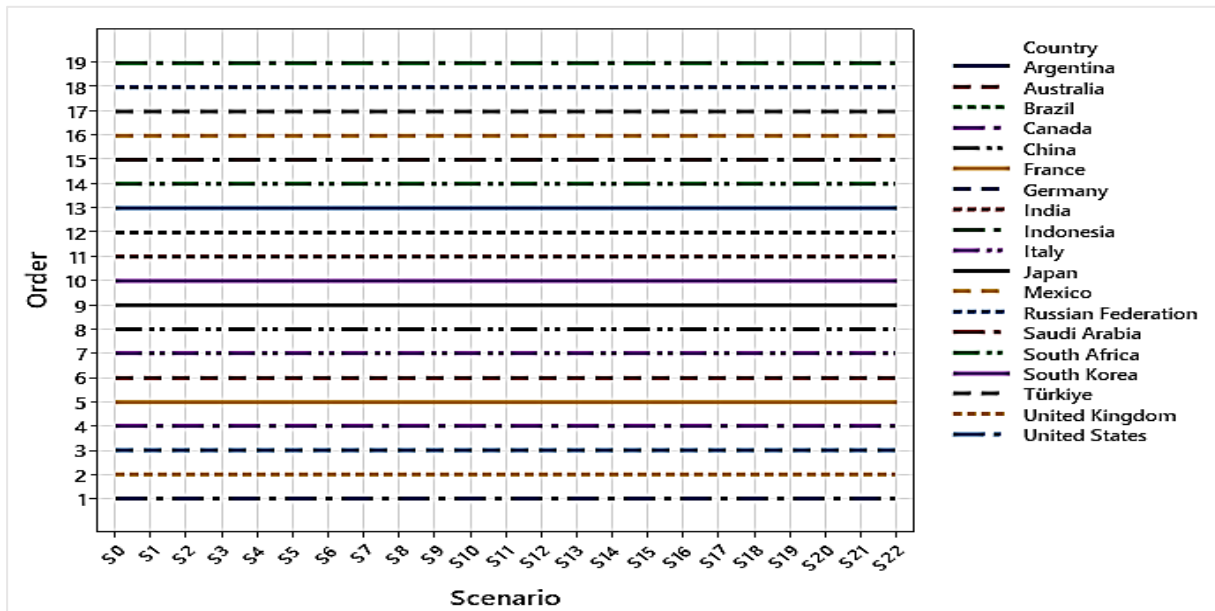
The chart depicted in Figure 5 illustrates that the alteration in the significance weights of the remaining criteria, resulting from the reduction in the weight of the most important criterion, does not influence the ranking of the countries under any circumstance. This situation indicates that whatever the weights of the criteria are, there will be no variations in the performance order of the countries.

Apart from the sensitivity analysis carried out depending on the variation of the criteria weights within a certain interval, the orders obtained by CODAS-LN method are also investigated with different MCDM methods and the results obtained are illustrated in Figure 6.

Figure 6. Comparison with Different MCDM Methods
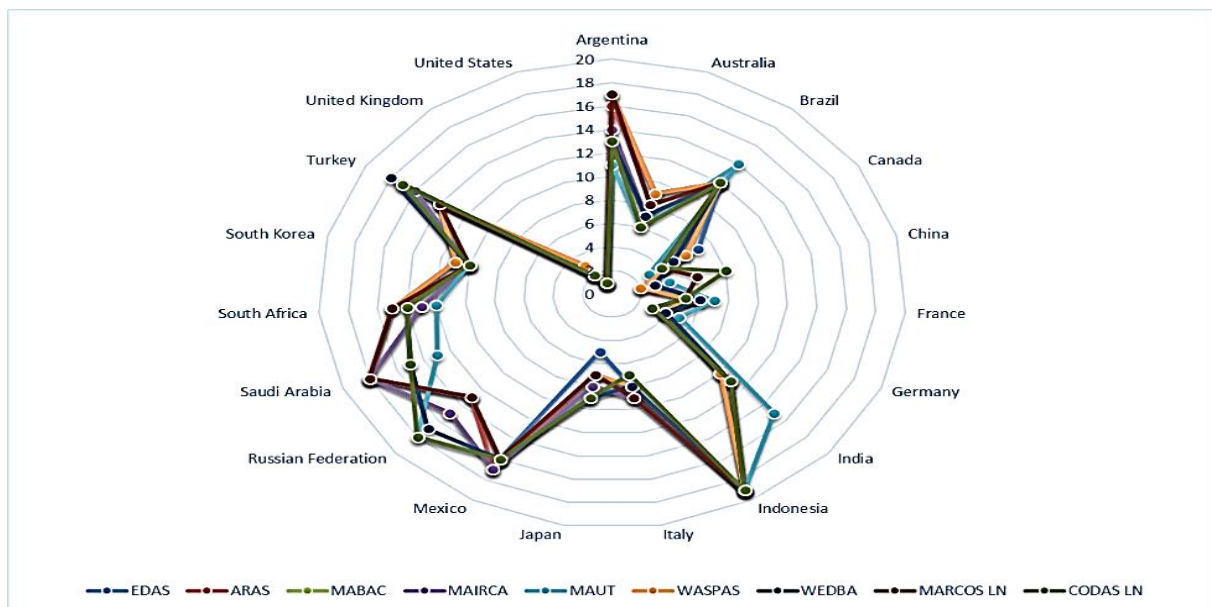
The ranking results depicted in Figure 6 indicate that there may be minor variations in the rankings when employing different MCDM methods, but these discrepancies do not yield any

significant differences. Moreover, it is firmly established that the United States consistently exhibits the highest level of performance in terms of scientific publications across all scenarios.

5. RESULTS AND DISCUSSION

Based on the idea that the level of development of a country is directly related to its achievements in the scientific domain, investigating the contributions of economically influential countries to science in today's world constituted the main reference point of this study. The scientific publications of the G20 countries were analysed not only in terms of their numerical size, but also by other criteria, including the extent to which they are taken into consideration by other scientists. The remaining criteria considered in this regard are number of citable documents, number of citations, number of self-citations, number of citations per document and H-Index parameters. Another important point is that it is required to determine which criterion has the highest impact for the assessment of scientific publication performance of these countries. On the other hand, the priority of the other criteria against each other should be expressed in numerical terms.

In order to fulfil these prerequisites, the opinions of ten academicians involved in the fields of engineering, economics, social sciences, medicine and basic sciences are requested and the priority levels of the mentioned criteria are determined by employing the Fuzzy SWARA method. By virtue of results derived from the relevant procedure, it can be inferred that the H-Index stands out as carrying maximum weight in relation to other criteria. Furthermore, the importance of Number of Citable Documents, Number of Citations per Document, Number of Citations, Number of Documents and Number of Self Citations criteria are ordered in descending order.

Following the transaction for determination of the importance level of the criteria, ordering of G20 countries in terms of scientific publication performance is conducted. Since the scientific publication data considered for each country are skewed and therefore not normally distributed, the CODAS-LN method involving logarithmic normalisation is preferred. The ranking results obtained through the application of the method indicate that the United States is in a very superior position in terms of scientific publication performance. The other countries in the top five are the United Kingdom, Germany, Canada and France, while Australia, Italy, China, Japan, South Korea, India, Brazil, Argentina, South Africa, Saudi Arabia, Mexico, Türkiye, Russia and Indonesia are the other countries in the descending order. Considering the 2022 data of the World Bank, it is clearly observed that the deep efforts of these countries in the scientific field directly reflect their Gross Domestic Product (GDP) values. Therefore, the contribution of scientific endeavours to economic welfare of countries is undeniable.

As a result of the sensitivity analysis carried out to determine whether the method used in the research provides a stable and consistent ranking, it is determined that although the weight of the most important criterion is reduced within a certain interval, no deviation is detected. Therefore, it is

confirmed that the analysis conducted for the ranking of the countries yields sound results. In addition to this sensitivity analysis, a comparison with other multi-criteria decision-making methods is also carried out and it is observed that there is no significant difference between the results generated by these methods.

The method applied for G20 countries in this study reveals that it can be a reference for universities, institutes, research institutions and scientific journals in terms of their own performance evaluation.

In this respect, generation of scientific publications in a country is an indicative measure of that country's contribution to the scientific field. In addition, it is a concrete sign that reveals the country's efforts in research and development activities, the quality of their scientific research institutions and the knowledge generation capacity of the country's scientists. The significant increase in the number of publications indicates the existence of a determined and enthusiastic scientific community. However, it is essential to evaluate scientific publications not only in terms of quantity but also in terms of their quality. Satisfying both quantity and quality criteria in scientific publications will be a more meaningful achievement in terms of reliability and credibility of such studies. While the high volume of scientific publications may give an idea about the efforts in the scientific field, it is the quality of their content that determines the impact and importance of these publications. Other aspects to be considered are whether scientific publications lead to tangible productivity and whether they are taken as references by other researchers.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

Comparative Performance Measurement in the Full Electric Vehicle Market

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Abstract

In this study, Entropy, WASPAS and MOORA methods, which are multi-criteria decision-making techniques, are used to measure the performance of the best-selling full electric cars in Türkiye as of October 2023 by the Automotive Distributors and Mobility Association using 12 different criteria. The weights of the criteria were calculated with the Entropy method. Then, the electric cars were ranked by evaluating their performance with the WASPAS and MOORA-based methods. In the study, it was concluded that the top three criteria with the highest weights were power (HP), fast charging time and battery capacity, while the top three highest performing electric cars were TOGG T10X V2 Long Range, Volvo XC40 RWD (Single Motor) and Tesla Y Long Range RWD (4x2).

Keywords: Full Electric Car, Electric Vehicle (EV), Entropy, WASPAS, MULTIMOORA.

Article Type	Application Date	Admission Date
Research Article	December 21, 2023	February 25, 2024

1. INTRODUCTION

Greenhouse gas emissions are one of the most important causes of global warming. Fossil fuels used in transportation and electricity generation increase greenhouse gas emissions and therefore cause global warming. Renewable energy sources have become more important with the increase in air and water pollution as a result of rapid production and consumption, the gradual depletion of limited resources, and the awareness of leaving a livable world to future generations (Çoşkun, 2022a, p. 69).

The Paris Agreement, which entered into force in November 2016, aims to keep the global average temperature increase below 2 degrees. In this context, European Union countries have committed to reduce greenhouse gas emissions by 40%, CO2 emissions from vehicles by 55%, and those from pickup trucks by 50% by 2030. The law also proposes to eliminate emissions from pickup trucks and cars by 2035 (European Environment Agency, 2022). Road transportation plays an important role in achieving this goal (Biswas & Das, 2019, p. 531). Electric vehicles have begun to become more visible with the increasing incentives provided to electric vehicles not only by European countries, but also by China and the United States of America, the competition for a share in the electric vehicle (EV) market has intensified and consumers have become more sensitive to the environment (Gavcar & Kara, 2020, p. 352). In parallel with the efforts to reduce oil consumption, energy technologies that provide less carbon emissions have been supported, alternative energy policies have been adopted and important studies have been carried out in the public and private sectors. With the high demand for hybrid and electric vehicles in recent years, automobile manufacturers have started to focus on electric vehicle production. Brands around the world such as General Motors, BMW, Ferrari, Daimler, Honda, Hyundai, Jaguar, Land Rover, Renault, Toyota, Volkswagen and Volvo have announced that they will gradually end the production of diesel and gasoline vehicles in different periods after 2025 and switch to electric vehicle production only (Çoşkun, 2022a, p. 69).

According to the Economic and Market Report of The European Automobile Manufacturers' Association – ACEA (2023); While automobile sales increased by approximately 9% on a global scale in the first three quarters of 2023, battery electric vehicle sales increased by 55%. The share of battery electric models is expected to increase to 14.5% by the end of 2023. Information obtained from the World Electric Vehicle Sales Database also confirms these rates and shows that the acceleration in electric vehicle sales continues rapidly. In the report on electric vehicle sales volumes prepared by Neil King and published on evvolumes.com, the unit volume of global EV sales is expected to increase from 10.5 million in 2022 to 14.1 million in 2023 and over 31 million in 2027. The 2023 sales forecast equates to a 34% increase in EV sales compared to 2022. It is estimated that it will exceed 74.5 million units in 2035 and that two-thirds of global light vehicle sales will be made up of EVs (King, 2023). China is the main driving force of this global volume and growth. Supported by the Chinese market and increasing public incentives, China's BYD (Build Your Dreams) has become the world's largest EV manufacturer, surpassing Tesla in 2022. It is expected to continue this in 2023.

The sales rates recorded for electric cars in the European region and globally are similar to the rates in the Turkish market. According to the Automobile and Light Commercial Vehicle Market Assessment 2023 November bulletin of the Automotive Distributors & Mobility Association (2023) published on December 4, 2023, 6214 electric cars were sold in Türkiye in the January-November 2022 period, and 60101 electric cars were sold in the January-November 2023 period. In the same period, automobile and light commercial vehicle sales increased by 66.2%, while the EV increase was 867.2%. According to the data of the Turkish Electric and Hybrid Vehicles Association – TEHAD (2023), electric vehicle sales in Türkiye, which were 44 in 2016 and 77 in 2017, reached 844 in 2020 and 2849 in 2021. In 2022, it reached a total of 8210 units, an increase of 188% compared to 2021. Again, according to the information in TEHAD, charging station investments of various companies have increased rapidly, and charging services for electric vehicles have become available in all 81 provinces. According to the data of the Turkish Statistical Institute (TUIK, 2023), there is a rapidly growing market. According to TUIK's Motor Land Vehicles October 2023 report, the rate of traffic registrations of electric vehicles increased from 1.2% in January-October 2022 to 5.9% in 2023, according to all fuel groups.

Acting with the awareness of the importance of EA production and use, Türkiye wants to exist in the sector with the TOGG (Türkiye'nin Otomobili Girişim Grubu) branded electric vehicle factory established in Bursa-Gemlik district and capture the opportunity it missed in the automobile sector in the EA market. Thus, dependence on fossil fuels needed for automobiles will be reduced, savings will be made on imports of fossil fuels, and a contribution will be made to the fight against global warming and climate change.

Increasing supplies of manufacturers and technological developments; governments' taxation approaches and environmental policies; changing demand trends as a result of individuals' changing perceptions and attitudes towards sustainability; have already started to make electric vehicles a component of a large market. Research on sustainable transportation systems that can meet energy needs with alternative energy sources, instead of conventional transportation systems with internal combustion engines and rubber wheels, which have a negative impact on environmental pollution, especially due to greenhouse gas emissions, has intensified today. Among alternative approaches, especially electric vehicles are one of the most popular options for the future that can be used instead of vehicles with conventional systems. In this regard, vehicles with internal combustion engines negatively affect the quality of human life, primarily due to the greenhouse gas emissions they create and the noise they cause. In Smadi and Hussein's (2020) research on emission comparison between alternative vehicles, EVs, which are shown to have zero local emissions, eliminate dependence on fossil-based fuels, while also offering energy efficient, flexible and reliable solutions with recovery technologies (Smadi & Hussein, 2020). However, considering the features of EVs, there are different criteria that may or may not be related to each other. These criteria must be evaluated for maximum or minimum purposes in terms of benefit or cost. Multi-criteria decision-making techniques are methods developed to make these

evaluations (Çoşkun, 2022b, p. 175). One of the most important steps of the decision process is the evaluation of the criteria of various alternatives, that is, the process of weighting. The weighting operations performed as a result of the evaluation of the criteria by experts in the field are subjective weighting, and the prioritization operations performed based on the values of the quantities of the criteria are objective weighting (Demircioğlu & Coşkun, 2018, p. 184-185). Techniques such as Analytical Hierarchy Process (AHP), The Decision-Making Trial and Evaluation Laboratory (DEMATEL), Stepwise Weight Assessment Ratio Analysis (SWARA) and Weighted Influence Non-linear Gauge System (WINGS), subjective weighting methods, Criteria Importance Through Intercriteria Correlation (CRITIC), ENTROPY, Mean Weight (MW) and Standard Deviation (SD) are objective weighting methods. This study aims to evaluate and compare the criteria that are effective in the selection of electric vehicles using the Entropy technique, Weighted Aggregated Sum Product Assessment (WASPAS) method and MOORA (Multi-objective Optimization By Ratio Analysis) method. For this purpose, in the study, the performance of the 11 best-selling fully electric cars in Türkiye as of October 2023 by the Automotive Distributors and Mobility Association was measured with the help of 12 different criteria. In the study, unlike other studies, the optimal lambda value was also calculated for WASPAS method and it was investigated whether the performance ranking changed. In addition, the study contributes to the EV sector as it is the first study to include TOGG, a domestic and national electric vehicle. In the following sections of the study, a literature review is included, then Entropy, WASPAS and MOORA methods are explained, analyses are performed and the results are interpreted. In the last section, general evaluation and policy recommendations are made.

2. LITERATURE REVIEW

Performance evaluation of electric vehicles has become popular in recent years with the developing electric vehicle market. Although there are many studies in the literature on the performance of internal combustion vehicles, there are a limited number of studies on the performance evaluation of electric vehicle models. The vehicle selection problem has been examined with various methods and multi-criteria decision-making methods have been frequently used in vehicle selection problems. Within the scope of this study, studies in the literature addressing vehicle selection problems were examined.

Baležentis et al. (2012) used the fuzzy MULTIMOORA technique to evaluate four alternatives under eight criteria for a personnel selection problem in a company. In the study by Aksoy et al. (2015), multi-criteria decision-making methods were used to evaluate the performance of eight enterprises belonging to TKİ (Turkish Coal Enterprises) between 2008 and 2012. In the study where seven criteria were weighted with AHP, MULTIMOORA and COPRAS methods were used in performance ranking. In Aytekin's (2016) study, eight criteria that are effective in patients' hospital selection were addressed. Firstly, the criteria were weighted according to the answers given through the questionnaire, and then eight different alternatives, three public and five private hospitals in Eskişehir city center, were ranked with MULTIMOORA. Onat et al. (2016) used the Fuzzy TOPSIS method for the selection of hybrid

and electric vehicle technologies for sustainable transportation. 16 different criteria classified as economic, environmental and social were discussed in line with the opinions of 3 experts. In Kılıç and Çerçioğlu's (2016) study, priority ranking was made for the railway connection planned for 78 locations such as organized industrial zones, plants, factories, etc. with high load carrying capacity, where an interconnection line is considered by TCDD. CRITIC, SD and MW techniques were used for weighting and TOPSIS and VIKOR methods were used for ranking the alternatives. Ömürbek and Aksoy (2017) used the MULTIMOORA technique in their study in which they aimed to evaluate the performance of thirty-two different manufacturing sub-sectors constituting the manufacturing sector between 2005 and 2015. Prakash and Mohanty (2017) evaluated the performance of 50 passenger cars with Data Envelopment Analysis (DEA). Emissions, braking, ride quality, acceleration, turning circle and trunk capacity were selected as inputs, while torque and miles per gallon were determined as outputs. An output-oriented BCC model was selected. They concluded that 27 of the models analyzed were efficient.

Biswas and Das (2019) evaluated EV performance with the MABAC method. Energy consumption, price, top speed, acceleration and range were used as evaluation criteria. Hyundai Ioniq was found to be the best-performing EV. Ulutaş and Karaköy (2019) aimed to rank G20 countries according to their LPI values with a multi-criteria decision-making model consisting of SD and WASPAS methods. Koşaroğlu (2020) aimed to measure the performance of deposit banks whose shares are traded in BIST by using SD and Evaluation based on Distance from Average Solution (EDAS), which are multi-criteria decision-making techniques. In Işık and Koşaroğlu's (2020) study, it was aimed to measure and evaluate the performance of oil companies listed on BIST based on market indicators for a 10-year period covering 2010-2019. SD and Multi-Attribute Utility Theory (MAUT) methods were used to measure the performances.

In the study conducted by Gavcar and Kara (2020), ENTROPY and TOPSIS methods were used for electric car selection. 11 different alternatives were evaluated, and the 5 criteria determined were battery capacity, vehicle horsepower, aerodynamic coefficient, range with full charge and sales price. According to the criterion weights obtained by ENTROPY, the two most important criteria were the horsepower and price of the vehicle, while the least important criterion was found to be the aerodynamic coefficient. In the ranking of alternatives, 2 electric vehicle models of the Tesla brand rank first and second. Khan et al. (2020) used the fuzzy TOPSIS method for sustainable commercial taxi selection. 7 different electric vehicle alternatives from Honda and Toyota; 10 different criteria classified as economic, environmental and social are listed in line with expert opinions.

In Babacan's (2020) study, 22 automobile alternatives that middle-income individuals can purchase were analyzed under 8 criteria. AHP was used to obtain criterion weights and VIKOR was used to rank the alternatives. In the study of Alakaş et al. (2021), it was tried to determine which of the public transportation vehicles is more suitable. The weights of six main criteria (internal volume, external volume, fuel type, cost, performance, passenger demands) and 24 sub-criteria were determined

by AHP method. 3 different alternatives were ranked by TOPSIS method. Maheshwari, et al. (2021) examined and analyzed the variables in the design of brake discs using finite element analysis and multi-criteria decision-making approach. 32 alternatives with 7 variables (performance parameters) were ranked using EDAS, Complex Proportional Assessment (COPRAS), TOPSIS and Additive Ratio Assessment (ARAS) methods and SD method was used for criteria weighting.

Ecer (2021) evaluated the performance of electric vehicles with different MCDM techniques, taking into account acceleration, price, battery and driving range. According to the study, Tesla Model S was determined as the best alternative among the EV evaluated. Sonar and Kulkarni (2021) evaluated electric vehicles sold in India using an integrated technique. For performance evaluation, they chose driving range, battery capacity, price, torque, seating capacity and charging time. They used the MABAC method integrated with AHP to evaluate electric vehicle models. They concluded that Hyundai Kona is the best electric vehicle in India. Öztayşi et al. (2021) used the Fuzzy KEMIRA method for electric vehicle selection. For 5 alternative vehicles, 6 criteria, 3 for cost and 3 for benefit purposes, are the sales price of the vehicle, transportation cost for 100 km, maintenance cost, maximum range with full charge, comfort and maximum speed. Ziemba (2021) evaluated the electric vehicle market in Poland. They determined acceleration, battery capacity, charging time, energy consumption, price, torque, maximum speed and cargo volume as criteria. They concluded that Volkswagen ID 3 and Nissan Leaf are the best-performing electric vehicles in Poland.

Taş et al. (2021) developed a solution proposal for the location selection of a logistics facility, which is critical for the continuation of operational activities in the fight against migration in the Aegean Region, with AHP and MULTIMOORA techniques. Rani et al. (2021) integrated SVNSs (Single-valued neutrosophic clusters), CRITIC and MULTIMOORA methods for the selection of the most appropriate food waste treatment method among a number of alternative methods.

In the study conducted by Çoşkun (2022a), SD was used as the weighting method in electric car selection and MULTIMOORA was used to rank the alternatives. According to the findings, the torque of the vehicle is the most important criterion, and the maximum speed of the vehicle is the least important criterion. Among the alternatives determined under various constraints, the Hyundai Kona 150 kW model was found to be the best alternative. In another study conducted by Çoşkun (2022b), 8 criteria that determine the performance of electric vehicles were examined with multi-criteria decision-making techniques. In criterion weighting or prioritization, ENTROPI and CRITIC methods were used as objective techniques, and AHP and WINGS methods were used as subjective techniques. In the findings obtained in the study, the most important criterion was found to be the price criterion, using 4 different methods. The least important criterion was found to be the efficiency rate criterion with ENROPI and AHP. The same criterion was found in the penultimate row in the WINGS method. Approximately the same results were obtained with 3 methods in terms of the least important criterion, and with 4 methods in terms of the most important criterion.

Gökgöz and Yalçın (2022) measured the performance of the top 10 best-selling EVs with the TODIM method. Accordingly, Tesla Model 3 is the best-performing electric vehicle. Small-sized hatchbacks were found to perform relatively worse compared to other EVs. In addition, range was found to be the most effective criterion for choosing an electric vehicle. Aydın (2024) aimed to evaluate the performance of electric buses produced and sold in Türkiye used in public transportation. For this, he used WASPAS and Entropy methods from multi-criteria decision-making techniques.

As can be understood from the literature, it is seen that multi-criteria decision-making techniques are used in electric vehicle selection and the issue is discussed from various perspectives. The importance rankings of the criteria differ depending on the objective or subjective approaches used in evaluating the criteria or the criteria selected. In this study, the criteria to be used when measuring the performance of electric vehicles were selected based on the literature (Khan et al., 2020; Ecer, 2021; Sonar & Kulkarni, 2021; Öztayşi et al., 2021; Ziemba, 2021; Çoşkun, 2022a; Çoşkun, 2022b, Aydın, 2024). In this study, Entropy, WASPAS and MOORA methods, which are objective weighting techniques, were preferred and, unlike other studies, the optimal lambda value was also calculated for WASPAS method to reveal whether the performance ranking had changed.

3. METHOD AND ANALYSIS

In the study, the performance of the 11 best-selling fully electric cars in Türkiye as of October 2023 by the Automotive Distributors and Mobility Association was measured with the help of 12 different criteria, using Entropy, WASPAS and MOORA methods, which are among the multi-criteria decision-making techniques. The criteria used within the scope of the study were weighted with the Entropy method, and then the performance ranking was performed for the fully electric cars subject to analysis with the selected Multi Criteria Decision Making methods. Also, the equally weighted results are presented.

3.1. Research Method

Within the scope of the study, the weights of the criteria were determined with the Entropy method, one of the multi-criteria decision-making techniques, and then the performance levels of the fully electric cars in question were tried to be determined with the selected Multi-Criteria Decision-Making methods.

3.1.1. Entropy Method

The concept of entropy was used by Rudolph Clausius (1865) to describe chaos within the system. (Zhang et al. 2012, p. 344). Today, the concept of entropy was developed by Shannon (1948) for use in information technologies. The entropy method was developed to measure the amount of useful information. The most important feature of the method is that it can be applied to the entire structure. However, the method has an objective nature. The entropy method consists of 5 steps (Aydın et al. 2018, p. 1129).

Step 1: Normalization of the decision matrix is performed. Criteria are normalized by taking into account benefit and cost structures.

$$r_{ij} = \{x_{ij}|max_{ij}\}(i = 1 \ldots \ldots m; J = 1 \ldots \ldots n) \tag{1}$$

$$r_{ij} = \{x_{ij}|min_{ij}\}(i = 1 \ldots \ldots m; J = 1 \ldots \ldots n) \tag{2}$$

Step 2: P_{ij} value is calculated by normalization.

$$P_{ij} = \frac{a_{ij}}{\sum_{i=1}^{m} a_{ij}}; \forall_j \tag{3}$$

i = alternatives

j = criteria

P_{ij} = normalized values

Step 3: Calculating the entropy of E_j

$$E_j = -k \sum_{i=1}^{m} \left[P_{ij} \ln P_{ij} \right]; \forall_j \tag{4}$$

$k = (\ln(n))^{(-1)}$

k = Entropy coefficient

E_j = entropy value

P_{ij} = normalized values

Step 4: Calculation of d_j uncertainty

$$d_j = 1 - E_j; \forall_j \tag{5}$$

Step 5: w_j weight values are calculated to determine the importance of criterion j.

$$w_j = \frac{d_j}{\sum_{j=1}^{n} d_j}; \forall_j \tag{6}$$

3.1.2. WASPAS Method

WASPAS Method was developed by Zavadskas et al. in 2012. The method consists of the combination of WSM (Weighted Sum Model) and WPM (Weighted Product Model). The aim of the method is to increase ranking accuracy (Zavadskas et al., 2013, p. 3).

WASPAS method consists of 6 steps. The steps in question can be listed as follows: (Chakraborty & Zavadskas, 2014, p. 2-3; Zavadskas et al., 2012, p. 3).

Step 1: Creating the Decision Matrix:

$$x = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ x_{m1} & x_{m1} & \cdots & x_{mn} \end{bmatrix} \tag{7}$$

Above; m is the number of candidate alternatives, n is the number of evaluation criteria. x_{ij} is the performance of the ith alternative considering the jth criterion.

Step 2: Creating the Normalized Decision Matrix:

In the WASPAS method, which is an equal combination of two separate MCDM approaches, linear normalization is performed using the following two equations.

Equality to be used for benefit criteria;

$$\bar{x}_{ij} = x_{ij} / \max_i x_{ij} \tag{8}$$

The equation to be used for cost criteria;

$$\bar{x}_{ij} = \min_i x_{ij} / x_{ij} \tag{9}$$

Normalization is done using these equations. Above x_{ij} value is the normalized version of x_{ij} value.

Step 3: Based on Weighted Sum Model (WSM). Calculating the overall relative importance of the alternative:

In the WASPAS method, a simultaneous optimism criterion is sought based on two equality criteria. The total relative value importance is calculated by multiplying the ith alternative value by the weight value of each criterion and then adding each alternative value respectively as follows.

$$Q_i^{(1)} = \sum_{j=1}^{n} \bar{x}_{ij} . w_j \tag{10}$$

Step 4: Based on Weighted Product Model (WPM). Calculating the overall relative importance of the alternative:

In this step, the total relative importance values according to WPM are calculated with the help of the formula below. For the value of each alternative criterion over the normalized decision matrix, the power of the relevant criterion weight is taken and the value is calculated by multiplying the found values for each alternative respectively.

$$Q_i^{(2)} = \prod_{j=1}^{n} \left(\bar{x}_{ij} \right)^{w_j} \tag{11}$$

Step 5: Calculation of the weighted common general criterion value for Weighted Sum and Weighted Multiplication Models:

$$Q_i = 0.5 Q_i^{(1)} + 0.5 Q_i^{(2)} = 0.5 \sum_{j=1}^{n} \overline{x}_{ij}.w_j + 0.5 \prod_{j=1}^{n} \left(\overline{x}_{ij} \right)^{w_j} \tag{12}$$

Step 6: Calculating the Total Relative Importance of the Alternatives:

Within the scope of the WASPAS method for the ranking of the decision-making process, a general model has been developed to determine the total relative importance of the alternatives.

$$Q_i = \lambda Q_i^{(1)} + \left(1 - \lambda\right) Q_i^{(2)} = \lambda \sum_{j=1}^{n} \overline{x}_{ij}.w_j + \left(1 - \lambda\right) \prod_{j=1}^{n} \left(\overline{x}_{ij} \right)^{w_j} \quad \left(\lambda = 0, 0.1, 0.2, \ldots, 1 \right) \tag{13}$$

The identified alternatives are ranked according to the Q value, that is, the best alternative must have the highest Q value. When λ=0, the WASPAS method turns into WPM, and when λ=1, it turns into WSM.

In addition, the variance of the WASPAS method seen in equation (13) is estimated based on WSM and WPM and is shown with the coefficient λ. Accordingly, the optimal λ value in the study was calculated with the help of the following formula (Zavadskas et. al. 2012, p. 4)

$$\lambda = \frac{\sigma^2 \left(Q_i^{(2)} \right)}{\sigma^2 \left(Q_i^{(1)} \right) + \sigma^2 \left(Q_i^{(2)} \right)} \tag{14}$$

3.1.3. MOORA Method

The MOORA method, first introduced by Brauers (2004) can be successfully applied to solve various types of complex decision making problems in manufacturing. The MOORA method starts with a decision matrix showing the performance of different alternatives with respect to various attributes (Brauers & Zavadskas, 2006). When MOORA method is compared with other multi-criteria decision making methods, it is found that it has some advantages. As a matter of fact, the MOORA method provides more reliable results with fewer calculations, using the least mathematical operations. Different approaches such as MOORA-Ratio Method, MOORA-Reference Point Theory, MOORA-Full Product Form, Multi-MOORA have been developed in the literature (Brauers & Zavadskas, 2012; Altın, 2022, p. 374). The MOORA-Ratio method consists of 3 steps.

Step 1: Constructing the decision matrix of the problem: The decision matrix shows the performance of different alternatives with respect to the various criteria. x_{ij} is the performance measure of ith alternative on j^{th} criterion, m is the number of alternatives and n is the number of criteria.

$$x = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \vdots & \vdots \\ x_{m1} & x_{m1} & \cdots & x_{mn} \end{bmatrix} \tag{15}$$

Step 2: Creating the Normalized Decision Matrix: The matrix is normalized by dividing the performance value (x_{ij}) of each alternative according to each criterion by the square root of the sum of the squares of the performance values. Linear normalization is performed using the following formula.

$$Nx_{ij} = \frac{x_{ij}}{\sqrt{\sum_{j=1}^{m} x_{ij}^2}} \tag{16}$$

Here, $j = 1, 2, \ldots, m$ where m is the number of alternatives, $i = 1, 2, \ldots, n$ where n is the number of evaluation criteria, x_{ij} is the value of the performance of alternative i according to criterion j and Nx_{ij} is the normalized value of x_{ij}, i.e. the normalized performance value of alternative i according to criterion j. This value can be in the range [0;1].

Step 3: Calculating Differences for Optimization: For optimization, the normalized sum of maximized performance values $\left(\sum_{i=1}^{i=g} Nx_{ij} \right)$ minus the sum of minimized performance values $\left(\sum_{i=g+1}^{i=n} Nx_{ij} \right)$.

$$Ny_j = \sum_{i=1}^{i=g} Nx_{ij} - \sum_{i=g+1}^{i=n} Nx_{ij} \tag{17}$$

Where g is the number of attributes to be maximized, (n−g) is the number of attributes to be minimized, and Ny_j is the normalized assessment value of ith alternative with respect to all the attributes. In this formula linearity concerns dimensionless measures in the interval [0;1]. The Ny_j values are ranked in descending order to arrive at a performance ranking.

The second part of MOORA method is the Reference Point Theory. In the reference point theory, in addition to the ratio method, for each criterion, the highest value if the objective is maximization and the smallest value if the objective is minimization are determined as reference points (r_i). Then, the distances of these points from the normalized value of x_{ij} (Nx_{ij}) are found.

$$D_j = \left(r_i - Nx_{ij} \right) \tag{18}$$

Then, the maximum values are selected for each i. alternative. This time, the selected values are ranked from smallest to largest to arrive at the performance ranking (Stanujkic et al., 2012).

Brauers and Zavadskas developed the full-multiplicative form of the MOORA method in 2010. Here, $j = 1, 2, \ldots, m$ where m is the number of alternatives, $i = 1, 2, \ldots, n$ where n is the number of evaluation criteria, x_{ij} is the value of the performance of alternative i according to criterion j, and U_j is the suitability of alternative j for the objective (Brauers & Zavadskas, 2010, p. 13-14).

$$U_j = \prod_{i=1}^{n} x_{ij} \tag{19}$$

In this approach, for each alternative j, the product of maximized criteria A_j is divided by the product of minimized criteria B_j.

$$A_j = \prod_{g=1}^{i} x_{gi} \quad ; \quad B_j = \prod_{\substack{m \\ k=i+1}}^{n} x_{kj} \quad ; \quad U_j^{'} = \frac{A_j}{B_j} \tag{20}$$

Finally, the $U_j^{'}$ values are ranked from largest to smallest to arrive at the performance ranking.

MULTIMOORA, which is the combined result of these methods, is not a method in itself. It provides re-evaluation of the rankings made as a result of different MOORA approaches according to their dominance and concentration. In this way, it increases the reliability of research.

The diagram below shows the relationship structure between MULTIMOORA decision matrix, ratio method, reference point theory and full-multiplicative form. Thus, MULTIMOORA becomes the most robust system of multi-criteria optimization (Brauers & Zavadskas, 2012, p. 8-11).

Figure 1. Diagram of MULTIMOORA
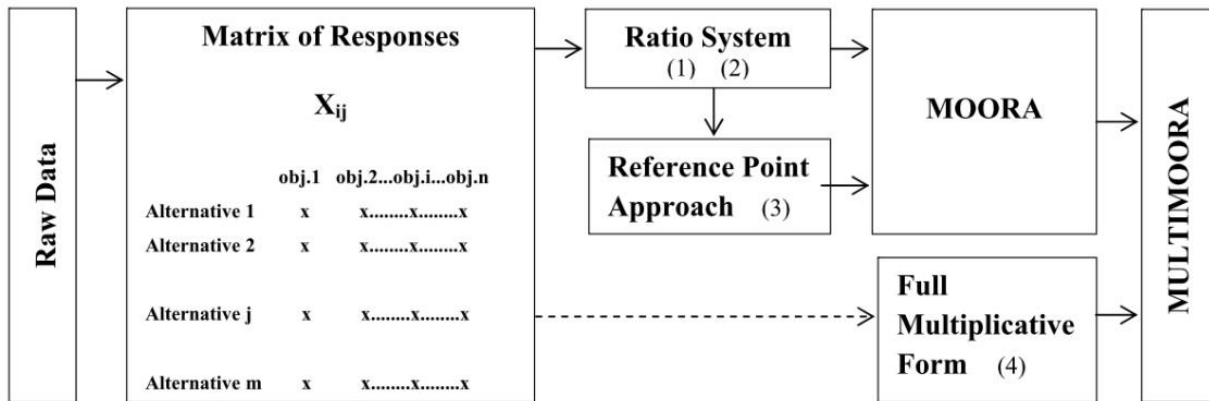
3.2. Analysis of Results

In the study, the performances of the best-selling fully electric cars in Türkiye as of October 2023 by the Automotive Distributors and Mobility Association were measured with the help of 12 different criteria. Data regarding the fully electric cars and performance criteria included in the study are given in Table 1, and the impact aspects of the criteria on performance are given in Table 2.

Table 1. Full Electric Cars and Performance Criteria

	Average Consumption (100 km) (kWh)	Range Average (WLTP Estimated)	Battery Capacity (kWh)	Fast Charging Time (10-80% with 50 kW DC fast charging)	Power (HP)	Torque (Nm)
Tesla Y Long Range RWD (4x2)	16.70	455.00	57.50	30 min.	299.00	350.00
TOGG T10X V2 Long Range	16.90	523.00	88.50	28 min.	218.00	350.00
Renault Zoe e-Tech R135	17.70	386.00	52.00	65 min.	135.00	245.00
MG4 Luxury	16.60	435.00	64.00	40 min.	204.00	250.00
Skywell ET5	17.00	489.00	86.00	38 min.	204.00	320.00
Opel Mokka-e	16.20	327.00	50.00	30 min.	136.00	260.00
Renault Megane E-Tech iconic	15.30	450.00	60.00	30 min.	220.00	300.00
Volvo XC40 RWD (Single Motor)	16.90	567.00	79.00	27 min.	252.00	420.00
Dacia Spring e	13.00	220.00	26.80	56 min.	65.00	113.00
MG ZS EV	17.80	440.00	72.60	40 min.	156.00	280.00
New Opel Corsa Edition / GS	16.10	354.00	50.00	40 min.	136.00	260.00

	Price (Thousand TL)	Aerodynamic (Driction) Coefficient (Cd)	Standard Luggage Volume (Lt)	Acceleration (0-100 km/sec)	Efficiency Rate (Battery Capacity/ Average Range) (kWh/Km)	Maximum Speed (Km/h)
Tesla Y Long Range RWD (4x2)	2,207.90	0.23	363.00	6.90	0.13	217.00
TOGG T10X V2 Long Range	1,563.50	0.28	441.00	7.80	0.17	185.00
Renault Zoe e-Tech R135	1,348.90	0.24	338.00	9.50	0.13	140.00
MG4 Luxury	1,499.00	0.25	363.00	7.90	0.15	160.00
Skywell ET5	1,655.00	0.35	467.00	7.90	0.18	150.00
Opel Mokka-e	1,493.90	0.36	310.00	9.20	0.15	150.00
Renault Megane E-Tech iconic	1,599.00	0.33	440.00	7.40	0.13	160.00
Volvo XC40 RWD (Single Motor)	2,411.00	0.32	419.00	7.30	0.14	180.00
Dacia Spring e	969.00	0.36	290.00	13.70	0.12	125.00
MG ZS EV	1,649.00	0.31	448.00	8.60	0.17	175.00
New Opel Corsa Edition / GS	1,175.90	0.29	267.00	8.20	0.14	150.00

Table 2. Criteria Used in the Analysis and Their Effects on Performance

Criterion	Direction of Effect
Average Consumption (100 km) (kWh)	Negative
Range Average (WLTP Estimated)	Positive
Battery Capacity (kWh/h)	Positive
Fast Charging Time (10-80% with 50 kW DC fast charging)	Negative
Power (HP)	Positive
Torque (Nm)	Positive
Price (Thousand TL)	Negative
Aerodynamic (Driction) Coefficient (Cd)	Negative
Standard Luggage Volume (Lt)	Positive
Acceleration (0-100 km/sec)	Negative
Efficiency Rate (Battery Capacity/ Average Range) (kWh/Km)	Negative
Maximum Speed (Km/h)	Positive

While 6 of the 12 criteria used in the analysis have a positive effect on performance, 6 of them have a negative effect. The weights of the criteria were calculated by the Entropy method. Table 3 shows the Entropy criterion weight values (w_j) for each criterion and their order of importance when listed from largest to smallest. Accordingly, for the fully electric cars subject to analysis; the first three most important performance criteria are;

- Power (HP)
- Fast Charging Time (10-80% with 50 kW DC fast charging)
- Battery Capacity (kWh/h)

On the other hand, the last three lowest performance criteria are;

- Maximum Speed (km/h)
- Efficiency Rate (Battery Capacity/ Average Range) (kWh/Km)
- Average Consumption (100 km) (kWh)

Table 3. Entropy Weights and Importance Ranks of the Criteria Used in the Analysis

Criterion	Entropy Weight	Order Quantity
Average Consumption (100 km) (kWh)	0.066816	12
Range Average (WLTP Estimated)	0.083532	6
Battery Capacity (kWh/h)	0.095212	3
Fast Charging Time (10-80% with 50 kW DC fast charging)	0.095407	2
Power (HP)	0.110056	1
Torque (Nm)	0.092556	4
Price (Thousand TL)	0.086350	5
Aerodynamic (Driction) Coefficient (Cd)	0.073009	9
Standard Luggage Volume (Lt)	0.076395	8
Acceleration (0-100 km/sec)	0.078835	7
Efficiency Rate (Battery Capacity/ Average Range) (kWh/Km)	0.069463	11
Maximum Speed (Km/h)	0.072369	10

In the study, although Entropy weights were considered, the performance ranking that would be obtained when the criteria were given equal weight (1/12 = 0.0833) was also examined and the fully electric cars subject to analysis were ranked by performing a performance evaluation with the WASPAS method. In addition to the entropy weights, the results obtained when equal weights are taken into account are also presented.

Table 4. Total Relative Importance Values Based on WSM and WPM

Fully Electric Cars	by Entropy Weights			by Equal Weights		
	WSM $Q_i^{(1)}$	WPM $Q_i^{(2)}$	Q_i	WSM $Q_i^{(1)}$	WPM $Q_i^{(2)}$	Q_i
Tesla Y Long Range RWD (4x2)	0.842409	0.822005	0.832207	0.845341	0.825472	0.835407
TOGG T10X V2 Long Range	0.840102	0.832366	0.836234	0.838409	0.831036	0.834723
Renault Zoe e-Tech R135	0.659248	0.640905	0.650077	0.677437	0.659631	0.668534
MG4 Luxury	0.741945	0.736559	0.739252	0.750705	0.745266	0.747986
Skywell ET5	0.770979	0.761365	0.766172	0.771130	0.761608	0.766369
Opel Mokka-e	0.666664	0.655231	0.660948	0.675611	0.665364	0.670487
Renault Megane E-Tech iconic	0.786097	0.778680	0.782388	0.791660	0.784156	0.787908
Volvo XC40 RWD (Single Motor)	0.851640	0.830630	0.841135	0.847632	0.827319	0.837476
Dacia Spring e	0.554177	0.489199	0.521688	0.583248	0.518936	0.551092
MG ZS EV	0.726345	0.717097	0.721721	0.735504	0.727032	0.731268
New Opel Corsa Edition / GS	0.687144	0.673033	0.680088	0.702231	0.688604	0.695418

Total relative importance values based on weighted sum method (WSM) and weighted product method (WPM) are presented in Table 4. Volvo XC40 RWD (Single Motor) achieved the highest score in terms of WSM and WPM values calculated based on entropy and equal weights. Accordingly, it has been understood that it has the highest performance among fully electric cars.

In the WASPAS method, after calculating the $Q_i^{(1)}$ and $Q_i^{(2)}$ values within the scope of WSM and WPM, the Weighted Common General Criterion Values Q_i were calculated and then the performance ranking was made. Ranking values are in Table 5.

Table 5. Performance Ranking Based on WASPAS Method

Performance Order	by Entropy Weights	by Equal Weights
1	Volvo XC40 RWD (Single Motor)	Volvo XC40 RWD (Single Motor)
2	TOGG T10X V2 Long Range	Tesla Y Long Range RWD (4x2)
3	Tesla Y Long Range RWD (4x2)	TOGG T10X V2 Long Range
4	Renault Megane E-Tech iconic	Renault Megane E-Tech iconic
5	Skywell ET5	Skywell ET5
6	MG4 Luxury	MG4 Luxury
7	MG ZS EV	MG ZS EV
8	New Opel Corsa Edition / GS	New Opel Corsa Edition / GS
9	Opel Mokka-e	Opel Mokka-e
10	Renault Zoe e-Tech R135	Renault Zoe e-Tech R135
11	Dacia Spring e	Dacia Spring e

Considering the entropy weights in Table 5; the top three highest performing fully electric cars are Volvo XC40 RWD (Single Engine), TOGG T10X V2 Long Range and Tesla Y Long Range RWD (4x2). In addition, considering that the criteria are given equal weights; the top three highest performing fully electric cars are Volvo XC40 RWD (Single Motor), Tesla Y Long Range RWD (4x2) and TOGG T10X V2 Long Range. The best-performing fully electric car in both alternative calculations was the Volvo.

In the WASPAS method, the lambda (λ) effect is examined in order to increase the ranking accuracy and efficiency of the decision-making process. The λ effect on the ranking, which is a more general step to determine the total relative importance of the alternatives, was calculated and the λ coefficient was found to be $0.555068 \cong 0.60$. The WASPAS method basically gives a weight of 0.50 each for WSM and WPM. Considering the optimal λ, WSM is given 0.60 weight and WPM is given 0.40 weight. According to the analysis results, there was no performance ranking change when the performance ranking was made considering equal λ (0.50) and optimal λ (0.60). Since the optimal λ value is close to 0.50, it can be said that there is no change in the ranking.

MULTIMOORA is not a method in itself. It ranks the rankings obtained as a result of different MOORA approaches such as the ratio approach, reference point approach and full product form, according to the dominance/concentration status among the alternatives. MULTIMOORA results, which provide a final ranking based on the findings of different MOORA approaches applied using both entropy and equal weights, are presented in Table 6.

Table 6. Performance Ranking Based on MULTIMOORA Method

Performance Order	by Entropy Weights	by Equal Weights
1	TOGG T10X V2 Long Range	TOGG T10X V2 Long Range
2	Volvo XC40 RWD (Single Motor)	Volvo XC40 RWD (Single Motor)
3	Tesla Y Long Range RWD (4x2)	Tesla Y Long Range RWD (4x2)
4	Renault Megane E-Tech iconic	Renault Megane E-Tech iconic
5	Skywell ET5	Skywell ET5
6	MG4 Luxury	MG4 Luxury
7	MG ZS EV	MG ZS EV
8	New Opel Corsa Edition / GS	New Opel Corsa Edition / GS
9	Opel Mokka-e	Opel Mokka-e
10	Renault Zoe e-Tech R135	Renault Zoe e-Tech R135
11	Dacia Spring e	Dacia Spring e

As can be seen from Table 6, using equal weights or entropy weights in the MULTIMOORA method did not have an effect on the performance ranking, and the ranking results were the same. As a matter of fact, the first three fully electric cars in the MULTIMOORA method are determined as TOGG T10X V2 Long Range, Volvo XC40 RWD (Single Motor) and Tesla Y Long Range RWD (4x2). Accordingly, as in the WASPAS method, the cars in the top three ranks among the highest performance

fully electric cars in the MULTIMOORA method have not changed. However, the ranking values differed. Interestingly, the cars from fourth to eleventh places were ranked exactly the same in both the WASPAS and MULTIMOORA methods. In fact, when the entropy weights for both methods are taken into account, the fully electric cars in the third to eleventh places are in exactly the same order, and only the fully electric cars in the first two rows have changed places. Accordingly, since the ranking results are the same even though the weights change in the MULTIMOORA method, it may be considered more practical and useful to perform performance ranking directly with the MULTIMOORA method instead of the combination of entropy and WASPAS. It should be noted that the results are based on the fully electric cars included in the analysis and the criteria used.

4. CONCLUSION AND RECOMMENDATIONS

In the study, the performances of the best-selling fully electric cars in Türkiye as of October 2023 by the Automotive Distributors and Mobility Association were measured with the help of 12 different criteria. The top three performance criteria for fully electric cars subject to analysis are Power (HP), Fast Charging Time (10-80% with 50 kW DC fast charging) and Battery Capacity (kWh/h). The last three lowest performance criteria are Maximum Speed (km/h), Efficiency Rate (Battery Capacity / Average Range) (kWh/Km) and Average Consumption (100 km) (kWh). The first three most important performance criteria obtained in the study are identical to the findings of Gavcar and Kara (2020), Ecer (2021), Sonar and Kulkarni (2021) and Ziemba (2021) from the literature. On the other hand, Biswas and Das (2019), Öztayşi et al. (2021), Çoşkun (2022b), Gökgöz and Yalçın (2022) differ from their studies. In these studies, price and the range of the vehicle stand out as the most important criteria.

In the study, it was concluded that the best performing fully electric car among the fully electric cars subject to analysis, considering both entropy weights and equal weight, is the Volvo XC40 RWD (Single Engine). The worst-performing vehicles are the Dacia Spring e and Renault Zoe e-Tech R135 models, respectively. In the study, unlike other studies, the results did not change in the WASPAS performance ranking based on the optimal lambda value.

On the other hand, using equal weights or entropy weights in the MULTIMOORA method did not have an effect on the performance ranking, and the ranking results were the same. As a matter of fact, the first three fully electric cars in the MULTIMOORA method are determined as TOGG T10X V2 Long Range, Volvo XC40 RWD (Single Motor) and Tesla Y Long Range RWD (4x2). Accordingly, as in the WASPAS method, the cars in the top three ranks among the highest performance fully electric cars in the MULTIMOORA method have not changed. However, the ranking values differed.

In the literature, Biswas and Das (2019), Gavcar and Kara (2020), Khan et al. (2020), Ecer (2021), Sonar and Kulkarni (2021), Çoşkun (2022a), Gökgöz and Yalçın (2022) found that the performance of different models of Tesla and Hyundai was higher. Obtaining different results is a natural result of performance analysis. Because it should not be forgotten that the ranking is carried out in terms

of the selected criteria, and the ranking may differ when the criteria and the fully electric cars subject to analysis are changed. The inclusion of TOGG, a domestic and national electric vehicle, which was not included in previous studies, may be a reason for this difference.

On the other hand, small hatchbacks such as the Dacia Spring e and Renault Zoe e-Tech R135 have relatively lower power (hp), battery capacity, range and torque values. These low values of small electric vehicles negatively affect their performance. These results suggest that if consumers want performance-oriented vehicles, they should avoid purchasing these small-scale electric vehicles. In this context, consumers should determine their priorities when purchasing an electric vehicle, as the superior features of the models may differ significantly. EV sellers increasing power (HP), range and battery capacity, while reducing fast charging time and average electricity consumption could lead to a large increase in sales.

The following suggestions can be made for future studies on the subjects and methods analyzed in this study, in which the performances of the best-selling fully electric cars in Türkiye as of October 2023 are measured; By increasing the diversity of EA models considered, comparison of EAs in the same segment can be made. In addition, both quantitative and qualitative data can be used together by interviewing expert opinions on EA and conscious EA consumers and identifying and weighting the subjective factors that affect consumers' EA preference. More optimal results can be obtained by using different multi-criteria decision-making techniques and comparing the results with sensitivity analysis.

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Does Envy, Self Esteem and Social Norms on Instagram Lead to Conspicuous Consumption and Overspending?

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Abstract

The purpose of this study is to investigate how envy of others affects the conspicuous consumption and overspending habits of Instagram users. Additionally, the study aims to examine the effect of self-esteem and social norms on conspicuous consumption and overspending. This empirical study used a proposed model, which was tested through the distribution of questionnaires to a sample of 346 Turkish Instagram users. Path analyses were performed to validate the research hypothesis. The study findings elicited the effect of Instagram users' envy towards others has a significant and positive effect on both conspicuous consumption and overspending. Additionally, the study found that injunctive norms, which reflect the perceived social approval or disapproval of others, have a direct and positive effect on conspicuous consumption. On the other hand, descriptive norms, representing the perception of others' actual behavior, did not have a direct effect on conspicuous consumption. Regarding self-esteem, the results did not support the hypothesis that self-esteem has a direct and positive effect on conspicuous consumption. Furthermore, the study found a significant and positive relationship between conspicuous consumption and overspending, indicating that individuals who engage in conspicuous consumption are more likely to exceed their budget limits and engage in impulsive buying behaviors.

Keywords: Envy, Conspicuous Consumption, Overspending, Social Norms, Social Media.

Article Type	Application Date	Admission Date
Research Article	December 21, 2023	June 24, 2024

1. INTRODUCTION

Through social media tools like Instagram, Twitter, Tiktok, and Facebook, communication breaks down virtual boundaries and enables people from different parts of the world to instantly be aware of one another. As of 2024, the number of social media users worldwide has surpassed 5 billion, indicating the profound integration of these platforms into daily life. The average user now spends over 2 hours and 23 minutes per day on social media, engaging in various activities such as sharing content, communicating, and consuming media (We Are Social, 2024). As a result of this interaction, a large virtual community is emerging that is increasingly alike and influencing each other, with a growing number of people can be observed wearing the same brands, visiting the same places, and applying the same makeup. Studies have shown that people's influences on others are important determinants of their consumption behavior (Abrams, 1994; Lascu et al., 1995; Terry & Hogg, 1996; Taylor & Strutton, 2016; Gümüş, 2019; Güneş, 2023; Loureiro et al., 2020; Liu et al., 2024). Due to the opportunities provided by the digital world, individuals' consumption, communication, self-expression, sharing, and ways of interacting with others are changing.

Recently, social media has become a place where users showcase a luxurious lifestyle, which is assumed to be an indicative of a wealthy lifestyle. According to Lehdonvirta (2010), consumers are increasingly showcasing their material possessions and lifestyles online. As a result, we observe that the effect of social media on consumer behavior, consumption, and self-expression is increasing (Heinonen, 2011; Thoumrungroje, 2014; Stephen, 2016; de Vries et al., 2017, Güneş et al., 2023). Users of today's social media are meticulously working on their accounts to highlight their characteristics, to present an ideal self-image, and to make a favorable impression on other users (Rosenberg & Egbert, 2011; Güneş et al., 2023). In their effort to create their own self-brand and a persona, people use social media, especially Instagram, by digitally displaying their consumption habits through images and videos (Belk, 2013; Çadırcı & Güngör, 2019). Moreover, people use social media not only spread desired impressions but also display their status symbols (Lyu, 2016).

It is known that individuals prefer goods and services that have the power of reflecting the identity they desire to have (Ashforth & Mael, 1989). Studies by Christen and Morgan (2005) and Drèze and Nunes (2009) have shown that low-income individuals are more inclined to consume in a more attention-grabbing manner to reflect the identity they desire, to keep up with others and overcome the envy resulting from comparing themselves with what they see on the social media. Thus, social comparison occurring on social networks has a potential to direct consumers toward more conspicuous consumption.

Although there are many studies on conspicuous consumption and luxury consumption (Dubois & Laurent, 1996; Wang & Griskevicius, 2014; Jacob et al., 2020; Ülker, 2021; Turancı et al., 2022; Boylu, 2023; Bulut et al., 2023; Unal, 2023), a few has explored how envy, self-esteem and social norms influence consumers' display of their consumptions on their social media accounts. Moreover, there is

a significant gap in the literature regarding how these three dimensions (envy, self-esteem, and social norms) jointly.

The present study aims to fill a significant gap in the literature by investigating how envy, self-esteem, and social norms collectively influence conspicuous consumption behaviors on social media. This research provides a holistic understanding of these interrelated factors, which have been underexplored in previous studies. By focusing specifically on social media platforms, the study addresses the contemporary relevance of digital environments in shaping consumer behavior. The findings are expected to offer valuable insights for marketers to develop targeted strategies that account for the psychological and social dynamics of conspicuous consumption, thereby enhancing the effectiveness of marketing efforts. Furthermore, this research contributes to broader consumer behavior theory by illuminating the motivations and behaviors associated with self-presentation and social comparison on social media, which affect consumers' spending on these platforms.

In sum, the aim of this study is to investigate how conspicuous consumption affects consumer expenditures and if consumer's envy and self-esteem work together to lead conspicuous buying. It is thought that comprehending these links might help marketers decide on their marketing tactics and provide insights into consumer behavior.

2. LITERATURE REVIEW

2.1. Social Media

Social media is a component of everyday life that has grown to be crucial for consumer behavior, consumption, and expressing ourselves (de Vries et al., 2017; Heinonen, 2011; Stephen, 2016; Thoumrungroje, 2014, cited in Siepmann et al., 2022), and it can be used for other purposes while providing effective opportunities to connect with others. Muntinga et al. (2011) stated that social media is used for multiple purposes such as personal identity formation or strengthening, social interaction, information acquisition, and sharing of memories. Social media has begun to be seen as a platform that changes people's lives by helping them express their personalities through social networks. Ellison et al. (2007) stated that social media changes the nature and scope of social networks by allowing users to express their identities and establish and maintain these networks (Taylor & Strutton, 2016). More consumers are using social media to display their statuses and spread positive perceptions of themselves (Lyu, 2016, cited in Siepmann et al., 2022).

According to Schlenker and Wowra, self-presentation is a situation in which individuals use the data they have to create desired impressions on others, control it, and achieve a specific goal (2003, p. 879). Individuals actively use some of the information they have while hiding some of it to create the desired image (Hong et al., 2020; Schlosser, 2020) when they present themselves on social media. According to Michaelidou et al. (2022), "The "ecosystem" of social media allows users to present "versions" of themselves to manage impressions and self-presentations". The reinforcing effect of social

media on envy triggers users to present their best selves when posting new updates. Belk (2013) describes a "re-concretization" process in this abstract world that "enables social media consumers to create an idealized version of themselves". Burnasheva and Suh (2021) demonstrate that consumers use social media to present themselves, as studies suggest that the consumption styles, they share are a part of their desired identity (Bauman, 1996; Giddens, 1991).

Schiffman and Kanuk (2004) argues that users often engage in a social comparison process when using social media because it facilitates peer contact and idealized media representations. For example, the users of Instagram or Facebook are exposed to the images of material possessions of others in their social network. People may try to showcase and announce the situations they want others to see about themselves through easily accessible and cost-effective channels such as Instagram since they are concern with the impressions that they have on others. Previous research has shown that social media is a powerful tool for increasing self-esteem (Widjajanta, et al, 2018; Steinfield et al., 2008; Gonzales & Hancock, 2011) and that increased self-esteem leads to positive feelings towards oneself, which in turn can lead to attention-seeking behavior and extravagant spending as individuals lose self-control and try to attract the attention of others (Widjajanta et al., 2018).

In sum, social media is proved to be a very effective tool for increasing self-esteem and image management. Estimates show that half of the global population is connected through social media (Burnasheva and Suh, 2020), and it is estimated that the number of people who is connected via social media will be about 5.85 billion in 2027 (Statista, 2023). This means that such a large number of the world's population can use social media as an operational self-support tool.

2.1.1. Instagram

Instagram is one of the social media platforms where anyone may upload content on any topic, gain likes and followers, follow other users, brands, and celebrities, and even start their own careers in fame (Verrastro et al., 2020). Due to its high number of users and continued growth, Instagram is considered one of the most attractive platforms and has become a very effective platform for both individuals and businesses (Nelson-Field et al., 2013). While Instagram offers a range of options for users such as posting photos, text, and commenting, it is primarily used for sharing photos and videos. Since presenting oneself online has become an important part of young people's daily activities (Chua and Chang, 2016), platforms that allow this have become increasingly attractive. Studies show that Instagram is one of the platforms where people spend at least thirty minutes a day (Verrastro et al., 2020). Instagram has become a platform where people can easily and comfortably showcase what they eat, drink, and wear, the products they use, and the places they visit. Along with these developments, Instagram also offers various ways to convey to users some unattainable points of interest with a perfect illusion. Although few people believe in the reality of what they see on Instagram, a significant majority still make an extraordinary effort to approach these irrational ideals. Studies examining the motivations

that lead consumers to social media platforms, including Instagram, have found that individuals seek to present their "best selves" and showcase their lifestyles and experiences by providing clues and signals to others (Hong et al., 2020).

2.2. Envy and the Social Comparison Process

Although jealousy and envy are generally used in different contexts in literature, it is very common to use these words interchangeably in daily life. Jealousy is a reaction given to protect the relationship we have, against threats, whereas envy is the desire of a person to have the qualities, success, and material opportunities that others have (Parrott & Smith, 1993, p. 907). Though the word 'envy' is used in its own meaning, it has been observed that the feeling of jealousy is used instead of the word 'envy'. Following the definition given by Parrott and Smith (1993: 907), this study is going to use "envy" as the situations when one person lacks another's excellence, achievement, or possession and desires it or wishes the other not to have it.

People tend to make purchasing decisions based on the belief that they should have what others have (Taylor & Strutton, 2016). The feeling of envy encourages social media users to advertise themselves by engaging in online consumption in a way that draws attention and sends a message to other users, to reduce feelings of inadequacy stemming from social comparisons.

According to the Social Comparison Theory, which suggests that people tend to compare themselves with others in terms of appearance, knowledge, and standard of living, individuals tend to compare themselves with certain criteria within a specific environment and with other environments (Yılmaz, 2015). As a result of this comparison, people define others as either a group member similar to themselves or as an outsider (Yılmaz, 2015). The power of social media to increase envy comes from the opportunity it provides to its users to share their happiest, most successful, and other best moments, as in Instagram (Taylor & Strutton, 2016). Content created on social media creates a rich collection that reflects who individuals are or what they think (Carroll & Romano, 2011, p. 3). Social media facilitates individuals' shaping and sharing of their self-congruity because they are concerned about how other users perceive them (Taylor & Strutton, 2016; Burnasheva & Suh, 2021). Considering that the social identity of an individual is relational and comparative (Tajfel & Turner, 1986, p. 16), it can be said that these comparisons have an effect on individuals' identity formation. Yu et al. (2013) have suggested that individuals tend to clarify their identities by consuming symbolic brands which match their self-images (Burnasheva & Suh, 2021). Conspicuous consumption displayed in online environments has become more attractive to users because it strengthens a positive self-image on social media (Duan & Dholakia, 2017).

Social comparison is a common and well-known phenomenon (Festinger, 1954) that plays a role in consumers' consumption patterns and social behaviors along with their self-esteem. While social comparisons can be effective in the formation of self-esteem, research has reported that individuals with

higher social comparison orientation have weaker self-perceptions, lower self-esteem, and more negative emotions (Jang et al., 2015). This trend has also been noted by Jiang and Ngien (2020) and Vogel et al. (2014) (Staniewski & Awruk, 2022). Social comparison can increase or decrease self-esteem depending on the direction of the comparison. Downward social comparison, which involves comparing oneself to those in a worse situation, can boost a person's self-confidence, while upward social comparison, which involves comparing oneself to those in a better situation with higher living standards, can lower self-esteem (Taylor & Strutton, 2016). Downward comparisons can increase narcissism, while upward comparisons can trigger envy. When individuals compare themselves to those in a better situation, they are motivated to act in a way that makes them feel more like the people they admire. Studies have shown that upward social comparison on social media is associated with higher levels of envy and lower life satisfaction (Chou & Edge, 2012; Krasnova et al., 2013). The situations individuals see on social media but do not possess yet desire will become goals or objectives to achieve. Consequently, individuals may change their behavioral patterns, even making purchases that exceed their budget, to attain these goals. This change will be evident in the holiday destinations visited, the clothes worn, the brands purchased, and the cafes/restaurants preferred. Wang & Wang (2024) contribute a relational maintenance perspective, exploring how being envied—whether benignly or maliciously—affects consumers' tendencies towards inconspicuous consumption. Their findings suggest that malicious envy increases inconspicuous consumption of luxury products and experiences, mediated by heightened social anxiety. Taylor and Strutton's (2016) research support the effect of envy on online consumption made to draw attention to oneself. Based on this, the first and second hypotheses of the study were formulated as follows:

H₁: Envy has a significant and positive effect on conspicuous consumption.

H₂: Envy has a significant and positive effect on overspending.

2.3. Injunctive and Descriptive Norms

O'Cass and McEwen (2004) have pointed out that normative influence is the main determinant of individuals' conspicuous consumption behavior. Normative influence suggests that other people have an effect on an individual's own behavior. It can be said that individuals are influenced not only by their own attitudes and values but also by the behavior of others and the social norms around them (Ajzen, 1985; Cialdini et al., 1990). Literature most commonly distinguishes between two types of norms: injunctive and descriptive norms, and are evaluated within the framework of the planned behavior theory (Krause et al., 2019, p. 3).

Injunctive norms are the independent norms that reflect the moral principles of a society and the perception of individuals regarding which behaviors of others in their environment will be approved (Cialdini et al., 1991). Therefore, they indicate the existence of rewards or punishments for engaging in certain behaviors or avoiding them (Krause et al., 2019) hence, motivating individuals to behave in an

expected manner through rewards and punishments. An injunctive norm is defined as the individual's concern for what others think about their behavior and the desire to obtain their approval (White et al., 2009; Jacobson et al., 2011). A person who wants to be accepted and approved by those they value may try to resemble them by imitating their consumption patterns, thereby increasing the likelihood of being accepted by others. The perception of how important people approve of an individual's behavior, known as an injunctive norm (Park & Smith, 2007), is expected to influence consumer behavior and lead them to engage in conspicuous consumption.

Descriptive norms refer to "individuals' perceptions of what significant others in their environment are doing" (Cialdini et al., 1990; White et al., 2009). They provide guidance to the individual about what behavior makes sense in a given situation, for example, "if most people behave/think this way in this situation, it is rational to act in the same way" (Cialdini et al., 1991, cited in Karagonlar & Emirza, 2021, p.1006). Based on this theoretical basis, it is assumed that individuals will move in the direction of the behavior or consumption pattern adopted by the people around them or the environment they want to influence. The third and fourth hypotheses of the study were formulated from this perspective:

H₃: Injunctive norms have a direct and positive effect on conspicuous consumption.

H₄: Descriptive norms have a direct and positive effect on conspicuous consumption.

2.4. Self-Esteem

Self-esteem has been defined as a personality trait that has a strong influence on how individuals behave and can also trigger a large number of customer behaviors (Pyszczynski et al., 2004). Self-esteem is also defined as "overall evaluation of the person's value, expressed in a positive or negative orientation towards himself" (Minev et al., 2018) or the sense of personal worth that a person associates with himself (Campbell et al., 2002). Self-esteem can also be defined as "a person's positive or negative self-evaluation or the extent to which a person believes in their values" (Leary & Baumeister, 2000). A person develops an idea about himself by evaluating himself as a result of interaction with others (Leavitt et al., 2015; Rosenberg, 1965).

It has been discovered that self-esteem can affect people's behavior and can be considered as an incentive for some behaviors and is one of the most important driving forces of motivation on consumers' decisions and behaviors (Grubb & Grathwohl, 1967; Pyszczynski et al., 2004). Self-esteem was also perceived as a level of human needs. Therefore, whenever an individual experiences low levels of self-esteem, they will tend to engage in activities that can help boost their self-esteem. Pyszczynski et al. (2004) found that self-esteem affects the way people behave and functions as a motivation for some of their behaviors. When consumers have low self-esteem, they tend to have a strong inclination to engage in activities that can increase their self-esteem (Giovannini et al., 2015; Burnasheva & Suh, 2021). Consumers who are on an identity quest consciously try to make others aware of their achievements,

showcase their talents, or convince themselves that their lives are better than they are in reality (Taylor and Strutton, 2016). Hausman (2000) also suggested that self-esteem affects consumers' impulsive buying behavior as it is a way for consumers to gain acceptance from others and satisfy themselves. It has been shown that individuals use material possessions and other elements to convey their identities to other members of society, and consumers consume branded products as the means of protecting their identities. Consumers who have brand awareness and who want to be socially accepted tend to buy expensive brands (Ismail, 2017).

Hanley and Wilhelm (1992) noted that individuals with low self-esteem tend to enhance their social prestige through the purchase of products. Individuals contribute to the formation of their self-esteem by displaying their financial power through conspicuous consumption (Campbell, 1995; Eastman et al., 1999). Additionally, Tenia et al. (2022) found a strong correlation between self-esteem, sense of belonging, and conspicuous consumption among Generation Z in Jakarta and Java. Academic research findings indicate a positive relationship between self-esteem and conspicuous consumption (Khan & Dhar, 2006; Souiden et al., 2011; Lewis & Moital, 2016; Widjajanta et al., 2018). Based on this, the fifth hypothesis of the study was formulated as below:

H_5: *Self-esteem has a direct and positive effect on conspicuous consumption.*

2.5. Conspicuous Consumption

Conspicuous consumption first emerged in 1899 by Veblen, who stated that wealthy individuals spend a lot of money on luxury goods to showcase their social status (Veblen, 1899). Conspicuous consumption is defined as the consumption in which consumers buy products or services based on the status relationship (Nguyen et al., 2015), and it is claimed that this consumption focuses on certain signals to convey wealth, influence others, confirm and prove social status to others (Corneo & Jeanne, 1997). The rationale behind this consumption behavior is to give individuals the impression that they belong to a higher social class (Kaus, 2013; Trigg, 2001).

Traditionally, individuals demonstrate their status by spending money on luxury goods and consuming them in a way that catches the attention of others. Those who consume brands that are signs of wealth, and do so openly to everyone, try to improve or maintain their position in society through conspicuous consumption (O'cass & Frost, 2002). Belk, while expressing that the things we have reflect us and that we can evaluate ourselves as the sum of what we have (1988, p. 139), actually talks about the embedding of the perception of external objects into the self. People's motivation to create a consistent and desired self-identity shapes their behaviors, which they believe will contribute to achieving their personal goals (Escalas & Bettman, 2003). Thus, a "re-embodiment" process begins in this world that allows consumers on social media to create an idealized version of themselves (Taylor & Strutton, 2016).

Since people can share their wealth, the social status they have earned, or the status they maintain through social media via the goods they have acquired, social media increases the spending on luxury and conspicuous goods by consumers. Social media platforms, particularly Instagram, have become prominent arenas for conspicuous consumption, where individuals showcase their wealth, social status, and lifestyle through the goods they acquire (Özer Canarslan, 2022). Therefore, conspicuous consumption is defined as spending motivated by social factors such as influencing others, raising one's social status, and gaining prestige, rather than by quality concerns of consumers (Sundie et al., 2011; Krause et al., 2019). Individuals increase their self-esteem by demonstrating personal financial power through conspicuous consumption (Eastman et al., 1999; Campbell, 1995).

According to research, media plays a significant role in influencing consumer values and purchasing habits, especially in the context of materialistic consumption (Jacob & Belk, 1990; Gorn & Goldberg, 1977). However, studies investigating the role of media show limited effects of peer approval, acceptance, and group membership on consumers' preference for conspicuous consumption. Social comparison, known as the tendency for individuals to evaluate themselves in comparison to others, has become an important tool in today's age where people pursue social distinction and status. Previous studies have noted that wealth gives people status and that conspicuous consumption is one of the best ways to demonstrate this wealth and thus status (Cole et al., 1992; Arrow & Dasgupta, 2009). Chang et al. (2018) demonstrate that early economic research shows that people not only care about their own consumption but also care about their consumption relative to others and compare their consumption evaluations with others. According to Schlosser (2020), the number and composition of social media followers will affect a person's self-presentation. If the majority of followers are people who consume luxury goods and adopt a luxury lifestyle, it will pave the way for a person to present themselves in this way on social media.

Consumers determine their consumption patterns based on how they want to be seen by others and take action to create an image that fits that identity. Studies by Campbell (1995) and Eastman et al. (1999) have also demonstrated that individuals try to develop their self-esteem through conspicuous consumption. Burnasheva & Suh (2020) also highlight an indirect relationship between social media usage and conspicuous online consumption. Based on this, the sixth hypothesis of the study is formed.

H₆: Conspicuous consumption has a direct and positive effect on overspending.

3. METHODOLOGY

The aim of this study is to determine the effect of envy towards others on the conspicuous consumption and overspending behavior of Instagram users. Additionally, another objective of the study is to reveal the influence of social norms (injunctive and descriptive norms) and self-esteem on conspicuous consumption and overspending.

The study is quantitative research. According to the research goal, it belongs to descriptive research. In this framework, firstly, a literature review was made regarding the variables in the model. In order to collect primary data, the "survey" instrument, which is frequently used in social sciences as a quantitative data collection method, has been chosen.

Within this framework, 346 Instagram users participated in the research in March 2022. Data were analyzed by SPSS 24 and AMOS 24. The first part of the survey included demographic questions such as age, gender, and education, as well as a question regarding the frequency of Instagram usage among the sample. The survey instrument consisted of a total of 43 statements, with 8 items for Overspending, 6 items for Envy, 7 items for Conspicuous Consumption, 6 items for Descriptive Norms, 7 items for injunctive Norms, and 9 items for Self-esteem. The questions for these scales were formulated based on a 5-point Likert scale (strongly disagree - strongly agree). The variables of conspicuous consumption, overspending, self-esteem, injunctive norms, and descriptive norms in the conceptual model were taken from Wai and Osman (2019), and Krause et. al. (2019).

3.1 Numerical and Percentage Distributions of Participants

To evaluate the findings obtained as a result of the research, firstly, the demographic information of the 346 participants which is characterized as descriptive information regarding gender, age, education, marital status and occupation, are presented in Table 1 and the frequency of Instagram use is presented in Table 2.

Table 1. Demographic Frequencies of the Sample (N= 346)

Gender	N	%	Marital Status	N	%
Female	253	73.1	Married	191	55.2
Male	89	25.4	Single	255	44.8
Other	4	1.15			
Age	N	%	**Graduation Status**	N	%
18-25	82	23.6	High School	60	17,3
26-33	108	31.2	Undergraduate	187	54,0
34-41	112	32.3	Postgraduate	98	28,3
42>	42	12.1	**Personal Income**	N	%
Occupation	N	%	Minimum wage and below	157	33.69
Public Sector	96	27.7	Minimum wage up to double	62	17.9
Private Sector	68	19.7	Minimum wage up to three times	152	15.3
Student	92	26.6	Triple or more the minimum wage	95	21.4
Other	72	21.4			

Table 2. Frequency of Instagram Use of The Sample

Frequency of Instagram Use	N	%
Five hours a day or	40	11.6
3-4 hours a day	40	25.423.1
1-2 hours a day	140	1.1540.5
Less than 1 hour a day	86	24.9

4. RESULT

In this part of the study, the findings obtained as a result of data analysis are presented.

4.1. Pre-analyses

Before proceeding with the analysis, the distributional characteristics of the data, independence checks of the answer choices, reliability analyses, descriptive statistics, and validity analyses were conducted to determine which conditions the data met the necessary conditions for hypothesis testing. First of all, it is important to check the independence of the answers in scales such as Likert, semantic, differences, and ordinal scales to test whether the participants can distinguish the answer options of the questions in the scale (Kavak, 2013, p. 252). Independence checks of the answers to all questions in the questionnaire were performed with chi-square analysis. The analysis was applied to all of the answer options used, and the chi-square results obtained as a result of the analysis revealed that the p-value could be distinguished from each other at a reliability level of 99%. Outliers in the research data set are values that should be investigated and removed from the data set before starting the analysis due to their role and impact on future statistical tests (Hair et al., 2010). The box plots created in SPSS were examined and no outliers were detected for the participants in the analysis results.

There are opinions that measuring dependent and independent variables simultaneously with the data collected in the same questionnaire form may lead to the emergence of erroneous relationships between these variables and the problem of common method bias. Especially when measuring behavioral variables, attention should be paid to the existence of this bias (Podsakoff et al., 2003). In order to eliminate this bias, Harman's single-factor test (Podsakoff & Organ, 1986), which is an accepted and frequently used method in the literature, was used. According to Harman's single-factor test, if there is a common method bias, a single-factor will explain more than 50% of the variance. In the study, all variables in the questionnaire were subjected to explanatory factor analysis using principal component factor analysis without rotation and it was seen that the first factor explained 26.95% of the variance, thus the first factor did not explain more than 50% of the variance. The results of the analysis show that there is no common method deviation problem in the study.

The mean, standard deviation, kurtosis, and skewness values of the statements were analyzed to determine the general distribution of the data and whether they were normally distributed. As seen in Table 3, the kurtosis and skewness values of the statements are between 2.0 and -2.0 values recommended for normal distribution (Darren & Mallery, 2003, p. 98-99). Therefore, kurtosis and skewness values support the normal distribution of the data.

Table 3. Descriptive Statistics

Statements	Mean	Std	Skewness	Kurtosis
Overspending_1	3,06	1.19	-.005	-.825
Overspending_2	3,32	1.17	-.154	-.929
Overspending_3	3,20	1.17	-.051	-.851
Overspending_4	2,93	1.25	.180	-1.062
Overspending_5	2,63	1.26	.486	-.780
Overspending_6	2,54	1.23	.566	-.607
Overspending_7	2,77	1.20	.260	-.843
Overspending_8	2,59	1.27	.483	-.767
Envy_2	2,01	1.18	.888	-.395
Envy_3	2,19	1.21	.563	-.928
Envy_4	2,86	1.42	.071	-1.287
Envy_5	2,83	1.34	.047	-1.241
Envy_6	2,46	1.34	.514	-.975
Envy_2	2,01	1.18	.888	-.395
Conspc_1	2,41	1.19	-.005	-.825
Conspc_2	2,21	1.12	.777	-.016
Conspc_3	2,19	1.13	.725	-.271
Conspc_4	2,21	1.12	.717	-.255
Conspc_5	2,46	1.25	.468	-.819
Conspc_6	2,52	1.21	.424	-.775
Des_Norm_1	3,93	.84	-1.06	1.739
Des_Norm_2	4,12	.78	-.926	1.294
Des_Norm_3	4,10	.82	-1.06	1.736
Des_Norm_4	4,03	.94	-1.24	1.679
Desc_Norm_5	4,10	.8	-.878	1.000
Desc_Norm_6	3,84	.94	-.838	.626
Desc_Norm_7	4,20	.69	-.762	1.038
Injunctive_Norm1	3,55	1.0	-.550	-.019
Injunctive_Norm2	3,58	1.0	-.342	-.403
Injunctive_Norm3	3,69	1.0	-.584	-.035
Injunctive_Norm4	3,69	1.0	-.528	-.132
Injunctive_Norm5	3,65	1.0	-.563	.090

Table 3. (Continued) Descriptive Statistics

Statements	Mean	Std	Skewness	Kurtosis
Injunctive_Norm6	3,77	1.0	-.673	.357
Injunctive_Norm7	3,90	1.0	-.933	.745
Self_esteem_3	3,79	1.0	-.899	.435
Self_esteem_5	3,96	1.0	-1.02	.621
Self_esteem_6	4,07	.98	-.857	.000
Self_esteem_7	4,12	.90	-.845	.138
Self_esteem_8	3,04	1.4	-.063	-1.39
Self_esteem_9	3,88	1.1	-.912	.065
Self_esteem_10	3,76	1.1	-.675	-.230

Before proceeding to hypothesis testing, the reliability and validity of the scales included in the study were also evaluated. Reliability coefficients were calculated to test the reliability of the scales, Cronbach Alpha coefficient was used in the calculation of the reliability coefficient since the scales were Likert-type. The generally accepted minimum Cronbach alpha coefficient is 0.7 (Hair et al., 1998, p. 118). Reliability analyses conducted using the SPSS program are presented in Table 5. In the reliability analysis, Envy1, Self-Esteem 1, 2, and 4 statements were found to decrease reliability, but at this stage, these statements were not excluded from the analysis since their Cronbach's alpha coefficients were above 0.7, and validity analyses were started.

Table 5. Reliability Coefficients of the Scales

Scale	Cronbach Alpha	Cronbach Alpha*
Overspending	,948	,948
Envy	,856	,881
Conspicuous Consumption	,935	,935
Injunctive Norm	,957	,957
Descriptive Norm	,923	,923
Self-esteem	,887	,902

*After removing statements that reduce reliability

To determine whether convergent validity was achieved, the average explained variance values of the scales were calculated in Excel program according to the technique of Fornell and Larcker (1981). Bagozzi and Yi (1988) reported that a mean explained variance value of 0.50 and above can be considered to ensure the convergent validity of the scale. In cases where the average explained variance value is below 0.5, a combined reliability coefficient above 0.6 can be considered to provide convergent validity of the scale (Bagozzi and Yi, 1988). As seen in Table 6, all mean explained variance values are above 0.50 and convergent validity is ensured. To ensure discriminant validity, the square roots of the

calculated average explained variance values of each variable should be greater than the correlation values of that variable with other variables (Fornell & Larcker, 1981, p. 45; Hair et al. 2010, p. 710). As seen in Table 6, the square root of the explained variance values of each variable is greater than the correlation values of that variable with other variables, so the scales have discriminant validity.

Table 6. Reliability Coefficients and Correlation Values of The Scales

	CR	AVE	√AVE	(1)	(2)	(3)	(4)	(5)	(6)
(1)	0.94	0.69	0.833	1					
(2)	0.87	0.58	0.767	,448**	1				
(3)	0.93	0.66	0.817	,388**	,437**	1			
(4)	0.95	0.76	0.872	,142**	,135*	,244**	1		
(5)	0.92	0.63	0.794	,264**	,342**	,162**	,390**	1	
(6)	0.92	0.59	0.77	-,35**	-,65**	-,33**	-,082	-,14**	1

Confirmatory factor analysis was applied to determine the construct validity of the previously dimensioned, valid, and reliable scales used in the research for this study. The purpose of confirmatory factor analysis is to test whether the previously dimensioned scales are similar in the sample in which the research is conducted (Meydan & Şeşen, 2011, p. 21). The measurement models were analyzed using the "maximum likelihood" method through AMOS 24.0 software. In the study, the measurement model consisting of 5 variables and 45 statements was tested. As a result of the factor analysis, Envy1, Self-Esteem1, Self-Esteem2, and Self-Esteem4 statements, which had factor loadings below 0.5 and were previously found to decrease reliability, were excluded from the analysis. Table 7 and Table 8 displays the findings of the confirmatory factor analysis.

Table 7. Confirmatory Factor Analysis Factor Loadings Results

Statement Codes	Factor loadings	Statement Codes	Factor loadings
Overspending_1	0.877	Des_Norm_7	0.754
Overspending_2	0.828	Des_Norm_6	0.721
Overspending_3	0.826	Des_Norm_5	0.797
Overspending_4	0.835	Des_Norm_4	0.773
Overspending_5	0.828	Des_Norm_3	0.836
Overspending_6	0.818	Des_Norm_2	0.87
Overspending_7	0.785	Des_Norm_1	0.801
Overspending_8	0.864	Des_Norm_7	0.754
Envy_6	0.763	Injunctive_Norm_1	0.811
Envy_5	0.81	Injunctive_Norm_2	0.816
Envy_4	0.827	Injunctive_Norm_3	0.948
Envy_3	0.717	Injunctive_Norm_4	0.927
Envy_2	0.712	Injunctive_Norm_5	0.903
Conspc_1	0.738	Injunctive_Norm_6	0.862
Conspc_2	0.927	Injunctive_Norm_7	0.83

*Table 7. (**Continued**) Confirmatory Factor Analysis Factor Loadings Results*

Statement Codes	Factor loadings	Statement Codes	Factor loadings
Conspc_3	0.886	Self_esteem_10	0.825
Conspc_4	0.868	Self_esteem_9	0.77
Conspc_5	0.809	Self_esteem_8	0.655
Conspc_6	0.707	Self_esteem_7	0.676
Conspc_7	0.763	Self_esteem_6	0.664
		Self_esteem_5	0.799
		Self_esteem_3	0.819

Table 8. Fit Indices

Fit Indices	CMIN/df	GFI	CFI	RMSEA
Model values	2,94	0.774	0.889	0.075
Acceptable Model Values	≤3*	≤0.90*	≤0.90*	≤0.08*

* Schumacker and Lomax,1996;76

When the confirmatory factor analysis results shown in Table 7 are examined, it is seen that the factor loadings vary between 0.655 and 0.927 and these values are above the value of 0.50, which is accepted in the literature (Hair et al., 2010). This finding shows that the structure of the scale items is valid. When the fit indices obtained as a result of the analysis were examined (Table 8), it was seen that the ratio of the chi-square value to the degrees of freedom and RMSEA gave good fit values, while the CFI value was very close to the acceptable value. Shevlin and Miles (1998, p. 88) clarify that GFI is sensitive to sample size and factor loadings among the goodness-of-fit indicators and that the GFI value tends to be low due to low factor loadings or sample size, and that an estimation point such as 0.90 is not an appropriate estimation point for all situations. Based on this explanation, it was accepted that the model showed adequate fit based on the adequacy of other goodness of fit indices.

Before proceeding to structural equation analysis for testing the hypotheses, one of the prerequisites of structural equation model analysis is that the data constituting the variables should show multiple normal distributions. In multivariate normality analysis, skewness and kurtosis levels on a factor basis are examined. In the multivariate normality test, the assumption of multivariate normality is met when the multivariate critical ratio (c.r)<10.00 (Kline, 2005, p. 63). As a result of the analysis in the AMOS program, the multivariate critical ratio was calculated as 7.424 (Multivariate c.r.=7.424<10.00) and it was determined that the assumption of multivariate normality was met.

4.2. Testing the Research Hypotheses

When the assumptions regarding the measurement model were observed at acceptable levels, the structural equation model analysis was started to test the hypotheses of the study. The model was tested with the AMOS 24.0 package program using the maximum likelihood estimation method since the data were normally distributed. In the analysis process, firstly, the general fit of the model with the

data was evaluated by considering the fit indices, and then it was checked whether the hypotheses developed were suitable for the theoretical extension. Table 6 shows the fit indices of the model.

Table 9. Model Goodness of Fit Values

Fit Indices	CMIN/df	GFI	CFI	RMSEA
Model values	3.056	0.982	0.987	0.077
Acceptable Model Values	≤ 3 * very good fit	≤0.95* very good fit	≤0.95 * very good fit	≤0.05*,very good fit 0.05 – 0.08* good fit

* Schumacker and Lomax,1996;76

As seen in Table 9, the goodness of fit values obtained as a result of the analysis are very good and good fit levels. Accordingly, it can be said that there is an acceptable goodness of fit between the data and the model. Based on this result, it can be said that the research model is a model at a good fit level. After explaining the fit between the data and the research model through the goodness of fit indices, the research hypotheses were tested. For this purpose, the table of unstandardized regression coefficients was used and the results related to the hypotheses were obtained. Table 10 presents the values and results related to the structural equation model.

Table 10. Model Goodness of Fit Values

Hypothesis	Estimation Coefficient	St. Error	z-value	p-value	Hypothesis Result
H1: Envy --- Conspicuous Consumption	0.375	0.066	5.67	***	Accepted
H2: Envy --- Overspending	0.345	0.052	6,63	***	Accepted
H3: Injunctive norm--- Conspicuous Consumption	0.209	0.051	4,08	***	Accepted
H4: Descriptive norm --- Conspicuous Consumption	-.059	0.054	-1,0	0.276	Rejected
H5: Self-esteem --- Conspicuous Consumption	-.082	0.063	-1,30	0.193	Rejected
H6: Conspicuous Consumption --- Overspending	0.237	0.052	4,561	***	Accepted

When the detailed values of the structural model and relationships in Table 10 are examined, it is seen that the critical values of the relationships between self-esteem and conspicuous consumption and between descriptive norms and conspicuous consumption are below 1.96 and the relationship coefficients are not significant. Therefore, the hypotheses " Descriptive norms have a direct and positive effect on conspicuous consumption." and " Self-esteem has a direct and positive effect on conspicuous consumption." are rejected. All other relationship coefficients were found to be significant.

One of the criteria that express the paths between variables in structural equation models with numerical values is standardized estimation values. Kline (1998, p. 118) classifies the standardized estimation values according to the effect size as follows; values of 0.10 and below indicates a small effect, values around 0.30 indicate an average effect and values of 0.50 and above indicate a large effect. When we examined the significant relationships in the model, we found that all relationships had a moderate effect.

Figure 1. Structural Equation Model Standardized Values
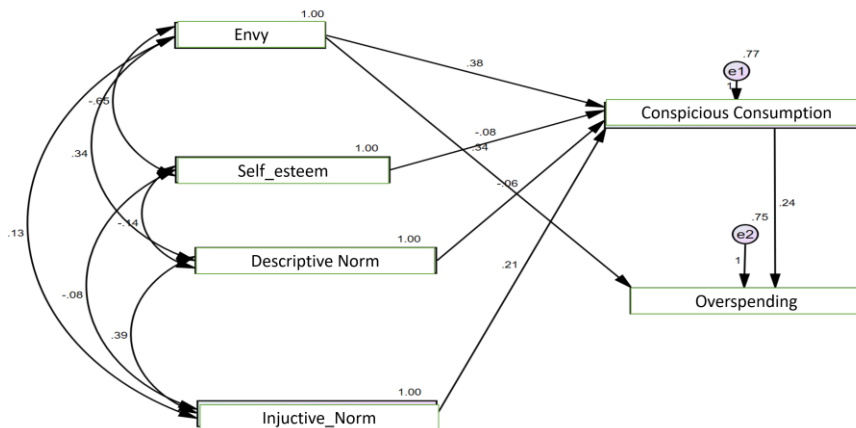
5. CONCLUSION

This study proposes a model to examine how envy, self-esteem, descriptive norms, and injunctive norms affect conspicuous consumption and overspending on Instagram. The findings from the analysis of the structural equation model revealed several significant relationships, thereby providing valuable insights into the influence of these variables on consumer behavior.

The results confirmed that envy towards others has a significant and positive effect on both conspicuous consumption and overspending. This finding aligns with previous research suggesting that individuals who are experiencing envy may engage in conspicuous consumption as a means to alleviate their feelings of inferiority or to present a desirable image to others (Taylor & Strutton, 2016; Zheng et. al., 2018). Toprak et al. (2014) also noted that the new form of communication among consumers is now to see and show, to observe and be observed. Consumers tend to show others the beautiful things they have, especially their lifestyles and the products they consume. This creates competition among individuals following each other on social media, leading consumers to demand the things they see others have. Sabuncuoğlu et al. (2015) stated that social media is a very suitable environment for the display of conspicuous consumption, allowing individuals to highlight the social classes they belong to and differentiate themselves from lower classes through the content they produce. In addition, Loureiro et al. (2020) found that both benign and malicious envies significantly influence the desire to purchase luxury fashion items. Benign envy particularly predicts this desire due to its association with admiration, affiliation, and the enhancement of social status. Similarly, Liu et al. (2024) found that luxury

experiential consumption shared on social media triggers benign envy, which in turn increases consumption intentions among users. Additionally, Wenninger et al. (2021) note parallels between envy in social networking sites (SNSs) and offline contexts, emphasizing purchase intentions as a significant response due to the platforms' advertisement-driven revenue models. These results imply that envy-driven motivations can lead Instagram users to engage in conspicuous consumption and overspending behaviors, potentially contributing to financial strain and materialistic pursuits.

The study also discovered that injunctive norms, which represent perceived social approval or disapproval of others, had a direct and advantageous effect on conspicuous consumption. This implies that people are influenced by social norms and expectations that promote the display of prosperity and luxurious things. On the other hand, descriptive norms, which are perceptions of the actual behavior of others, did not directly influence conspicuous consumption. This unexpected finding suggests that individuals may not be significantly influenced by observing the behavior of others in relation to their own consumption patterns.

The findings regarding self-esteem did not support the idea that it has a direct and positive effect on conspicuous consumption. This finding is inconsistent with previous literature (Khan and Dhar, 2006; Souiden et al., 2011; Lewis & Moital, 2016; Widjajanta et al. 2018) suggesting a positive relationship between self-esteem and materialistic tendencies. A study by Güneş et al. (2023) found that individuals felt inferior when they compared themselves to wealthier people and sought to alleviate this negative emotion by consuming luxury, expensive, and ostentatious products. Another manifestation of this behavior is that individuals tend to portray themselves with better or superior qualities than they actually possess on social networks, thereby creating a new ideal self. Tenia et al. (2022) similarly found a strong correlation between self-esteem, sense of belonging, and conspicuous consumption among Generation Z in Jakarta and Java. Their results indicate that young adults engage in conspicuous consumption to compensate for low self-esteem and to secure a sense of belonging, viewing luxury consumption as a means to achieve higher social status. The complicated interactions between envy, conspicuous consumption, and self-esteem on Instagram require more study.

The study also discovered a substantial and favorable association between conspicuous consumption and overspending, suggesting that those who engage in conspicuous consumption are more likely to go over their budget limits and indulge in impulsive purchasing habits. This demonstrates that conspicuous consumption might be a role in the rise of consumer debt and the instability of personal finances.

5.1 Theoretical Implications

In a number of ways, this study contributes theory to the body of research on consumer behavior and social media. By analyzing the effects of envy, self-esteem, and normative influence on Instagram, the study advances our understanding of the psychological factors behind conspicuous consumption and

overspending behavior. The findings underline the need of taking social norms and their impact on consumer behavior, as well as the role of envy as a motivator for overspending, into account.

Firstly, the findings underscore the crucial role of envy in motivating conspicuous consumption on social media platforms like Instagram. Building upon previous research, this study confirms that both benign and malicious forms of envy significantly influence consumers' conspicuous consumption. This extends our theoretical understanding by highlighting how envy, particularly benign envy linked to admiration and social status enhancement, drives consumers to display their material possessions and lifestyles to gain social approval.

The results of this study indicate that Instagram is a significant platform for users to engage in conspicuous consumption, aligning with Özer Canarslan's (2022) findings that digital platforms have transformed consumption behaviors, allowing individuals to easily display their luxury consumption to a broad audience.

Moreover, the study provides new insights into the complex interactions between self-esteem and conspicuous consumption. Contrary to previous research (Khan & Dhar, 2006; Souiden et al., 2011; Lewis & Moital, 2016; Widjajanta et al., 2018), this study did not find a direct and positive effect of self-esteem on conspicuous consumption. This finding is complemented by the work of Güneş et al. (2023) and Tenia et al. (2022), which suggests that individuals with low self-esteem may engage in conspicuous consumption to alleviate negative emotions and secure a sense of belonging. These nuanced understandings challenge the assumption that higher self-esteem always leads to greater conspicuous consumption, pointing to the need for further research to explore these intricate relationships.

The study also clarifies how the effects of injunctive and descriptive norms on conspicuous consumption vary. It reveals that injunctive norms, representing perceived social approval or disapproval, exert a direct and influential effect on conspicuous consumption. In contrast, descriptive norms, which reflect perceptions of others' actual behavior, exhibit minimal direct impact. This distinction enhances our comprehension of the social mechanisms influencing consumer behavior, suggesting that perceived social expectations may be more influential than merely observing others' actions.

By integrating these findings, this study contributes to the broader theoretical discourse on consumer behavior, particularly in the realm of social media. It highlights the importance of considering social norms and psychological factors, such as envy and self-esteem, in understanding conspicuous consumption and overspending. These insights provide a more comprehensive framework for future research, aiming to unravel the complexities of consumer behavior in the digital age.

5.2 Managerial Implications

The results of this study have significant implications for social media platforms and marketers that want to shape customer behavior and control the harmful effects of unnecessary expenditure.

Marketers must be aware of the influence envy has on consumer needs and think of ways to satisfy those desires while fostering responsible purchasing. Additionally, knowing how injunctive and descriptive norms differ in their effects can assist marketers modify their social media marketing and messaging strategies. Marketers can foster positive social attitudes and behaviors while reducing the negative effect of conspicuous spending by adhering to injunctive norms that support ethical and sustainable consumption.

Furthermore, the connection between conspicuous consumption and overspending emphasizes the importance of consumer education and financial literacy initiatives. The negative effects of conspicuous consumerism can be lessened by encouraging people to adopt mindful spending habits and think about the long-term financial consequences of their purchasing choices.

The emergence of consumers' influence on each other provides important clues to businesses when designing their marketing strategies. Especially on social media everything is displayed as perfect, and this perfection may lead consumers to buy products that they did not even think of buying before as a result of their envy of the lifestyles they see as perfect, glittered and comfortable. Based on this, it can be concluded that emotions and hedonic benefits shape the purchasing behavior more than functional benefits. Businesses may increase the visibility of their products on social media and stimulate the demand by showing the users of their products and usage of their products. In the communication strategies they plan to implement, emphasizing that their products are considered among luxury product category or used by celebrities will allow businesses to reach out even more customers. As very well recognized, influencer marketing activities are increased, it seems that use of this strategy is going to increase in time. It can be said that use of social media as a marketing tool can increase brand values, polish brand images and help to promote or position the products as conspicuous products.

In summary, this study contributes to the existing body of knowledge by uncovering the relationships between envy, self-esteem, normative influence, conspicuous consumption, and overspending on Instagram. The findings provide valuable insights for both theoretical research and practical applications. They help marketers and policymakers understand and address the underlying mechanisms that drive consumer behavior in the social media era.

5.3 Limitations and Future Research Suggestions

The results of current study need to be acknowledged in light of a few limitations, and the consequent recommendations are suggested. One of the most important limitations of the research is the questioning of the personal income of the participants instead of their household income, because a person with no personal income may also tend to engage in conspicuous consumption with the income of a high-income individual in his/her household. It is important to design the research by considering this issue in future research.

In addition, the study was conducted with a specific demographic and may not be fully representative of the diverse range of Instagram users. Future research could consider broader demographic representation to enhance the generalizability of the findings.

The data collected relied on self-reported responses, which can be subject to biases and inaccuracies due to social desirability and memory limitations. Qualitative methods, such as in-depth interviews or focus groups, could provide deeper insights into the emotional experiences and motivations underlying conspicuous consumption behaviors.

The study focused on Instagram users, and the findings might be influenced by the unique features and culture of the platform. Other social media platforms could yield different results. In future studies, comparing the effects of envy and social norms on other social media platforms could reveal platform-specific differences in consumer behavior and motivations.

This study sample is 346 Turkish Instagram users. Considering the global nature of social media, in future cross-cultural studies could shed light on how cultural values and norms influence consumer behavior across different societies.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

The Relationship Between Symmetrical Internal Communication, Employer Branding, Organizational Identification and Turnover Intention

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Abstract

It is accepted by both employers and academic circles that employees in the modern management approach are effective in the success of the organizations they work for. Employees also play a role in organizations creating competitive advantage. Employer branding practices in an organization at the point of creating a strong employer brand not only offer an attractive value package for qualified employees, but also ensure that qualified employees, who are an important competitive advantage for the organization, continue to work in the organization. Therefore, examining the factors associated with employer branding emerges as an issue that needs to be carefully evaluated for the sustainable success of organizations. The main purpose of this research is to examine the relationship between employer branding, symmetrical internal communication, organizational identification and turnover intention. 413 people working in Istanbul-based Turkish airline companies constitute the sample of the research. Quantitative research technique was used in the study and descriptive and relational scanning design was preferred. As a result of the research, a significant and positive relationship was found between symmetrical internal communication and employer branding, and it was determined that organizational identification mediated the relationship between employer branding and turnover intention.

***Keywords:** Employer Branding, Symmetrical Internal Communication, Organizational Identification.*

Article Type	Application Date	Admission Date
Research Article	December 26, 2023	March 11, 2024

1. INTRODUCTION

Brand, whose origins as a concept go back to consumer goods, is generally defined from the consumer's perspective (Kimpakorn & Tocquer, 2009). American Marketing Association defines brand as "a name, term, design, symbol or any other feature that identifies one seller's goods or service as distinct from those of other sellers". The application of the steps taken and studies carried out towards branding in the field of human resources is called "employer branding" and organizations increasingly make use of employer branding to impact potential workforce and integrate existing employees into corporate culture and strategies (Backhaus & Tikoo, 2004).

Barrow and Mosley (2005), Sartain and Schumann (2008) researched brand functions from the perspective of employees through embracing the fact that brands do not only stick in consumers' minds but also in shareholders' minds (Kimpakorn & Tocquer, 2009). A successful employer brand not only contributes to attracting and retaining talented employees, but also increases production efficiency by encouraging and motivating existing employees and contributes to the continuity of business (Backhaus & Tikoo, 2004). The employer brand not only increases the motivation of employees but also reduces their intention to leave by strengthening organizational identification. In addition to all these, employer branding is also a tool for the organization to achieve its strategic goals. If organizational identification is achieved, employees' decisions to accept offers from other institutions are prevented, even if the conditions are not very suitable (Kashyap & Chaudhary, 2019).

Employer branding is also a communicative and interdisciplinary process that creates a sustainable employer and employee relationship. This process is important for both current and potential employees (Aggerholm et al., 2011). "Communication" is the basis of employer branding efforts, and a strong employer brand consists of internal and external communication (Verčič, 2021). At this point, the external and internal communication systems of organizations should be structured with fact-based, consistent messages (Barrow & Mosley, 2005).

Barney's (1991) Resource-Based Approach (RBA) considers the employer brand as an important tool that enables the recruitment and retention of employees, who are an important resource for it. At the same time, this human resource differentiates the business from its competitors and provides a sustainable competitive advantage. One of the primary goals of employer branding is to enable employees to identify with the organization they work for (Foster et al., 2010).

In this context, it is important to determine the elements associated with employer branding. The aim of this research, which sets out to examine these elements from the perspective of current employees, is to investigate the relationship between employer branding, symmetrical internal communication, organizational identification, and turnover intention. It has been seen in the literature that the relationships between these structures have been examined in separate studies. However, in the

literature there isn't any study examining these variables together has been found. Therefore, research is important in this respect.

2.LITERATURE REVIEW

Today, effective use of resources is an important element in providing a competitive advantage for organizations. Resource-Based Approach (RBA) provides an important theoretical background for this study. The RBA suggests that organizations' own resources will be effective in providing competitive advantage (Barney, 1991). Barney (1991) underlines the importance of human resources as an internal resource in creating competitive advantage today and defines competitive advantage as "an organization's implementation of a value-creating practice in a way that cannot be implemented simultaneously by its competitors".

In the literature, "employer brand", "employer branding", "employer attractiveness" are often confused with each other and used interchangeably. *Employer brand (EB)* is "the package of functional, economic and psychological benefits provided by employment, and identified with the employing company" (Ambler & Barrow, 1996). A strong employer brand enhances the commitment of the employee to the organization, provides organizational identification and hinders employees' decisions for accepting offers from other institutions even if the conditions do not really appeal (Backhaus & Tikoo, 2004). Another confused concept is *employer attractiveness (EA)*. Berthon et al. (2005) define EA as "the benefits that potential employees hope to obtain from the current implementation of an employer brand". *Employer branding (EBR)* is the practices carried out by the employer to increase employer attractiveness. Berthon et al. (2005) categorized the notion of employer attractiveness into five factors: namely, "interest value, social value, development value, application value and economic value".

Some of the studies on this subject refer to the importance of EBR for potential employees (Knox & Freeman, 2006; Theurer et al., 2018; Verčič & Ćorić, 2018). These studies generally focus on the issue within the framework of employer branding to attract qualified candidates to the institution (Knox & Freeman, 2006; Mosley, 2007). In various studies, existing employees and potential employees are reviewed at the same time, which is followed by comparing the results (Lievens et al., 2007). EBR does not only refer to reaching potential employees, it is about keeping employer promises at every stage of employee experience in the organization e.g., hiring, employment and leaving (Lievens & Chapman, 2019).

The EB, in terms of its content, not only points to the different aspects of the organization from its competitors, but also includes the unique features and opportunities of the working environment for employees. (Backhaus & Tikoo, 2004). Therefore, within the scope of this study, the importance of employer branding for current employees has been focused on and the subject has been evaluated in this context. In this study, the concept of employer branding was discussed within the scope of the perceived

employer attractiveness dimensions revealed in the study of Berthon et al. (2005), and how these employer attractiveness dimensions were perceived by employees was measured.

Due to the interdisciplinary and complex structure of the concept of *internal communication* (IC), there are different definitions made by different researchers in the literature (Kalla, 2005). IC is often associated with employee communication (Verčič et al., 2012). Employees are critical strategic groups of the organization (Kim & Rhee, 2011). Through IC corporate culture values are transferred to employees, internal information exchange is ensured, and internal relations are maintained. IC also provides employees with the information they need about their field of work, the institution they work for and its environment, and many more (Berger, 2008).

Thanks to IC in an organization, employees perceive the values of the employer brand. The IC system has the power to affect employees' feelings towards the organization, positively or negatively, and is a phenomenon that has an impact on the success of organizations in the long term and should be evaluated (Barrow & Mosley, 2005). IC is recognized by researchers and practitioners as a fast-growing area of expertise in communication management research (Lee & Yue, 2020; Verčič, 2021; Verčič et al., 2012; Verčič & Špoljarić, 2020).

Barrow and Mosley (2005) state that there are twelve elements in the employer branding process. These elements are internal communication, external reputation, senior leadership, corporate social responsibility, working environment, internal measurement system, reward and recognition, service support, team management, learning and development, recruitment and induction, performance evaluation. The responsibilities and importance of corporate internal communication in organizations today are increasing in the field of EBR (Verčič, 2021). Another important issue regarding corporate internal communication is about what this communication structure will be like. It is an accepted fact today that a successful internal communication system must be structured symmetrically.

Symmetrical communication that underpins understanding, cooperation, and responsiveness for forming long-term, mutual, and beneficial relationships (Grunig, 2006; Men, 2014) is considered as a paramount area of communication management. Symmetrical internal communication (SIC) is about listening to the wishes of employees, who are important stakeholders of an organization, and responding to their concerns and questions (Roper, 2005). Organizations are required to adopt a two-way symmetrical internal communication strategy to align their employees' thoughts, feelings, and actions with their own strategies (Albrech, 2011). SIC deals with "the principles of employee empowerment and participation in the decision-making process" (Hargie & Tourish, 2000).

In the symmetrical communication perspective, it is expected from individuals and organizations to use communication not to control the thoughts and behaviors of others', but to adapt their own ideas and behaviors to others' (Grunig & Grunig, 2006). Symmetrical communication also

plays a persuasive role in achieving the goals of management (Men, 2014). In this study, internal communication is discussed within the scope of symmetrical internal communication.

In different research, SIC has a positive correlation with many constructs such as employee–organization relationships, job satisfaction, organizational effectiveness, employee engagement, trust, empowerment, loyalty, employee creativity, organizational identification (Jo & Shim, 2005; Kang & Park, 2017; Kang & Sung, 2017; Robson & Tourish, 2005; Smidts et al., 2001). As Verčič (2021) stated in his study the relationship of IC with many fields has already been examined, however almost no studies have demonstrated the relationship between IC and EBR. This study primarily aims to fill this gap. Starting from here;

Hypothesis 1: There is a positive relationship between symmetrical internal communication and employer branding.

Organizational identification (OI) is defined as "the individual's unity with the organization, defining himself as a member of that group, feeling himself belonging there, and taking credit for his successes and failures" (Ashforth & Mael, 1989). OI is "the degree to which a member identifies himself with the characteristics of the organization" (Dutton et al., 1994). It is seen that the studies conducted in the field of OI, especially after the 1980s, are based on Social Identity Theory (SIT). SIT is based on the studies conducted by Henri Tajfel and his friends to investigate intergroup relations (Abrams & Hogg, 1998). Ashforth and Mael (1989), who discussed organizational identification within the framework of SIT, suggested that OI is a special form of social identification, and they define social identification as "the sense of belonging that an individual has developed towards a particular group". Social identification is related to the individual's attitudes and behaviors. On the other hand, OI is related to the individual's attitudes and behaviors towards the organization (Van Knippenberg & Van Schie, 2000).

Backhaus and Tikoo (2004) define EBR as "the process by which organizations build an employer brand identity to differentiate themselves from competitors. SIT suggests that when the organizational identity is considered attractive and unique by the employee, the level of identification of the employee with the organization increases (Lievens et al., 2007). If the person sees himself/herself as a part of that organization more clearly than alternative organizational identities and has some characteristics of that organization as a social group, then it can be said that the person strongly identifies with that organization (Dutton et al., 1994).

SIT suggests that employees leave their identities to associate themselves with the identity of the organization to realize the organizational identification (Ashforth & Mael, 1989; Maxwell & Knox, 2009). The EB differentiates the business from its competitors by presenting a distinctive employer identity. When the employee compares the business, he works with other businesses, he will perceive the business as different and attractive from other businesses in line with the value propositions presented to him. This perception will enable the employee to consider the business as a "good place to

work" and will therefore improve the level of organizational identification (Ashforth & Mael, 1989). A strong employer brand improves the employee's commitment to the institution, ensures organizational identification and deters employees from leaving their posts for other institutions even if the conditions are bad (Backhaus & Tikoo, 2004). From this point

Hypothesis 2: There is a positive relationship between employer branding and organizational identification.

Turnover intention (TI) is defined as "a conscious and deliberate desire to leave an organization" (Tett & Meyer, 1993). It is about "the individual's departure from the organization and the search for a new job" (Gaertner, 1999). It is seen that studies on TI are based on different fields such as economics, psychology, sociology and management. (Gadot & Zion, 2004). One of the factors thought to affect turnover intention in organizations is EBR and OI. Literature review has revealed in many studies that EBR reduces employees' turnover intention, which is associated with improving OI (Kucherov & Zavyalova, 2012; Priyadarshi, 2011; Rai & Nandy, 2021).

When the turnover intention results in leaving the job (job change stress, loss of seniority, etc.), many negative consequences arise for employees and (the cost of finding qualified personnel, loss of experienced personnel, decrease in motivation, satisfaction level of employees, increase in internal communication problems etc.) organizations (Mobley, 1982; Muchinsky & Morrow, 1980). Knowing the factors affecting the turnover intention is important for sustainable success in organizations. From this point;

Hypothesis 3: There is a negative relationship between organizational identification and turnover intention.

Hypothesis 4: There is a negative relationship between employer branding and turnover intention.

In addition to all these, Hypothesis 5 was created to test the mediating role of organizational identification in the relationship between employer branding and turnover intention.

Hypothesis 5: Organizational identification mediates the relationship between employer branding and turnover intention.

The Research Model is shown in Figure 1.

Figure 1. Research model
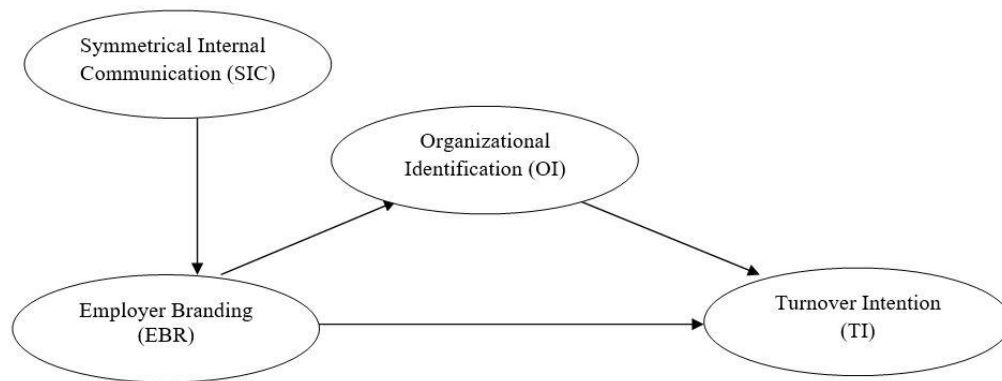
3. METHOD

Demographic characteristics of the participants were analyzed using the statistical program SPPS 24.0. Structural Equation Modeling (SEM) was preferred to test the hypotheses within the scope of the study and SmartPLS 3.0 statistical program was used for this.

SEM is a statistical method that analyzes the relationships between variables to test hypotheses in scientific research. There are different approaches to SEM analysis: first generation and second generation. Among these approaches, the most common ones in academic studies are Partial Least Squares (PLS-SEM) and Maximum Likelihood (Covariance Based Sem/CB-SEM) approaches. Within the scope of this study, the PLS-SEM approach was preferred (Hair et al., 2017b) . "Unlike CB/SEM, PLS-SEM is a second-generation analysis method used to measure and test complex models consisting of many structures and variables" (Hair et al., 2019). PLS-SEM is a method that does not require a normality distribution and can analyze both formative and reflective variables, as well as variables measured by one or two indicators. It also provides ease of analysis in complex models and is also used when the sample size is small. In recent years, its use in brand-related studies has been increasing. (Hair et al., 2014; Henseler, 2010). In addition to all this, "PLS-SEM is increasingly recognized in brand management" (Mahmoud et al., 2021). SmartPLS 3.0 one of the leading software applications for PLS-SEM, was used as the analysis tool in this study.

PLS-SEM Measurement Model (outer model) and *Structural Model* (inner model) consist of two main components. While the Measurement Model defines the relationship between the variables and the scale indicators that make up these dimensions, the Structural Model is used to define the relationships between the latent variables of the research (Henseler, 2010). In this study, the Measurement Model (outer model) was evaluated with a two-stage approach, and then the Structural Model was passed.

3.1. Data Analysis

3.1.1. Participants

The population of the research consists of employees of Turkish airline companies whose headquarters are in Istanbul. 413 people working in these companies were determined as the sample of

the research. A Random sampling method was used to determine the sample. This method is one of the probability-based sampling methods. The research was carried out according to the descriptive and relational screening design, one of the quantitative research designs, and the data were collected through an online questionnaire using the questionnaire method, which is one of the quantitative research techniques. The online questionnaire form consists of 5 parts. In the first part, there are questions about demographic characteristics, in the second part there are scale items about symmetrical communication, in the third part about the employer branding, in the fourth part about organizational identification and in the last part there are scale items about intention to leave.

Table 1. Sample demographics

Characteristics	Frequency (n)	Percentage (%)
Gender		
Female	164	39.7
Male	249	60.3
Job type		
Ground staff	203	49.2
Flight staff	210	50.8
Years of working in the company		
1-4 years	209	50.6
5-9 years	126	30.5
10 years+	78	18.9
Age		
18-29	155	37.5
30-39	230	55.7
40 +	28	6.8
Total	413	100

As seen in Table 1, 39.7% of the participants are women and 60.3% are men. While 49.2 of the participants are ground staff, 50.8% are flight staff. Among the respondents, 50.6% have a working period of 1-4 years, and more than half (55.7%) of the respondents are in the age range of 30-39.

3.1.2. Measures

The scales used within the scope of the research are listed below. In all scales, agreement with the statements was measured on a 5-point Likert scale (1-strongly disagree; 5- strongly agree)

The 25-item employer attractiveness scale created by Berthon et al. (2005) was used to measure employer branding. The functional, economic and social benefits included in the definition of employer branding by Ambler and Barrow (1996) were later taken as basis on the scale created by Berthon et al. (2005), and employer attractiveness was measured in 5 sub-factors and 25 items (Alnıaçık et al., 2014). Scale consists of 5 sub-factors. Social value (eg., "I have good relations with co-workers in the organization where I work"), economic value (eg "I am paid above average"), development value (eg, "This organization where I work is) a good stepping stone for my future career goals") interest value (eg,"The organization I work for offers innovative services "and application value (eg, "The organization I work for attaches importance to human values and reflects this to the society".

SIC was measured with 5 items adopted from Dozier et al. (2002) (e.g., "It can be said that the communication carried out with me within the organization is mostly two-way," "Managers in our organization encourage employees to express different ideas").

OI was measured with 6 items adopted from Mael and Ashforth (1992), (e.g., "When someone criticizes the organization, I take it as a personal insult", "When talking about my organization, I usually use the phrase 'we' rather than 'they'").

TI was assessed with 4 items developed by Moore (2000) and Netemeyer et al. (1996) (e.g., "I plan to work in this organization for another five years", I am currently looking for a new job").

3.1.3. Normality Test

In the study, Skewness and Kurtosis values were examined as a result of the Normality test performed to determine whether the scales showed a normal distribution. Accordingly, Employer Branding (Skewness -.144, Kurtosis -.762), Symmetrical Internal Communication (Skewness -.064, Kurtosis -.639), Organizational Identification (Skewness .004, Kurtosis -.747), Turnover Intention (Skewness .067) , Kurtosis -.277), it is seen that the values of all scales are within +/- 1 limits and meet the normality assumptions (Hair et al., 2009).

3.1.4. Measurement Model Evaluation

The measurement model shows the relationship between observed variables and the latent variables on which they depend. In the research model, the employer branding variable, which has five dimensions, is considered as a high-order construct. It represents the more general structure of the lower-order constructs measured reflectively. In the model; The employer branding superstructure consists of five sub-structures: social value, economic value, development value, interest value and application value. The relationships of the superstructure with its own substructure implicit variables should be tested. The measurement model was checked by examining the reliability, rho_A, validity values (Hair et al., 2014; Henseler et al., 2016). Since all the structures in the research are reflective, the measurement model was examined using the consistent PLS method (Dijkstra & Henseler, 2015).

Table 2. Measurement Model Results

Factor	Indicator	Factor Loading	t value (bootstrap)	CA (α)	Rho_A	CR	AVE
EBR	**Social value**			0.805	0.820	0.813	0.593
	EBR2	0.844*	40.216				
	EBR1	0.770*	25.201				
	EBR5	0.689*	21.652				
	Economic value			1.00	0.802	0.802	0.574
	EBR8	1.00*					
	Development value			0.800	0.806	0.802	0.505
	EBR11	0.784*	35.543				
	EBR14	0.723*	28.178				
	EBR15	0.674*	20.965				
	EBR12	0.654*	18.874				

Table 2.   *(Continued)*

Factor	Indicator	Factor Loading	t value (bootstrap)	CA (α)	Rho_A	CR	AVE
	Interest value			0.859	0.820	0.813	0.593
	EBR16	0.793*	44.283				
	EBR19	0.776*	33.922				
	EBR18	0.773*	39.042				
	EBR20	0.769*	29.036				
	Application value			0.832	0.834	0.833	0.714
	EBR24	0.867*	43.080				
	EBR23	0.823*	33.643				
OI	OI3	0.787*	17.443	0.772	0.784	0.776	0.538
	OI4	0.771*	20.237				
	OI5	0.632*	12.149				
SIC	SIC2	0.836*	16.254	0.886	0.891	0.888	0.615
	SIC4	0.817*	33.582				
	SIC3	0.803*	26.227				
	SIC5	0.767*	35.399				
	SIC1	0.689*	25.588				
TI	T2	0.775*	15.741	0.800	0.802	0.802	0.574
	T4	0.764*	17.054				
	T1	0.734*	15.742				

*p<0.05, two tailed, (t>1.96), Note: CA=Cronbach's α ; CR=Composite Reliability; AVE=Average Variance Extracted.

Table 2 shows the results for measurement model reliability and convergent validity. For convergent validity, factor loading/external loading and average variance extracted (AVE) values were examined. Hair et al. (2019) recommends that the factor loading be at least 0.708 and that those below 0.40 be excluded from the model. Indicators with factor loads between 0.40 and 0.70 should be removed from the model by checking the AVE and CR coefficients. The extraction process can be terminated when the AVE and CR coefficients reach the desired threshold value. Within the scope of this study, indicators with a factor load below 0.40 were excluded from the model. Indicators between 0.40 and 0.70 were also excluded from the analysis one by one by controlling the AVE and CR coefficients. As seen in Table 2, factor loads of all indicators in the study were 0.60 and above. As soon as the AVE and CR threshold values reached the desired level, the measurement model took its final form. Consistent PLS Bootstrapping (subsample-5000) was used in the research model. The t and p values after bootstrapping are also given in Table 2. The results show that all indicators are related to the variables they are related to, and it is significant at the 0.95 confidence level. AVE values should be above ≥ 0.50. The values in Table 2 show that convergent validity is provided. For reliability in the measurement model, Cronbach Alpha-CA, which is the internal consistency reliability/coefficient, CR and rho_A, which is the composite reliability coefficient, should be ≥ 0.70 (Hair et al., 2014). Table 2 shows that these values are ≥ 0.70 and above. Therefore, it is seen that the reliability of the measurement model is stuck. Three values are used to test discriminant validity. One of them is cross-loading, the second is the Fornell-Larcker criterion (Fornell & Larcker, 1981) and the third is the HTMT criterion (Henseler et al., 2015).

Table 3. Cross-loadings of the measurement items

	Social value	Economic value	Development value	Interest value	Application value	SIC	OI	TI
EBR2	**0.844**	0.561	0.622	0.697	0.705	0.650	0.388	-0.299
EBR1	**0.770**	0.402	0.546	0.687	0.607	0.620	0.390	-0.232
EBR5	**0.689**	0.437	0.618	0.493	0.566	0.567	0.401	-0.222
EBR8	0.609	**1.00**	0.639	0.698	0.622	0.560	0.331	-0.476
EBR11	0.571	0.475	**0.784**	0.687	0.756	0.504	0.578	-0.563
EBR14	0.455	0.481	**0.723**	0.638	0.616	0.507	0.568	-0.378
EBR15	0.519	0.412	**0.674**	0.571	0.534	0.399	0.519	-0.370
EBR12	0.655	0.446	**0.654**	0.479	0.543	0.472	0.375	-0.189
EBR16	0.574	0.577	0.724	**0.793**	0.643	0.646	0.462	-0.502
EBR19	0.641	0.517	0.620	**0.776**	0.626	0.722	0.391	-0.479
EBR18	0.627	0.556	0.589	**0.773**	0.652	0.768	0.455	-0.446
EBR20	0.706	0.523	0.683	**0.769**	0.695	0.586	0.445	-0.419
EBR23	0.751	0.554	0.719	0.733	**0.867**	0.733	0.557	-0.529
EBR24	0.625	0.496	0.749	0.686	**0.823**	0.571	0.664	-0.614
SIC2	0.613	0.463	0.544	0.782	0.639	**0.836**	0.452	-0.335
SIC4	0.676	0.483	0.503	0.741	0.599	**0.817**	0.385	-0.306
SIC5	0.627	0.379	0.532	0.634	0.632	**0.767**	0.496	-0.253
SIC3	0.664	0.428	0.514	0.692	0.650	**0.803**	0.329	-0.210
SIC1	0.535	0.443	0.513	0.565	0.505	**0.689**	0.419	-0.252
OI4	0.431	0.357	0.584	0.452	0.621	0.439	**0.771**	-0.353
OI3	0.411	0.265	0.573	0.425	0.528	0.372	**0.787**	-0.426
OI5	0.259	0.201	0.417	0.359	0.425	0.350	**0.632**	-0.376
T1I	-0.229	-.0325	-0.365	-0.429	-0.491	-0.285	-0.406	**0.734**
TI4	-0.258	-0.391	-0.430	-0.410	-0.486	-0.212	-0.414	**0.764**
TI2	-0.258	-0.365	-0.428	-0.509	-0.557	-0.292	-0.372	**0.775**

According to Hair et al. 2017(a), the coefficients of the superstructure should be ignored while controlling the diagonal loads. Therefore, diagonal loads of the EBR, which is the superstructure, are not included in Table 3. In the crosstab, each indicator should take the highest value in the related variable. When the indicator loads are examined, it is seen that EBR 12 has a high correlation with a different variable. However, there is less than 0.10 difference between the factor loading in the other variable. Therefore, EBR12 is not considered as a contiguous item and is left in the model.

Table 4. Discriminant validity using the Fornell–Larcker criterion

	EBR	OI	SIC	TI	app.v	dev.v	eco. v.	int.v	soc.v.
EBR	**0.710**								
OI	0.658	**0.733**							
SIC	0.840	0.529	**(0.784)**						
TI	-0.586	-0.524	-0.347	**0.758**					
application v	0.976	0.721	0.774	-0.675	**(0.845)**				
development v	1.002	0.722	0.664	-0.539	0.868	**(0.710)**			
economic v	0.751	0.331	0.560	-0.476	0.622	0.639	**1.00**		
interest v	1.013	0.564	0.875	-0.594	0.841	0.841	0.698	**(0.778)**	
social v	0.956	0.508	0.796	-0.328	0.816	0.770	0.609	0.819	**0.770**

Table 4 includes Fornell-Larcker values. Hair et al. (2017a) state that discriminant validity should only be between first-level constructs and all other constructs of the model, but they state that it does not need to be examined between first-level constructs and second-level constructs. Therefore, the discriminant validity in Table 4 was evaluated on this basis. Here, too, the coefficients of the EBR have

been ignored, since employer branding is a high-level variable. According to the Fornell-Larcker criteria, the dark values seen in the diagonal are the square root of the AVE value of the relevant variable and each must be higher than the correlation coefficients in its own row and column (Fornell & Larcker, 1981). When Table 4 is checked, it can be seen that some values in parentheses violate this criterion. Recent studies reveal that it is not always possible to meet this criterion. For example, the Fornell-Larcker criterion; it stated that it does not perform well, especially when the indicator loads on a structure are only slightly different (for example, when all indicator factor loads are between 0.65 and 0.85). The researchers suggested that the cross-loading and Fornell-Larcker criteria are insufficient to reveal the discriminant validity, and it was suggested to look at the heterotrait-monotrait (HTMT) ratio between correlations. This value should be below 0.90 if the research model contains conceptually close variables, and below 0.85 for concepts that are far from each other in terms of content (Henseler et al., 2015).

Table 5. Discriminant validity using the Heterotrait-Monotrait-Ratio (HTMT)

	EBR	OI	SIC	TI	app.v	dev.v	eco. v.	ınt.v	soc.v.
EBR									
OI	0.657								
SIC	0.842	0.537							
TI	0.578	0.530	0.349						
application v	0.968	0.723	0.775	0.678					
development v	1.015	0.719	0.671	0.531	0.867				
economic v	0.750	0.331	0.564	0.476	0.622	0.641			
interest v	1.009	0.566	0.877	0.594	0.841	0.839	0.699		
social v	0.972	0.512	0.808	0.330	0.821	0.790	0.612	0.823	

When the HTMT coefficients are examined in Table 5, it is seen that these values are below 0.85. For the HTMT coefficients, the coefficients of the high-level variable EBR are ignored.

3.1.5. Structural Model Evaluation

SmartPLS 3.0 was used for SEM. Figure 2 shows the model. In this study, the five-dimensional employer branding independent variable was reduced to one dimension in the SmartPLS.3 and the SEM was tested as a high-level model. The high-level model is often used to test models with two second-order building layers. In the research, the high-level model was used in order to avoid linearity problems between the variables and to reduce the number of relationships in the model. Regarding the research model; PLS algorithm for calculating linearity, path coefficients, R^2 and effect size (f^2); Blindfolding analysis was also run to calculate the predictive power (Q^2). In order to evaluate the putative path coefficients and the level of significance, the resampling (n= 5000) bootstrapping analysis method at a 95% bias-corrected confidence interval was used. (Chin, 1998).

Figure 2. Structural Equation Model
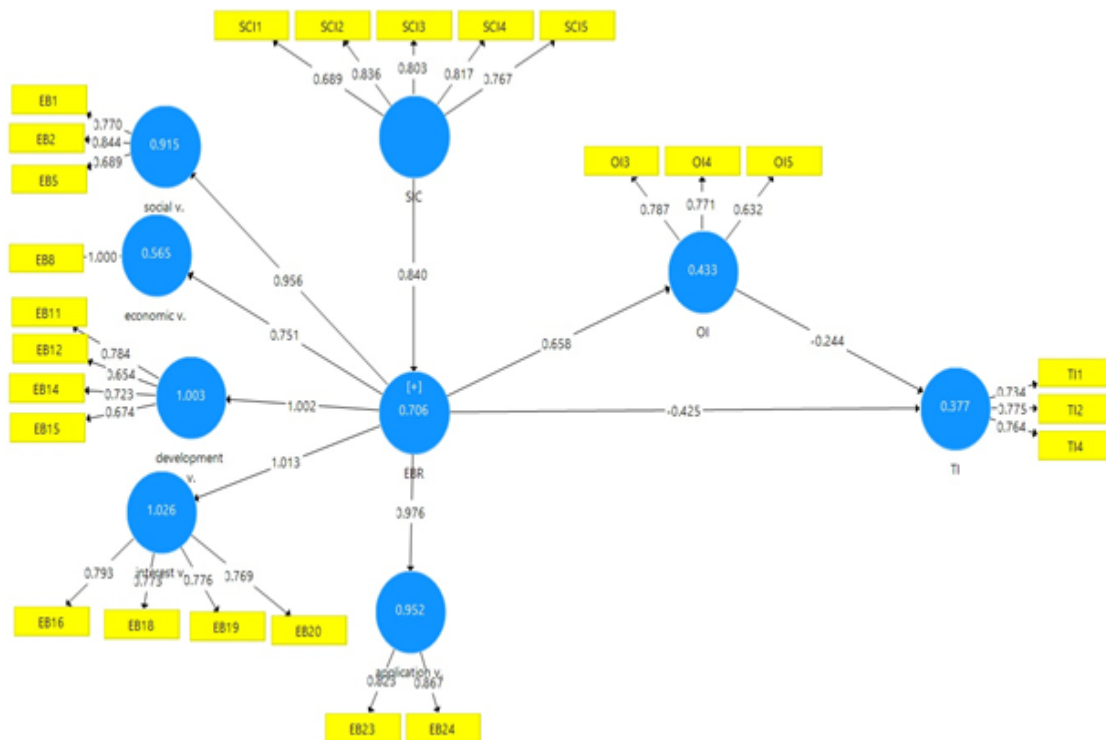
The inter-construct variance inflation factors (VIFs) values, which emerged as a result of the analysis performed to determine whether there is a linearity problem between the variables before proceeding to the hypothesis tests, are given in Table 6.

Table 6. Inter-construct variance inflation factors (Inter-factor VIFs)

	EBR	OI	SIC	TI	app.v	dev.v	eco. v.	ınt.v	soc.v.
EBR		1.00		1.763	1.00	1.00	1.00	1.00	1.00
OI				1.763					
SIC	1.00								
TI									

Since the variables are reflective, the linearity between the indicators (outer VIF values) is not at the focal point, the linearity results in the inner VIF values are considered. According to Hair et al 2019, VIF coefficients should be below the threshold value of 5, in order to avoid a linearity problem between the variables. As seen in Table 6, (VIFs) values are less than 5. There is no linearity problem between the research variables

Table 7. Explained variance (R^2) and the prediction relevance (Q^2) test

	R^2	Q^2
EBR	0.706	0.315
OI	0.433	0.216
TI	0.377	0.200

Table 7 includes R^2 values. R^2 values are considered weak if they are below 0.19, moderate if they are between 0.19-0.33, and substantial if they are greater than 0.67 (Chin, 1998). When Table 7 is examined, it is seen that the model explains 70% of the variance of employer branding (substantial),

43% of the variance of organizational identification (moderate) and 37% of the variance of the turnover intention (moderate). Table 7 also includes cross-validated redundancy measure (Q^2) values. Q^2 indicates whether the research model has the power to predict endogenous variables (Geisser, 1974; Stone, 1974). Blindfolding procedure was used to calculate the Q^2 value. The fact that this value is greater than zero indicates that the research model has the power to predict endogenous variables (Chin, 1998). Q^2 in Table 7 shows that the model has predictive power.

Table 8. Evaluation of the structural relations

Path	β	f^2	Effect	Standard dv.	t Statistics	Confidence Interval Bias Corrected 2.5%(LL)	97.5%(UL)	p-value
SIC → EBR	0.840	2.406	large	0.019	44.871*	0.800	0.875	0.000*
EB → OI	0.658	0.763	large	0.042	15.712*	0.573	0.736	0.000*
EBR → TI	-0.425	0.164	medium	0.070	6.091*	-0.559	-0.289	0.000*
OI → TI	-0.244	0.054	small	0.078	3.098*	-0.385	-0.085	0.002*

Table 8 shows the standardized path coefficient β coefficients, effect size (f^2), standard deviation, t statistics, confidence interval bias corrected values. In the research, t values were calculated with the Bootstrap method. 5000 subsamples were taken. Table 8 shows that all values are less than 0.05 at the 95% confidence level indicating that the hypotheses are accepted. SIC→ EBR meaningful and positive (β = 0.840; p < 0.05), EBR→OI meaningful and positive (β = 0.658; p < 0.05), EBR→TI meaningful and negative (β = -0.425; p < 0.05), OI →TI meaningful and negative (β = -0.244; p < 0.05) as affecting. Table 8 shows that t value is calculated as 44.871 in the SIC→ EBR path, 15.712 in the EB →OI path, 6.091 in the EBR→ TI path, 3.098 in the OI →TI path.

Since these values were not between 1.960 and 1.960 at the 95% confidence level (Hair et al., 2011) it was seen that all hypotheses were accepted. The effect size f^2 coefficient shows the share of exogenous variables in the explanation ratio of endogenous variables. According to this coefficient, ratios of 0.02 and above are considered to have a small effect, 0.15 and above are considered to have a medium effect, and 0.35 and above are considered to have a large effect (Cohen 2013; Hair et al. 2017). The f^2 coefficients in Table 8 show that the SIC variable has a large effect on the EBR variable, the EBR variable has a large effect on the OI variable, the EBR variable has a medium effect on the TI variable, and the OI variable has a small effect. When the confidence interval bias corrected confidence intervals in the table are checked, it is seen that none of the path coefficients contain a value of zero.

Table 9. Mediation test results

	Total effect β	t statistics	Direct effect β	Indirect effect β	VAF *	p-value	Confidence Inter. Bias Corrected 2.5%(LL)	97.5%(UL)
EBR → TI (c)	-0.586	14.860	-	-	-	0.000*	-0.565	-0.290
EBR → OI (a)	-	16.098	0.659			0.000*	0.570	0.735
OI → TI (b)	-	3.139	-0.241			0.002*	-0.385	-0.080

Table 9. (Continued)

	Total effect β	*t* statistics	Direct effect β	Indirect effect β	VAF *	p-value	Confidence Inter. Bias Corrected 2.5%(LL) 97.5%(UL)
EBR→OI→TI	-	3.109	-0.427(c')	-0.159	0.27	0.002*	-0.260 -0.057

*p<0.05 (t>1.96), * VAF (variance accounted for)=indirect effect/total effect (Hair et al, 2014), LL lower limit, UL upper limit

The method of Baron and Kenny was used to determine whether OI has a mediating effect between EBR and TI. The authors suggest that three conditions must be met in order to talk about a mediating effect. The first of these is that in the structural model without the mediating variable, the independent variable should affect the dependent variable (EBR→TI), in the structural model with the mediating variable, the independent variable should affect the mediating variable (EBR→OI) and the mediating variable should affect the dependent variable (OI→TI). Again, in the structural model with the mediating variable, if the effect of the independent variable (EBR→TI) on the dependent variable is insignificant (p>0.05), if the effect of the independent variable on the dependent variable (EBR→TI) is significant (p<0.05) and the beta coefficients (β) If there is a decrease, partial mediation effect is mentioned. These conditions are indicated in Table 9 as paths a, b, c, c'. When the results in Table 8 were checked, EBR→TI was meaningfully negatively (β=-0.586; p<0.05), EBR→OI was meaningfully positive (β=0.659; p<0.05), OI→TI was negative meaningfully (β=-0.241; p<0.05) as affected. When the mediating variable OI entered the model, the EBR→TI effect was negative and significant, and the β coefficient decreased (β=-0.427; p<0.05) Therefore, it can be said that organizational identification has a partial mediation effect on the relationship between employer branding and turnover intention. Hair et al. 2017 recommends calculating the VAF coefficient to test the significance of mediation effects. According to the authors, if VAF > 0.80, full mediating effect, 0.20 ≤ VAF ≤0.80, partial mediating effect. A VAF < 0.20 indicates that there is no mediating effect. The VAF (0.27) value in Table 9 shows us that organizational identification has a partial mediation effect between employer branding and turnover intention. When the confidence interval bias corrected in the table are checked, it is seen that none of the path coefficients contain a value of zero.

Table 10. Summary of hypothesis test

Hypothesis	Hypothesis	Acceptance
H1	Symmetrical Internal Communication- Employer Branding	Yes
H2	Employer Branding-Organizational Identification	Yes
H3	Employer Branding- Turnover Intention	Yes
H4	Organizational Identification-Turnover Intention	Yes
H5	Employer Branding- Organizational Identification- Turnover Intention (mediating)	Yes

3. CONCLUSION

In this study, based on SIT and RBA, it was aimed to reveal the relationships between symmetrical internal communication, organizational identification, and turnover intention, which are thought to be related to employer branding. The relationships between these structures have been examined in separate studies in the literature. However, no study has been found that examines these variables together. Therefore, the research results are important in this respect.

In today's competitive environment, employees are considered an important resource for organizations. The basis of sustainable success for organizations is to attract qualified employees to the organization, as well as to ensure that existing employees identify with the organization and keep them in the organization. At this point, employer branding also emerges as a strategic concept for potential and existing employees. Employer branding emphasizes the features of the current working environment in the organization that are notable and different from those of its competitors. These features are considered within the scope of benefits offered to employees. While employer branding practices try to offer attractive value to potential employees about the organization, they also want to provide better and unique working conditions to current employees than their competitors.

Research results support the hypothesized relationships between empirically examined variables. In the analysis, it was determined that there was a significant and positive relationship between symmetrical internal communication and employer branding ($\beta = 0.840$; p< 0.05). In the literature, the relationship between internal communication and many organizational elements has been examined. It has been demonstrated in different studies that internal communication has a positive relationship with many areas such as organizational identification, job satisfaction, loyalty, employee commitment, positive employee communication behaviors, trust, empowerment, employee creativity, and organizational effectiveness (Jo & Shim, 2005; Kang & Park, 2017; Kang & Sung, 2017; Lee & Kim, 2021; Robson & Tourish, 2005; Smidts et al., 2001).

However, the relationship between employer branding and internal communication has not been examined in almost any study in the literature. Therefore, the result of the research is valuable in this respect. Because employer branding paves the way for organizations to remain strong in the competitive environment. The existence of this strong relationship between the two variables in the research results indicates the importance of creating an effective internal communication system in institutions. How the employer brand values are communicated to employees and how they are perceived by employees is an element related to how internal communication channels operate. The internal communication system plays a fundamental role in conveying the attractive features of the institution. At this point, feedback also emerges as a key concept. A symmetrical internal communication system also includes a feedback mechanism where employees can easily express their thoughts and problems. This two-way communication structure within the organization will positively affect the perception of the employer

brand. Thanks to the feedback received from employees, existing practices within the scope of employer branding can be revised or new values can be created.

It has been demonstrated in different academic studies that a strong employer brand that will provide a competitive advantage to the institution brings many gains for organizations. One of these is that an effective employer brand increases organizational identification in employees (Backhaus & Tikoo, 2004; Foster et al., 2010) and another is that a strong employer brand reduces employees' intention to leave (Kucherov & Zavyalova, 2012; Priyadarshi, 2011; Rai & Nandy, 2021). Within the scope of this research, the mediating effect of organizational identification between employer branding and turnover intention was also examined. Accordingly, it has been determined that the indirect effect of employer branding on intention to leave is significant and that the relationship between employer branding and intention to leave is mediated by organizational identification ($\beta = -0.159$, 95% BCA CI [-0.260, -0.057]. Intention to leave is mediated by organizational identification. Quitting a job has many costs for the organization. Therefore, in today's competitive environment, no organization wants the qualified and experienced personnel who have been working within it for a long time and have been integrated with the organization to leave. Because organizations are aware that they cannot provide competitive advantage only with product and service quality in the current market conditions. Therefore, Qualified human resources have a strategic importance for them. The economic, social and developmental benefits offered to employees through employer branding and the values these benefits offer to employees can positively or negatively affect employees' perception of the employer brand. Therefore, the stronger this perception is, the more the employee will identify with the organization. and there will be no intention to quit the job.

This study has some limitations. One of these is that the subject was examined within a single sector. In future studies, comparative studies that include different sectors or even consider different sectors together can be suggested. Another limitation is related to the method. Only a quantitative design was used in this study. In future studies, qualitative studies, or a combination of both may be recommended to gain a more in-depth understanding of the subject. It is anticipated that this study will shed light on future studies on communication, public relations and employer branding.

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Syrian Asylum Seekers as Political Factors and Their Effects on Local Politics

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Abstract

The influx to Turkey amidst the 2011 Syrian civil war has significantly affected the Syrian and Turkish communities socially and economically. It can be claimed that this major Syrian existence among Turkish society, has the potential to be a factor, especially in local politics and the political choices of Turkish citizens. The study focuses on 12 provinces of Turkey where the ratio of Syrian asylum seekers to the population of the province is the highest in Turkey. The main subject of this study is the function of Syrian asylum seekers in structuring Turkey's local politics. Within this context and based on the last two local elections in Turkey, election manifests and speeches of political parties and mayoral candidates are analyzed on the axis of Syrian asylum seekers. Also, the distinctive role of the presence of Syrian asylum seekers and political discourse about them in the political choices of Turkish voters is presented argumentatively. In this study, data obtained through content analysis is analyzed within a comparative framework, and in consequence, the functions of Syrian asylum seekers as political factors in structuring local politics are evaluated.

Keywords: Syrian Asylum Seekers, Local Politics, Local Administrations, Local Elections, Political Choices

Article Type	Application Date	Admission Date
Research Article	December 26, 2023	June 24, 2024

1. INTRODUCTION

Migration, which can be defined as the movement of individuals or groups of people from one place to another for various reasons, is a phenomenon that has been frequently observed in the life of societies throughout history and continues to be observed. Apart from its type, intensity, and causes, different cultures and societies interact as a result of migration especially when it occurs on an international scale (Parlak & Şahin, 2019, p. 40). Although it is known that in the historical process, immigrants tend to reach similar cultures, especially in economic migration; this tendency becomes a concern about life when immigrants are involuntarily displaced (Parlak & Şahin, 2019, p. 40). Within these kinds of situations, the primary objective of people living in war or conflict zones is to reach regions where they think they can find safety as quickly as possible (Parlak & Şahin, 2019, p. 40).

Diverse communal consequences emerge as a result of the type, intensity, and causes of migration. These social economic, cultural, and political consequences tend to create negative effects on the communal attitude of immigrant-receiving societies. According to Castles and Miller (2008, p. 20), migrants are facing strong reactions from some sections of immigrant-receiving societies in the face of economic restructuring and far-reaching social changes created by migration. Immigrants are often seen as the cause of insecurity and unemployment, and they are also blamed for pushing up housing prices and overloading social services, crime, and diseases (Castles & Miller, 2008, p. 20).

Concerning the Castles and Miller's (2008, p. 18) profile of immigrants, it is seen that immigrants are mostly coming from societies with different traditions and religions, speak different languages, possess different cultures, physical appearances, and clothing styles, and generally work at low-class jobs and settle in among low-income. These differences create a sense of perceived threat for both societies and usually result in the development of negative attitudes towards immigrants among hosting societies.

As an example, findings of the European Social Survey (2002-2016)[1] indicate that European societies are in a tendency to accept immigrants who share similar roots with them, are well-educated and highly qualified, have a high level of welfare, can speak the language, and are familiar with the lifestyle of the country of destination. However, the European societies also think that immigrants worsen the crime problem in the host countries and the Europeans are skeptical about whether the immigrants are making their host countries more livable and contributing to their economy (Şahin, 2018, p. 65).

Hence, according to the findings of yet another research conducted in 2016; over half of the Europeans (59%) think that the refugees are increasing the likelihood of terrorism and half of the Europeans (50%) believe that refugees also create economic burdens as they are taking Europeans' jobs

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[1] For more information about European Social Survey visit http://www.europeansocialsurvey.org/

and social opportunities (Pew Research Center, 2016, pp. 3-12). According to 30% of the Europeans, refugees are responsible for crimes in European countries and 36.7% of them believe that the existence of diverse ethnical groups makes those countries worse places to live in (Pew Research Center, 2016, pp. 3-12).

According to Tunç (2015, pp. 42-46), findings indicate that Turkish society's behaviors against Syrians are similar to this universal profile. Turkish society also maintains a distance from asylum seekers and various demographic concerns arise among the society (Tunç, 2015, pp. 42-46). Concerns about unemployment and loss of income prevail and as well as economic concerns centered around constantly rising house rental pricings (Tunç, 2015, pp. 42-46). Moreover, asylum seekers are perceived as the cause of some diseases and crimes leading to a state of distrust towards them. (Tunç, 2015, pp. 42-46)[2].

When we consider the findings of these studies, we can understand that the negative attitudes developed against immigrants, asylum seekers, or refugees occasionally turn into anti-immigrant movements ranging from expressions of dissent and political criticism to violent actions and racist attacks. Especially due to the perception that migration and immigrants are negatively affecting the labor market, real estate and rental market, deliverance of health services, and public security, anti-immigrant attitudes rise in the host society because these issues are able to directly affect the daily life of the host society.

The findings of a recent study also support this inference. The findings of a study conducted across Turkey by the Social Democracy Foundation (2021, pp. 11-13) suggest that the voters who voted for AK Party, CHP, MHP, IYI Party, and HDP in the Turkish General Elections in 2018 are defining the Syrians in Turkey as a burden and source of possible future problems. Besides, the common opinion of all of the voters is that the Syrians should return to their country (Social Democracy Foundation (SODEV), 2021, pp. 11-13).

According to these recent findings, it can be understood that the main concerns held are about economic issues and continually rising crime rates in Turkish society. For example, 67.1% of the research participants have a negative view of Syrian business owners in Turkey arguing that Syrians do not pay taxes, that they will be permanent and, that they will steal the opportunities of the Turks (Social Democracy Foundation (SODEV), 2021, p. 38). When this finding is distributed over the voters then the voters of CHP, MHP, and IYI Party are against the business opening of Syrians by a minimum rate

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[2] The findings indicated in these studies since 2011 refer to the general opinion about the Syrian asylum seekers in Turkey. However, these findings are mostly based on the attitudes developed in Turkish society against Syrians. But the negativity related to Syrians in many studies about healthcare, education, public security etc. does not reflect the real situation when the official data is taken into consideration. For more information, see (Şahin, 2018).

of 80% (Social Democracy Foundation (SODEV), 2021, p. 38). It is seen that this rate is 59.6% among AK Party voters and 52.3% among HDP voters (Social Democracy Foundation (SODEV), 2021, p. 38).

Findings of participating in the labor force also coincide with the findings of business startups. 62.8% of the research participants have a negative view of Syrians participating in labor life stating that they should return to their country and work there, wages will decrease, they will be permanent in Turkey and, they will take away the jobs of Turks (Social Democracy Foundation (SODEV), 2021, pp. 41-43). When these findings were distributed to voters, 54% of AK Party voters, 79.9% of CHP voters, 66.7% of MHP voters, 83.7% of IYI Party voters and, 62.6% of HDP voters are against Syrians' participation in the labor force (Social Democracy Foundation (SODEV), 2021, pp. 41-43).

Hence more than 60% of voters who are the participants of this study share a common opinion that Syrians are negatively affecting the Turkish economy and raising apartment rents (Social Democracy Foundation (SODEV), 2021, pp. 78-83). Besides, more than 50% of the participants share concerns about the increase in crime rates and conflicts (Social Democracy Foundation (SODEV), 2021, pp. 78-83).

In this context, the emergence of anti-immigration attitudes in the host society should be manifested in political choices; in other words, the local and national political powers that produce and carry out the current immigration policy should be expected to be warned, especially through elections. In this regard, two hypotheses are proposed: Voters' political choices are formed around their ideological commitments and individual interests and, the existence of Syrian asylum seekers is not a factor to dissolve the ideologically motivated commitments of the voters to political parties.

2. METHODOLOGY

The population of Syrian asylum seekers in Turkey has constantly increased since the start of the Civil War in Syria in 2011. Although the population of Turkey also increased within the same years, the ratio of Syrian asylum seekers to the population of Turkey has been over 4% since 2017. Based on these ratios, this study focuses on 12 provinces of Turkey where the ratio of Syrian asylum seekers to the population of the province exceeds the ratio of Syrian asylum seekers to the population of Turkey.

Because 10 of these 12 provinces are also metropolitan municipalities, results of the elections for both the metropolitan municipality mayorships and the metropolitan city council memberships have been analyzed based on the mayoral candidates and the political parties. For the other two provinces which are not metropolitan municipalities (Kilis and Osmaniye), results of the elections for the municipal mayorships and the provincial assembly memberships have been analyzed with respect to the candidates and the political parties. Additionally, the results of the Presidential and Parliamentary Elections held in 2018 have been analyzed for these 12 provinces so as to cross-check the findings.

Data indicating the results of the elections were collected from various publicly available press releases, which were also published based on the official results announced by the Supreme Election

Council[3]. Additionally, discourses of political parties which are seeking for national and regional power and speeches and pledges of the mayoral candidates in 2014 and 2019 elections are analyzed on the axis of Syrian asylum seekers via election manifestos of the political parties.

3. POLITICAL BACKGROUND OF TURKEY

Although Turkey's history of democracy can be traced back to the constitutional period of the Ottoman Empire, the multi-party political life in the modern Republican era started with the elections held in 1946. 1946 election was the first occasion in which Turkey experienced a multi-party election in which two main ideological rivals competed.

Before the 1946 elections, the socio-political environment in Turkey consisted of two opposite sides: well-organized political elites that occupy the center and heterogeneous peripheral formations united in their opposition to the power elite. The political representatives of this structure were the Republican People's Party in the center and the Democrat Party in the periphery (Akgün, 2000, p. 79). The antagonism between these two pioneers of the newly established multi-party political life also predetermined Turkey's political and ideological scenery after 1946. Especially until the military coup held in 1980, the peripheral political movements have always been regarded (?) as the successor of the Democrat Party. And in the '90s, many new political parties with many new political tendencies based on religious, nationalist, and ethnic ideologies started to grow in the political life of Turkey (Akgün, 2000, pp. 79-80).

The multi-party political life in Turkish democracy and the newly emerged dynamics in politics have naturally affected the relations in Turkish society. The intra-country rural-urban migration movements accelerated from 1960's onwards, and unplanned urbanization and local compatriotic relations were established following those movements. The economic crises and political instability that occurred in the post-1980 period were the main reasons for the social reaction which deeply affected the political choices after the 2000s (Bayburt, 2021, pp. 26-27). Thus, the same political party is governing Turkey since 2002.

In today's political world of Turkey, there are five main actors. *AK Party*, whose initial political definition can be made as a mass-party that pursues politics along conservative democratic lines, is a structure embodied on the ground of social reactivity. In that context, AK Party can be regarded as a product of the public's loss of trust in other political parties at the central right and central left in the new millennium, whose politics have been similar since the beginning of the multi-party democratic life in Turkey. At the beginning of the 2000s, many people who lost faith politically and economically perceived AK Party as a new future.

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[3] The official results of the elections published in the Official Gazette by the Supreme Election Council include consolidated data of Turkey. But because it is needed to analyze the results by provinces for this study, the data were collected from various media institutions.

AK Party defined itself economically "neoliberal", politically "libertarian reformist" and ideologically "conservative democrat" in its early periods (Tepe, 2010, pp. 151-152). In the meantime, it had been observed that the AK Party headquarters has also shown a particular sensitivity to avoid being associated with "Islamist" characterization.

After the military coup attempt on 15 July 2016 was repulsed, it is observed that the AK Party completely abandoned its liberal/libertarian rhetoric in the political field, which had begun to erode slowly before, and preferred a more security-oriented, state-centered political language. It is possible to state that the "Public's Alliance" established with the Nationalist Movement Party and the "Presidential Government System" implemented by replacing the parliamentary regime reinforce this political language. Erdoğan, who was elected president in 2014, has become the primary political actor with a decisive role in the domestic and foreign politics of the country, with the new system passed in 2018.

On the other hand, the origins of the *Nationalist Movement Party (MHP)*, which gained its current institutional identity in 1969, can be traced back to the Republican Villagers Nation Party, which was founded in 1958. The process started when Alparslan Türkeş[4], the leader of the movement, who had charismatic authority and was known as the "Basbuğ"[5], and his friends joined the Republican Villagers Nation Party in 1965 and gained intra-party power within a short time, resulted in the change of the name of the party to the "Nationalist Movement Party" in the Adana Congress held in February 1969.

The program of the MHP, led by Türkeş, was dominated by anti-communist and anti-liberal rhetoric, focusing on Turkish nationalism in every field from politics to economy. The party program, called "the Nine Lights Doctrine" and written by Türkeş, has been the main determinant of the MHP's policy-making and administration. In addition, the party management has implemented a model of thought known as the "Turkish-Islamic Ideal" by merging Turkish nationalism with Islamist values.

In the congress held after the unexpected death of Türkeş as a result of a heart attack in 1997, Devlet Bahçeli[6], who continues his duty today, was elected as the chairman and the party became the government partner by achieving second place in the general elections held in 1999.

The MHP, led by Bahçeli, which attracted attention with its harsh and sharp oppositional rhetoric against the AK Party from its coming to power in 2002 until 2016. But after 2016, the MHP has shifted its rhetorical position and preferred to stand by Erdoğan with the discourse of "the survival of the state", which is considered one of the indispensable arguments of the traditional politics of the party,

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[4] Retired soldier/politician, born in 1917. He took an active part in the Military Coup on May 27, 1960 with the rank of staff colonel, and led the Turkish nationalism-based political line known as the "Ülkücü Movement" and its institutional representative, the Nationalist Movement Party, until 1997, when he stepped into his political life in 1965. He also served as deputy prime minister (1975-77, 1977-78) twice during his political career.

[5] Phrase meaning "commander in chief" in Turkish history.

[6] Academician/politician born in 1948. He has been the chairman of the Nationalist Movement Party since 1997 and served as the deputy prime minister between 1999-2002.

after the 15 July military coup attempt. and became the other major partner in the formation of the "Public's Alliance".

The *Republican People's Party (CHP)* has a different position in the historical context when compared to other parties in Turkish politics. It emerged as a political structure founded by the military-civil bureaucratic elite, which mainly led the national struggle against the occupying forces and subsequently had the grand share in the establishment of the modern nation-state.

Following the mid-1990s, the CHP, under the leadership of Deniz Baykal, portrayed a party that could not get rid of its perceived identity as a chronic opposition party, and according to some political circles, it did not want to do so. As a policy, it is possible to say that it was drifting in a more state-centered, nationalist direction rather than a line that centers the economically disadvantaged segments of the people. Its voter base is largely composed of urbanized and educated segments of the society belonging to the middle and upper-income brackets.

Although the party went through a paradigm shift with Kemal Kılıçdaroğlu's[7], taking the office after Deniz Baykal in 2010, and aimed to reach all segments of society, it is difficult to say that it achieved a meaningful success until the local elections held in March 2019. Despite this, it is observed that the CHP under Kılıçdaroğlu reached a wider electorate compared to the Baykal period. In this process, relations with the poor living in metropoles and groups that feel excluded due to identity, gender, etc. have become even tighter. Since 2018, the party has established the "Nation's Alliance" with the IYI Party.

IYI Party, which was founded in October 2017 by Meral Akşener[8] and her followers, can be read as a direct and institutional outcome of the power struggle within the MHP since 2015. As a result of the general elections held in November 2015, the MHP's position as the fourth party by obtaining 40 deputies in the parliament mobilized those who were not satisfied with Devlet Bahçeli and his administration, and Meral Akşener announced her candidacy for the general presidency in this direction.

In light of all those developments, serious ruptures took place within the MHP under the leadership of groups opposing the policies implemented by the leader Devlet Bahçeli. Especially the MHP's rapprochement with the AK Party after 2016 caused serious intra-party objections and the process ended with the establishment of the IYI Party.

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[7] Bureaucrat, politician, born in 1948. Between 1992-96 and 1997-99, he served as the General Director of the Social Security Institution, entered the parliament in 2002 by entering politics from the CHP, and has been the chairman of the CHP since 2010.

[8] Academic, politician, born in 1956. Raised from a family with a nationalist view, his older brother Nihat Gürer became one of the well-known and influential figures in the MHP and the idealist movement. In the mid-1990s, he started active politics in the True Path Party, which was one of the important actors in the centre-right politics of that period, and undertook the duty of interior minister between 1996-97. Although he took part in the "Innovators" movement with Recep Tayyip Erdoğan and Abdullah Gül in 2001, he left there due to some disagreements and joined the MHP. Since 2017, he has been the chairman of the IYI Party, which he founded.

As a political discourse, in the IYI Party, which appeals to the secular, urban, and educated nationalist segments of the MHP electorate who are generally dissatisfied with Bahçeli's political style, an effort to become a center-right party aiming to reach a wider audience under the leadership of Akşener is observed.

It is known that Kurdish politicians who define themselves on the left of the political spectrum in Turkey during the 1960s, in a political environment where left/socialist influences exhibited some strength in the political life of Turkey, were engaged in politics under the umbrella of formations such as the People's Republic Party and the Workers' Party of Turkey. This situation continued for a long time.

At the beginning of the 1990s, Kurdish politics started to institutionalize independently on a legal scale, and the process that started with the People's Labor Party continues today with the *Peoples' Democratic Party* (HDP), which was founded in 2012. This political tradition, which became politically active by winning the metropolitan and district municipalities in the Eastern and Southeastern Anatolia Region, where mostly Kurds live, started to make its voice heard strongly on a national scale with the election of HDP co-chairman Selahattin Demirtaş[9]. Gaining a certain momentum with the moderate left rhetoric adopted by Demirtaş compared to previous periods, HDP reached a remarkable 13.1% of votes in the general elections held in June 2015.

Although the HDP's political agenda includes asylum seekers, homosexuals, women, and poor classes seeking rights, it is possible to say that the phenomenon they define as the "Kurdish problem" is still strong at the center of their political discourse and is equally determinant.

The dynamic political life in Turkey is also affecting the voting behavior of the voters. According to the findings of many studies (Bayburt, 2021; Erdoğan, 2004; Çinko, 2006; Akgün, 2000), voters in Turkey are mostly determining their political choices rationally concerning economic circumstances. Bayburt (2021, p. 39) states that, especially after an economic crisis period, voters are behaving rationally and determining their political preferences concerning their economic circumstances. Erdoğan (2004, p. 105) also states that in the periods of elections, macroeconomic indicators are more important than the ideological preferences for voters, and voters decide for whom to vote according to those macroeconomic indicators. Çinko (2006, pp. 111-114) mentions that in countries where economic problems worsen, factors related to these economic problems have a decisive effect on voting behavior, and in Turkey, the negative macro-economic policies of the government are also affecting the political choices of the voters. Çinko (2006, pp. 111-114) also states that low-income

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[9] Lawyer, politician, born in 1973. He was the co-chairman of the Peace and Democracy Party between 2010-14 and the Peoples' Democratic Party between 2014-2018. He served in the parliament as a deputy in the 2007, 2011 and 2015 general elections. He was sentenced to prison on charges of "establishing an organization for the purpose of committing a crime", "being a member of a terrorist organization", "being a member of an armed terrorist organization", "committing a crime on behalf of a terrorist organization" and has been living in prison since 2016.

voters are preferring opportunist policies that are raising financial support for themselves. According to Akgün (2000, pp. 89-90), voters pursue their economic interests by acting pragmatically.

4. FACTORS AFFECTING ELECTORAL BEHAVIOR AND THE ROLE OF FORCED MIGRATION

In representative democracies, elections are the most important way of people's participation in the governmental policies (Beetham & Boyle, 2010, p. 376). There are many factors affecting people's political choices while they are electing their representatives within the democratic participation opportunities. According to Kışlalı (2011, p. 275), voters' political choices are affected not only by their self-interests but also by the demand for security, the demand of respectability, emotional commitment, and religious and political beliefs. For example, it can be observed that the effects of local influences on voting preferences decrease while the effects of social classes on voting preferences increase according to the transition from an agricultural economy to an industrial economy, in other words, from traditional society to modern society. Those whose experience a decrease in their share of the income distribution tend to have more nationalistic and religious political preferences. Also, violence and security concerns cause the voters to act conservatively in their political choices (Kışlalı, 2011, p. 275).

Concerning some other studies (Antunes, 2010; Aydoğan Ünal, 2016; Lazersfeld, Berelson, & Gaudet, 1944) on voting behavior, it can be understood that several factors are affecting the voters' decisions about their political preferences. These factors could be based on ideological or rational grounds, Other grounds such as the social environment of individuals, the social capital of individuals, and the pragmatic and rational evaluations of individuals can also affect the political preferences of voters.

When these factors are reanalyzed with respect to the hypotheses of this study, one can claim that the population of asylum seekers settled in a country because of forced migration, would also saliently affect the political preferences of voters in the host country. Hence, the findings of many studies (Barone, D'Ignazio, de Blasio, & Naticchioni, 2016; Otto & Steinhardt, 2014; Dustmann, Vasilijeva, & Damm, 2016; Vasilakis, 2017) show that the rise of extreme nationalist tendencies in the last years especially in the welfare states of the Global North is mostly related to the population of immigrants in these countries.

For instance, Barone et.al (2016) found that in Italy, voters living in the districts where many immigrants are settled, have a tendency towards central right political parties depending on the cultural differences and the competition in accessing the labor market and public services. Also, according to the findings of their research conducted in Hamburg, Germany, Otto and Steinhardt (2014) revealed that the growing population of foreigners has a significant effect on the political success of extreme-right political parties in Germany.

Dustmann et.al has also reached similar results. Regarding their research conducted in Denmark, they have stated that the growth in the population of refugees is the cause of the increase of the votes of not only the anti-immigrant parties but also the center-right parties both in local and general elections. Also, with regard to the concern about the financial effects of refugees, this tendency towards right wing political discourses seems stronger in especially rural municipalities which are wealthier, where the working-age population is higher and much more refugees have settled (Dustmann, Vasilijeva, & Damm, 2016). Besides Vasilakis (2017) states that the population of Syrian asylum seekers in the Greek islands in the Aegean Sea is the reason for the increase of votes for the Golden Dawn Party in Greece, which is known for its Neo-Nazi political views.

5. STATISTICS ABOUT SYRIAN ASYLUM SEEKERS IN TURKEY AND ECONOMIC INDICATORS IN THE SAME PERIOD

A grassroots movement called the Arab Spring started in 2010 in Northern Africa and then spread to Syria, the southern neighbor of Turkey in 2011. As a result of the civil war in Syria, millions of Syrians had to flee from their country and seek refuge in neighboring countries. According to UNHCR (2021), 3,701,584 of 5,635,057 Syrian asylum seekers (65.7% of Syrian asylum seekers in the world) are settled in Turkey.

The population of Syrian asylum seekers has continuously grown since 2011 when the entries started in Turkey. According to the data from the Directorate General of Migration Management, the ratio of Syrian asylum seekers to the population of Turkey is 4.33% in July 2020 and 4.30% in 2019 (Figure 1).

Figure 1. The Ratio of Syrian Asylum Seekers to the Population of Turkey by Years (2011-2020)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Syrian Asylum Seekers	0	14,237	224,655	1,519,286	2,503,549	2,834,441	3,426,786	3,623,192	3,576,370	3,604,226
Population of Turkey	74,724,269	75,627,384	76,667,864	77,695,904	78,741,053	79,814,871	80,810,525	82,003,882	83,154,997	83,154,997
Ratio (%)	0.00	0.01	0.29	1.95	3.17	3.55	4.24	4.41	4.30	4.33
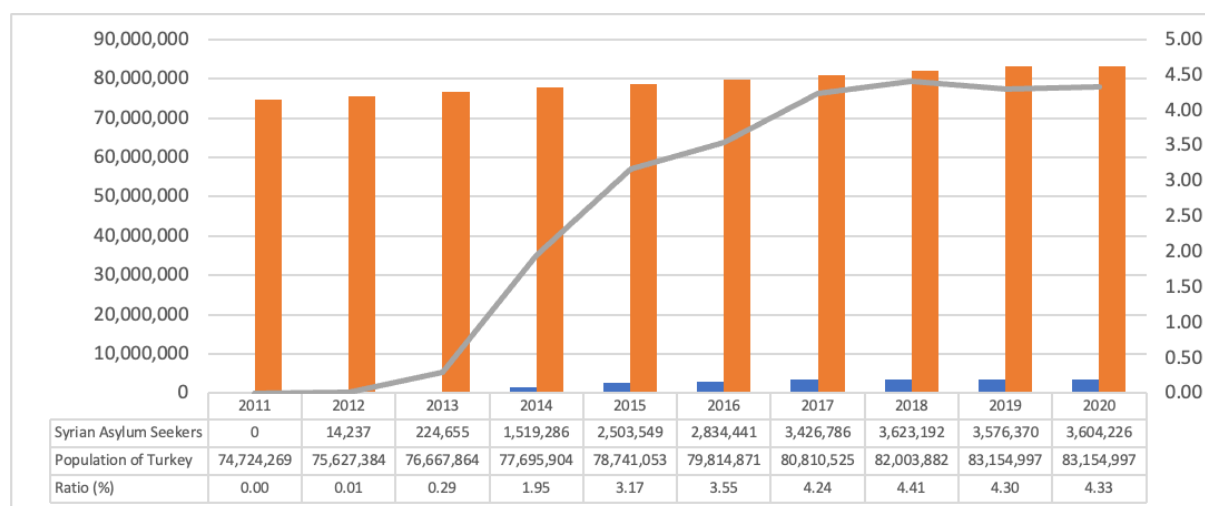
Source: (Directorate General of Migration Management, 2020; Turkish Statistical Institute, 2020)

There are 12 provinces in Turkey where ratios of the asylum seekers in Turkey exceed this percentage based on the overall ratio of Syrian asylum seekers in Turkey to the population of Turkey during election periods, which are the subject of the study, (Table 1).

Table 1. Provinces of Turkey Where the Ratio of Syrian Asylum Seekers to the Population of the Province Exceeds the Ratio of the Syrian Asylum Seekers to the Population of Turkey

Province	2018			2020		
	Number of Registered Asylum Seekers	Population of the Province	Ratio (%)	Number of Registered Asylum Seekers	Population of the Province	Ratio (%)
Adana	202,676	2,216,475	9.14	248,374	2,237,940	11.10
Bursa	148,077	2,936,803	5.04	176,628	3,056,120	5.78
Gaziantep	384,285	2,005,515	19.16	452,135	2,069,364	21.80
Hatay	445,095	1,575,226	28.26	435,297	1,628,894	26.72
Kahramanmaraş	100,346	1,127,623	8.90	91,135	1,154,102	7.97
Kayseri	74,524	1,376,722	5.41	77,181	1,407,409	5.48
Kilis	131,109	136,319	96.18	109,577	142,490	76.90
Konya	107,515	2,180,149	4.93	115,127	2,232,374	5.16
Mardin	92,846	809,719	11.47	88,769	838,778	10.58
Mersin	208,139	1,793,931	11.60	214,920	1,840,425	11.68
Osmaniye	54,555	527,724	10.34	48,363	538,759	8.98
Şanlıurfa	475,782	1,985,753	23.96	420,867	2,073,614	20.30

Source: (Directorate General of Migration Management, 2018; Directorate General of Migration Management, 2020)

As stated in the findings of various studies on voter preferences in Turkey mentioned above, voters' voting behavior runs parallel with their economic interests and economic wealth is a determining factor in their choices. Hence, it is important also to analyze the changes in the economic indicators such as inflation and unemployment rates after 2014 when the population of Syrian asylum seekers exceeded one million people in Turkey as those indicators are in a direct relation with daily life.

Figure 2. 2014-2019 Consumer Price Index (Year to Year % Changes)
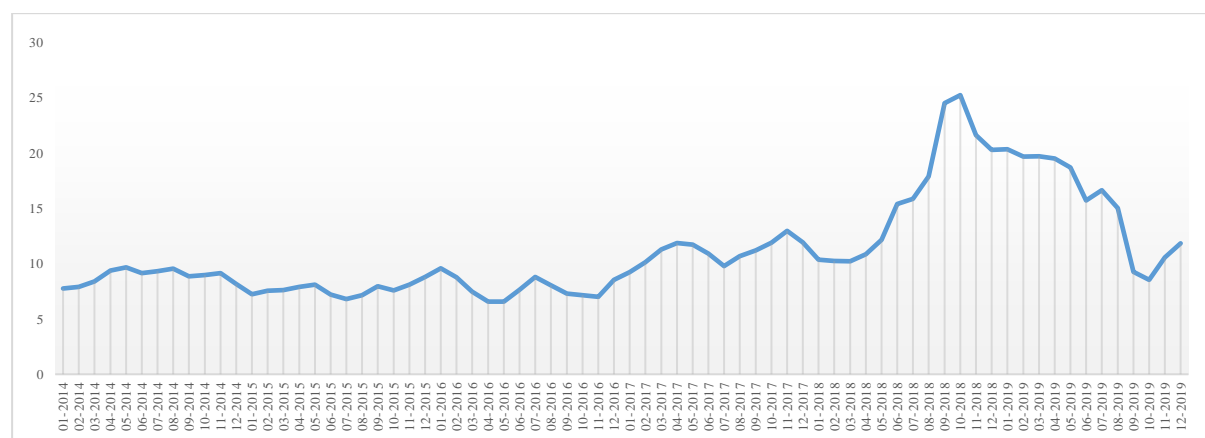
Source: The graphic is prepared by the authors according to the data of (The Central Bank of The Republic of Turkey, 2021)

For instance, when the Consumer Price Index between January 2014 and December 2019 is analyzed, it is understood that inflation is increasing after January 2017 and this increase accelerated after May 2018 (Figure 2). Thus, the inflation rate which is 10.85% in April 2018 has increased to 25.24% in October 2018 according to the Turkish Central Bank.

When the Consumer Price Index is analyzed according to the statistical data of the provinces which are the subjects of this study and the statistical regions where these provinces are located, according to the 12-month averages, it is understood that Consumer Price Index is 1.5-2% below or above the national average. Especially, only the regional inflation in Bursa, Bilecik, and Eskişehir regions is below the national average in 2018, when the national inflation increase has significantly accelerated (Figure 3).

Figure 3. Consumer Price Index (12-month Average) of the Provinces (2014-2019)
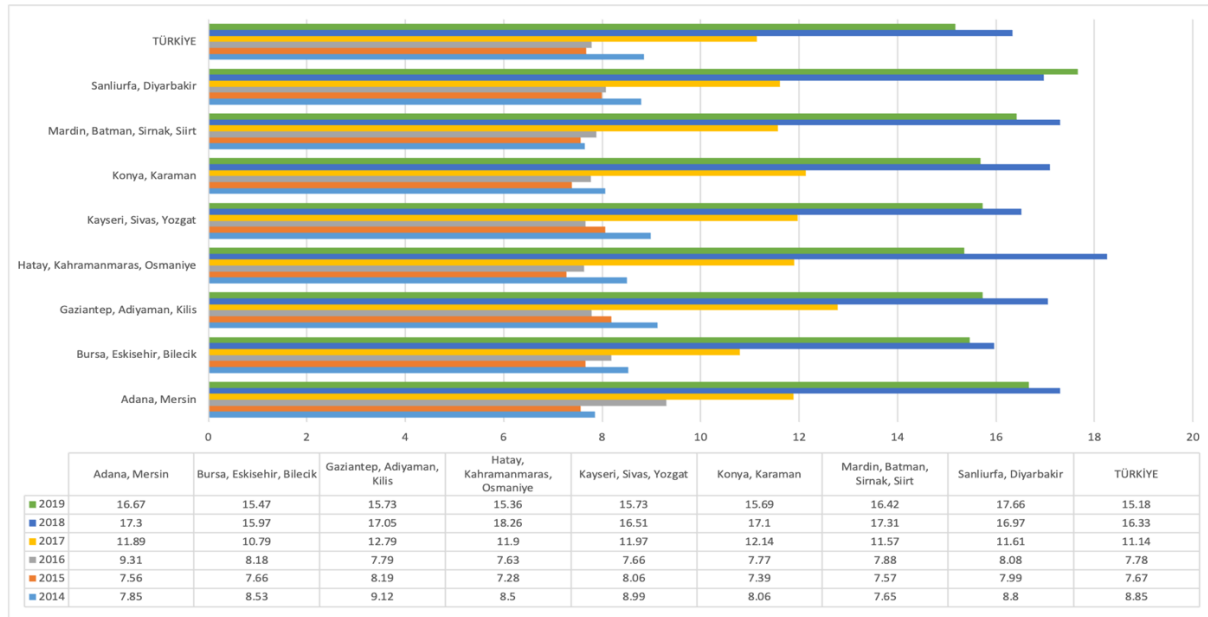
	Adana, Mersin	Bursa, Eskisehir, Bilecik	Gaziantep, Adiyaman, Kilis	Hatay, Kahramanmaras, Osmaniye	Kayseri, Sivas, Yozgat	Konya, Karaman	Mardin, Batman, Sirnak, Siirt	Sanliurfa, Diyarbakir	TÜRKİYE
2019	16.67	15.47	15.36	15.36	15.73	15.69	16.42	17.66	15.18
2018	17.3	15.97	17.05	18.26	16.51	17.1	17.31	16.97	16.33
2017	11.89	10.79	12.79	11.9	11.97	12.14	11.57	11.61	11.14
2016	9.31	8.18	7.79	7.63	7.66	7.77	7.88	8.08	7.78
2015	7.56	7.66	8.19	7.28	8.06	7.39	7.57	7.99	7.67
2014	7.85	8.53	9.12	8.5	8.99	8.06	7.65	8.8	8.85

Source: The graphic is prepared by the authors according to the data of (Turkish Statistical Institute, 2021).

Turkey national unemployment has also increased continuously between 2014 and 2019. The national unemployment rate which was 9.9% in 2014 has increased to 11% by 2018 and 13.7% by 2019 (Figure 4).

But when the unemployment rates of Turkey are analyzed on a regional scale, it is understood that the annual change in unemployment rates differ from the annual change of inflation. For example, the regional unemployment rate of the Konya and Karaman statistical regions is below the national average of Turkey between 2014 and 2019. But the regional unemployment rates of the statistical regions encircling Gaziantep, Kilis, Hatay, Osmaniye, Kahramanmaraş, Mardin, and Şanlıurfa provinces are above the national average of Turkey between 2014 and 2019, occasionally doubling the nation-wide unemployment rate. (Figure 4).

Figure 4. National and Provincial Unemployment Rates (2014-2019)
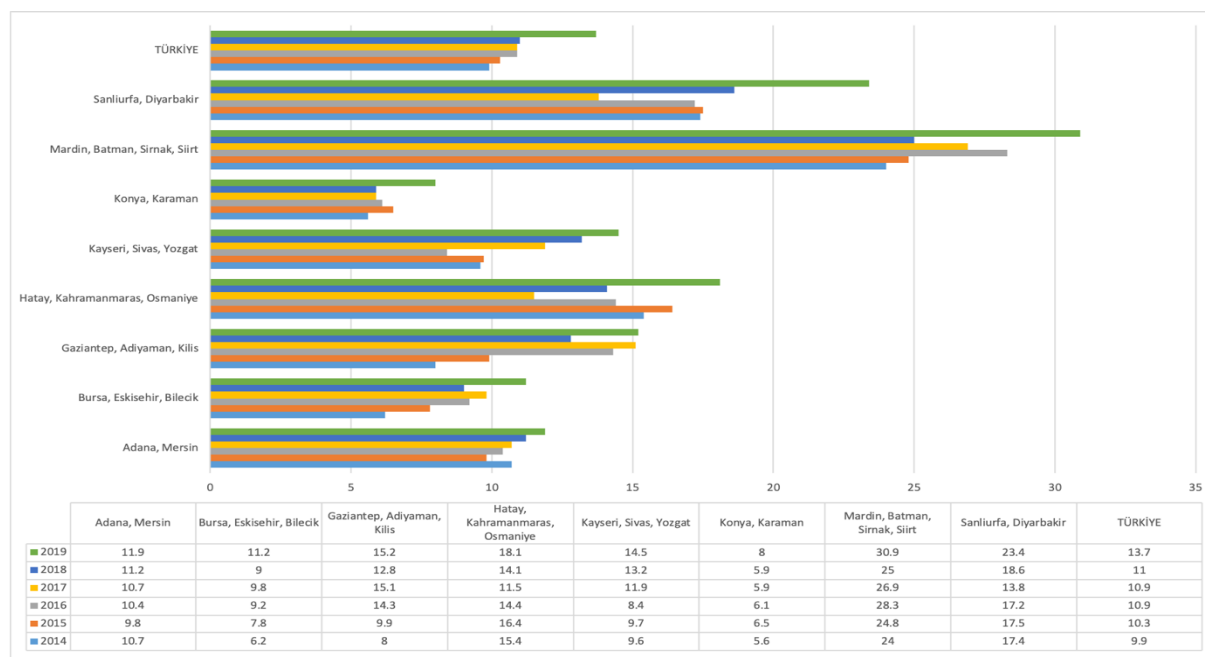
	Adana, Mersin	Bursa, Eskisehir, Bilecik	Gaziantep, Adiyaman, Kilis	Hatay, Kahramanmaras, Osmaniye	Kayseri, Sivas, Yozgat	Konya, Karaman	Mardin, Batman, Sirnak, Siirt	Sanliurfa, Diyarbakir	TÜRKİYE
2019	11.9	11.2	15.2	18.1	14.5	8	30.9	23.4	13.7
2018	11.2	9	12.8	14.1	13.2	5.9	25	18.6	11
2017	10.7	9.8	15.1	11.5	11.9	5.9	26.9	13.8	10.9
2016	10.4	9.2	14.3	14.4	8.4	6.1	28.3	17.2	10.9
2015	9.8	7.8	9.9	16.4	9.7	6.5	24.8	17.5	10.3
2014	10.7	6.2	8	15.4	9.6	5.6	24	17.4	9.9

Source: The graphic is prepared by the authors according to the data of (Turkish Statistical Institute, 2021).

6. FINDINGS

According to the comparative analysis of the results of local elections held in 2014 and 2019 on the axis of 12 provinces mentioned in Table 1, candidates of the same political parties won the mayorship elections in nine provinces, and in one province the same candidate won in 2019 (Table 2).

Table 2. Mayorship Election Results by Provinces (2014-2019)

	2014 Local Elections		2019 Local Elections		
Province	**Winning Political Party**	**Vote Rate (%)**	**Winning Political Party**	**Vote Rate (%)**	**Change**
Adana	MHP	33.51	CHP - Nation's Alliance	53.25	Yes
Bursa	AK Party	49.52	AK Party - Public's Alliance	49.60	No
Gaziantep	AK Party	54.57	AK Party - Public's Alliance	53.99	No
Hatay	CHP	41.01	CHP - Nation's Alliance	55.21	No
Kahramanmaraş	AK Party	58.82	AK Party - Public's Alliance	67.56	No
Kayseri	AK Party	58.91	AK Party - Public's Alliance	63.40	No
Kilis	AK Party	50.83	AK Party	47.26	No
Konya	AK Party	64.26	AK Party - Public's Alliance	70.69	No
Mardin	Independent	52.20	HDP	55.86	Yes, but the same candidate has won
Mersin	MHP	31.95	CHP - Nation's Alliance	45.30	Yes
Osmaniye	MHP	47.34	MHP - Public's Alliance	54.43	No
Şanlıurfa	AK Party	61.63	AK Party - Public's Alliance	60.72	No

Source: (Yeni Şafak, 2020a)

The results of the provincial assembly membership elections and the metropolitan city council elections are also similar to the election results of mayorships. In this regard, the majority of both the provincial assembly and the metropolitan city council memberships are won by the same political party which has won the mayorship in the same province (Table 3).

Table 3. Vote Rate Distribution of Provincial Assembly Memberships and Metropolitan City Council Memberships by Provinces (2014-2019)

Province	Political Party	Vote Rate in 2014 (%)	Vote Rate in 2019 (%)	Province	Political Party	Vote Rate in 2014 (%)	Vote Rate in 2019 (%)
Adana	CHP	26.5	40.4	Konya	AK Party	60.8	63.2
	AK Party	30.6	25.5		IYI Party	0	13.5
	MHP	29.6	18.2		CHP	6.6	8.7
	IYI Party	0	4.8		BBP	1.3	5.3
	HDP	0	4.1		SP	6	3.9
	SP	1.3	3.1		Independent	0	1.7
	BBP	0.8	1.5		MHP	21.9	1.3
	DP	1.3	0.7		HDP	2.2	1.1
	Independent	8.1	0.4	Mardin	HDP	52.3	54.7
Bursa	AK Party	45.3	49		AK Party	34.2	36.7
	CHP	25.9	34		CHP	1.5	2.3
	IYI Party	0	7.4		SP	6.5	2
	SP	3.4	3.2		IYI Party	0	1.4
	DP	1.5	1.6		Independent	0	1.2
	HDP	0	1.4	Mersin	CHP	28.3	37.5
	BBP	0.7	1.3		MHP	31.1	30.5
	MHP	20	0.9		IYI Party	0	11.1
G.antep	AK Party	52	52.7		AK Party	26.6	8.5
	CHP	21.1	19.1		HDP	10.9	6.3
	IYI Party	0	12.3		DP	0.5	4.2
	DSP	0	6.2	Şanlıurfa	AK Party	54.1	53
	HDP	6.3	3.1		HDP	26.4	20.7
	SP	3	1.9		SP	6.4	14
	BBP	1.4	1.6		CHP	1.2	4
	MHP	13.5	1.5		DP	3.7	3
	DP	1.7	0.7		MHP	4.8	2.3
K.maraş	AK Party	56.8	61.5		IYI Party	0	1.6
	IYI Party	0	19	Kilis	AK Party	51.88	47.1
	BBP	2.1	6.3		MHP	33.07	29.4
	CHP	8.1	6		CHP	7.08	4.8
	SP	2.2	2.2		BBP	2.77	0.2
	MHP	29	1.7		BTP	2.65	0.6
	DSP	0	1.3		SP	1.1	1.9
Hatay	CHP	34.4	37.6		Independent	1.1	1.6
	AK Party	39.1	37.3		IYI Party	-	13.3
	IYI Party	0	8.4	Osmaniye	MHP	43.7	34.4
	MHP	19.3	5.6		AKP	37.6	31.7
	DSP	0.2	3.2		CHP	13.1	14.9
	SP	1.6	2.4		IYI Party	-	13.5
	DP	0	2.3		SP	1.7	1.5
	BBP	0.5	1.5		HDP	0	1.5
	HDP	0	1.1				
Kayseri	AK Party	55.5	58				
	IYI Party	0	16.5				
	CHP	9.7	11.6				
	BBP	2.8	5.9				
	SP	2.4	4				
	MHP	28.6	2.3				

Source: (Yeni Şafak, 2020b)

When the data mentioned in Table 2 and Table 3 are analyzed together, it is seen that the political parties, which have won both mayorship and majority in assemblies or councils, increased their vote rate in 2019 in most of the provinces compared to the 2014 results. However, vote rates of winning candidates/parties in mayoral elections decreased by 0.58% in Gaziantep, by 3.57% in Kilis, and by 0.91% in Şanlıurfa, and vote rates of winning candidates/parties in assembly or council memberships also decreased by 1.1% in Şanlıurfa, by 4.78% in Kilis, and by 9.3% in Osmaniye.

Findings indicate that the political tendency of these 12 provinces in general elections held in 2018 is also similar to the political tendency in local elections. According to the results of the Presidential Elections held in 2018, the distribution of voting rates coincides with the results of local elections held in 2019, except for Adana and Hatay (Figure 5).

Figure 5. Vote Rate Distribution of the Presidential Elections by Provinces (2018)
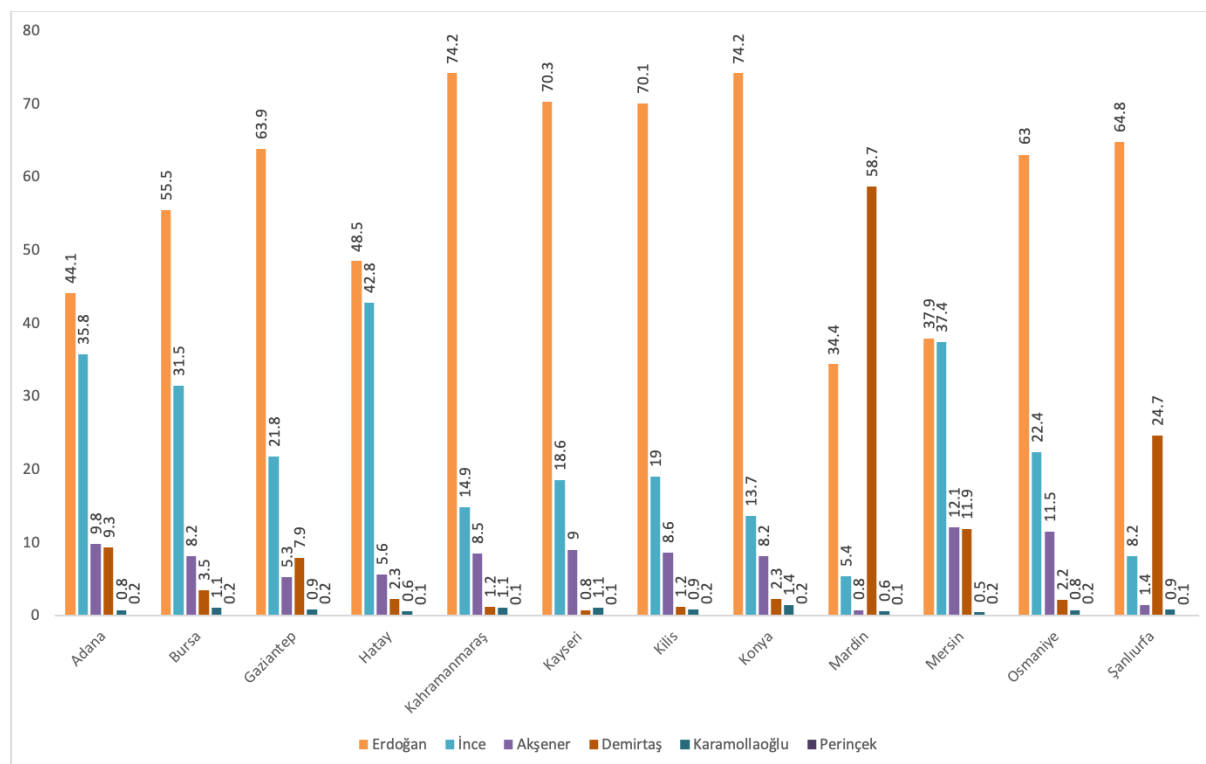
Source: (Yeni Şafak, 2020c)

The results of the Parliamentary Elections held in 2018 also coincided with both the results of the Presidential Elections in 2018 and local elections in 2019, except for Adana and Hatay (Figure 6).

Figure 6. Vote Rate Distribution of the Parliamentary Elections by Provinces (2018)
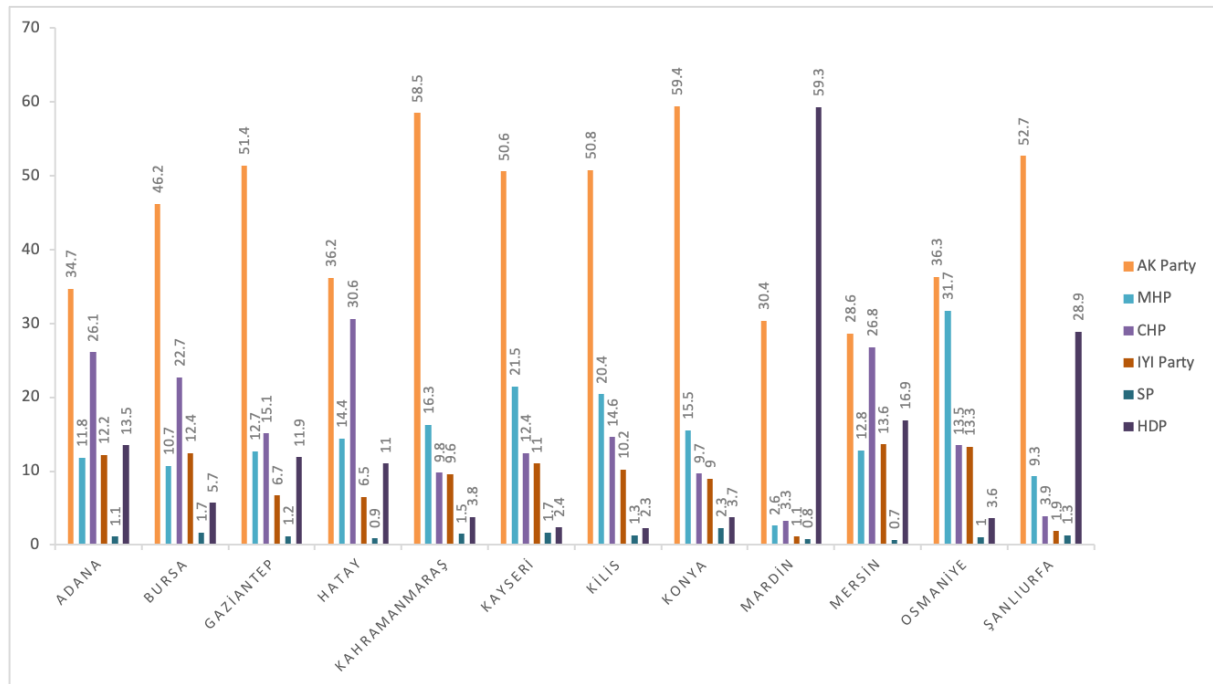
Source: (Yeni Şafak, 2020d)

7. POLITICAL STANCE OF THE POLITICAL PARTIES ABOUT SYRIAN ASYLUM SEEKERS

The election manifestos of the political parties won the mayoral elections in 2019 and the majority of the local assembly or council by being in the first three was also analyzed on the axis of Syrian asylum seekers in this study, as mentioned before. The findings indicate that the AK Party and MHP which have won eight of 12 municipalities and SP which has a 14% vote potential in Şanlıurfa have never mentioned migration and/or Syrian asylum seekers in their election manifestos[10]. On the contrary, CHP-Nation's Alliance and HDP which mentioned various pledges and policy proposals about Syrian asylum seekers in their election manifestos have won only four mayorships (AK Party, 2019; CHP, 2019; IYI Party, 2019a; HDP, 2019; SP, 2019).

In the election manifesto of CHP, pledges, and policies about migration are included under the title of "Local Governments Sensitive to Migration Problems" declaring that the migration issues will be held by developing effective local migration policies. In this context, according to the election manifesto of CHP, immigrant offices will be formed in municipalities; research and projects will be made about immigrants and related issues collaborating with universities and NGOs; studies will be conducted in the fields of immigrants' education, occupational training, social and cultural adaptation, professional and psychological support; and immigrants who want to return to their home countries will be supported (CHP, 2019, p. 27).

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[10] MHP and BBP did not publish electoral statements for the Local Elections in 2019.

HDP consolidated its pledges and policies about migration under the title of "We will offer refugees an honorable life" in its election manifesto. In this regard, HDP declared that the basic needs of refugees will be supplied, discrimination will be stopped, free healthcare services will be offered at the healthcare centers of municipalities, the opportunity to benefit from the services of municipalities in their mother tongue will be offered, refugee camps will be inspected regularly and education in mother tongue will be supported for refugee children (HDP, 2019, p. 32).

It can be claimed that from the beginning of the influx, AK Party rulership and more specifically President Erdoğan had a different approach to this influx compared to other political parties and the Syrian influx is interpreted as a historical opportunity rather than a problem. AK Party rulership appeals to the political sensitivities of its political base by approaching the Syrians in the context of "religious brothership"[11] by referencing Islamic history. On the other hand, AK Party rulership has kept on its agenda as an alternative policy option the way of using Syrian asylum seekers as leverage against Europe. Because AK Party is dissatisfied with not being able to receive the necessary financial support for the needs of Syrians as promised.

The other partner of the Public's Alliance, the MHP, has deemed it appropriate to follow a policy that chooses not to stand out too much in this regard, by adhering to the contract of acting together in the alliance and not objecting to the general approach of the AK Party. On the other hand, when the ideology that MHP is representing and the historical perspective of the parties against the Arabs since the First World War are considered, it is hard to conclude that the political base of the party is also approving the policies conducted by the MHP executives. In this regard, the support given by the political base of the MHP to asylum policies should be understood within the hierarchy and discipline in the party's political culture which is shown by the motto "the leader, the organization and the doctrine is not arguable".

Syrian asylum seekers are considered as a serious national security issue both for the public and the state in the middle and long term by the partners of the Nation's Alliance. According to the IYI Party, the population growth ratio of the asylum seekers is the main concern, also the problems with the adaptation of the Syrians to the culture of living together were frequently expressed. The Mayor of the Metropolitan Municipality of Hatay, Lütfü Savaş, who is known for his nationalist history but was elected from the list of CHP, has also remarked on the population growth of the asylum seekers and pointed out that this kind of growth of population will be the cause of the change in political power within Hatay and its districts in the near future (Sputnik, 2019). In this context, this kind of a sensational

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[11] The Prophet of Islam, Hz. Muhammad and the Muslims of Mecca were forced to migrate from Mecca to Medina in 622 because of the oppression they suffered. The Muslims who showed hospitality and hosted them in Medina were then called "ansar" which means "the ones who help". The Muslims of Mecca then took the name "muhajir" which means "immigrant".

statement may have had an influence on the re-election of Mr. Savaş as mayor in 2019 by making the public on alert.

The main statement of the IYI Party about asylum seekers before and after the elections has been that asylum seekers should be sent to their home countries immediately. In this regard, a workshop titled "The Workshop on the Return of the Syrian Asylum Seekers to Their Home Country" was organized by the end of 2019, and the statement "We believe that everybody will be happy in his/her home country" was highlighted by the president of the party (IYI Party, 2019b).

On the other hand, the senior partner of the Nation's Alliance, the CHP has maintained a more humanitarian approach by highlighting the necessity for the improvement of the policies for supplying the basic needs of asylum seekers such as education, healthcare, and accommodation in the short term. Additionally, another focused policy field of the CHP has been the adaptation of asylum seekers as long as they live in Turkey. According to CHP, the return of the asylum seekers to their home country should be discussed in detail in long term and be conducted gradually.

According to the political program and promises, it can be understood that the political elites of HDP are not fundamentally against Syrian asylum seekers. Although based on different reasons, it can be claimed that HDP is politically close to AK Party in this subject and both political parties are trying to find a way to establish the rules of living together with Syrians.

8. CONCLUSION

It should be mentioned that the existence of the Syrians, who are forced to migrate because of the civil war in their home country, has become one of the main fields of political interest in Turkish politics at local and national levels.

Based on our findings; we argue that despite the discomfort experienced by the society, the presence of Syrian asylum seekers in the provinces which were analyzed in this study doesn't affect the political choices of the electors living in the same provinces for local governments. On the contrary, it can be claimed that the existence of Syrian asylum seekers may be an opportunity for the capitalist class (especially for the medium and large-scale enterprises) in these provinces based on many reasons such as the advantages of unregistered and cheap employment. Concerning the data on inflation and unemployment mentioned above, we argue that the political choices of the voters are formed more by their ideological commitment based on the political culture in which they live than macro-level economic parameters. When the results of both the presidential and local elections are taken into account, we observe that the inflation and unemployment data in the provinces where the Public's Alliance holds office do not generally lead to a refugee-based reactivity.

In this regard, we can conclude that despite the economic facts which are affecting the daily life of the society, the political choices of the voters are formed around their ideological commitments. It can be claimed that the presence of Syrian asylum seekers, which has reached a significant number since

2014, does not constitute a political ground that will enable the dissolution of the ideological commitments of voters in Turkey. On the contrary, the fact that the issue was explained by the current political authority on the basis of the Ansar-muhajir relationship and that a large number of asylum seekers was used as political leverage against the West from time to time fed the ideological weaknesses of the majority of the voters who voted for both the AK Party and the MHP.

The results of the Presidential and Parliamentary Elections held in Turkey in 2023 also support the conclusions of this study. In addition to the difficult economic conditions in Turkey, especially since 2020, it is seen that the far-right discourses based on anti-refugee sentiments that started to rise in the last two years are not reflected in the election results. The Public's Alliance, which expanded with right-conservative and ideologically Islamist parties such as the Grand Union Party (BBP), HUDA-PAR, and New Prosperity Party (YRP) formed the parliamentary majority and Erdoğan won the Presidency again.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

Civil Society Experiences of Migrants Under International Protection and Temporary Protection: The Case of Türkiye *

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Abstract

In the context of irregular migration waves to Türkiye, in addition to the basic needs of migrants, their needs for representation and self-advocacy have also come to the fore. This situation has led to an increase in the number of civil society organizations established by migrants. The main purpose of this research is to examine the experiences of the migrants in civil society and to reveal how they engage in activities and practices, especially in terms of solidarity and self-advocacy. Within the scope of this qualitative study conducted within the framework of the phenomenological approach, interviews were conducted with 32 immigrants involved in migrant civil society organizations using an in-depth interview technique through a semi-structured interview form. In line with the interviews; it was seen that civil society organizations enable migrant individuals to participate effectively in social life and benefit from rights and services. In addition, it can be said that it is at an important point in terms of protecting social health by enabling individuals to interact with their environment and to be in a state of social well-being. On the other hand, it has been revealed that non-governmental organizations act as implementers of the services provided by public institutions and organizations or as a bridge for the services provided to reach individuals. In line with the findings of the research, it is aimed to ground the relationship between migration and NGOs and to contribute to the development of this field in the future.

Keywords: Social Work, Social Health, Migration, Civil Society

Article Type	Application Date	Admission Date
Research Article	December 30, 2023	June 26, 2024

1. INTRODUCTION

Throughout history, Anatolia has been a preferred destination for migrating masses due to its location at the intersection of continents (İçduygu & Aksel, 2012, p. 17). Migration movements to Türkiye can be divided into four stages throughout the history of the Republic. The first mass migration movements were initiated by immigrants from the Balkans. During the specified period, there were multiple instances of mass migration from Iraq due to internal conflicts (Kaygusuz & Buz, 2023, p. 817). In contrast, Türkiye has experienced a surge in mass migration in recent years, primarily due to political and armed social movements in the Arab world (Directorate of Migration Management, 2023a). In 2011, 252 people migrated to Türkiye from Syria due to anti-government protests, uprisings, and armed rebellions in North African and Middle Eastern countries, following the events that began in Tunisia. Since then, millions of people have entered Türkiye as part of a mass migration movement from various regions, particularly Syria and Afghanistan (Ekmekci, 2017; Erdoğan, 2022, p. 56). Migrant individuals face various social problems due to this situation. Policy and service models have been proposed to address these issues (Lordoğlu & Aslan, 2016).

Legal regulations have been established to ensure access to basic rights and services for individuals migrating to Türkiye, particularly those in groups requiring special policies (Işıkçı, 2017, p. 27). These regulations have evolved over time, but their purpose remains to guarantee that migrant individuals have access to fundamental rights, including health, education, and employment (Demirhan & Aslan, 2015; Ertan and Ertan, 2017). Legal regulations on migration management have highlighted the significance of civil society organizations, which are one of the actors involved (Ayyıldız & Karataş, 2022). As a result, there has been a rise in the number of non-governmental organizations working on migration, and an increase in the participation of migrant individuals in civil society (Adıgüzel, 2019, p. 94).

Individuals with migration experience, who face social disadvantages, view civil society organizations as a means of gaining recognition and acceptance by society. organizations play a crucial role in maintaining cultural, political, social, and economic balance between the dominant culture and minority individuals in the country. organizations have become increasingly important in the formulation of migration policies that are based on temporariness (Gürses, 2020, p. 48).

Displaced individuals often join organizations to access aid, receive psychological and legal counseling support, and adapt to social life (Gürses, 2020, p. 179). In recent years, individuals with migration experience have increasingly taken part in civil society organizations and studies on good migration governance, leading to their emergence in politics and policy. This trend has been observed by Naz (2015, p. 12).

Individuals who have experienced international migration face various challenges during the process. Therefore, non-governmental organizations established by migrant individuals aim to solve

social problems encountered in general and provide access to basic rights and services. Civil society organizations are established to be useful in their service areas and to work towards eliminating the social problems experienced by individuals with migration experience. Civil society organizations engage in various activities and practices across different categories (Kutlu, 2015, p. 13 Türk, 2016, p. 148). Individuals who have experienced migration often encounter exacerbated health issues due to factors such as limited access to food and inadequate nutrition during the migration process. Civil society organizations undertake various activities to address the issues of malnutrition and access to clean and healthy food faced by individuals in groups requiring special policies (Gürses, 2020, p. 74; Çorabatır & Hassa, 2013).

Migrant civil society organizations carry out various activities to address the loss of rights experienced by individuals facing challenges in the workplace. Non-governmental organizations offer legal support and organize informative meetings to guide migrants through the legal process (Türk, 2016, p. 150). Civil society organizations provide legal counseling and support to migrants through information work. Furthermore, the organization conducts activities to raise awareness, build capacity, and lobby against forced deportation and violations of the prohibition of refoulement. They also provide support for access to basic rights and services, as well as advocate for the rights of refugees and migrants (Kutlu, 2015, p. 14).

Children who are forced to migrate from their home country face difficulties accessing education due to factors such as their families' low level of education, cultural differences, social issues, and language barriers. These challenges can make it difficult for children to adapt to school (Ereş, 2015, p. 17; Türk, 2016, p. 151). Civil society organizations working in this field provide children living in various regions with stationery and financial assistance. During the summer period, literacy courses, art classes, and psychosocial support activities are organized, along with workshops and trips for adaptation. Additionally, various out-of-school educational activities are carried out (Gürses, 2020, p. 74; Türk, 2016, p. 152). Vocational training is mainly focused on increasing employment opportunities (Ereş, 2015, p. 19).

Migrants often face challenges in accessing healthcare due to a lack of information, language barriers, and discrimination. To address this issue, temporary protection centers and non-governmental organizations provide health screening and psychosocial support services for migrants (Kutlu, 2015, p. 17; Türk, 2016, p. 149). Non-governmental organizations play a crucial role in safeguarding social health and enhancing social functionality through facilitating interaction between individuals. Social health is considered a vital aspect of overall health, alongside physical and mental well-being. The World Health Organization defined health as a state of complete physical, mental, and social well-being in its constitution adopted at the International Health Conference in 1946 (WHO, 1946, p. 1). In fact, it is observed that non-governmental organizations carry out activities to ensure the social health of migrant groups. As a matter of fact, within the scope of the research, in addition to the knowledge and

experiences of individuals involved in non-governmental organizations, current conditions and problems were also expressed. In this respect, it is thought that the study will shed light on the 'Migration-NGO relationship' and contribute to the studies on 'Migration and Social Work'.

The study aimed to determine the personal experiences of migrants involved in civil society organizations, their position within these organizations, and their accessibility. The sub-objectives of the research are the accessibility of individuals within civil society organizations, their knowledge and experiences regarding self-advocacy activities and the evaluation of policy recommendations for the field.

2. METHOD

A qualitative study was conducted using a phenomenological approach (Shenton, 2004; Neuman, 2010, p. 233). The research employed the in-depth interview technique through a semi-structured interview form. In this study, we conducted in-depth interviews with individuals involved in various non-governmental organizations formed by migrant individuals. Content analysis method was used to reveal the relationship between the data obtained.

2.1. Ethical Approval of the Research

To conduct the research, we obtained permission from the Mehmet Akif Ersoy University Non-Interventional Clinical Research Ethics Committee with meeting number 2021/11 and decision number GO 2021/366. We contacted immigrant non-governmental organizations operating throughout Türkiye to implement the research. NGO presidents and participants were informed about the research and provided verbal consent in accordance with ethical guidelines. The interviews were recorded and stored in a password-protected folder on the researcher's personal computer. In the research, participant identity information was kept confidential by using codes such as (G1) instead of personal information when referring to their statements in the interview forms.

2.2. Participants of the Study

The number of civil society organizations working on migration has increased in parallel with the rising number of applicants, particularly since 2010 (Mackreath & Sağnıç, 2017, p. 30). Therefore, the study population comprises individuals who migrated to Türkiye and are involved in civil society organizations. To ensure maximum diversity within the organizations where migrant individuals are involved, 32 people were selected. NGOs whose members have international migration experience were contacted and invited to participate in the study. Seven association presidents, 23 association members, and two volunteers agreed to be interviewed.

Table 1. Demographic Information of the Participants

Interviewer	Country of Origin	Province of residence	Age	Gender	Marital Status	Education Status	Status within the CSO	Year of Joining the Association
G1	Afghanistan	Kayseri	32	Woman	Married	University	President	2014
G2	Afghanistan	Kayseri	33	Male	Single	University	Member	2020
G3	Afghanistan	Uşak	46	Male	Married	University	President	2020
G4	Syria	Izmir	67	Male	Married	University	President	2013
G5	Syria	Izmir	34	Woman	Single	Primary School	Member	2014
G6	Syria	Izmir	35	Woman	Married	University	Member	2017
G7	Afghanistan	Uşak	35	Male	Married	University	Member	2020
G8	Afghanistan	Uşak	42	Male	Married	Illiterate	Member	2020
G9	Iran	Kayseri	49	Woman	Married	University	Member	2017
G10	Afghanistan	Kırşehir	52	Woman	Married	University	President	2019
G11	Afghanistan	Kayseri	22	Woman	Single	University	Member	2021
G12	Afghanistan	Uşak	44	Male	Married	High School	Member	2020
G13	Syria	Izmir	51	Woman	Married	University	Member	2016
G14	Afghanistan	Kırşehir	46	Woman	Married	University	Member	2019
G15	Syria	Izmir	52	Woman	Married	University	Member	2013
G16	Afghanistan	Uşak	23	Male	Single	High School	Member	2020
G17	Afghanistan	Şanlıurfa	45	Male	Married	Primary School	Member	2020
G18	Syria	Izmir	47	Woman	Married	University	Member	2016
G19	Afghanistan	Şanlıurfa	50	Male	Married	High School	Member	2017
G20	Afghanistan	Şanlıurfa	34	Male	Single	High School	Member	2017
G21	Afghanistan	Şanlıurfa	40	Male	Married	Primary School	President	2017
G22	Syria	Izmir	23	Woman	Single	High School	Volunteer	2022
G23	Afghanistan	Uşak	27	Male	Married	Primary School	Member	2020
G24	Syria	Izmir	50	Male	Married	University	Member	2017
G25	Syria	Izmir	21	Woman	Single	University	Volunteer	2022
G26	Syria	Istanbul	37	Male	Married	University	President	2014
G27	Somalia	Istanbul	50	Male	Married	University	President	2017
G28	Somalia	Istanbul	30	Male	Single	University	Member	2017
G29	Iraq	Uşak	23	Woman	Single	University	Member	2022
G30	Palestine	Osmaniye	33	Male	Married	High School	Member	2016
G31	Iraq	Ankara	28	Woman	Single	University	Member	2021
G32	Iran	Uşak	36	Woman	Single	High School	Member	2021

2.3. Data Collection

Semi-structured forms were used to conduct interviews in order to reveal the experiences, personal value judgments, and feelings of the individuals involved in the research (Jamshed, 2014, p. 87). The participants were asked questions about the reasons for the establishment of the non-governmental organization, the services provided, what kind of activities are carried out and what are the difficulties and facilities encountered during these activities, their motivations and expectations for becoming a member and the activities planned to be carried out in the future. Data were collected and analyzed simultaneously. Saturation was reached during the data analysis through the repetition of

themes and codes, leading to the conclusion of the interview process (Faulkner & Trotter, 2017). During the interviews, civil society organizations informed migrant individuals about the research's purpose, content, and the principles of volunteerism and confidentiality. Directors and association members who agreed to participate in the research were interviewed face-to-face or through different digital platforms. The interviews were recorded using a voice recorder. The interviews ranged from 30.04 to 48.00 minutes, with an average duration of 32 minutes.

2.4. Data Analysis

As part of the research, 32 participants were interviewed in-depth. Audio recordings were made using various mass media during the interviews, and notes were taken on semi- structured interview forms to facilitate data analysis. The qualitative data analysis program MAXQDA 2020 was used to analyze word transcripts, and the researcher re-examined the interpreted data. Following the semi-structured interview form created by the researcher and the subsequent analysis, the obtained information was examined and evaluated. The participants' thoughts were coded based on their meanings, and categories were created according to the similarities of the codes. The categories were then combined based on common characteristics, resulting in themes that are presented in the findings section.

3. FINDINGS

As part of the research, 32 participants were interviewed in-depth. The participants' thoughts were coded based on their meanings, and categories were created according to the similarities of the codes. The categories were then combined based on common characteristics, resulting in themes that are presented in the findings section.

Table 2. Themes and Subthemes

THEMES	SUB-THEMES
Experiences with Services Provided by Civil Society Organizations	Counseling and Guidance Support
	Work on Provision of Fundamental Rights and Services
	Cultural-Social Activities and Social Cohesion Studies
Experiences on the Problems Experienced by Individuals with International Migration Experience	Experiences on Problems in Access to Fundamental Rights and Services
	Economic Problems
	Discrimination / Marginalization
	Violence against Women/Early Marriage
Experiences of Civil Society Organizations Regarding the Facilitations They Face	Gaining Visibility
	Support from Public Institutions
Experiences on the Challenges Faced by Civil Society Organizations	Financial Difficulties
	Discriminatory Attitudes/Hate Speech
Experiences of Civil Society Organizations during the Pandemic	Activity Suspension
	Support Activities for Fundamental Rights and Services
	Counseling and Guidance Support

3.1. Experiences with Services Provided by Civil Society Organizations

The study found that many individuals with international migration experience who were interviewed were involved in non-governmental organizations from the establishment phase. According to these individuals, the associations have varying service models to protect social health and ensure the well-being of individuals. The services provided are classified into counseling and guidance support, activities to ensure basic rights and services, cultural and social activities, and social cohesion activities. It is observed that non-governmental organizations place greater emphasis on certain service models within the scope of the study.

3.1.1. Counseling and Guidance Support

The interviews with migrant individuals in civil society organizations revealed that the most emphasized sub-code regarding the experiences of services provided by migrant associations was consultancy and guidance support.

"They come here. So you know it is very difficult to start from scratch. We come there and inform them. We used to take their records and provide them with firewood or inform them about other hospitals." (I9)

According to MUDEM (2020, p. 33), migrant individuals who seek assistance from organizations often encounter difficulties related to food, health, housing, and employment services. Non-governmental organizations specializing in migrant support offer consultation and guidance to address these issues.

"The association provided them with such emergency help. So in which neighborhood can there be tenants? In which neighborhood can a house be cheap for them? We helped them from the Red Crescent, then businessmen, institutions, I was a shopkeeper, so my circle was quite large. We helped them. We also gave them counseling on how to go to the hospital. We met their urgent needs as a group, as an association." (I4)

Civil society organizations of migrant individuals try to solve their problems by directing the registered individuals to different institutions. (G7) explained this situation as follows:

"If anyone comes here, for example. They have a problem, they have a problem. We record them first. We listen to them, for example, "What is your problem?" Then we try to find a way to solve it. For example, there is a problem with the migration administration. We send them to the migration administration. If they ask for interpretation elsewhere, we provide interpretation." (I7)

As a result, based on the statements of the people interviewed within the scope of the research, it has been observed that non-governmental organizations working on migration provide consultancy and guidance services to individuals in solving existing social problems.

3.1.2. Work on Provision of Fundamental Rights and Services

As a result of the interviews with migrants in civil society organizations, it was found that civil society organizations working in this field emphasize the provision of basic rights and services, in particular education, health, employment, social assistance and interpretation services.

"When it comes to education, when enrolling children in school, parents don't know, they don't know the way. We register them ourselves in the office. We go to the Directorate of National Education, talk to them and register them ourselves. We arrange computers for our university students to take their university exams. We empty the rooms, they sit here in the classrooms and take the exams online. This is how we provide support." (I10)

Migrant individuals encounter various social issues due to their limited language proficiency (Erdoğan, 2021). Despite the negative impact of language barriers on accessing services, non-governmental organizations are actively working to address this problem. As stated by (G2), these organizations are taking steps to alleviate the situation.

"If our volunteers have free time, we provide interpreting services. We provide interpreting services if someone is sick or for other issues." (I2)

Moreover, the existing health problems have been exacerbated by the pandemic (Akçapar and Çalışan, 2021). Migrant individuals encounter difficulties in accessing health services. The interviews reveal that non-governmental organizations offer assistance to migrant individuals in accessing basic health services.

"We also had a pediatrician at the center. We examined about 1000 children. We did not have a health license. I told you, we had a very good relationship with the health directorate. We said: "We only examine those children. We don't give medicine." So we don't give medicine. We only give them painkillers if they have painkillers. We do simple examinations. Of course, that is also with free organizations." (G4)

According to (G14), vocational courses that create employment opportunities are organized in addition to the training programs carried out by civil society organizations.

"For example, first of all, we have Turkish courses. We have English. Then we have religion classes, all of which are affiliated to Public Education. Not from our own heads. Then they slowly started to learn a job. For example, they teach tailoring to tailor girls." (I14)

Non-governmental organizations working on migration face challenges in accessing sufficient financial resources. However, they provide support to migrant families living in economic insufficiency through the budget allocated to them. *(I4) expressed this situation objectively.*

"There are friends who have no financial situation. For example, we have 40 members and we gather as an association. This guy got into university, but his father and mother don't work. He has financial difficulties. Let's try to give him a scholarship as much as we can. We gave scholarships to one or two students." (I17)

3.1.3. Cultural/Social Activities and Social Cohesion Studies

During interviews with migrant individuals, non-governmental organizations emphasized the importance of Cultural/Social Activities and Social Cohesion Studies. Civil society organizations organize various social and cultural activities, as well as social cohesion activities, to help migrant individuals participate effectively in social life.

"Last year and this year, we organized a painting festival for children between the ages of 7-14 across Türkiye together with the Red Crescent Community Center, UNHCR, ARSA and Migration Management. We do such activities nationally and internationally." (I1)

The financing of social and cultural events, as well as social cohesion activities organized by civil society organizations, is often carried out using limited resources.

"Last time we organized a festival by organizing games in three categories and we also have iftar programs during Ramadan. After Ramadan, we will organize a book reading contest. Our activities are carried out for the whole audience." (I21)

The research observed that civil society organizations sometimes collaborate with national and international institutions and organizations to protect the social well-being of individuals through their service models. However, civil society organizations working on migration often require special policies for certain groups, such as children, women, and individuals with disabilities.

3.2. Experiences on the Problems Experienced by Individuals with International Migration Experience

It is widely acknowledged that individuals who are forced to migrate from their home countries face a range of challenges, including difficulties with housing, healthcare, education, employment, accessing psycho-social support, language barriers, a loss of identity, and difficulties adapting to new environments (Buz, 2008; Coşkun & Yılmaz, 2018, p. 269). Based on interviews with individuals who have international migration experience and are involved in non-governmental organizations, it has been observed that accessing basic rights and services, such as identity and registration, housing, health, employment, and education, can be problematic.

To address these issues, it is important to ensure that these individuals have equal access to these services and that their rights are protected. On the other hand, individuals with migration experience may face economic problems, discrimination, marginalization, violence against women, and early marriage.

3.2.1. Experiences on Problems in Access to Fundamental Rights and Services

The study's interviews revealed that migrant individuals in civil society organizations face significant challenges in accessing basic rights and services. G15 specifically highlights issues with accessing social services.

"Well, there are many unidentified people. For example, they enter illegally. For example, she entered Türkiye. She becomes pregnant. How will she give birth without an ID? Here, for example, sometimes the first identity card is not issued in Izmir. For example, they cannot come from Adana, it doesn't work like that. There is a lot of identity problem. Identity is very difficult. They live very hard. For example, they experience this a lot. Because there are babies. There are pregnant women, sick people." (I15)

Migrants often face difficulties accessing services due to language barriers (Sur & Çalışkan, 2021: 34; Atasü-Topçuoğlu, 2014). However, individuals who have lived in Türkiye for more than 5 years tend to have better language proficiency (Erdoğan, 2021, p. 265).

"They establish associations because of the language barrier. Because they can do things more easily. They come and tell their problems. As I said, they have language problems. But there is someone here who does something. He translates their language." (I9)

"There are many health problems. But those who have ID cards come to us because they don't speak the language. "How do I go to the doctor? Can you make an appointment? How will I go after I make an appointment?" So there are those problems." (I11)

Migrants may face difficulties accessing healthcare, which is a fundamental human right, due to factors such as financial constraints, economic challenges, lack of identification, and language barriers (YYD, 2020). In a similar vein, (I14), who was interviewed as part of the study, expressed this issue as follows:

"For example, the whole world can do the corona vaccine. But refugees, refugees without identity, cannot." (I14)

The primary source of income for migrant individuals is the work they do (Erdoğan, 2021, p. 80). According to Ateş (2022), individuals who migrated during the pandemic faced various employment-related challenges. Interviews conducted within the scope of the study revealed that those who sought assistance from non-governmental organizations also experienced employment issues.

"There are no jobs in this pandemic. There is no work. Where can you work? They are not working." (I5)

Migrants often face difficulties accessing education services due to language barriers and lack of official identification (Akpınar, 2017; MUDEM, 2020). As reported by interviewees:

"Children cannot get any education, they cannot go to school. I mean, at the moment, the Immigration Administration does not give IDs in any way. Identities are closed." (I11)

"There is no identity card or there is an identity card in another province. For example, the child cannot go to school because of this." (I18)

However, the Covid-19 pandemic has led to a transition to distance education, which has resulted in children being required to participate in domestic labor and informal work due to the decline

in household incomes of migrant families (Lordoğlu & Aslan, 2018, p. 727; Leather Textile & Shoe Workers Association, 2021: 4).

"I mean, maybe 400 students have never been to school. Gradually, for example, how will they live tomorrow? It is difficult. Hodja, for example, now the system has been removed, maybe more than 100 children are collecting garbage. I mean, how will they be like this tomorrow? I mean, it is difficult." (G24)

Individuals who work informally are employed more with less wages (Leather Textile & Shoe Workers Association, 2020). On the other hand, there are also widespread unpaid migrant workers.

"For example, our insurances were cut. Wages have become high. Most people cannot deposit wages." (I14)

Interviews with research participants revealed that they frequently encounter difficulties accessing fundamental rights and services.

3.2.2. Economic Problems

Financial inadequacy and economic problems are major issues faced by individuals who have to migrate to Türkiye for various reasons (Buz, 2008, p. 122; Coşkun, 2017). The study's interviews with migrant individuals within non-governmental organizations revealed that they experienced economic difficulties.

"They need help economically. Children usually work. There is also child labor." (I11)

On the other hand, with the pandemic period, the existing economic problems faced by migrant individuals deepened and increased. (I15) explained this situation as follows:

"Well, there are problems. First, there is the financial problem. I mean, people were already ruined during the corona period. The financial situation is first." (I15)

The research participants reported experiencing financial difficulties and subsequently sought assistance from non-governmental organizations.

3.2.3. Discrimination / Marginalization

The individuals interviewed within the scope of the research stated that they had problems due to financial inadequacy and therefore applied to non-governmental organizations (Doğanay & Çoban Keneş, 2016). The participants interviewed in the study reported experiencing discrimination.

"We went somewhere. Foreigners came and spoke Turkish." "We've been here a long time." I said, "What annoying people you are. You came to our country and took our jobs. You took our bread... You also took our language. What kind of people are you?" (I24)

Stating that she felt lost in the country, (I6) expresses the discrimination she faced as follows:

"But as Syrians, we are lost. We can neither return to our country nor go to Europe. Whatever happens here, they say "Syrians did this and that". The place is not important, as long as we can stand on our feet." (I6)

Individuals interviewed for the research reported experiencing discriminatory attitudes and marginalization.

3.2.4. Violence against Women/Early Marriage

Women, who make up the majority of migrants, are subjected to violence and discrimination due to gender inequality, unlike migrant men (Başterzi, 2017). Additionally, incidents of violence against women among migrant groups increased during the pandemic period (Ateş, 2021; Ergönen, Biçen, & Ersoy, 2020). G14, who was interviewed, reported an increase in cases of violence during the pandemic period.

"There have been many hardships. We are unemployed, we have no money, all kinds of things. In a family, for example, not having a job, unemployment, of course, causes problems for that family as well... There are all kinds of beatings and fights. There has always been more violence after the corona." (I14)

On the other hand, early marriage, which is sometimes seen as a tradition or culture, is among the social problems encountered.

"The biggest danger, for example, is now early marriage. I mean, for example, there are people getting married at the age of 15. For example, this is still a child, a child. So they need to be counseled. For example, they have been here for 10 years. These men are very far from civilization." (I24)

According to interviews conducted with migrant individuals in civil society organizations, women with international migration experience were found to be particularly vulnerable to violence, especially during the pandemic. Additionally, it was reported that children were being married off at an early age.

3.3. Experiences of Civil Society Organizations Regarding the Facilitations They Face

Based on interviews with individuals who have international migration experience in civil society, this text explores the challenges faced by migrant associations. The opinions of these individuals regarding the facilitations faced by migrant associations are expressed as gaining visibility and the support of public institutions.

3.3.1. Gaining Visibility

Based on the statements of the individuals interviewed within the scope of the study, it was revealed that taking part in a civil society organization has a positive effect in terms of gaining visibility.

"For example, we used to have a team. Or it had something to do with children or young people. There was enthusiasm. To participate in soccer, for example. Maybe they didn't participate

before. But now they joined the municipality together as an association or through the association... For example, maybe they couldn't do that before. Exactly, but now they do." (I16)

However, according to the interviews conducted as part of the research, civil society organizations have played a significant role in addressing the social issues faced by migrant individuals, making them more visible and providing solutions.

"Ofcourse the association has helped us, everyone, Afghans in this city. I have no voice on my own. I mean, if I need to do something, I cannot do it alone. When I apply to that association, we do it all together. For example, how many times I had problems with the foreign branch." (I23)

According to the research, civil society organizations with international migration experience establish connections with all actors working on migration, particularly public institutions and organizations. It is important to note that the text has been revised to adhere to the desired characteristics, including objectivity, comprehensibility, conventional structure, clear and objective language, formal register, balance, precise word choice, grammatical correctness, and no changes in content. This active participation in social life allows migrant civil society organizations to gain visibility and represent individuals.

3.3.2. Public Support

According to interviews with individuals in civil society organizations, public institutions support the work carried out by migrant civil society organizations.

"The hardship is difficult, but there are conveniences, for example, state institutions are working with us. The convenience is that they always support us here. If we have a problem, they try to solve it. We have these facilities and difficulties. This is something that can happen anywhere." (I10)

These organizations make migrant individuals visible in social life and assist the work of public institutions and organizations. In fact, (G14) explains this situation as follows:

"Right now, thanks to our association, many state institutions are comfortable. People used to apply directly to public education. They did not know the language. All kinds of minds are at ease now. We just leave them a list. "This many people want to study." OK." (I14)

According to the statements made by the research participants, public institutions and organizations collaborate with civil society organizations to provide basic rights and services.

3.4. Experiences on the Challenges Faced by Civil Society Organizations

In line with the interviews conducted with the individuals within the scope of the study, opinions on the experiences regarding the difficulties faced by migrant civil society organizations were expressed as financial difficulties and discriminatory attitudes/hate speech.

3.4.1. Financial Difficulties

Civil society organizations and foundations working in Türkiye face problems in accessing financial resources (İçduygu, Meydanoğlu, & Sert, 201, p. 14). Similarly, interviews with individuals within the scope of the study revealed that migrant civil society organizations face financial difficulties. On the other hand, these financial difficulties are felt more by migrant civil society organizations.

"We know that too. So there is no such support for our association now. At least if our own Afghans, at least around our own Afghans, could at least collect 5-10 things a month, if they could support them, we don't have such a situation. The difficulty is very difficult, believe me. We became migrants, I mean we came out of Afghanistan. I mean, we always have difficulties, believe me." (I12)

The income of migrant civil society organizations comes from members' dues, donations and funding support, but this does not prevent financial insufficiency.

"Financial reasons at first. Here, we cover all the expenses of the association from our own pockets. Of course, we have a lot of human power. Thanks to our association members, our volunteers support us." (I1)

Due to the lack of financial resources within civil society organizations, it is seen that other activities are financed with the income obtained through projects (Yanardağ, 2017, p. 84). However, with the pandemic period, migrant civil society organizations that did not receive funding support had to stop their activities.

"We closed for six months due to the pandemic. Then we reopened, but we cannot do activities again. Because there is no support." (I13)

"We have some financial problems. As we said, we do that as much as we can. Now our association building is rented. Since it is rented, we are trying to pay for the electricity and internet with the monthly money of our members, but we are trying to cover these rents with our own means with the money of our members." (I17)

It has been observed that the civil society organizations have difficulties due to financial insufficiency, regardless of their fields of activity and regions, and that most of them do not receive any financial support from public institutions and organizations. In fact, the main resources of the migrant civil society organizations within the scope of the study consist of the dues income of the individuals within the association.

3.4.2. Discriminatory Attitudes/Hate Speech

Another problem faced by civil society organizations was expressed as discriminatory attitudes/hate speech. According to research conducted in different periods, it has been observed that migrant individuals face hate speech and marginalization. On the other hand, it was observed that civil society organizations within the scope of the study were subjected to discrimination.

"As a migrant association, exclusion is the biggest problem we face. When we come into contact with a different structure, we encounter skeptical approaches until we overcome the adaptation process." (I21)

Indeed, both migrant individuals and migrant civil society organizations continue to face discrimination, marginalization and hate speech.

"... "The state gives it to you," the Turks say. My dear, we are not hungry. We have our hometown, our house, our land, our workplace. I am a shopkeeper. I have been a shopkeeper since I was nine years old. I came here for my safety. I mean, I don't lack anything. Thank God I have everything. We came here for our safety." (I23)

Based on the statements of the individuals within the scope of the study, it has been observed that migrant associations face discriminatory attitudes and hate speech regardless of the region in which they operate.

3.5. Experiences of Civil Society Organizations during the Pandemic

As a result of the interviews with individuals with international migration experience within the scope of the study, it was observed that civil society organizations stopped their activities during the pandemic, carried out support activities for basic rights and services, and provided consultancy and guidance support.

3.5.1. Suspension of Activities

As a result of the interviews with the individuals within the scope of the study, it was stated that civil society organizations commonly stopped their activities during the pandemic period. Migrant civil society organizations that had problems in accessing financial resources had to stop their activities during the pandemic.

"We have a lot of courses. But we closed some courses because of the pandemic. We had too many courses." (I11)

"We closed for six months due to the pandemic. Then we reopened, but we cannot do activities again. Because there is no support." (I13)

Especially with the pandemic, working from home has become widespread, limiting the activities of migrant civil society organizations. (I17) explained this situation as follows:

"We didn't have any activities during this period, we couldn't do anything because of the corona. I mean, our president tried to do what we normally do. You can neither go anywhere nor do anything because of the curfew. So most of our activities stopped. We were too late." (I17)

3.5.2. Support Activities for Fundamental Rights and Services

With the pandemic, migrant individuals faced various problems in accessing rights and services, especially food, shelter and hygienic materials (MUDEM, 2020, p. 33). In fact, based on the statements of the individuals interviewed within the scope of the study, it was observed that migrant non-

governmental organizations largely stopped their work during the pandemic. On the other hand, it has been revealed that some migrant civil society organizations have been providing support for the provision of basic rights and services, especially education and health.

"And on the other hand, we produced masks very seriously in 2020. We produced soap. We distributed hygiene kits in our association as volunteers." (I1)

Civil society organizations that carried out work during the pandemic period provided hygiene support to migrant individuals. (G3) explained this situation as follows.

"In the corona virus, for example, we supported a lot of people. For example, we gave food, cleaning materials, masks and some things. We distributed them, alhamdulillah. We gave them." (I3)

Another problem that emerged with the pandemic period was access to education services (YYD, 2020; MUDEM, 2020, p. 33). Based on the statements of the individuals within the scope of the study, it was stated that non-governmental organizations provided educational support during the pandemic.

"I mean, we had face-to-face trainings before the corona pandemic. But during the pandemic process, our classes had the most impact. But we have been doing that recently." (I2)

Based on the interviews, it was observed that civil society organizations carried out support activities in terms of access to basic rights and services during the pandemic period and provided information about the process.

3.5.3. Counseling and Guidance Support

Based on the statements of the individuals within the scope of the study, it was observed that migrant associations provided counseling and guidance support during the pandemic period. With the pandemic period, migrant non-governmental organizations visited migrant families and carried out problem identification studies.

"We have never closed the association because we work with refugees. We have to solve their problems. Even if they are sick because they do not know the way, they still call us. "Sister, we are sick. We are in quarantine, what should we do?" For example, we have our own friend who works in our office. For example, he visits the fields. Who has how many problems. For example, everyone comes and applies. We take the list and give it to him. He goes to the houses. For example, there are people who are helpful, we go to their houses with them and help them." (I10)

During the pandemic, civil society organizations provided counseling and guidance support to migrant individuals who had problems accessing basic rights and services.

"It has changed more during the pandemic. Let's say a newly arrived refugee doesn't know where to register, how to do it if he wants to buy a line, or if he doesn't have a job, he doesn't know what the job field is like. He asks for help. "I just arrived, I don't have a job, can you give information if the companies you work with are looking for workers?" We do." (I2)

However, migrant civil society organizations can receive support for effectively implementing existing legal regulations within the framework of social integration and human rights.

4. DISCUSSION AND CONCLUSION

This qualitative study aims to uncover the position, accessibility, knowledge, and experiences of individuals with international migration experience regarding self-advocacy activities within civil society organizations. In-depth interviews were conducted with individuals involved in migrant civil society organizations to provide solidarity and carry out advocacy activities. The analysis revealed themes related to services provided by migrant civil society organizations, problems experienced by individuals with international migration experience, and experiences of civil society organizations regarding the facilities and difficulties they face.

Türkiye has a history of being a central location for mass migration movements. In recent years, legal regulations have been implemented to provide access to basic rights and services for migrants. Public institutions and organizations involved in the migration process have worked to provide services to individuals in line with these regulations (Küçük, 2020; IMRA, 2020). Service models have been developed to include groups requiring special policies, particularly women and children (Akpınar, 2017; Çorabatır & Hassa, 2013). According to the study participants, migrant non-governmental organizations operate similarly. These civil society organizations aim to protect the social health of vulnerable groups, including children, women, individuals with disabilities, youth, and the elderly.

Research on attitudes and perspectives towards immigrants suggests a shift from acceptance to tolerance (Çetin & Demirel, 2023; Erdoğan, 2022; Şengül, 2022). Following the pandemic, negative attitudes towards migrant individuals have increased, particularly in border regions compared to metropolitan areas (Erdoğan, 2021, p. 97). Within the scope of the research, it was found that local people hold predominantly negative attitudes towards immigrant associations, despite varying perspectives. The study also revealed that civil society organizations formed by migrants, regardless of ethnic differences, are often subject to negative perceptions. However, it was also observed that these organizations provide visibility and representation for individuals.

Civil society organizations working in the field of migration commonly engage in religiously motivated and humanitarian aid-based activities (Çelik & Pekküçükşen, 2018; Keysan & Şentürk, 2021). Conversely, civil society organizations that engage in rights-based activities primarily receive support from international institutions and organizations (Çelik & Pekküçükşen, 2018). However, it is evident that the service areas and expertise of civil society organizations working on migration, as well as their sources of motivation and relations with different institutions and organizations, vary. Similarly, the study revealed that individuals' motivations for participating in civil society organizations were the desire for unity and collective action, the desire to help, and spirituality. However, the research has

revealed that non-governmental organizations carry out various activities related to protecting social health and providing basic needs for migrant individuals.

It is noteworthy that most civil society organizations in Türkiye rely on state resources to continue their operations. Migrant civil society organizations often rely on state resources, national institutions, and organizations for support (Çelik & Pekküçükşen, 2018). Therefore, it can be argued that these organizations typically lack their own resources or have inadequate funding. The research has shown that civil society organizations, regardless of their working areas and regions, face financial problems and most of them do not receive any financial support from public institutions and organizations. The main budgets of the migrant civil society organizations within the scope of the study consist of the contributions of individuals within the association.

Individuals who migrate to Türkiye from their countries of origin for various reasons encounter a range of social issues (Buz, 2008). Therefore, it can be stated that public institutions and non-governmental organizations are working to address these problems. The study has revealed that individuals are facing difficulties in accessing basic rights and services such as identity and residence, health, housing, employment, education, and social security. Non-governmental organizations working in the field provide services such as counseling, guidance, education, courses, health, social cohesion, food, shelter, and cash support to address these issues.

On the other hand, Koç and Paslı (2022) observed that non-governmental organizations working in the field of migration faced challenges in providing services during the pandemic. Similarly, the research indicated that although most non-governmental organizations suspended their activities during the pandemic, they continued to provide personal hygiene, education, counseling, and guidance support. However, according to reports from individuals, non-governmental organizations are planning cultural and social activities, training and course support, as well as in-kind and cash support for women in the future. Studies involving migrant individuals have shown that they demand basic rights and services (Erdoğan, 2021). In particular, there is a strong demand for financial support (Keysan & Şentürk, 2021, p. 369). Similar to this situation, individuals within the scope of the research have been observed to make demands such as legal status, identity, registration, and inclusion in the process, particularly financial support.

Different service models should be created for the social problems and needs of migrant civil society organizations and their members, based on research findings. These service models should be developed in collaboration with public institutions, private sector, non-governmental organizations, and international organizations.

Legal texts guarantee individuals with international migration experience, but interviews reveal that they face issues in areas such as health, education, and employment. From this perspective, it is important to create various social service models to safeguard individuals' social health and ensure their

well-being. However, migrant civil society organizations can receive support for effectively implementing existing legal regulations within the framework of social integration and human rights. These organizations can carry out activities and work in line with the identified needs of individuals, particularly for basic rights and services, to ensure sustainability.

The planned practices and activities, in cooperation with the Directorate of Migration Management and migrant civil society organizations, should be carried out by 'social solution teams' comprising professionals from various disciplines, such as social workers, sociologists, pedagogues, psychological counselors, psychologists, and lawyers. Once social solution teams have been formed, they can carry out various practices and activities to address the issues at hand. This can be achieved by identifying the current problems faced by individuals in collaboration with non-governmental organizations and public institutions operating in the field. The ultimate goal is to improve the social welfare of individuals and ensure that migrant groups have access to a decent life, as outlined in national and international legal texts.

The involvement of civil society organizations, comprising individuals with international migration experience, in all stages of the migration process, alongside other actors, can be seen as a positive step towards enhancing transparency and sustainability.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

The Impact of Firms' Carbon Emissions on Financial Performance and the Role of Innovation: Evidence from Türkiye

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Abstract

Carbon emissions, one of the main causes of climate change and environmental degradation, have recently become extremely important. In parallel, firms' disclosure of their environmental performance and activities to reduce carbon emissions are viewed positively by stakeholders and society. The question arises whether firms' activities to reduce carbon emissions create additional costs for firms or reduce their costs. In this study, we investigate the relationship between carbon emissions and firms' financial performance. We also examine the moderating effect of innovation on the relationship between carbon emissions and financial performance. The lack of a study on developing countries reveals the importance of this study. Within the scope of the analysis, 14 firms in the BIST Sustainability Index with carbon emissions and innovation data between 2017-2021 were included. Using the random effects model, we find that carbon emissions have a negative effect on firms' return on assets and return on equity, and this negative effect turns positive with innovation. On the other hand, no statistically significant effect was found between Tobin's q value and carbon emissions and innovation. The study shows that firms should adopt proactive environmental strategies and organize their resources and investments to manage their financial performance well.

***Keywords:** Carbon Emissions, R&D, Environmental Performance, Financial Performance, Ratio Analysis.*

Article Type	Application Date	Admission Date
Research Article	January 3, 2024	May 15, 2024

1. INTRODUCTION

Today, global environmental problems have become a growing concern. Problems such as climate change, biodiversity decline, and depletion of natural resources have serious impacts not only on the environment but also on economic and social levels. Carbon emissions (CE), at the center of these problems, are one of the principal sources of climate change. CE are an essential environmental factor resulting from releasing greenhouse gases into the atmosphere from human activities such as the use of fossil fuels, production processes, and transportation. These emissions cause climate change by disrupting the temperature balance of our planet due to the greenhouse effect (Mikhaylov et al., 2020, p. 2897). CE have a profound impact not only on the environment but also on the challenges that firm faces in terms of sustainability and long-term success (Matsumura et al., 2014; Lee et al., 2015). Therefore, CE have become a critical issue for measuring and managing the environmental impact of industry and firm.

According to the agency theory perspective, firms' efforts to reduce their environmental impact, especially when high costs are taken into account, can reduce the profitability and shareholder wealth of the firm when competitors can avoid these costs while at the same time providing a competitive advantage for competitors (Friedman, 1970; Wedari et al., 2023, pp. 654-655). However, with the increase in environmental concerns in recent years, stakeholders have been pressuring firms to adopt green practices (Singh et al., 2021). Firms that emit more carbon dioxide contribute to climate change and may also be at a disadvantageous position in the market. This is because consumers increasingly demand products and services from firms which are committed to sustainability. In addition, governments also have taken some steps to combat climate change. Türkiye can be a party to these practices directly or indirectly. Some of the conventions and protocols to which Türkiye is a party can be listed as the "Vienna Convention and Montreal Protocol", the "UN Framework Convention on Climate Change", the "Kyoto Protocol", and the "Paris Agreement". The Paris Agreement, one of these conventions and protocols, envisages the provision of financing, technology transfer, and capacity-building opportunities to developing countries in need (Türkiye Cumhuriyeti Dışişleri Bakanlığı, n.d.). Another regulation that will indirectly affect Türkiye is the Border Carbon Adjustment Mechanism (CBAM), which is planned to be implemented gradually between October 1, 2023 and December 31, 2025. With this regulation, it is envisaged to levy a "carbon emission tax" on certain products imported by the European Union (EU) at certain rates at the border according to their carbon content (Bahadır, 2023).

Low- and middle-income countries, including Türkiye, were responsible for 53% of CE in 2000, which increased to 69% in 2021 (United Nations Environment Programme (UNEP), 2023, p. 6). According to 2021 data, Türkiye ranks 15th in CE worldwide with 598.351.400 tons (Ritchie and Roser, 2023). Per capita CE in Türkiye generally showed an upward trend between 1990 and 2020, except for the years of financial stagnation (The World Bank, 2023a). In terms of emissions by sectors, energy-

related emissions accounted for the largest share with 71.3%, followed by industrial processes and product use at 13.3%, agriculture at 12.8%, and waste at 2.6% (Türkiye İstatistik Kurumu [TÜİK], 2023). In this context, due to the EU's high share in Türkiye's exports and being one of the major suppliers of the EU, especially in sectors such as steel, cement, and aluminum, Türkiye is considered to be among the countries that will be most affected by regulations such as CBAM (Türkiye Cumhuriyeti Ticaret Bakanlığı, 2022). Reducing CE is essential for Turkish firms as goods produced within the scope of trade with the EU are required to comply with stricter carbon standards through CBAM implementation. Within the framework of this importance and the planning of CE reduction activities, the World Bank has provided $450 million in financing support within the scope of the "Türkiye Green Industry Project" for industrial firms in Türkiye to effectively keep pace with the green transformation. With this support, it is planned to help firms reduce their CE, improve their environmental performance and support green innovation activities (The World Bank, 2023b).

Increasing pressure from various stakeholder groups on firms to reduce their environmental impact and improve their sustainability has led firms to address environmental and ethical concerns (Prakash, 2002; Maas, 2018). Firms that avoid environmental costs and operate irresponsibly may face government sanctions, reputational damage, or inefficient production processes. For these reasons, the efforts of firms to reduce their environmental impact and increase their sustainability have increased significantly (Zammit-Cutajar, 2012). One way to reduce CE is through technological innovation. New technologies can improve energy efficiency and reduce CE. For example, electric vehicles have lower CE than fossil fuel-powered vehicles. Renewable energy technologies can replace fossil fuels and reduce CE. In addition to lowering CE, innovation can also improve firm performance. New technologies can provide firms with cost savings and competitive advantage (Pane Haden et al., 2009). However, according to Chang (2011) and Hillestad et al. (2010), the motivation for green innovation is not limited to profit and financial performance (FP); environmental initiatives of firms can also be implemented to meet societal expectations, which may indirectly affect the FP of firms.

Reducing CE is of increasing importance for firms in line with sustainability goals. Therefore, examining the relationship between CE and FP and understanding how innovation changes this effect is critical. In the existing literature, very few empirical studies test the relationship between innovation levels, FP, and CE, which may be due to the limitations of the available data. The data required to measure innovation is limited also in Türkiye. The present study focuses on R&D expenditures in measuring innovation to overcome this limitation. In addition, most of the studies in the literature have focused on the direct impact of innovation on FP or CE. However, this may be insufficient to fully explain the relationship between the innovation levels of firms and their FP and CE. This study examines the impact of CE on firm performance in addition to investigating how innovation can moderate this impact. This study aims to measure the contribution of innovation to the improvement of firms' environmental performance and to reveal the impact of improved environmental performance on FP by

focusing on firms' environmental performance and innovation power. For these reasons, the answers to the questions of whether the increase of CE of firms negatively affect their FP, and whether the innovation positively changes the effect of CE on FP.

The fact that CE in Türkiye has been on an increasing trend over the years and the recent planning of activities to reduce CE and the conduct of R&D studies in this direction raises the question of how it will affect FP. As a result of the literature review, no study considers developing countries in this aspect, and this reveals the importance of the present study. Innovation can play an important role in firms' efforts to improve environmental sustainability. Innovative products, processes, and firm models can help firms reduce environmental impacts and gain competitive advantage. Presenting these findings specifically for Türkiye, as a developing country, may contribute to the literature and encourage the implementation of measures and investments. In this way, developing countries such as Türkiye can be prevented from being negatively affected by the new conjuncture and regulations. In this context, the study proceeds to understand the impact of CE on firm performance and to explore how innovation can shape this impact. It will review the relevant literature and present the findings of empirical studies. It will also discuss the implications of the findings for firms and policymakers.

2. LITERATURE REVIEW

In this section, the literature review of the studies focusing on CE, FP, and innovation is included and hypotheses are determined by revealing their rationality.

2.1. The Relationship between Carbon Emissions and Financial Performance

CE have become an important issue as a result of increasing global environmental concerns due to climate change. In this context, firms face increasing pressure from stakeholders such as customers and governments to reduce CE. In the face of this problem, more and more politicians are turning to tax policies to reduce CE, such as carbon emission tax (Tu et al., 2022). On the other hand, customers have started to pay more attention to firms' carbon emission disclosures. Lu et al. (2021) argue that carbon emission disclosures do not contribute significantly to FP in carbon-intensive sectors but positively impact FP in non-carbon-intensive sectors. These pressures create an obligation for firms to manage their environmental impacts (Tu et al., 2022). For this reason, it is critical for firms to reduce CE in terms of both fulfilling sustainability goals and FP. Various studies in the literature examine the relationship between CE and FP.

Gallego-Álvarez et al. (2015) conducted a study with the data of 89 international firms for the years 2006-2009 and concluded that reducing CE affects FP positively. Miah et al. (2021) conducted a study with data covering the period 2011-2020 for 328 non-financial and 104 financial firms operating in 22 emerging economies. The results show that CE decrease the return on equity (ROE), Tobin's q, Z-score and credit rating of firms. Galama and Scholtens (2021) examined 34 studies conducted between 1997 and 2019 with the meta-analysis method. According to the results, firms with lower CE exhibit

better FP. In addition, it was observed that the sector in which the firms operate has an impact on the results. According to Galama and Scholtens (2021), it is claimed that CE have a greater impact on FP in countries with strict carbon policies. In the study by Houqe et al. (2022) which included from 2323 US firms for the years 2007-2016, the results show that firms with higher CE exhibit lower FP. In the study of Laskar et al. (2022) with the data of 100 firms traded on the Bombay Stock Exchange for the years 2016-2020, it was concluded that the effect of CE on FP is negative.

There are also studies that use carbon performance instead of CE as a variable. He et al. (2016), using a sample of US S&P 500 firms, concluded that carbon performance positively affects FP. Ganda (2018) conducted a study on 63 firms operating in the Republic of South Africa and concluded that carbon performance positively affects ROE and return on sales (ROS). Yan et al. (2022) examined the relationship between carbon performance and FP using the Chinese energy sector as an example between 2014 and 2019. The results show that carbon performance positively affects FP. In the study conducted by Meng et al. (2023) with data covering 2013-2020 of 352 firms registered on the Chinese Stock Exchange, it was concluded that carbon performance positively affects FP. Meng et al. (2023) also found that carbon performance has a greater impact on FP in non-state-owned firms.

Contrary to these studies finding a positive effect of low CE and carbon performance on FP, there are also studies in the literature that claim that low CE have a negative effect on FP. According to Tu et al. (2022), the carbon emission tax implemented to encourage CE reduction reduces CE and improves environmental quality but slows down economic growth. Therefore, firms with lower CE may not always exhibit better FP. The finding of Busch et al. (2022) supports this prediction. The study of Busch et al. (2022) covers the data of 5.663 publicly traded firms from Reuters DataStream for the years 2005-2014. According to the findings of the study, FP is positively correlated with CE. The authors emphasize that more policy interventions are needed to pave the way for a low-carbon economy due to the negative FP of firms that reduce CE. Lewandowski (2017), using data from 1.640 international firms between 2003 and 2015, finds that carbon emission reduction increases ROS but is negatively related to Tobin's q. The findings of the study by Van Emous et al. (2021) also support the findings of Lewandowski's study (2017). According to the findings of Van Emous et al. (2021) with the data of 1.785 firms from 53 countries for the period 2004-2019, reducing CE increases return on assets (ROA), ROE, and ROS, but has no effect on Tobin's q and current ratio. In contrast to these findings, Wang et al. (2021) state that carbon efficiency has a positive effect on Tobin's q.

The impact of CE on FP has not been fully clarified in the literature. The majority of the literature concludes that CE negatively affect the FP of firms. However, this result may differ depending on the type of firm, the region of operation and the FP indicators used. Grounded on these, new studies are needed in different countries and sectors to clarify the connection between CE and FP. Accordingly, the following hypothesis is formulated and shown in Figure 1.

Hypothesis 1. The increase in firms' carbon emissions negatively affects their financial performance.

2.2. The Relationship among Carbon Emissions, Financial Performance, and Innovation

Innovation is defined by Slade and Bauen (2009) as the gradual, disruptive or radical change of new modern technology that can replace old technology. With increasing concerns about climate change, reducing CE has become increasingly crucial for firms in terms of both environmental responsibility and financial success. One way to reduce CE can be through innovation. Firms can benefit from innovation by reducing the negative impacts of environmental risk, pollution and resource use. In this way, firms can increase their efficiency by improving their goods or service production processes, organizational structures or management processes (Porter & Van Der Linde, 1995; Kemp & Pearson, 2007; Zhang et al., 2012; Long et al., 2017). On the contrary, the pressure of environmental regulations such as environmental taxes can also encourage innovation by increasing the R&D expenditures of firms (Hamamoto, 2006; Mensah et al., 2019; Zhu et al. 2020; Zhang et al. 2020). This, in turn, can accelerate the advancement of environmental technologies for CE reduction and sustainable development (Karmaker et al. 2021; Mensah et al. 2019).

While innovation provides cost savings, competitive advantage, corporate image and market opportunities for firms, it can also reduce their environmental impact (Hull & Rothenberg, 2008; Huang & Li, 2017; Duque-Grisales et al., 2020; Zhang et al., 2020; Wedari et al., 2023). Therefore, innovation can improve the FP of firms while reducing CE (Powell & DiMaggio, 1991; Powell & Bromley, 2015; Benlemlih & Girerd-Potin, 2017). Few studies in the literature examine the relationship between CE, innovation and FP.

Lee and Min (2015), in a study on Japanese manufacturing firms, concluded that environmental innovation reduces CE. On the other hand, there are various studies reporting findings that environmental innovation has a positive impact on the FP of the firm (Lee & Min, 2015; Tariq et al. 2019; Wang & Wang, 2022; Yan et al. 2022, 9-10; Wedari et al. 2023). According to Yan et al. (2022), the interaction of carbon performance and technological innovation strengthens the effect on improving corporate FP. However, this effect does not apply to state-owned firms. The possible reason for this is that technological innovation of non-state-owned firms is more profit-oriented and technological innovation of state-owned firms may be more oriented towards meeting social responsibility needs (Yan et al., 2022).

Khalil and Nimmanunta (2022) tested the impact of traditional innovation and environmental innovation on firm value. The study, conducted with data of 462 firms from Asian countries for the years 2015-2019, emphasized that traditional innovation has a positive impact on firm value, but at the expense of the environment. However, according to the findings, green innovation positively affects both environmental performance and firm value.

Very few studies test the relationship between innovation levels, FP, and CE. According to the existing literature, this relationship differs depending on the type of firm and whether the innovation is environmental or standard innovation. The following hypothesis is formulated and shown in Figure 1 to contribute to the literature in clarifying this relationship

Hypothesis 2: Innovation positively changes the impact of carbon emissions on financial performance.

Figure 1. The relationship among carbon emissions, financial performance, and innovation
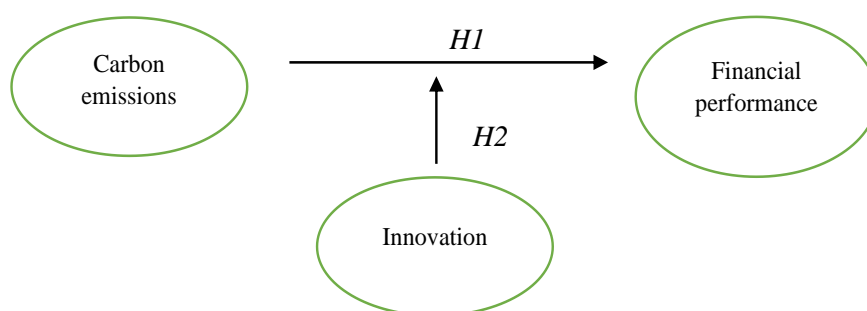
3. DATA AND METHODOLOGY

In this section, the research data set, the variables used in the research, the analysis results, and the findings of the research are included.

3.1. Data Set

Due to differences in countries' local environmental practices and policies and in their exposure to market pressures (Lee & Min, 2015), only one country was analyzed within the study's scope. In parallel with this, only Türkiye is included in the scope of the research. The reasons behind choosing this country lie behind factors such as Türkiye being a developing country, its high export rate to Europe, and its high amount of carbon emissions. Not including the other developing countries in this study might be considered a limitation. In addition, the purpose of the study is not to make comparisons between countries but to reveal the current situation in Türkiye, which is a developing country.

As greenhouse gas emissions data before 2017 and after 2021 could not be accessed, of the 77 firms in the Borsa Istanbul (BIST) Sustainability Index, the ones whose data consisting of uninterrupted total greenhouse gas (GHG) emission (Scope 1, Scope 2 & Scope 3) between 2017 and 2021 in their sustainability reports were analyzed. In this context, 31 firms in the BIST Sustainability Index have environmental performance data between 2017 and 2021. Among these firms, there are 14 firms with R&D expenditures. The data of these 14 firms between 2017-2021 were included in the scope of the research, and the list of these firms is given in Table 1.

Table 1. Firms Included in the Scope of Analysis

Name of the Firm	Name of the Firm
Arçelik A.Ş.	Brisa Bridgestone Sabancı Lastik Sanayi ve Ticaret A.Ş.
Aselsan Elektronik Sanayi ve Ticaret A.Ş.	Çimsa Çimento Sanayi ve Ticaret A.Ş.
Aygaz A.Ş.	Kerevitaş Gıda Sanayi ve Ticaret A.Ş.
Logo Yazılım Sanayi ve Ticaret A.Ş.	Otokar Otomotiv ve Savunma Sanayi A.Ş.
Pınar Süt Mamulleri Sanayii A.Ş.	Tofaş Türk Otomobil Fabrikası A.Ş.
Tüpraş-Türkiye Petrol Rafinerileri A.Ş.	Türkiye Şişe ve Cam Fabrikaları A.Ş.
Ülker Bisküvi Sanayi A.Ş.	Anadolu Isuzu Otomotiv Sanayi ve Ticaret A.Ş.

Within the scope of the variables of the study, FP, innovation, and environmental performance data of 14 firms, presented in Table 1, between 2017-2021 were collected. The variables used in the research, the calculation method of these variables and the sources from which the data were obtained are shown in Table 2.

Table 2. Description of Variables

Variables	Description	Calculation	Sources Obtained
CO2	Carbon density	Total CE (tons)/total sales	Sustainability reports
TOBINQ	Tobin's q	(Market capitalization + total debt) /total assets	https://www.kap.org.tr/
ROA	Return on assets	Net profit/total assets	https://www.finnet.com.tr/
ROE	Return on equity	Net profit/equity	https://www.finnet.com.tr/
CAPINTENS	Capital Intensity	Total assets/total sales	https://www.finnet.com.tr/
LEV	Leverage ratio	Total debt/total assets	https://www.finnet.com.tr/
RD	R&D Intensity	R&D expenditures/total sales	https://www.kap.org.tr/
RDCO2	Moderator	R&D*CO2	
SIZE	Firm size	Natural logarithm of total assets	https://www.finnet.com.tr/

Carbon intensity is the independent variable of the models created to examine the impact of CE on the FP of firms. Carbon intensity variable has been used in many studies in the literature (Gallego-Álvarez, Segura, & Martínez-Ferrero, 2015; Lee & Min, 2015; Ganda & Milondzo, 2018; Mensah et al, 2019; Miah et al, 2021; Busch et al, 2022; Khalil & Nimmanunta, 2022). ROA, ROE and TOBINQ variables were used as FP indicators of the firms, and these variables were determined as the dependent variables of the models. ROA (Gallego-Álvarez et al, 2015; Akben-Selcuk, 2019; Tariq et al, 2019; Naranjo Tuesta et al, 2020; Zhang et al, 2020; Van Emous et al, 2021; Miah et al, 2021; Wang, Li & Zhang, 2021; Lu et al, 2021; Fourati & Dammak, 2021; Yan et al, 2022; Busch et al, 2022; Zhang & Gan, 2023; Wedari et al, 2023), ROE (Gallego-Álvarez et al, 2015; Ganda, 2018; Ganda et al, 2018; Tariq et al, 2019; Naranjo Tuesta et al, 2020; Wang, Li, & Zhang, 2021; Van Emous et al, 2021; Lu et al, 2021; Fourati & Dammak, 2021) and Tobin's q (Lee & Min, 2015; He et al, 2016; Lewandowski,

2017; Zhang et al, 2020;Van Emous et al, 2021;Miah et al, 2021; Wang, et al., 2021; Busch et al, 2022; Khalil & Nimmanunta, 2022; Yan et al, 2022; Houqe et al, 2022; Meng et al, 2023; Zhang & Gan, 2023) have also been used in many studies in the literature. Both internal and external performance measures can be used to assess FP. Accounting-based measures like ROE, ROA, and ROS are used to compute internal performance measures. However, accounting-based measures are susceptible to manipulation and therefore, Tobin's q, which reflects the market reaction to a firm's environmental activities, is also included (Houqe et al., 2022: 6). Tobin's q, which operationalizes stock performance, reflects the capital market's expectation of the future value of a firm (Wang et al. 2014). CAPINTENS (Lee & Min, 2015; He et al. 2016; Wang, Li & Zhang, 2021; Busch et al. 2022; Wedari et al. 2023; Meng et al. 2023), SIZE (Butselaar, 2020; Desai et al, 2021) and LEV (Lee & Min, 2015; He et al, 2016; Akben-Selcuk, 2019; Zhang et al, 2020; Wang, Li & Zhang, 2021; Fourati & Dammak, 2021; Busch et al, 2022; Laskar et al, 2022) variables have also been used in many studies in the literature.

In the literature, some studies have measured innovation with the number of patents owned by firms (Zhang & Gan, 2023; Karmaker et al., 2021; Zhang et al., 2020) and some studies have measured innovation with R&D expenditures (Lee & Min, 2015; Laskar et al., 2022; Khalil & Nimmanunta, 2022). Since it is not possible to access data on the number of patents on a firm basis in Türkiye, R&D expenditure data is used to measure innovation in this study. In the literature, some studies include R&D intensity in the model by proportioning R&D expenditures to total sales (King & Lenox, 2002; Lee & Min, 2015).

Three different models, namely Model (1), Model (2) and Model (3), were constructed with the variables given in Table 2. The models of the study are shown in Equation (1), Equation (2) and Equation (3) respectively.

$$ROA_{it} = \beta_0 + \beta_1 CO2_{it} + \beta_2 RD*CO2_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CAPINTENS_{it} + \varepsilon_{it} \qquad (1)$$

$$ROE_{it} = \beta_0 + \beta_1 CO2_{it} + \beta_2 RD*CO2_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CAPINTENS_{it} + \varepsilon_{it} \qquad (2)$$

$$TOBINQ_{it} = \beta_0 + \beta_1 CO2_{it} + \beta_2 RD*CO2_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CAPINTENS_{it} + \varepsilon_{it} \qquad (3)$$

In the models, data for firm i in period t are expressed. In addition, a new variable is derived to measure the moderating effect of the innovation variable in the models. Since there is more than one unit and time dimension in the study, panel data analysis is used.

3.2. Empirical Analysis and Results

Under this heading, the analyses conducted to reveal how the environmental performance of firms affects their FP and the power of innovation in this possible effect are presented. Summary descriptive statistics of the study variables are shown in Table 3.

Table 3. Descriptive Summary Statistics

Variables	Number of Observations	Average	Std. Error	Minimum	Maximum
ROA	70	0.06	0.05	-0.05	0.19
ROE	70	0.19	0.17	-0.19	0.69
TOBINQ	70	1.49	0.65	0.65	4.28
CO2	70	0.00	0.00	0.00	0.00
RDCO2	70	-0.00	0.00	-0.00	-0.00
LEV	70	0.62	0.13	0.38	0.85
SIZE	70	22.73	1.33	19.76	25.38
CAPINTENS	70	1.39	0.57	0.45	2.87

When the summary statistics of the variables are analyzed, it is observed that the average value of ROA, which expresses the average ROA of the firms within the scope of the analysis, is 0.06. However, the maximum and minimum ROA are 0.19 and -0.05. Similar findings are observed for ROE and TOBINQ, where the minimum ROE is -0.19 and the maximum ROE is 0.69, while the minimum TOBINQ value is 0.65 and the maximum TOBINQ value is 4.28, indicating that TOBINQ values are higher than ROA and ROE performances. The minimum value of the CO2 variable is 0.000 and the maximum value is 0.003 and it is thought that the difference between the minimum and maximum values is due to the firms belonging to different sectors. Since the mean value of the LEV variable is 0.65, it is observed that sustainable firms generally finance their assets with borrowing. The minimum value of the SIZE variable is 19.76 and the maximum value is 25.38. Accordingly, no significant differences were observed between the sizes of the firms.

Table 4. Correlation Matrix

	1	2	3	4	5	6	7	8
1. ROA	1.00							
2. ROE	0.86***	1.00						
3. TOBINQ	0.54***	0.52***	1.00					
4. CO2	-0.00*	-0.06*	-0.22*	1.00				
5. RDCO2	-0.01	0.07	0.02	-0.83***	1.00			
6. SIZE	0.04	0.06	-0.30**	-0.03	0.25**	1.00		
7. LEV	-0.23**	0.16	0.10	-0.12	0.15	0.20*	1.00	
8. CAPINTENS	0.15	-0.03	0.06	0.32***	-0.36***	0.01	-0.28**	1.00

Note: ***p<0.01, **p<0.05, *p<0.10.

According to Table 4, no high correlation was observed between the independent variables. This situation prevents the multicollinearity problem (Liu et al., 2014). The multicollinearity problem means that there is a relationship between independent variables. The Variance Inflation Factor (VIF), which indicates whether there is a multicollinearity problem, is presented in Table 5.

Table 5. Variance Inflation Factor Results

Variables	VIF
RDCO2	4.21
CO2	3.78
SIZE	1.27
CAPINTENS	1.27
LEV	1.15
Mean VIF	2.34

Since the average VIF criterion presented in Table 5 is less than 10, there is no multicollinearity problem in the models (Studenmund, 2007). Table 6 presents the results of the Ramsey Reset, DeBenedictis and Giles Reset specification tests, which indicate whether the functional form of the models can be determined correctly.

Table 6. Specification Test Results

	Model (1)	Model (2)	Model (3)
Ramsey ResetF1	2.90*	2.42	4.44**
Ramsey ResetF2	1.49	1.82	4.25**
Ramsey ResetF3	1.07	1.20	3.23**
DeBenedictis - Giles ResetL1	0.52	0.61	1.64
DeBenedictis - Giles ResetL2	0.27	0.48	1.29
DeBenedictis - Giles ResetL3	0.80	0.31	1.18
DeBenedictis - Giles ResetS1	0.40	0.83	1.27
DeBenedictis - Giles ResetS2	0.50	0.44	0.98
DeBenedictis - Giles ResetS3	0.50	0.41	1.46

Note: ***$p<0.01$, **$p<0.05$, *$p<0.10$.

According to the findings of the specification tests of the models given in Table 6, The H_0 hypotheses stating that the models are correctly constructed cannot be rejected in general and the models are correctly specified.

It is necessary to examine whether there are unobservable unit or time effects in the panel. If there are unit and/or time effects, they should be included in the models (Papke & Wooldridge. 2023). The F test is a test to determine whether it would be appropriate to use the classical model using the fixed effects model. The LR test is a test to determine whether it is appropriate to use the classical model by considering the maximum likelihood estimator for random effects.

Table 7. Unit/Time Effects Results

	Model (1)	Model (2)	Model (3)
F- two-way	1.95**	1.59*	2.22**
F-unit	10.50***	8.84***	6.91***
F-time	0.48	0.37	2.01
LR - two-way	31.62***	27.48***	35.00***
LR-unit	31.48***	27.48***	26.12***
LR-time	0.00	0.00	0.81

Note: ***$p<0.01$, **$p<0.05$, *$p<0.10$.

Accordingly, Table 7 presents the results of the F and LR test for the unit and/or time effects analysis of the models. The H_0 hypothesis of the F test is "there are no unit and time effects". According to the findings of the F test, there is a unidirectional unit effect in Model (1), Model (2) and Model (3). The H_0 hypothesis of the LR test is "there are no unit and time effects". According to the findings of the LR test, the H_0 hypothesis is rejected for unit effect for Model (1), Model (2) and Model (3) and there is a unit effect in the models. However, H_0 hypothesis cannot be rejected for the time effect and the models have no time effect. According to the findings of F and LR tests, the models are one-way unit effect models. Accordingly, in models where the classical model is not valid, the Hausman test is used to decide whether fixed effects or random effects should be preferred. The findings of the Hausman test are presented in Table 8.

Table 8. Hausman Test Results

Hausman Test		
Model (1)	Model (2)	Model (3)
2.05	1.90	0.86

Note: Coefficients are given in the table. ***p<0.01, **p<0.05, *p<0.10.

The H_0 hypothesis of the Hausman test is "there is no correlation between the explanatory variables and the error term". In this case, both fixed effects and random effects estimators are consistent, but the random effects estimator is inefficient. Accordingly, when the Hausman test results presented in Table 8 are analyzed, H_0 hypotheses cannot be rejected, and random effects estimators are effective in the models. As a result of the analysis, it is decided that the models are one-way unit-effect random effects estimators. Accordingly, the findings of heteroskedasticity, autocorrelation and the cross-sectional dependence tests, which are the basic assumption tests of the random effects estimator, are presented in Table 9, Table 10 and Table 11. In addition to the traditional tests for equality of variances, Brown and Forsythe (1974) proposed a robust heteroskedasticity test that can be used in the absence of a normal distribution.

Table 9. Heteroskedasticity Test Results

Brown & Forsythe	Model (1)	Model (2)	Model (3)
W0	2.94***	3.19***	3.04***
W50	1.32	1.56	2.14**
W10	2.94***	3.19***	3.04***

Note: Coefficients are given in the table. ***p<0.01, **p<0.05, *p<0.10.

According to Table 9, the null hypothesis H_0 stated as "variances of the units are equal" is rejected and there is heteroskedasticity in the models. For the autocorrelation test, which is another assumption test, the Durbin Watson (DW) test of Bhargava, Franzini and Narendranathan (1982) and the Locally Best Invariant (LBI) test of Baltagi-Wu (1999), which can be preferred in the random effects model, are applied. Table 10 presents the autocorrelation test findings.

Table 10. Autocorrelation Test Results

	Model (1)	Model (2)	Model (3)
DW	1.93	1.30	1.77
LBI	1.37	1.81	1.84

Note: Test statistic values are given in the table.

According to the findings in Table 10, since the LBI and DW test statistics are less than 2, it can be stated that there is autocorrelation in the models. To test for the presence of inter-unit correlation in the models, Pesaran (2004) proposed the CD test, which can be applied when the time dimension is smaller than the unit dimension (T<N). Table 11 presents the inter-unit correlation, in other words, the cross-sectional dependence test results of the models.

Table 11. Cross-Section Dependence Test Results

	Model (1)	Model (2)	Model (3)
CD	0.81	1.52	6.41***

Note: Coefficients are given in the table. ***p<0.01, **p<0.05, *p<0.10.

According to Table 11, for Model (1) and Model (2), the null hypothesis of "no correlation between units" cannot be rejected and there is no correlation between units. However, in Model (3), the H_0 hypothesis is rejected and there is horizontal cross-section dependence. As a result of the tests, the Huber (1967), Eicker (1967) and White (1980) estimator, which can be used for robust standard errors, is applied in Model (1), Model (2) and Model (3). The results of Huber, Eicker and White robust estimators are presented in Table 12.

Table 12. Results of Robust Regression

Variables	Model (1)	Model (2)	Model (3)
CO2	-240.76***	-29.49**	-216.34
RDCO2	10386.93***	25954.96***	-12509
SIZE	0.01*	0.03	-0.17*
LEV	-0.29***	-0.44*	0.86
CAPINTENS	-0.02	-0.06	0.11
Cons.	-0.09	0.32	4.86*
Wald ist.	81.74***	58.99***	21.01***

Note: Coefficients are given in the table. ***p<0.01, **p<0.05, *p<0.10.

According to the findings of Model (1), where ROA is the dependent variable, the effect of CE on ROA is statistically significant and negative. However, innovation turns the effect of CE on ROA into positive. SIZE variable statistically affects ROA positively at 10% significance level. The effect of LEV variable on ROA is statistically significant and negative. The CAPINTENS variable, which expresses capital intensity, has no statistically significant effect on ROA. According to the findings of Model (2), where ROE is the dependent variable, the effect of CE on ROE is statistically significant and negative. Innovation, on the other hand, turned the effect of CE on ROE into a positive one. The effects

of SIZE and CAPINTENS variables on ROE are not statistically significant. LEV variable has a negative effect on ROE at 10% significance level. In Model (3), where TOBINQ is the dependent variable, there is no statistically significant effect of CE and the impressive power of innovation on TOBINQ. While LEV and CAPINTENS variables have no statistically significant effect on TOBINQ, the effect of SIZE variable on TOBINQ is negative at 10% significance level.

It has been observed that the profitability of firms with higher carbon intensity relative to their total sales declined. Türkiye has close trade relations with the EU, and the EU has a large share in Türkiye's exports. Based on their carbon content, the 2023 CBAM envisages a "carbon emission tax" on certain EU imports at the border. Although this practice has not been implemented in the period covered by the dataset, EU firms may prefer firms with lower carbon intensity in their trade relations with Türkiye. This is because once CBAM is implemented, costs will increase as additional taxes will be imposed on trade with firms with high CE. EU countries that do not want to have problems in finding suppliers may change their preferences in advance. This may explain why firms with higher carbon intensity have lower ROA and ROE ratios. According to the findings, it is also observed that innovation turns this negative effect into a positive one. As a developing country, firms in Türkiye need to make innovative investments to produce with cleaner energy sources and to increase their energy efficiency. Firms that make and continue to make these investments can gain a more advantageous position in the market within the scope of CBAM. Since innovation is thought to reduce carbon intensity in the long run, firms that invest in innovation may become more preferred by EU firms, even if their carbon intensity is high. This may increase the profitability of these firms. Moreover, firms with low CE may have access to lower-cost sources of financing. In addition, firms are also offered low-cost financing opportunities to invest in green innovation. This has an impact on firms' profitability. Our finding on the leverage ratio supports this finding. According to the findings, a high leverage ratio negatively affects profitability. Therefore, reducing borrowing costs can increase profitability. Consumers' impact on these findings is thought to be low. The fact that CE do not significantly affect Tobin's q supports this idea. Investors and consumers in Türkiye may not value environmental performance or may not yet have this awareness.

4. CONCLUSION

CE, one of the primary contributors to global warming/climate change, are increasing concerns about environmental degradation day by day. Due to climate problems, many countries have introduced legal regulations for the disclosure of CE to the public. Public acknowledgment of CE has encouraged firms to investigate the relationship between CE and FP. The aim of this study is to examine the relationship between CE and FP of firms and to reveal whether innovation has a regulatory effect on the direction of the relationship between CE and FP. The study analyzes firms that carry out sustainable activities in Türkiye. However, in developing countries such as Türkiye, public disclosure of CE information is still limited, which constitutes the limitation of the study. In this context, the study

analyzed the data of the firms in the BIST Sustainability Index that disclosed their CE data between the periods 2017-2021. Among the firms disclosing CE data, firms making innovation investments were selected, and 14 firms were included in the analysis.

According to the analysis findings, firms' CE reduce their ROA and ROE. These findings are in line with the findings of Van Emous et al. (2021), Gallego-Álvarez et al. (2015), Galama and Scholtens (2021), Laskar et al. (2022), Houqe et al. (2022) and contrary to the findings of Busch et al. (2022) and Rokhmawati et al. (2015). Innovation, on the other hand, positively changes the decreasing effect of CE on ROA and ROE. This finding is in line with the findings of Yan et al. (2022), Khalil and Nimmanunta (2022). Activities carried out to reduce CE and investments in innovation are expected to increase the FP of firms as they reduce their costs in the long run. In addition, by conducting activities to prevent environmental degradation and disclosing these activities to stakeholders and the public, it is expected that the FP and market value of firms will increase due to the increase in corporate image and reputation, trust in stakeholders, and fulfillment of their responsibilities towards society. On the other hand, there is no statistically significant effect of CE and innovation on Tobin's q value. This finding is in line with Van Emous et al. (2021). This finding is consistent with Van Emous et al. (2021), but contrary to the findings of Shuwaikh et al. (2022), Faria et al. (2022), and Kurnia et al. (2021).

The findings of the study are important for firms to determine their strategies. This study shows that firms' innovations both improve their environmental performance and increase their FP. Firms' environmental performance and innovation are among the key elements that will enable them to gain a competitive advantage. Accordingly, firms can improve their financial performance by enhancing their innovation and their environmental performance. It shows that firms must adopt proactive environmental strategies and organize their resources and investments to manage their environmental and FPs well. For firms and managers, improving their environmental performance means investing in green technology. Although the integration of firms in this process may seem to bring additional costs in the first place, according to the findings of this study, it means that they will have a good environment and FP in the long run and will benefit in the long run.

Previous studies suggest that the market "penalizes" firms based on the idea that unless firms reduce CE, they harm the environment, living beings and society (Lee et al., 2015). However, according to the findings of this study, the environmental performance of firms in the market with an investor profile in a developing country like Türkiye is not yet fully known. At this point, governments should introduce some regulations for firms in terms of environmental policies and legal practices. Policymakers can make public disclosure of non-financial information on environmental performance, such as carbon emission data, mandatory or incentivized. Mandatory carbon emission reporting encourages the adoption of proactive environmental strategies and corporate environmental management activities. Firms should measure and report the benefits and costs resulting from environmental management and improved environmental performance. To adapt to climate change and

reduce CE, firms should reduce their use of coal and liquid fossil fuels and switch to renewable energy sources. They should conduct R&D activities to increase energy efficiency, in short, they should invest in green innovation. Firms may need financial resources to do all this. Therefore, it would be extremely beneficial for policymakers to create budgeting and financing mechanisms and provide tax advantages for firms to increase their green innovation activities and reduce carbon emissions. In addition, training and communication activities should be carried out to increase knowledge, skills and awareness of climate change, and national and international cooperation should be strengthened.

Considering the limitations of the study, it should be kept in mind that these comments provide a general framework, and further studies should be conducted to investigate different aspects of the issue. Future studies can compare developing countries with developed countries or include energy structure and industry profile as variables in developing countries where access to data is more accessible. There is also a need for comprehensive studies that evaluate the socio-economic effects on the relationship between CE and FP in developing countries such as Türkiye.

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An Investigation of Negative Attitudes Toward the Syrians Under Temporary Protection in Terms of Various Variables

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Abstract

In this study, negative attitudes towards Syrians under temporary protection were analyzed in terms of various variables. The "Negative Attitudes Towards Immigrants" scale was used to collect research data. The study population consists of Küçükçekmece residents, one of the districts with the highest population of the Syrians under temporary protection in Istanbul, the most populated province in Turkey. The study showed that the participants who had had a negative dialogue with the Syrians had more negative attitudes than those who had not. Moreover, it was revealed that negative attitudes differed significantly according to the approach toward political issues and the level of nationalism.

Keywords: Political Science, nationalism, religiosity, approach toward political issues, negative dialogue, negative attitude.

Article Type	Application Date	Admission Date
Research Article	January 5, 2024	February 23, 2024

1. INTRODUCTION

The first mass population movement from Syria to Turkey started when 300-400 Syrian citizens moved toward the Cilvegözü border gate in Yayladağı district of Hatay province on 29.04.2011 with the beginning of the war in Syria in 2011 and the growth of the humanitarian crisis afterward. With the increase in these movements and transforming into a mass form, the "Law on Foreigners and International Protection" was adopted in 2013. Article 91 of this law, titled "Temporary Protection," states the following: "Temporary protection may be provided for foreigners who have been forced to leave their country, cannot return to the country that they have left, and have arrived at or crossed the borders of Turkey in a mass influx situation seeking immediate and temporary protection (Yabancılar ve Uluslararası Koruma Kanunu, *T.C. Resmî Gazete*, 28615, April 11, 2013)." Within the scope of this law, Syrian refugees who arrived in Turkey by being forced to leave their country have been taken under temporary protection. There have been large mass influxes toward Turkey since 2011, which still continue.

According to the latest data updated by the Presidency of Migration Management in Turkey on 18.12.2022, the number of the Syrians under temporary protection residing in Turkey is currently 3,561,883, and this number is 550,154 for Istanbul (Presidency of Migration Management, 2022, Syrians Under Temporary Protection by Years). Therefore, the ratio of the Syrians under temporary protection to the population of Istanbul is 3.36%, their density in the general population is approximately 4.2% (Turkey's population is 84 680 273 people according to the data of the Turkish Statistical Institute for 2021), and the density of the Syrians residing in Küçükçekmece district is approximately 5.37% (Korkmaz, 2021). Hence, the density of the Syrians in Küçükçekmece district is above the average for both Istanbul and Turkey.

Such a large migration flow can affect the economic, social, and cultural structure and threaten the social structure in the security field. The literature review shows that some studies accept perceived threat as a precursor to forming exclusionary attitudes toward immigrants (McLaren & Johnson, 2007; Scheibner &Morrison, 2009; Ben-Nun Bloom et al., 2015b). Numerous studies indicate that, in case of such an intense flow of refugees, competition can occur in economic, social, and cultural structure areas and this competition can create negative attitudes and prejudices. Three basic theories affecting the attitude toward groups can be mentioned: Realistic Conflict Theory (Allport, 1954; Sherif, 1967), Social Identity Theory (Tajfel et al., 1979; Coenders et al., 2004), and 'Integrated Threat Theory' based on the first two theories (Stephan & Stephan, 2000).

'Realistic conflict theory' assumes competition between people for economic and social benefits. According to Ben-Nun Bloom (2015), minority group members or immigrants can be regarded as potential competitors for material resources, and the increasing immigrant population poses a threat while they compete for scarce material resources (Ben-Nun Bloom et al., 2015b). Social identity theory is based on cultural and social factors shaping attitudes toward and perceptions of immigrants and

refugees. Based on these premises, people belonging to a certain group try to attribute positive characteristics to their own groups to reinforce their self-esteem by comparing them with other social groups. The local population's attitudes toward and perceptions of immigrants are also based on historical, political, institutional, social, geographical, and cultural contexts (Rontos et al., 2022).

Apart from these two theories, the integrated threat theory introduced by Stephan and Stephan (2000) includes four types of threats. These four threats were categorized as realistic threats, symbolic threats, intergroup anxiety, and negative stereotypes. Realistic threats consist of threats in real life. Realistic threats are threats to the existence of the ingroup, threats to the political and economic power of the ingroup, and threats to the physical or material well-being of the ingroup or its members. This concept of realistic threat originates from realistic group conflict theory. Symbolic threats are the second type of threat. Symbolic threats are morals, values, beliefs, and attitudes. Symbolic threats are threats to the ingroup's worldview (Stephan & Stephan, 2000, pp. 23-45). The third threat is intergroup anxiety. The idea that anxiety adversely affects intergroup relations emerges in numerous studies (Dovidio & Gaertner, 1986; Gudykunst, 1995; Stephan & Stephan, 2000, pp. 23-45). Negative stereotypes are the last type of threat. Almost all outgroup stereotypes contain threats to ingroups because providing a basis for expectations regarding the behavior of the stereotype group's members is one of the functions of stereotypes (Hamilton, Sherman & Ruvolo, 1990; Stephan & Stephan, 2000, pp. 23-45).

In light of all these data, the present study aimed to examine whether "negative attitudes toward the Syrians under temporary protection" in Turkey were affected by various variables, such as approaches toward political issues, level of nationalism, level of religiosity, and negative dialogue.

2. THEORETICAL BACKGROUND

Research was done within the framework of the following hypotheses to examine negative attitudes toward the Syrians under temporary protection. To test these hypotheses, the "Negative Attitude Scale Toward Immigrants" developed by Varela et al. (2013) to determine negative attitudes toward immigrants and examine the impacts of these prejudices was employed.

H1.1: With all other conditions being equal, the negative attitude toward the Syrians under temporary protection changes significantly according to the variable of having a negative dialogue with any Syrian.

The question "Have you had a negative dialogue with any Syrian" was asked to the participants, and it was aimed to test whether there was a significant difference between individuals who had had a negative dialogue and those who had not in the context of the participants' responses. According to Allport (1954), one of the most influential theoretical frameworks explaining the relationship between contact and groups, constructive associations formed by people of different ethnic identities, religions, races, and sects reduce prejudices between groups and develop positive attitudes between groups (Allport, 1954). Some studies demonstrate that negative contact between groups leads to negative

attitudes among group members (Barlow et al., 2012; Techakesari et al., 2015). Moreover, some studies have shown that positive contact also creates a positive attitude (Paolini et al., 2014; Hayward et al., 2017). Therefore, a relationship between contact and attitude was expected in the present study.

H2.1: With all other conditions being equal, the negative attitude toward the Syrians under temporary protection changes significantly according to approaches toward political issues.

The question "What is your approach toward political issues? Can you mark your place where 1 means the far left and 5 means the far right?" was asked to the participants, and it was attempted to test whether the negative attitude toward the Syrians changed according to the participants' level of self-positioning.

The differences between the attitudes of the participants, who position themselves on the right or the left, toward immigrants may result from their individual upbringing styles and intergroup interaction. Additionally, possible differences may also originate from mass interaction. The flow of refugees to Europe started after the crisis in Syria in 2011, and then the far-right parties became stronger and significantly increased their votes in some countries. It is expected that individuals who position themselves on the right will have a more negative attitude toward refugees than others on the grounds that far-right parties make refugees a propaganda tool to acquire an advantage against their opponents and this propaganda can spread to the electorate because similar results are observed upon reviewing the relevant literature (Wilkes, Guppy & Farris, 2007; De Vries et al., 2013; Anderson & Ferguson, 2018; Van Der Brug & Harteveld, 2021). In this respect, when approaches toward political issues are examined, a significant difference is expected in the current research on negative attitudes between individuals who position themselves on the right and left. However, considering the Turkish sample, there is a different scenario from the sample in some European countries where far-right parties are influential because the MHP (Nationalist Movement Party), the ruling partner in Turkey, has the status of a right-wing nationalist party. Since this party is a ruling partner and is a part of the policies developed in the country toward the Syrians, it is observed that it does not engage in negative dialogue with the Syrians and such a program is not included in the declaration prepared for the elections to be held in 2023 (See the Nationalist Movement Party (MHP) Election Declaration). In this case, it was assumed at the beginning of the study that a negative attitude that might result from mass interaction would not have spread to the supporters of this party and the result might differ from the literature in this context. However, it was not ignored that there might be attitude differences due to individual differences or intergroup interaction.

H3.1: With all other conditions being equal, the negative attitude toward the Syrians under temporary protection changes significantly according to the level of nationalism.

The question "To what extent do you consider yourself nationalist? Can you mark your place where 1 indicates non-nationalists at all and 5 indicates the most nationalists?" was asked to the

participants, and it was tried to test whether the negative attitude toward the Syrians changed according to the participants' level of positioning themselves as nationalists.

Nationalism is based on the idea that the values, principles, achievements, and interests of its own nation are more important than individual interests and universal principles. This brings about emotional attachment to one's own nation and its fundamental goals. Furthermore, it can be said that nationalist individuals tend to see their country and its values, such as history, culture, civilization, etc., superior to those of other countries. Numerous studies in the recent literature state that there are concerns that possible contact with immigrants will damage many cultural and material values of the local people and negative attitudes are formed in this respect. According to Ben-Nun Bloom et al., perception of cultural threat often creates negative attitudes toward immigrants as a critical part of such group values because immigrants threaten the symbolic social and political power of the natives. Ben-Nun Bloom et al. found that the impact of cultural threat on all ethnic/racial preference measures was positive and statistically significant (Ben-Nun Bloom et al., 2015b, p. 1762). Van der Brug and Harteveld (2021) examined whether nationalistic feelings and anti-immigration attitudes increased due to the increasing number of asylum applications and found conditional effects, although no universal (across all citizen groups, EU-wide) effects were determined. In Central and Eastern Europe, initially, there is no significant difference between the attitudes of right-wing and left-wing citizens toward immigration. In these countries, the refugee crisis (as reflected in the number of applications in Europe as a whole) was accompanied by a slight but insignificant increase in anti-immigration attitudes among citizens on both sides of the ideological spectrum. In all regions of Europe, adherence to national identity was revealed to be unaffected (Van der Brug & Harteveld, 2021, pp. 227-247), with the exception of the countries most affected by a large number of refugees (Greece, Italy, and Spain) (Van der Brug & Harteveld, 2021, pp. 227-247). Jeong (2013) found that 'nationalism, national identity, and national pride' had different effects on attitudes toward immigrants. Moreover, it was revealed that nationalism provoked anti-immigrant sentiment (Jeong, 2013, pp. 1461-1477). In the current study, a relationship is expected between the level of nationalism and anti-immigrant attitudes. Nevertheless, it is thought that the assumptions put forward in H2.1 are also valid for this hypothesis and there is a high probability of a different result from the available literature on nationalism.

H4.1: With all other conditions being equal, the negative attitude toward the Syrians under temporary protection changes significantly according to the level of religiosity.

The question "To what extent do you consider yourself religious? Can you mark your place where 1 indicates non-religious at all and 5 indicates the most religious?" was asked to the participants, and it was attempted to test whether the negative attitude toward the Syrians changed according to the participants' level of positioning themselves as religious.

There are numerous opinions in the literature showing that the level of religiosity can create negative attitudes and prejudices. Considering these views, there is no common opinion on whether religion causes negative attitudes or prejudices (Altemeyer, 2003, pp. 17-28). Adorno et al. (1950) determined that individuals with high levels of religiosity also had high levels of prejudice (Adorno et al., 1950). According to Allport and Ross (1967), religious people are prejudiced. On average, churchgoers are more prejudiced than those who are not (Allport & Ross, 1967, pp. 432–443). Altemeyer and Hunsberger (1992) argued that religious fundamentalism could act with prejudice. They also proved that prejudice was associated with the Christian Orthodoxy Scale. Additionally, some studies demonstrate that it is related to some concepts such as religiosity and prejudice, religiosity and intolerance, negative attitudes and xenophobia (Glock and Stark, 1966; Hunsberger, 1995; Paloutzian, 1996; Beit-Hallahmi & Argyle, 1997; Johnson et al., 2010; Djupe & Calfano, 2013). Batson et al. (1993) detected a positive relationship between church attendance or other measures of religiosity and racial prejudice. According to Scheepers et al. (2002), the more religiosity is evident in people's lives and the more spirituality they experience, the more they move away from prejudices. However, the stronger people accept religious particularism, the stronger their prejudice is. Brandt and Reyna (2010) stated that they partially agreed with the view that religious fundamentalism was consistently associated with prejudices against various outgroups. Ben-Nun Bloom et al. (2015a) indicated that religious social identity increased opposition to immigrants who did not resemble ingroup members regarding religion or ethnicity, whereas religious belief generated warm attitudes toward immigrants of the same religion and ethnicity, especially among less conservative religious people. Contrary to all these, some studies show that religion can create a positive attitude and prevent prejudice. Billiet (1995) revealed that church involvement had a moderating effect on ethnic prejudice. According to Schwartz and Huismans (1995), religions encourage people to seek meaning beyond everyday life and display attitudes of awe, respect, and humility. Bohman and Hjerm (2014) observed that religious people were, on average, less likely to oppose immigration than non-religious people.

As is seen, there is no common opinion on the relationship between religion and prejudice, and different results have been acquired from field studies in the literature. In the current study, it is expected that the attitudes of the participants with different levels of religiosity toward the Syrians will differ significantly. However, the fact that the local people and the Syrians who arrived in Turkey as guests belong to the same religion, they were part of the same country until the early 1900s, and that there are still strong partial ties of kinship between the two countries weakens this assumption.

3. METHOD

3.1. Research design

In the present study, a survey model, one of the descriptive research designs, was used to "examine negative attitudes toward the Syrians under temporary protection in terms of various variables." In survey studies, information is usually collected from a large population using the answer

options determined by the researcher. In survey studies, researchers are usually concerned with how opinions and characteristics are distributed in terms of individuals in the sample rather than why they originate (Fraenkel & Wallen, 2006). Within the scope of this model, hypotheses were established, the scale was used to collect data from the participants, the reliability of the available scale was tested, and an examination was performed in accordance with the nature of scientific research.

3.2. Data collection tools

Data collection tools consist of two sections, a survey and scale. The first section contains information that will describe the participants' personal characteristics. In the second section, the "Negative Attitude Toward Immigrants" scale, which was developed by Varela et al. (2013) to determine negative attitudes toward immigrants and examine the impacts of these prejudices, was used. The validity and reliability studies of the scale developed by Varela et al. (2013) were conducted with university students. The item-total correlations of the 12-item scale varied between .30 and .65, and Cronbach's alpha internal consistency coefficient was .86. Günay et al. (2019) performed the validity and reliability studies for the Turkish version of the scale. As a result of the reliability analyses applied to the scale, Cronbach's alpha value was .81, the split-half reliability was .67, and the item-total test correlation coefficients ranged between .85 and .87 (Günay et al., 2019). In the present study, Cronbach's alpha internal consistency coefficient was .95.

3.3. Confirmatory factor analysis

A single-factor structure was examined with regard to the negative attitude scale. There are 12 items to measure negative attitudes in the structure examined. As a result of the confirmatory factor analysis, the model fit criteria were investigated, and CMIN=297.845, DF=54, P<0.001, CMIN/DF=5.516, RMSEA=, CFI=0.959, and GFI= 0.914 were obtained. It was revealed that one item differed significantly from the other items. The modification indices were examined because the model fit criteria obtained were not at the desired level. The index analysis also found that the differentiated item had a covariance relationship with other items. According to these determinations, the relevant item was removed from the scale and analyzed. After the item was removed from the scale, the data in Table 1 were obtained as a result of the examination.

Table 1. Fit Index Values Acquired by CFA Analysis

Fit Values	Acceptable Limit	Perfect Fit Limit	Single-Factor Model
X^2			197.246
X^2/sd	The X^2/sd value is below 5	The X^2/sd value is below 3	4.696
CFI	=.95 and above	=.97 and above	.974
GFI	=.85 and above	=.90 and above	.94
NFI	=.90 and above	=.95 and above	.967
AGFI	=.85 and above	=.95 and above	.905
RMR	Between =.050 and =.080	Between =.000 and =.050	.055
RMSEA	Between =.050 and =.080	Between =.000 and =.050	0.78

Considering the values obtained for the said fit indices from the CFA analysis, it was seen that the values CFI=.974, GFI=94, and NFI=.967 were at the perfect fit limit. Moreover, the values X2/sd=4.696, AGFI=.905, RMR=.055, and RMSEA=.78 were at the acceptable limit. In this respect, it was revealed that the single-factor structure of the Negative Attitude Toward Immigrants Scale was confirmed as a model (For the acceptable and perfect fit limits of fit indices, see: Çokluk et al., 2010).

3.4. Data analysis

Data were collected using the Negative Attitude Toward the Syrians Under Temporary Protection scale and a survey consisting of personal information and analyzed using SPSS 22 and AMOS programs. The analysis showed that the skewness value was -.648, the kurtosis value was -.750 and the data were normally distributed (+1.5-1.5 normal distribution, Tabachnick & Fidell, 2013). Since the data were normally distributed, the t-test was used for binary variables, and the ANOVA test was conducted for three and more variables. Moreover, the LSD test was applied to determine the source of the difference originating from the ANOVA test.

3.5. Population and sample

The population consisted of the residents of Küçükçekmece district, whereas the sample comprised the participants selected on a voluntary basis. The proportional stratified sampling method was employed for sample selection. The population of Küçükçekmece district is 805,930 people (TurkStat, 2021). There are 21 neighborhoods within the district's boundaries. The cosmopolitan structures of the neighborhoods in Küçükçekmece district differ significantly from each other. There is no homogeneous distribution between neighborhoods for some important conditions, such as the density of the Syrians, socio-economic level, and educational status. Hence, each neighborhood was considered a stratum, and a sample was selected from each stratum according to the population ratio with the proportional stratified method. After the boundaries of the strata were clearly determined, the data in each stratum were collected by a simple random method. Six hundred thirty-three participants agreed to participate in the study voluntarily, and data were collected from them. Twenty-four participants did not fill out the surveys as desired and were excluded from the study. The data from 609 participants were used in the present study.

4. RESULTS

Table 2. The participants' mean scores on the "Negative Attitude Scale"

Scale	N	Minimum	Maximum	Mean
Negative Attitude Scale	609	11.00	55.00	37.10

Considering the participants' scores on the Negative Attitude Scale, it was found that they generally had negative attitudes toward the Syrians under temporary protection ($\bar{x}$=35.48, min=11, max=55).

Table 3. The participants' "Negative Attitude Scale" t-test results

Variable	Response	N	Mean	Sd	T	P
Have you had a negative dialogue with any Syrian?	Yes	208	40.47	13.90	.778	0.00
	No	401	35.35	12.59		

Table 3 contains the Negative Attitude Scale t-test results. It was seen that the average of the participants who responded "yes" to the question "Have you had a negative dialogue with any Syrian?" ($\bar{x}$=40.47) was higher than the average of those who responded "no" to the said question ($\bar{x}$=35.35). Additionally, a significant difference was determined between the participants who responded as "yes" and "no" (t=.778, p<0.05) as a result of the t-test. Thus, hypothesis H1.1 was accepted. The results showed that the negative dialogue was effective in forming negative attitudes.

These data provide valuable insights into how interactions with members of other ethnic groups, particularly negative dialogues, can shape attitudes.

Firstly, respondents who answered "yes" are shown to have a higher likelihood of engaging in negative dialogues with Syrians. This suggests that frequent or more pronounced negative interactions may lead individuals to develop more negative attitudes toward that ethnic group. This aligns with the phenomenon known as "experiential-based attitudes" (Petty & Cacioppo, 1986; Gawronski & Bodenhausen, 2006) in social psychology, where personal experiences and interactions play a significant role in shaping attitudes.

Secondly, according to the t-test results, a significant difference was found between the groups of respondents who answered "yes" and "no." This indicates that negative dialogues can indeed influence attitudes toward Syrians, and this effect is statistically significant. This underscores the complexity of relationships between ethnic groups and the impact of negative interactions on attitudes.

In conclusion, these findings shed light on how negative interactions can influence attitudes and highlight the importance of fostering more positive and constructive communication between ethnic groups. Understanding these dynamics is crucial for developing social policies and strategies for managing intergroup relations, promoting respect for ethnic and cultural diversity, and enhancing empathy and understanding among different communities.

Table 4. The participants' "Negative Attitude Scale" ANOVA test results

Variable	Group	N	Mean	Sd	F	P	Difference LSD

What is your approach toward political issues? Can you mark your place where 1 means the far left and 5 means the far right?	1	83	36.08	14.33			
	2	45	37.28	11.39			
	3	231	39.08	12.23	3.45	**0.01***	3-5
	4	62	38.69	10.96			
	5	188	34.53	14.69			
To what extent do you consider yourself nationalist? Can you mark your place where 1 indicates non-nationalists at all and 5 indicates the	1	71	35.11	13.48			
	2	31	33.42	12.18			1-3, 2-3,
	3	141	39.37	11.25	2.95	**0.02***	5-3
	4	99	39.04	11.64			
	5	267	36.13	14.61			
To what extent do you consider yourself religious? Can you mark your place where 1 indicates non-religious at all and 5 indicates the	1	29	38.00	13.60			
	2	18	40.06	13.74			
	3	142	37.91	12.13	1.38	0.24	
	4	175	38.06	12.27			
	5	245	35.62	14.41			

Table 4 contains the ANOVA test results for the data collected from the participants. A significant difference was identified upon examining the responses to the question, "What is your approach toward political issues? Can you mark your place where 1 means the far left and 5 means the far right?" (F=3.45, p<0.05). Therefore, hypothesis H2.1 was accepted. As a result of the LSD test conducted to determine the source of the difference, a significant difference was determined in favor of individuals regarding themselves in position 3 among those who regarded themselves in positions 3 and 5.

Considering the responses to the question "To what extent do you consider yourself nationalist? Can you mark your place where 1 indicates non-nationalists at all and 5 indicates the most nationalists?", a significant difference was observed (F=2.95, p<0.05). Hence, hypothesis H3.1 was accepted. As a result of the LSD test carried out to determine the source of the difference, there was a significant difference in favor of the participants regarding themselves in position 3 among those who regarded themselves in positions 1 and 3, 2 and 3, and 3 and 5.

Finally, there was no significant difference upon examining the responses to the question "To what extent do you consider yourself religious? Can you mark your place where 1 indicates non-religious at all and 5 indicates the most religious?" (F=1.38, p>0.05). In this respect, hypothesis H4.1 was rejected.

These data reveal the complexity and diversity of attitudes towards Syrian refugees. The research demonstrates that these attitudes are influenced not only by individuals' personal characteristics but also by political, social, and cultural factors.

Firstly, the finding of a significant relationship between political orientation and attitudes towards Syrian refugees underscores the significant impact of politics and ideologies on refugee hostility. Specifically, individuals with centrist political views are found to exhibit more negative attitudes towards Syrian refugees.

The relationship between the level of nationalism and refugee hostility also provides an important insight. The research indicates that individuals identifying with moderate levels of nationalism hold more negative attitudes towards refugees compared to those at other levels of nationalism. This suggests that nationalist sentiment plays a significant role in shaping attitudes towards those perceived as outside of the group or nation.

However, there was no statistically significant relationship found between the level of religiosity and refugee hostility. This suggests that religiosity may have less influence on shaping attitudes towards refugees compared to other factors. Further investigation into the complex relationship between religiosity and attitudes towards refugees may be warranted.

In conclusion, these findings demonstrate that attitudes towards refugees are shaped not only by individual characteristics but also by broader contextual factors such as political climate, social structures, and cultural norms. Such research provides valuable insights for policymakers and relevant stakeholders in understanding and addressing negative attitudes towards refugees.

5. CONCLUSION

This study examining negative attitudes toward the Syrians under temporary protection revealed that the participants generally had negative attitudes toward the Syrians under temporary protection according to the data obtained from the participants. Saraçoğlu and Bélanger (2019) showed that public opinion toward the Syrians in Turkey became more negative recently. Based on the ethnographic fieldwork Saraçoğlu and Bélanger conducted at four research sites in Izmir, they demonstrated that the attitudes of the local Turkish population towards the Syrian refugee influx were based on prejudice and fear of losing their status.

According to the findings obtained in the study conducted by Doğan and Ünal (2021), foreign immigrants, which have been a permanent presence in Turkey for a long time now, are mostly perceived by the local population as disruptive and potentially more disruptive external groups. Güzel (2021) and Tayınmak and Furtuna (2022) found that participants had low attitudes toward the Syrians. It is thought that there has been serious disinformation about the Syrians in the local press, national press and social media platforms in Turkey, particularly in recent years, which affects the attitude. Additionally, it can be said that the increasing Syrian population and the recent inflationary period in Turkey have also affected this because there are opinions that this process is affected by the intense migration flow both in social media and in the populist discourses of some political parties. It is thought that this situation may affect the attitude toward immigration and asylum seekers.

A significant difference was observed between the participants who responded "yes" and "no" to the question, "Have you had a negative dialogue with any Syrian." According to the results, the negative dialogue was effective in creating negative attitudes. Some studies show that negative contact between groups creates negative attitudes among group members (Alport, 1954; Barlow et al., 2012;

Techakesari et al., 2015). Moreover, some studies have demonstrated that positive contact also creates a positive attitude (Paolini et al., 2014; Hayward et al., 2017). Bağcı et al. (2020), who conducted research in the Turkish sample, concluded that positive contact was effective in creating a positive attitude. In the study conducted by Bağcı, Baysu, Tercan, and Turnuklu (2023), it has been shown that increasing positive contact buffers against the rise in outgroup negativity in behavioral tendencies. Çalışkan, Sarı and Yalçınkaya Alkar (2022) revealed that close social contact and intercultural sensitivity reduced intergroup anxiety and increased positive attitudes toward the Syrians. Acar (2021) found that negative attitudes toward the Syrians were above the country average in provinces close to the Syrian border. Furthermore, the negative attitudes of the participants who encounter the Syrians more frequently in their daily lives tend to decrease. In this respect, the relevant literature indicates a relationship between contact and attitude. As seen in the present study, negative contact is effective in creating negative attitudes.

A significant difference was found upon examining the responses to the question, "What is your approach toward political issues? Can you mark your place where 1 means the far left and 5 means the far right?". As a result of the LSD test carried out to determine the source of the difference, there was a significant difference in favor of the participants regarding themselves in position 3 between those who regarded themselves in positions 3 and 5.

Some studies indicate that individuals who position themselves on the right will have a more negative attitude toward refugees than others, based on the idea that far-right parties in Europe turn refugee problems and the problems created by refugees into a propaganda tool in order to acquire an advantage against their rivals and this propaganda can also spread to their voters (Wilkes, Guppy & Farris, 2007; De Vries et al., 2013; Anderson & Ferguson, 2018; Van Der Brug&Harteveld, 2021). However, it is seen that this situation does not have similar features in the sample of Turkey as in the European Union countries, which can be attributed to numerous reasons. Some researchers state that political parties and the media play an important role in shaping the image of immigrants, refugees, asylum seekers, and other perceived "out" groups (Crisp, 2005; Grove & Zwi, 2006). Hence, the political structure of Turkey is one of the issues considered important in this respect. The AK Party, which has been the influential actor in the entry of refugees into Turkey, is currently in power. Although the AK Party is not a party with an extreme right character, its ruling partner, the MHP (Nationalist Movement Party), is a right-wing nationalist party. Therefore, both parties do not make refugees a propaganda tool as in European countries (See the Nationalist Movement Party (MHP) Election Declaration, See the AK Parti 2023 Political Vision). In light of these data, it is thought that the negative attitude of individuals who position themselves on the far right toward the Syrians under temporary protection in Turkey, as in European countries, is not determinative compared to other participants. On the contrary, individuals who position themselves in the middle have more negative attitudes than those who position themselves on the extreme right since the participants who position themselves in the middle are not under the

influence of a restrictive authority in creating negative attitudes compared to those who position themselves on the extreme right, which can explain this situation. It is thought that this may originate from the relatively non-discriminatory discourse of political party leaders, who, as claimed, position themselves on the far right and keep large masses under their control.

When the responses to the question "To what extent do you consider yourself nationalist? Can you mark your place where 1 indicates non-nationalists at all and 5 indicates the most nationalists?" were examined, a significant difference was revealed. As a result of the LSD test conducted to determine the source of the difference, a significant difference was determined in favor of the participants who regarded themselves in position 3 between those who regarded themselves in positions 1 and 3, 2 and 3, and 3 and 5. Numerous studies in the recent literature show that there are concerns that possible contact with immigrants will harm many cultural and material values of the local people and negative attitudes are formed in this respect (McLaren & Johnson, 2007; Ben-Nun Bloom et al., 2015a). Van der Brug and Harteveld (2021) found the conditional effects of nationalistic feelings due to the increasing number of asylum applications. Jeong (2013) revealed that 'nationalism, national identity, and national pride' had different impacts on attitudes toward immigrants.

In the present study, different results from the general literature were found in the nationalism variable, as well as in the approach toward political issues. It is observed that individuals who position themselves in the middle have a more negative attitude than non-nationalists and ultra-nationalists. The fact that this situation is similar to the variable of political positioning encourages us to make a similar claim.

No significant difference was revealed upon examining the responses to the question, "To what extent do you consider yourself religious? Can you mark your place where 1 indicates non-religious at all and 5 indicates the most religious?". There are numerous opinions in the literature that the level of religiosity can create negative attitudes and prejudices. Considering these views, there is no common opinion on whether religion causes negative attitudes or prejudices (Altemeyer, 2003, p. 17-28). Adorno et al. (1950) determined that individuals with high levels of religiosity also had high levels of prejudice. According to Allport and Ross (1967), religious people are prejudiced. On average, churchgoers are more prejudiced than those who are not. Altemeyer and Hunsberger (1992) argued that religious fundamentalism could act with prejudice. Batson et al. (1993) identified a positive relationship between church attendance or other measures of religiosity and racial prejudice. According to Scheepers et al. (2002), the more religiosity is evident in people's lives and the more spirituality they experience, the more they move away from prejudices. Nevertheless, people's prejudice increases as they accept religious particularism stronger. Brandt and Reyna (2010) stated that they partially agreed with the view that religious fundamentalism was consistently associated with prejudices against various outgroups. Ben-Nun Bloom et al. (2015a) expressed that religious social identity increased opposition to immigrants who did not resemble ingroup members regarding religion or ethnicity, whereas religious

belief generated warm attitudes toward immigrants of the same religion and ethnicity, particularly among less conservative religious people. Billiet (1995) revealed that church involvement had a moderating effect on ethnic prejudice. According to Schwartz and Huismans (1995), religions encourage people to seek meaning beyond everyday life and exhibit attitudes of awe, respect, and humility. Bohman and Hjerm (2014) observed that religious people were, on average, less likely to oppose immigration than non-religious people. In their study conducted in Turkey, Sağır and Paloutzian (2020) demonstrated that prejudice decreased as religious attitudes became more positive. The study conducted by Tepe et al. (2019) in the Turkish sample demonstrated that extrinsic-personal religious orientation was a significant determinant in increasing the negative attitude toward Syrian refugees, while internal religious orientation was an important determinant in reducing negative attitudes. In the current research, it was observed that the level of religiosity was not effective in creating negative attitudes. It is thought that this situation may be caused by reasons such as the fact that the local people and the Syrians who arrived in Turkey as guests belong to the same religion, they were part of the same country until the beginning of the 1900s, and they are still strong partial kinship ties between the two countries.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

The Effect of Perceived Management Skills on Trust in Supervisors: The Mediating Role of Supervisor Support

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Abstract

The purpose of this study is to determine the mediating role of supervisor support in the effect of management skills perceived by employees on the level of trust in supervisors. The sample of the study, in which quantitative research design was adopted, consists of employees in small and medium-sized enterprises operating in Kırşehir. Data were collected from 417 people reached by convenience sampling method through online survey. Smart-PLS statistical program was preferred to analyze the collected data. In line with the results obtained from the research, it was concluded that supervisor support has a partial mediating role in the effect of management skills on the level of trust in supervisors. Based on the research findings, it can be said that perceptions of management skills should be improved to increase trust in supervisors. In addition, it should be taken into consideration that perceptions of supervisor support will also be effective in this process.

***Keywords:** Management skills, Skills, Supervisor support, Trust in supervisor*

Article Type	Application Date	Admission Date
Research Article	January 15, 2024	June 27, 2024

1. INTRODUCTION

To achieve specific goals, organizations need effective direction. Supervisors play a crucial role in this by systematically evaluating both internal and external processes and implementing necessary practices. Regardless of their quality, every decision made by a supervisor shapes the organization's future. Therefore, every organization needs competent and effective supervisors. The competence of supervisors can be gauged by evaluating their management skills. In other words, supervisors are expected to possess certain special skills such as technical, human, perceptual, and political skills (Nazari, 2018, p. 58).

Management skills refer to the application of knowledge, skills, and attitudes required for managerial work in a specific context, as demonstrated by work behaviors and achievements (Carbone et al., 2005, p. 28). These skills, when utilized by a supervisor to accomplish organizational goals, result in both economic and social value at the organizational level. Consequently, supervisors' management skills are externally manifested through their behaviors, influencing employees' perceptions of their supervisors. These perceptions play a significant role in the management process as they impact overall organizational activities. The social exchange theory, which explains the reciprocal behavior between an employee and a supervisor, has been used to study this situation (Stinglhamber et al., 2006, p. 443). This theory posits that an employee has two main social exchange relationships at work: one with their supervisor and one with their organization (Masterson et al., 2000). However, because supervisors are often viewed as representatives of an organization, perceptions about a supervisor may extend to the entire organization. This study aims to highlight the impact of a supervisor's skills and behaviors on both employees and the organization.

Drawing on Blau's (1964) study, which underscores the role of trust in social exchange theory within organizations, it is believed that employees' perceptions of their supervisors' skills can foster trust in supervisors. This sense of trust is particularly vital in SMEs, where growth-oriented activities are concentrated. In these smaller enterprises, trust forms the basis of internal social exchange relationships and is crucial in managing relations when establishing new collaborations. In other words, trust also influences the perception of potential benefits within networks engaged in collaborative efforts (Brunetto and Farr-Wharton, 2007, p. 362). Supervisors have a critical role in promoting progress within an organization. While it's recognized that management skills can influence perceptions through various elements in an organizational context, these skills are also expected to affect trust indirectly through other factors. A study by Holland et al. (2017) suggested that supervisor support can directly influence trust in supervisor. Therefore, managerial skills may indirectly influence trust through perceived supervisor support. With this in mind, this study aims to explore the indirect and direct effects of management skills on trust in supervisor, as mediated by supervisor support, from the perspective of small and medium-sized enterprise (SME) employees.

SMEs comprise 99.7% of all enterprises in Turkey, accounting for 71% of employment (TurkStat, 2021). Given their role in creating new jobs, adapting to changing conditions, and supporting economic development, it's clear that SMEs are particularly valuable for developing countries. The significant impact of SMEs on economic development highlights the significance of effective supervisors behind these statistics. The synergy created by combining the efforts of skilled supervisors and employees who trust and feel supported by them can enhance SMEs' quantitative and qualitative data. As a result, these businesses can succeed on an operational level and contribute to advancing the country's economy. For instance, Hayton's (2015) study on British SMEs suggested combining leadership and management skills with management practices can lead to improved business performance and employment growth. Based on these insights, this study aims to explore the indirect and direct effects of management skills, mediated by supervisor support, on trust in supervisors, as perceived by SME employees. While there are many studies examining the organizational behavior of employees/supervisors in SMEs, this study will contribute to the field of management by drawing attention to the fact that trust in supervisor is shaped by the perceptions (management skills and support) created by the relations between the employee and the supervisor. Theoretically, it is expected that employees will reciprocate management skills employed by supervisors appropriate to the organizational context, with perceptions of support and trust. In this regard, the study is thought to offer a new perspective on the understanding of reciprocity proposed by Blau (1964) within the social exchange theory framework.

In light of the above information, the general structure of this study is divided into four sections. First, literature studies on management skills, perceived supervisor support, and trust in supervisors were reviewed. In this context, hypotheses have been developed about how management skills may affect trust in supervisors and how perceived supervisor support may mediate. Secondly, the data and methods used in the study are explained. In the third section, the findings were shared. In the last section, the study's results, contributions, and limitations are discussed, and suggestions for future research are made.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Management Skills and Trust in Supervisor

The concept of skill was introduced to organizational psychology in the 1970s, thanks to the contributions of Gilbert and McClelland. They studied individual skills within the framework of organizational work. Mintzberg defined managerial roles in 1973 based on three functions: interpersonal communication, decision-making, and information processing. He also assessed these roles within the context of managerial skills. However, the term "management skills" was first coined by Richard Boyatzis in 1982 (Freitas & Odelius, 2017, p. 50). Boyatzis argued that skills are observable behaviors that enhance organizational performance and help reach target levels. This concept started gaining prominence in management during the 1990s, and was incorporated into organizational studies

(Montezano et al., 2015, p. 14). However, a conceptual consensus on skill evaluation has not yet been reached due to a lack of a universally applicable method.

Management skills are generally accepted to comprise three elements: knowledge, skills, and attitudes. However, most studies have not assessed these skills from a holistic perspective that considers the synergy of these elements. Instead, they have examined them in the context of each component (Brandão, 2007, p. 150). In other words, management skills were evaluated based on a single component without considering their synergy. Definitions derived from this perspective do not adequately explain the term 'management skills.' According to a comprehensive definition approached systemically, management skills can be defined as behaviors exhibited by supervisors in accordance with organizational context, resources, and strategy. These skills allow them to demonstrate their knowledge, abilities, attitudes, and the synergy of personal qualities, creating value for themselves and others (Freitas, 2016, p. 36). This definition suggests that management skills encompass more than the expected knowledge, abilities, and attitudes. They must also be linked to the environment and work context in which they are used. In other words, management skills should not only be understood as a set of knowledge, skills, and attitudes needed to carry out certain activities but also as the supervisor's job performance within a particular context, in terms of the behaviors they adopt and the successes they achieve (Carbone et al., 2005, p. 28).

Management skills are critical indicators of professional performance within an organization and can influence how a supervisor is perceived. Prahalad and Hamel (1990, p. 79) state that management skills bridge the gap between personal characteristics and organizational strategy. From this perspective, the outcomes, or achievements a supervisor produces using their knowledge, skills, and attitudes toward organizational goals allow employees to form opinions about their supervisors. Trust in a supervisor can be seen as one of these opinions. Supervisors with the necessary knowledge, skills, and experience are expected to be trusted in management processes. Conversely, it is widely accepted that the essential requirement for trust in someone is "competence." To earn the trust of others, an individual must be competent at the task at hand, responsible, and consistent (Asunakutlu, 2002). In organizational processes, trust relationships between supervisors and employees are built upon the supervisor's competence and behavior. In this regard, supervisors are seen as the architects of trust within an organization. Trust in a supervisor also influences trust in the organization as a whole.

Whitener et al. (1998, p. 516) stated that five basic behaviors affect employees' perceptions of managerial reliability: "behavioral consistency, behavioral integrity, sharing/delegating control, communication, and showing interest." These behaviors stem from the management skills that supervisors possess. Such behaviors translate management skills into economic and social value at the organizational level. Therefore, it is widely accepted that a competent supervisor should excel in four skills: technical skills, perceptual skills, human skills, and political skills (Nazari, 2018, p. 58). The

behaviors that convert these skills into social and economic value influence the level of trust in supervisors.

Given the above considerations, this study suggests that management skills may influence trust in a supervisor. Upon reviewing the literature on this topic, no research was reached that directly examined the relationship between management skills and trust in supervisors. However, there is evidence that competencies indirectly affect trust (Frazier et al., 2015; Nienaber et al., 2015). Some studies focus solely on communication skills, one aspect of management skills (Bialaszewski & Giallourakis, 1985; Yeşil, 2022). To address this gap in the literature, the first hypothesis of this research was formulated as follows:

H_1: Perceived management skills have a positive and significant effect on trust in supervisors.

2.2. Management Skills and Supervisor Support

Supervisors, representing the organization, are responsible for directing, evaluating, and supporting employees (Dawley et al., 2008, p. 238). Their supportive behavior contributes to achieving organizational goals. Managerial support is perceived by employees as a sign that their contributions are valued, their well-being matters, and they have their supervisors' backing (Eisenberger et al., 2002, p. 565). As per organizational support theory, employees adjust their behavior based on their perceptions of how much their contributions are appreciated and the treatment they receive when facing undesirable outcomes (Eisenberger et al., 1986, p. 504). Essentially, for employees to exhibit constructive behavior and increase their contribution to the organization, they need to feel managerial support. Moreover, supervisors' knowledge, skills, and attitudes, along with their ability to integrate these into organizational processes, translate into behaviors that align with the perceived managerial support. This is because employees often interpret their supervisors' behavior as either supportive or unsupportive (Guchait et al., 2015, p. 295). In other words, employees' perceptions of their supervisors' skills can influence their behavior, either constructively or destructively, based on the level of managerial support they perceive.

Knowledge, skills, and attitudes, often referred to as management skills, have the potential to influence workplace behavior, success, and outcomes (Brandão, 2007, p. 151). This influence generates economic and social value at the organizational level. In other words, applying these skills in the workplace can lead to professional-level performance (Durand, 2000). This performance is defined by the individual's behavior and the subsequent success and results. In terms of management skills and behaviors, supervisors with these skills are expected to engage in constructive behaviors that positively affect the organizational context, ensuring coordination. Supervisors understand that employees are a crucial resource for achieving success and thus strive to support them in demonstrating the necessary performance. Therefore, supervisors who are aware of and actively use their skills are expected to exhibit supportive behavior towards their employees, adding social and economic value to the

organization. However, when employees perceive their supervisors to possess management skills, they may become more aware of managerial support.

The management skills of supervisors significantly influence perceptions of managerial support. According to Neves (2011, p. 446), employees perceive increased managerial support when they view their supervisors as competent. A study involving 210 public employees found a strong correlation between competence and managerial support. Guzmán, Castorena & Solarte (2022) stated that supervisors play a critical role in small and medium-sized enterprises (SMEs), with their management skills driving economic development. Machado and Pinheiro (2012) found that audit support directly reduces situational stress in SMEs. Henry et al. (2017, p. 1) included managerial supervisory skills in their research and concluded that auditing skills used in supportive activities are more effective than those used in corrective activities. This finding underscores the relationship between a supervisor's supportive behaviors and skills, supporting this research's hypothesis. However, the limited number of studies in this area suggests more research. Therefore, the second hypothesis of this research is as follows:

H_2: Perceived management skills have a positive and significant effect on perceptions of supervisor support.

2.3. Perceived Supervisor Support and Trust in Supervisor

Shapiro et al. (1992) suggest that trust is formed in three stages. The first stage, termed "deterrence-based trust," is based on the sense of obligation stemming from uncertain outcomes. Next, in the "knowledge-based trust" phase, trust is built on information acquired through personal interactions. Finally, "identification-based trust" arises when the parties' intentions align, reflecting a belief in inconsistent behaviors. Likewise, trust in a supervisor is established over time based on consistent behavior and intention between the employee and the supervisor. In other words, during the orientation process in an organization, employees tend to trust their supervisors based on their titles, as they lack the experience to evaluate the consequences of their supervisors' actions. In the following processes, employees have the opportunity to familiarize themselves with their supervisors, building trust in their supervisors' knowledge. Ultimately, if experiences and observations align and it's concluded that supervisors behave consistently, trust is fully established. This process demonstrates that trust in a supervisor is a belief developed over time, based on knowledge gained about the supervisor through their behavior.

Managerial support is a perception that arises in employees based on their supervisors' behaviors. The concepts of trust in a supervisor and managerial support, while similar in their formation stages, are essential tools for encouraging employees to adhere to organizational rules, support organizational change processes, and demonstrate high performance (Arslantaş & Dursun, 2008, pp.

113-114). Therefore, understanding the relationship between trust in a supervisor and perceived managerial support is crucial.

Positive thoughts about supervisors from employees often translate into perceptions of support and trust. When an employee views their supervisor positively, these thoughts are expected to develop into positive feelings and behaviors over time. Thus, employees who feel supported by their supervisor will likely trust them. Perceived managerial support is the extent to which employees feel their supervisors provide support and encouragement and value their contributions to organizational activities (Babin & Boles, 1996). Employees who perceive their supervisors as caring and supportive will likely trust them due to their trust-inspiring behavior. Several studies support the correlation between trust in a supervisor and perceived managerial support. For instance, studies by DeConinck (2010) and Holland et al. (2017) revealed that increased perceived supervisor support boosted employees' trust in their supervisors. Conversely, Afsar & Saeed (2010) proposed that perceived organizational support predicts trust in supervisor. Considering the literature studies, this study thought that perceived organizational support may impact trust in supervisor. In parallel with this idea, the third hypothesis of the research was determined as follows:

H₃: Perceived supervisor support has a positive and significant effect on trust in supervisors.

2.4. Supervisor Support as a Mediator in the Relationship Between Management Skills and Trust in Supervisors

SMEs, defined as businesses that operate in developing and highly competitive markets (Jennings & Beaver, 1997), frequently face dynamic competition-related challenges. However, their adaptability makes them crucial drivers of national economies. Globalization has emphasized the need to downsize for increased production, efficiency, and profitability in post-industrial societies (Özdemir, Ersöz, & Sarıoğlu, 2007, p. 177). Consequently, SMEs, with their flexible structures and high-tech utilization, have emerged as the key to producing higher quality, more diverse, and cost-effective products. Socio-economically, efforts such as reducing unemployment, increasing employment, and ensuring fair income distribution are beneficial. From this viewpoint, it is clear that initiatives aimed at boosting the effectiveness and efficiency of SMEs are crucial. This study discusses the role of trust in SMEs in order to foster new collaborative initiatives and to improve efficiency in workforce employment. The importance of trust in SMEs, which account for 71% of employment in Turkey, cannot be overemphasized. However, it's also important to acknowledge certain issues that SMEs face. A key problem is their tendency to focus on immediate and short-term solutions at the expense of comprehensive planning processes. On the other hand, access issues to technology and resources often complicate structuring internal processes (Fajardo et al., 2017). Trust can serve as a vital tool in addressing these management gaps. In this context, supervisors play a crucial role given their various responsibilities at operational and strategic levels (Fuller-Love, 2006). However, supervisors' roles extend beyond planning and implementing management processes. Their unique skills significantly

contribute to economic gains and corporate success (Hoffman & Tadelis, 2021; Audretsch & Belitski, 2021). Trust is vital in fulfilling these roles, especially when providing resources based on needs. In other words, supervisors hold a significant position in the context of trust.

Many management researchers posit that employees' trust in their supervisors is influenced by their skills that bring about positive changes (Conger, 1990, p. 50; Butler, 1991, p. 644; Davis et al., 2000, p. 573). If supervisors are perceived as competent, employees' trust will likely bloom as their expectations for a competent role model are met. Therefore, the management skills that supervisors possess can directly impact the level of trust employees have in them.

The feeling of trust requires the interaction of the characteristics possessed and the behaviors exhibited. Because the prerequisite for making abilities concretely visible is that they can be reflected in behavior. Otherwise, special effort is required for talents to be discovered by others. In organizational life, supervisors' skills need to be reflected in their behavior to facilitate their discovery by employees. On the other hand, Freitas (2016, p. 36) emphasized that management skills do not only mean having knowledge, skills, and attitudes regarding management processes. He also stated that these should be displayed harmoniously with the organizational context, resources, and strategy. Because employees can develop perceptions and attitudes regarding the abilities they can observe, in this sense, in addition to the direct effect of management skills on trust, it can also cause indirect effects on trust through some behaviors exhibited. Dirks and Ferrin (2002) state that trust in the supervisor is strongly connected with attitudes and behaviors. They emphasized that the support perceived by employees plays a vital role in forming trust. Supervisor support reveals the levels of social interaction that reflect supervisors' ability to help their employees at work. Management skills displayed during this interaction process may have the power to shape trust in the supervisor.

This study postulates that managerial support may indirectly influence the effect of management skills on supervisors' trust. Drawing on the premise that trust is fundamental to social exchange relationships, the study aims to extend Blau's (1964) theory by demonstrating that perceptions of management skills and managerial support can foster trust among employees. Thus, the study seeks to uncover the role of employees' perceptions, beyond goal-oriented practices, in bolstering trust that underpins social exchange. Particularly in Small and Medium-sized Enterprises (SMEs) with high employment rates, understanding the impact of employee perceptions on trust in supervisors could guide managerial practices. A literature review revealed that there has been no research investigating the indirect effect of management skills on trust in supervisors via managerial support till now. The absence of such a study does not rule out its existence in the literature. However, given the need for further research on this topic, the four hypothesis of this study is as follows:

H4: Perceived supervisor support has a mediating role in the effect of perceived management skills on trust in the supervisor.

As per the above discussions related to the research hypotheses, the research model, depicted in Figure 1, illustrates the mediating role of managerial support in the influence of perceived management skills on the level of trust in the supervisor.

Figure 1. Research Model
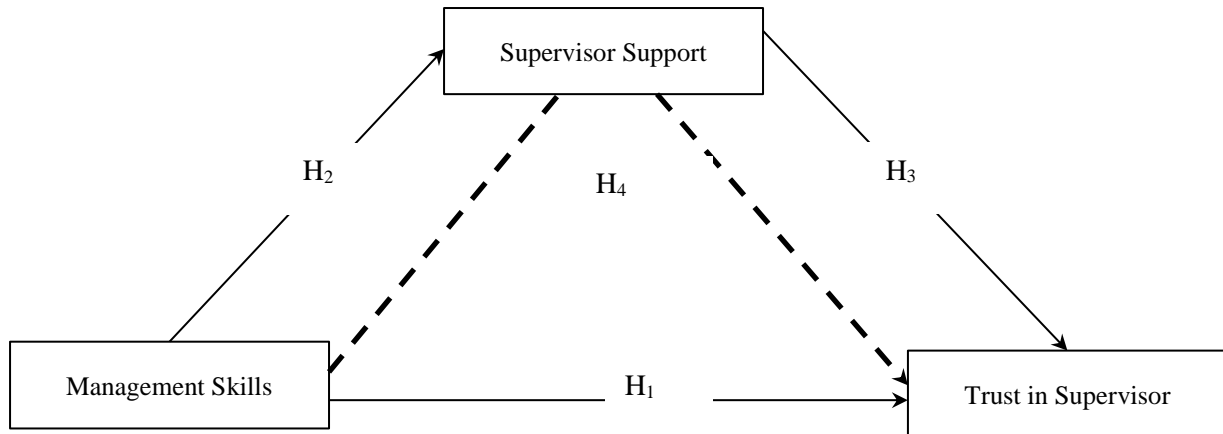
3. METHODOLOGY

This section of the research presents the study population, sample, data collection tools, and socio-demographic information of the participants.

3.1. Population and Sample

The research population comprises small and medium-sized enterprises in Kırşehir. This research targets businesses affiliated with the Chamber of Commerce and Industry, and the Organized Industrial Zone in Kırşehir. The aim is to determine the relationships between perceived management skills, trust in the supervisor, and managerial support, according to the views of individuals working in various businesses on the Kırşehir scale. The number of employees in businesses affiliated with the Chamber of Commerce and Industry in Kırşehir is not available on the website. However, the Organized Industrial Zone's website shows that 1,750 employees work in its affiliated businesses. According to the 2022 Labor Market Research Result Report by the Turkish Employment Agency (Turkish Employment Agency, 2022), 29,168 people were employed with insurance as of July 2022. This number includes 1,750 people working in businesses affiliated with the Organized Industrial Zone. Based on this data, the universe of the study was determined to be 29,168 people, and the sample size needed to be at least 384 people, as per Coşkun et al. (2019). The research employed the convenience sampling method. To this end, the survey form, created via Google Forms, was distributed online to individuals working in SMEs in Kırşehir. The study reached a total of 417 people. Of these, 203 (48.7%) were female and 214 (51.3%) were male. Most participants, 140 (33.6%), had a high school education. The typical age range for participants was 18-24 (41.0%), and the majority (62.8%) were single. Additionally, it was found that 82% (345) of the participants did not hold managerial positions in their respective organizations.

3.2. Measurement Tools

The survey form utilized in this research is divided into four sections: socio-demographic information, management skills scale, trust in the supervisor scale, and supervisor support scale.

Management Skills: The scale was developed by Quast & Hazucha (1992), and its Turkish adaptation was made by Şekerci (2006). The scale consists of 34 statements and five sub-dimensions: taking initiative, taking responsibility, technical skills, qualitative skills, and others. The 5-point Likert scale is rated as "1-I Completely Disagree / 5-I Completely Agree". In the scale, "Our supervisor listens carefully to employees' questions and comments.", "Our supervisor directs employees to group work." There are expressions such as.

Trust in Supervisor: The scale was developed by Podsakof et al. (1990), and its Turkish adaptation was made by Turunç & Çelik (2012). The scale, comprising six statements and a single dimension, is a 5-point Likert type rated as "1-Strongly Disagree / 5-Strongly Agree". The scale includes expressions such as: "I am sure that my supervisor will always try to treat me fairly." and "I have a very high level of loyalty to my supervisor."

Supervisor Support: The scale was developed by Giray & Şahin (2012) and consisted of 11 statements and a single sub-dimension. The 5-point Likert type scale is rated as "1-Strongly Disagree / 5-Strongly Agree". The scale includes statements such as "My supervisor defends me against other people in the organization when I make a mistake without knowing it." and "My supervisor takes care of my general situation, such as health and happiness.".

4. FINDINGS

This part of the study introduces details about the validity analysis of the scales, the structural equation model, and the effect size. Structural equation modeling (SEM), a multidimensional analysis method, has been utilized to scrutinize the data gathered within the scope of the study. Hypothesis tests were executed with the aid of the Smart-PLS program, maintaining a $p<0.05$ statistical significance level. During the process of structural equation analysis in Smart-PLS, the research incorporated an exhaustive review of the scales and variables employed within the measurement model.

4.1. Measurement Model

The validity of the scales used in the research was tested using the Smart-PLS program. It's crucial that the scales' validity and reliability coefficients are sufficient for hypothesis testing. Factor loadings of the scales used in the research should be above 0.50. As stated by Hair et al. (2017), Cronbach's Alpha coefficient, Composite Reliability (CR and rho_A) values should exceed 0.70 for validity and reliability, and the Average Variance Extracted (AVE) value should be over 0.50. The scales' factor load values, validity, and reliability values are displayed in Table 1.

Table 1. Facto Loadings, Reliability and Validity Values for the Scales

Variable	Factor Loadings	Mean	sd	Skewness	Kurtosis
		Management Skills Scale			
	Cronbach's Alpha= 0.981; rho_A=0.9981; CR=0.982; AVE=0.615				
MS1	0.744	3.926	0.927	0.991	-0.992
MS 2	0.749	3.861	0.962	1.189	-1.065
MS 3	0.816	3.815	0.930	0.598	-0.827
MS 4	0.787	3.882	0.918	1.083	-0.979
MS 5	0.695	3.751	0.996	0.225	-0.783
MS 6	0.810	3.837	0.948	0.390	-0.804
MS 7	0.742	3.779	0.959	0.003	-0.642
MS 8	0.826	3.856	0.936	0.403	-0.801
MS 9	0.820	3.863	0.910	0.465	-0.781
MS 10	0.807	3.923	0.921	0.528	-0.846
MS 11	0.800	3.880	0.903	0.311	-0.762
MS 12	0.834	3.878	0.912	0.495	-0.803
MS 13	0.817	3.890	0.894	0.158	-0.693
MS 14	0.803	3.849	0.946	0.432	-0.819
MS 15	0.776	3.866	0.968	0.553	-0.892
MS 16	0.789	3.885	0.901	0.510	-0.818
MS 17	0.767	3.789	0.936	-0.228	-0.589
MS 18	0.706	3.954	0.862	1.120	-0.970
MS 19	0.713	3.938	0.860	0.928	-0.924
MS 20	0.824	3.854	0.927	0.373	-0.794
MS 21	0.780	3.882	0.891	0.718	-0.848
MS 22	0.754	3.808	0.960	0.173	-0.716
MS 23	0.772	3.849	0.913	0.718	-0.855
MS 24	0.784	3.832	0.932	0.591	-0.766
MS 25	0.811	3.844	0.928	0.243	-0.716
MS 26	0.805	3.928	0.837	0.304	-0.653
MS 27	0.748	3.916	0.884	1.060	-0.942
MS 28	0.799	3.902	0.907	0.466	-0.811
MS 29	0.755	3.885	0.885	0.613	-0.815
MS 30	0.819	3.823	0.983	0.506	-0.824
MS 31	0.789	3.866	0.927	0.678	-0.835
MS 32	0.788	3.818	0.952	0.250	-0.732
MS 33	0.805	3.866	0.919	0.641	-0.827
MS 34	0.812	3.791	0.988	-0.091	-0.636
		Trust in Manager Scale			
	Cronbach's Alpha= 0.911; rho_A=0.911; CR=0.934; AVE=0.737; WIF=3.810				
TM1	0.834	3.758	1.044	0.501	-0.936
TM2	0.860	3.779	1.045	0.344	-0.901
TM3	0.875	3.743	1.008	0.409	-0.879
TM4	0.876	3.743	0.996	0.544	-0.871
TM5	0.848	3.775	0.988	0.609	-0.884

Table 1 (Continued)

Variable	Factor Loadings	Mean	sd	Skewness	Kurtosis
Manager Support Scale Cronbach's Alpha= 0.949; rho_A=0.950; CR=0.956; AVE=0.664; WIF=1.000					
Msup1	0.738	3.717	0.970	0.290	-0.720
Msup 2	0.808	3.758	0.950	0.764	-0.913
Msup 3	0.841	3.779	0.957	0.952	-0.964
Msup 4	0.815	3.801	0.945	0.453	-0.808
Msup 5	0.825	3.859	0.925	0.629	-0.847
Msup 6	0.848	3.710	1.011	0.131	-0.779
Msup 7	0.792	3.782	0.959	0.762	-0.929
Msup 8	0.834	3.811	0.950	0.553	-0.844
Msup 9	0.824	3.758	0.983	0.668	-0.930
Msup 10	0.842	3.743	1.003	0.220	-0.770
Msup 11	0.792	3.719	1.006	0.228	-0.776

MS= Management Skills; TM= Trust in the manager; MSup=Manager Support; CR= Composite Reliability; AVE= Average Variance Extracted

Table 1 presents the results regarding reliability, validity, and confirmatory factor analysis. The 6th statement from the Trust in Manager Scale was excluded from the analysis due to insufficient factor loading, which affected the validity results. Based on the values in Table 1, it can be inferred that the scales used in the research are both valid and reliable. Additionally, the sample appears to be normally distributed as the kurtosis and skewness coefficients fall within the range of +1.96 and -1.96 (Hair et al., 2017).

The Variance Inflation Factor (VIF) values obtained from the analysis are less than 5. Hair et al. (2017) state that a VIF value below five doesn't cause multicollinearity issues. Alongside the validity values in Table 1, the Fornell-Larcker criterion is used to calculate differences between scales. This criterion was developed by Fornell and Larcker (Yıldız, 2021). In addition, Henseler et al. (2015) proposed a new discriminant validity, Heterotrait-Monotrait (HTMT), instead of the Fornell-Larcker criterion. According to this view, HTMT values above 0.90 reveal discrimination problems.

Table 2. Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT) values

	Fornell-Larcker Criterion				Heterotrait-Monotrait Ratio (HTMT)		
	Msup	TM	MS		Msup	TM	MS
Msup	0.815	-	-	Msup	-	-	-
TM	0.812	0.859	-	TM	0.873	-	-
MS	0.859	0.807	0.785	MS	0.889	0.852	-

MS= Management Skills; TM= Trust in the manager; MSup=Manager Support

The scales used in the research also provide discriminant validity of the Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT). Structural equation modeling was applied since the

relevant values were found suitable for analysis. Apart from the appropriate analyses, R^2 and Q^2 values for the scales used within the scope of the research were examined. According to Sarstedt et al. (2014), the Q^2 value above zero is essential for the quality and measurability of the scales. Table 3 contains the relevant values.

Table 3. R^2 and Q^2 Test Results

	R^2	R^2 Adjusted	Q^2
Msup	0.738	0.737	0.486
TM	0.705	0.704	0.515

SM= Trust in the supervisor; SSup=Supervisor Support

As shown in Table 3, R^2 values exceed 0.50 and Q^2 values are positive. According to literature, an R^2 coefficient between 0.25 and 0.50 is seen as weak, 0.50 and 0.75 is medium, and anything above 0.75 is a strong explanatory ratio. However, these assessments should also consider disciplinary conditions. Some fields view a 10% disclosure rate as very strong (Yıldız, 2021). The f^2 coefficient is another measure of effect size, with values presented in Table 4.

Table 4. f^2 Test Results

	SSup	**SM**	**MS**
SSup	-	0.184	-
SM	-	-	-
MS	2.810	0.154	-

MS= Management Skills; SM= Trust in supervisor; SSup=Supervisor Support

The f^2 coefficients used in calculating the effect size are provided in Table 4. As per Cohen (1998), an f^2 coefficient of 0.02 or more is considered a low effect, 0.15 or more is considered a medium effect, and 0.35 or more is considered a high effect. The effect size ratios in Table 4 indicate a sufficient level.

4.2. Structural Model-Hypothesis Tests

In this part of the research, the relationship between the variables in the research model was examined using path analysis. Path analysis was performed with a 5000-sample bootstrap in the Smart PLS program. T-tests and p-values were examined to determine whether the β values obtained from the analysis were significant at the 5% significance level. Figure 2 shows the path diagram of the structural equation model.

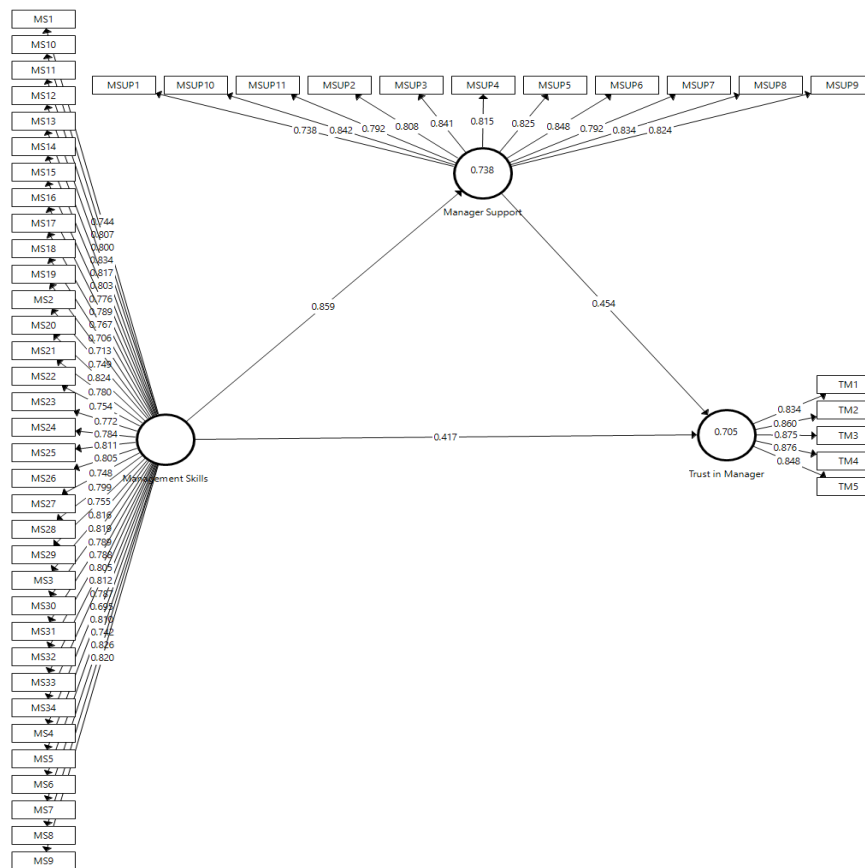**Figure 2.** Structural Equation Model Path Diagram

Figure 2 presents a structural equation model between perceived management skills, trust level in the supervisor, and supervisor support. The goodness of fit values from the model show that the Standardized Root Mean Square Residual (SRMR) value is 0.039 (SRMR<0.080), the d_ULS value is 1.901, the d_G value is 1.762, the Chi-Square value is 3.687.744, and the Normed Fit Index (NFI) value is 0.824 (NFI>0.80, Chi-square<5). Byrne (2016) states that the relevant values are appropriate for literature. Yıldız (2021) asserts no clear distinction between d_ULS and d_G values regarding goodness of fit. Based on these analyses, the hypotheses formed for the research were accepted, and the structural equation model coefficients can be found in Table 5.

Table 5. Hypothesis Testing Results

Paths	Beta (ß)	sd	t-values	%95 confidence level	P values
MS→SM (Total Effect)*	0.807	0.036	22.200	(0.731; 0.865)	0.000
MS→SM (Direct Effect)*	0.417	0.117	3.549	(0.204; 0.640)	0.000
MS→SSup*	0.859	0.033	26.214	(0.767; 0.902)	0.000
SSup→SM*	0.454	0.124	3.665	(0.226; 0.681)	0.000
MS→SSup→SM* (Indirect Effect)*	0.390	0.097	4.037	(0.186; 0.536)	0.000

*p<0,000; MS= Management Skills; TM= Trust in supervisor; SSup=Supervisor Support

Table 5 presents the coefficients that illustrate the mediating role of supervisor support in the effect of perceived management skills on the level of trust in supervisor. The mediation test employs the bootstrap test, an iterative, non-parametric test developed by Preacher & Hayes (2004, 2008). This method is straightforward to implement in partial least squares structural equation modeling. Compared to the Sobel test, the bootstrap test provides more precise results on the mediation effect and has a higher statistical power. Hair et al. (2014) explain that the bootstrap test is first conducted without the mediator variable in the model, making it easier to comprehend and interpret the mediation effect when the mediator variable is subsequently included. Before including the mediator variable in the model, management skills significantly impacted trust in supervisors (ß=0.807; p<0.01) - this represents the total effect. After adding the supervisor support variable to the initial model, management skills still had a significant positive impact on trust in supervisors (ß=0.417; p<0.01). Furthermore, management skills positively and significantly affected supervisor support (ß=0.859; p<0.01), and supervisor support positively affected trust in supervisors (ß=0.454; p<0.01). The literature suggests that additional tests should be conducted to confirm a mediation effect. While the Sobel test is commonly used, it has recently been criticized. Hair et al. (2017) recommended the Variance Accounted For (VAF) test instead. This is calculated by dividing the indirect effect by the sum of the total and indirect effects. A VAF value between 0% and 100% is obtained; more than 80% indicates full mediation, between 20% and 80% suggests partial mediation, and less than 20% implies no mediation effect.

As per Table 5, the indirect effect between management skills, trust level in the supervisor, and supervisor support is ß=0.390, and the total effect is ß=0.807. The calculated VAF value is 32%, indicating that supervisor support partially mediates the effect of perceived management skills on the level of trust in the supervisor. Therefore, hypotheses H1, H2, H3, and H4, created for this research, were accepted.

5. DISCUSSION AND CONCLUSION

This research explored the mediating role of supervisor support in the impact of management skills on trust in supervisors. The initial hypothesis suggested that positive employee perceptions of management skills would enhance trust in supervisors. The study's results confirmed this hypothesis. Competence is crucial in building trust. If employees perceive their supervisors as effectively applying their managerial skills in organizational processes, this can lay the groundwork for trust in the supervisor. Similar studies have found that high-quality leader-member interaction, justice, honesty, skill, political competence, and a transformational leadership style increase employees' trust tendencies and their trust in their supervisor (Afsar & Saeed, 2010; Frazier et al., 2015). Simultaneously, it has been found that supervisors' characteristics, attitudes, and behaviors shape the foundations of a trust climate in organizations (Nienaber et al., 2015). When supervisors are perceived as more proficient in management tasks, employees tend to perceive higher levels of supervisor support. This result aligns with the organizational support theory, which posits that perceived supervisor support develops partly

based on employees' perceptions that their supervisors can assist them, thereby contributing to the evaluation of competencies (Eisenberger et al., 1986; Eisenberger et al., 2002). This is also in line with the research findings of Neves (2011, p. 446), who cites organizational support theory to guide supervisors in shaping employees' responses to change. According to these results, employees who view their supervisors as competent perceive higher levels of managerial support. This aligns with the second hypothesis that managerial skills positively impact trust in the supervisor.

Managerial behavior can significantly influence the establishment of trust within organizations. Employees may develop trust in their supervisors when they feel respected and valued. The third hypothesis of this study reveals a positive correlation between perceived managerial support and trust in the supervisor. This finding aligns with the outcomes of similar studies exploring the relationship between managerial support and trust (Akram et al., 2018; DeConinck, 2010; Ji & Jan, 2020). These studies highlight that higher perceived managerial support enhances employees' trust in their supervisors.

In the conclusion of this research's fourth hypothesis, it was found that perceived managerial support from employees partially mediated the impact of management skills on trust in the supervisor. If employees believe their supervisors effectively employ skills such as initiative, responsibility, and technical prowess, they may interpret this as managerial support. Consequently, they start to trust their supervisors.

Consequently, this research broadens the existing literature and acts as a reference for future studies. Specifically, the absence of any similar studies on supervisor support's mediating role in the impact of management skills on trust in supervisors underscores this research's potential contribution to the literature. Furthermore, considering the country's economic development status and employment statistics, this study helps highlight the perceptions arising from employee-supervisor relationships in SMEs. The interaction between supervisors possessing management skills and employees who trust these supervisors can lead Small and Medium Enterprises (SMEs) to success, not just at the business level, but also in supporting the development of the country's economy. This relationship draws attention to the influence of a supervisor's perceived skills and support in shaping employee trust. The quality of this relationship depends on the interaction between the employee and the supervisor. Trust is fundamental to a supervisor's role. Employees' trust in their supervisors is based on the belief that their supervisors will make the right decisions. This trust can only be fostered if supervisors effectively use their skills within the organizational context. Regardless of the outcome, supervisors should also support their employees in all their endeavors. The findings of this study highlight that simply fulfilling essential managerial responsibilities can garner employees' trust without the need for additional measures. This study also provides practical guidance for organizations, suggesting they focus on ensuring the effectiveness of essential responsibilities before implementing other dynamics in human resources practices. By doing so, organizations can avoid wasting time and resources on unnecessary practices in

human resources, offering a valuable perspective on efficient resource management. Theoretically, employees are expected to perceive support and trust when supervisors exhibit skills suitable for the organizational context. This means that when supervisors show initiative, take responsibility, and demonstrate their abilities, employees reciprocate with support and trust. This idea extends the understanding of reciprocity proposed by Blau (1964) in the context of social exchange theory, thereby adding a new dimension to the field.

While research recommendations are noteworthy, it's essential to consider the study's limitations. Due to its cross-sectional nature, data was obtained from a limited number of participants at a specific time. Consequently, these findings should be supplemented with other research designs to understand better the contributions of management skills, supervisor support, and trust dynamics to management processes. Further research is needed to generalize these findings, as they were obtained from small and medium-sized employees in Kırşehir. There are not enough studies in the literature on this research topic. Hence, future research could include different organizational dynamics to underscore the importance of employees' perceptions of their supervisors at the organizational level. For instance, it would be beneficial to examine the effects of employees' perceptions of their supervisors' abilities and support on dynamics such as organizational performance, intent to leave, and work engagement. Conversely, this research, which investigates the impact of management skills and managerial support on trust in supervisors, could be expanded. The organizational implications of the trust fostered under the system's approach could also be examined.

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Bibliometric Analysis of Digital Leadership Studies *

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Abstract

The purpose of this study is to provide a comprehensive and holistic perspective on the field of digital leadership by conducting a bibliometric analysis of publications in this field. Web of Science (WoS) Core Collection database was utilized to gateher bibliometric data. Keywords such as "digital leadership", "e-leadership", "virtual leadership", "leadership 4.0" was used in the research. A total of 141 articles published between 2000 and 2022 were examined by means of the bibliometric analysis method. In the section of analysis, performance analyzes and bibliometric analyzes called co-occurrence and co-citation were performed. According to findings, the annual growth rate in the field of digital leadership is 15.09%, while the average number of citations per article is 21.48 in the performance analysis. Some of the prominent themes in the co-occurence analysis include "Digital Leadership and Performance Management," "Knowledge and Student Experience in Digital Education," "Transformation and Innovation in Digital Leadership" etc. Some of the cluster names obtained as a result of co-citation analysis are "Digital Leadership and Virtual Team Management," "Coordination and Consensus in Multi-Agent Systems," "Digital Leadership Skills and Psychological Well-Being," which represent prominent and intensively studied themes in the field of digital leadership.

As a conclusion, the number and importance of studies in the field of digital leadership are gradually increasing. The obtained data help us understand the thematic evolution of digital leadership research and shifts of interest in the research community. Digital leadership is a leadership model that is focused on innovation and performance which require effective communication and information management competencies. Several recommendations are proposed for researchers, practitioners and policymakers to further develop and implement effective digital leadership strategies. Expanding theoretical frameworks, conducting longitudinal studies, implementing leadership development programs, fostering a digital culture, supporting digital transformation, establishing standards and guidelines, promoting digital literacy are amongst them.

***Keywords:** Digital Leadership, Bibliometric Analysis, E-leadership, Digital Transformation, Co-occurrence Analysis, Co-citation Analysis.*

Article Type	Application Date	Admission Date
Research Article	January 26, 2024	June 26, 2024

1. INTRODUCTION

In today's world, where digitalization deeply affects business life, businesses are becoming more and more digital. In this respect, businesses that have missed the digital transformation process are expected to be slower, less flexible, and less competitive in the future (Zeike et al., 2019). Since digitalization leads to wide-ranging changes at all levels of the economy and society, it leads to both new challenges and opportunities, fundamentally altering the way people communicate and interact with each other and the activities of businesses in the market (Hensellek, 2020).

Leadership is a key success factor that enhances organizational success for digital transformation. At present, most businesses need a leader with sufficient knowledge and skills to execute their digitalization transformation process (Promsri, 2019). Digital leaders are defined as people, who have innovative ideas on the digital platform, motivate their employees in the digital environment, are able to communicate sustainably with their employees even in the digital environment, and have the capability to develop digital strategies (Sağbaş and Erdoğan 2022). Digital leaders are critical in creating the digital culture for a new organization (Antonopoulou et al., 2021).

Digital leaders also recognize that technological developments are the major elements contributing to significant changes in every company (de Araujo et al., 2021). In the digital age, digital leaders are expected to have different mindsets and qualities compared to the traditional leadership styles. Existing leaders should be able to combine both traditional and new digital skills so that they could effectively lead their organizations (Kane et al., 2019). According to the report issued by Manpower Group, today's leaders need to use 80 percent of traditional leadership qualities as well as 20 percent of new digital leadership qualities in order to successfully drive digital transformation in organizations (Gray, 2018).

Bibliometric analysis method was used in this research. A bibliometric study is a quantitative approach for studying the bibliographic material and mapping the research field without subjective bias (Zupic and Cater, 2015). It brings into light the most influential works and authors, the evolution of the most used keywords, the most associated topics, and the dominant outcomes, among other pieces of evidence (Tigre et al., 2023). Bibliometric analysis makes it much easier to understand the relevant field as it provides the opportunity to synthesize studies in a research field (Durmaz et al., 2023: 710). In this study, which was conducted to carry out a bibliometric analysis of research in the field of digital leadership, variables such as author, citation, affiliation, and country were used. Web of Science Core Collection database was used for the research and digital leadership articles and book chapters in this database were included in the research as well. The importance and impact of digitalization have increased, thus digital leadership has also become an important issue that needs to be addressed. The purpose of the research: is to provide a comprehensive and holistic perspective on the field of digital leadership by conducting a bibliometric analysis of studies conducted in this field. Herewith, it is aimed to fill the gap in the field by providing researchers and practitioners with information about the

development of the field of digital leadership. The research questions are formulated as follows in line with the purposes of the research:

- What is the performance analysis (number of publications and citations by year, top publishing country, institution, journal and authors, top cited articles) of publications on Digital Leadership?
- What is the conceptual structure (co-occurrence) of publications on Digital Leadership?
- What is the intellectual structure (co-citation) of publications on Digital Leadership?

In parallel with digitalization, the number and importance of digital leadership studies are progressively increasing. The present study discusses whether the field of digital leadership can serve as a new leadership model that can enable the digital transformation of businesses. It is thought that the findings obtained from the research will make a significant contribution to the digital leadership literature.

2. LITERATURE REVIEW

Although leadership has been defined in different ways by many researchers, the most focus is on directing followers to achieve the desired goals (Antonopoulou et al., 2021). In the historical process, technological transformation has shaped different types of leadership and the leadership has evolved in different ways based on different patterns such as hierarchy, power and authoritarian personality. Digitalization, on the other hand, changes leadership styles and skills to a considerable extent in today's dominant digital economy (de Araujo et al., 2021).

The concept of digital leadership emerged in the 1990s, when the internet began to grow rapidly and many organizations turned to digital technologies to accelerate their operations and increase their productivity, but it became more important with the rapid advancement of information and communication technology in the 2000s (Nuryadin et al., 2023).

Digital businesses require top-to-bottom organizational transformation. Digital transformation is about competitiveness, new challenges and innovation, and how to create value from becoming digital without creating new ways of communicating and collaborating. Therefore, it is very important for business leaders to adopt an influential leadership style and to bear the right skills to inspire their employees to innovate and maintain the innovation in the digital age (Karippur and Balaramachandran, 2022).

Zhu et al. (2022) recognize the digital leadership as a rapid, inter-hierarchical, team-oriented and collaborative leadership style that focuses strongly on the innovation of an organization. Mihardjo et al. (2019), on the other hand, perceive digital leadership as another version of transformational leadership, describing it as "It is the combination of digital competence and digital culture, evaluating the opportunities presented by digital technologies and directing change". According to Larjovuori et

al. (2016), digital leadership is the capability of leaders to create a clear and purposeful vision for the digitalization process and to execute strategies to achieve it. As a result of their study conducted to define digital leadership, Ordu and Nayır (2021) described digital leadership as "Creating a culture of sustainable change in the organization by using technology to create an innovative vision". According to Peng (2022), the concept of digital leadership is reshaping the business world by focusing on digital technology, and digital leadership is the ability of individuals or organizations to lead followers, teams, or entire organizations to fully incorporate thinking digital by benefiting digital insight, digital implementation, digital decision-making and digital guidance that they should have in the age of digital technology. Mihardjo and Rukmana (2018), believe that the digital leader has an important role in directing the rapid decision-making process and advancing change.

Digital leadership studies are based on Hambrick and Mason's (1984) *upper echelons theory*. The main argument of upper echelons theory is that leaders' experiences, values, and personalities influence their choices, and in return, these choices affect the organizational performance. This theory claims that the characteristics and experiences of leaders shape their perceptions, choices, and actions in a way that ultimately influences various organizational outcomes. Possessing a digital leadership style provides leaders with characteristics and performance that affect the behavior and decisions of the leader; thus the digital leader has an influence on variables at the business level (Wang, et al., 2022).

Promsri (2019) remarked that digitalization creates large leadership gaps in organizations around the world, which requires today's leaders to have different skills. According to Hensellek (2020), a purposeful digital vision is a prerequisite for good digital leadership. Wang et al. (2022) believe that digital leadership emphasizes five key skills for leaders: creativity, thinking and questioning, curiosity, vast knowledge, and global vision and collaboration. Zhu et al. (2022) have the opinion that digital leaders have creative thinking, foresight and insight. Digital leadership embodies distinctive features such as creativity, in-depth knowledge, strong network and cooperation and vision. In the study conducted by Wang et al. (2022), it was revealed that digital leadership has a significant influence on corporate innovation, culture development and orientation creation.

It is seen that some bibliometric analysis studies were carried out in the field of digital leadership (Karakose et al. 2022: Tigre et al., 2023; Erer et al., 2023; Espina-Romero et al., 2023). In the study conducted by Karakose et al. (2022), it is understood that especially the performance analysis part is far from satisfactory. While many performance parameters can be examined, this part was analyzed with very few parameters. In addition, co-citation, citation, and bibliometric coupling analyzes performed classically depending on the selected software (SciMAT) were not included in this study. Another bibliometric analysis study on digital leadership was conducted by Tigre et al. (2023). In this study, bibliometric and network analysis of research on digital leadership was conducted. However, they detected very few clusters and nodes in the analysis results. In this study, nearly 50 nodes and more clusters were obtained as a result of each analysis. Erer et al. (2023) also performed a bibliometric

analysis of digital leadership according to the visual mapping technique. However, in this study, especially the clusters obtained with the analysis were not called themes and only the comments regarding the size and placement of the nodes seen in the image were deemed adequate without taking advantage of the data pool obtained as a result of the search strategy for the relationship of each cluster with the digital leadership field. This means that deep examination and theme titles were not determined in the study. In the study conducted by Espina-Romero et al. (2023), a bibliometric analysis of the trends and challenges of digital leadership in the ever-changing world was conducted. In this study, especially co-citation analysis was not performed, thus, the intellectual structure of the digital leadership field was neglected. This study is needed for the reasons stated.

3. MATERIALS & METHODS

The data used in the research were accessed using the WoS Core Collection database. While searching, keywords related to leadership were selected in the article title. These words include; "digital leadership", "e-leadership", "virtual leadership", "leadership 4.0", "digital leadership traits", "digital leadership skills", "digital leadership competencies", "digitalization and leadership", "e-leader", "digital leader", "virtual leader", "leader 4.0", "digital leader traits", "digital leader skills", "digital leader competencies", "digitalization and leader", "leader and technology", "leader and innovation", "leadership and digital transformation". Keywords used in the research were searched using "OR" conjunction. Thus, it was aimed to reach all of the studies involving the field of digital leadership. Since Avolio, Kahai and Dodge's article titled "E-Leadership: Implications for theory, research, and practice" published in 2000 was considered as an important base for digital leadership studies, we included the studies conducted between 2000 and 2022 in the analysis.

In line with the search strategy, 116 articles were reached and in Figure 1, the process of obtaining the data set and analysis is visualized.

The data set of the articles downloaded within the scope of bibliometric analysis was analyzed in terms of titles such as sources, authors and documents. Bibliometric analysis of this article was performed through "biblioshiny for bibliometrix" application which is a R 4.0.3 software tool. R programming language is a tool whose foundation was laid by John Chambers et al. in the 1960's and used in statistical calculations (European Environment Agency, 2020; Prajapati, 2013).

Some of the reasons why bibliometrix application is preferred can be briefly stated as follows: First of all, there are many more modules available under the title of performance analysis compared to other analysis programs. For example, trend topic analyzes, impact analyzes (analysis of h, g, m indexes), multiple corresponding analyzes and dendrogram analyzes are modules that are not included in other bibliometric analysis programs. In addition, in terms of co-citation and co-occurrence analyzes, cluster can be determined with at least 50 words and at least 50 authors. Therefore, more clusters can be detected depending on the number of words obtained, and more common citation clusters can be

detected. For the reasons stated, bibliometrix application is favored among other analysis programs. Biblioshiny, a web interface for the Bibliometrix R package, was used for the analysis. It allows users to perform bibliometric analyses without any coding knowledge.

Figure 1. Data Construction, Performance Analyses and Bibliometric Analysis
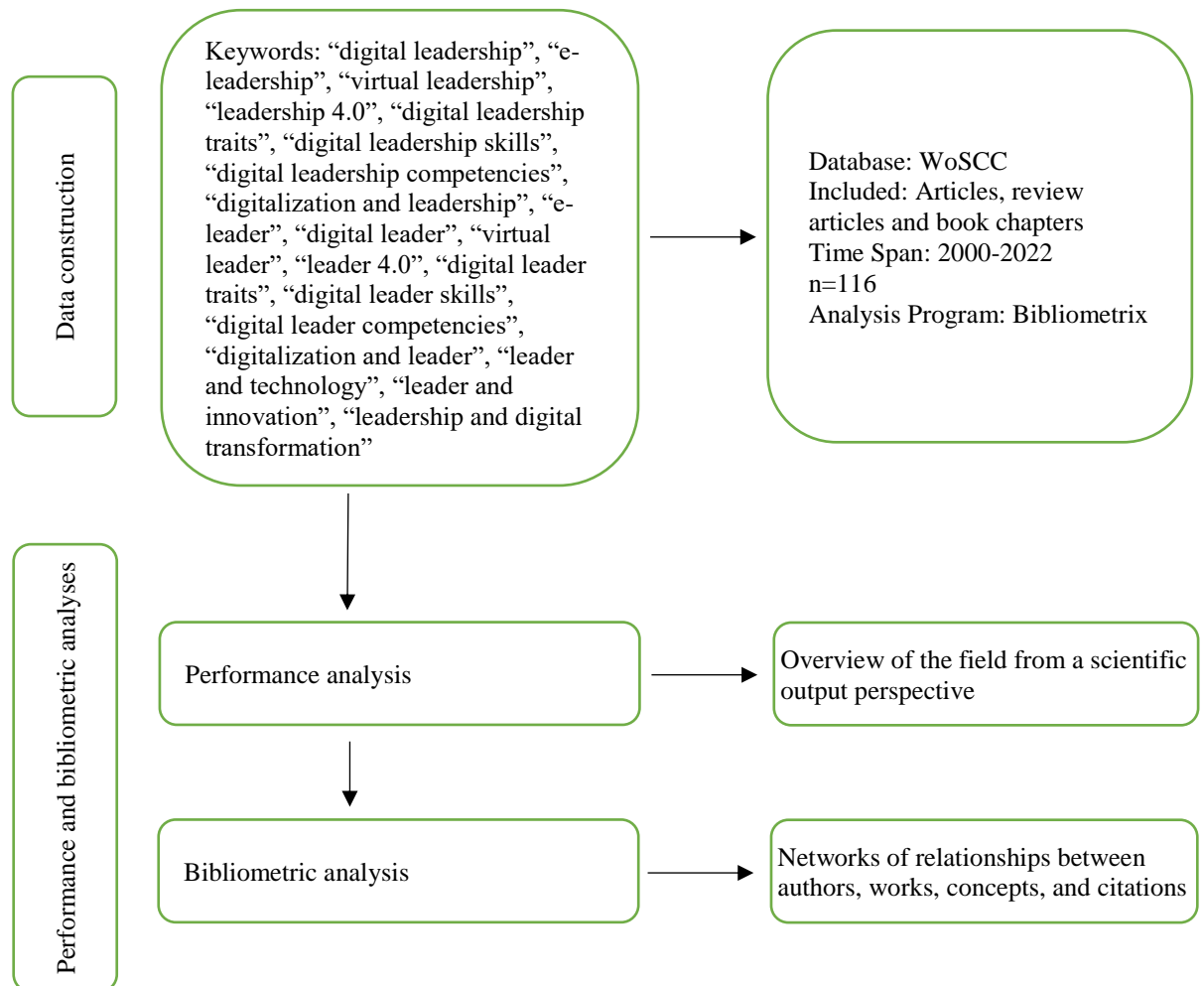
The Web of Science (WoS) database stands out as an ideal resource for bibliometric analysis studies. WoS provides a comprehensive collection of scientific publications, allowing researchers to evaluate academic performance and trace literature trends (Man, et. al. 2023). Thanks to its wide coverage and inclusion of high-quality and peer-reviewed journals, WoS provides a strong basis for bibliometric analyzes such as impact factors of scientific studies, citation analysis and examination of collaborative networks (Bağış et. al. 2023). In addition, the advanced search and filtering tools offered by WoS help researchers conduct in-depth analyzes in specific areas (Öget et. al. 2024). Due to these features, WoS becomes a favored database for bibliometric analyses.

Bibliometric analyses were performed using the Bibliometrix software. Within the scope of the analysis, cooccurrence and co-citation analyzes were conducted to determine the cooperation networks and research trends of authors, keywords and publications. These methods have been used to reveal the

general trends of studies in the fields of creative design and innovative production, important researchers, common themes and research networks. In the design and presentation of the findings of this article, the article template published by Tengilimoğlu et al. (2024) was taken as an example.

4. FINDINGS

The findings section is shaped on two main axes. In the performance analyzes, the main information, the number of publications and citations by years, the rankings of the most published journals, authors, countries, and institutions and the 10 most cited articles were examined. In addition, trend topical thematic evaluation and multiple correspondence analysis were carried out under this sub-section. Under the title of the second sub-section, the results of two main bibliometric analyzes (co-occurrence and co-citation) are given.

4.1. Performance Analysis

Basic information about the articles is shown in Figure 2. When this Figure is examined, there were 141 publications (journals, early access and review) from 2000 to 2022. 119 of these publications were published as articles. It is observed that the annual growth rate of the field is 15.09% and the average citation per document is 21.48. It is seen that the publications were made by 382 authors, 24 publications were authored by single person, the co-author per publication was 3.04 and the international co-authoring rate was quite high with 24.11%. The high rate of international co-authoring shows that the field is very favorable in terms of generating international studies.

Figure 2. Main Information About Data

Timespan	Sources	Documents	Annual Growth Rate
2000:2022	116	141	15.09 %
Authors	**Authors of single-authored docs**	**International Co-Authorship**	**Co-Authors per Doc**
382	22	24.11 %	3.04
Author's Keywords (DE)	**References**	**Document Average Age**	**Average citations per doc**
387	5727	7.38	21.48

*Number of Publications and Citations by Years***:** The distribution of the studies published on "Bibliometric Analysis of Digital Leadership Studies" by years and the number of citations are important to be understood the evolution and impact of research in the field of digital leadership. As seen in Graph 1, the high number of citations received between 2000 and 2003, despite the low number of publications (for example, 1 publication in 2000 and 229 citations), shows that the studies conducted during this period had a significant impact on the field. 2009 stands out, the highest number of citations (745) was reached with 6 publications this year. This indicates that there was an increasing interest in digital leadership at that time and that these studies created a wide area of influence.

Since 2013, there has been a significant increase in the number of publications, especially in 2013, with a remarkable increase of 14 publications and 371 citations compared to the previous years. This trend continues until 2022 and peaks with 22 publications in 2022. However, the low number of citations in 2021 and 2022 (51 and 29, respectively) may indicate that the studies conducted during this period have not yet been widely accepted or adequately evaluated.

Graph 1. Number of Publications and Citations by Years
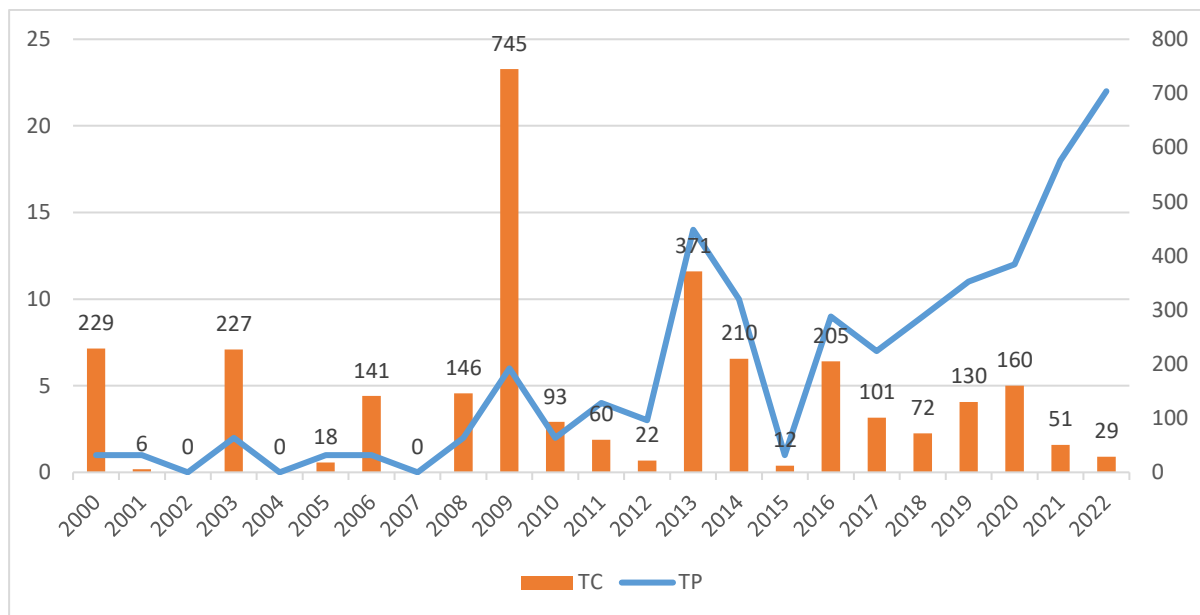

TC: Total Citation; TP: Total Production

Overall, the number of digital leadership studies has increased over time, but this increase has not always found a proportional reflection in citation numbers. This may signal the need for further analysis on the quality and impact of research in the field. These bibliometric data in the field of digital leadership help us better understand the general trends of the field and changes of interest in the research community.

The most cited journals, institutions, countries and authors: The sources, authors, institutions and regional distribution of publications in the field of digital leadership are shown in the Graph 2. The British Journal of Educational Technology is the most widely published journal, with other notable journals including Frontiers in Psychology and Organizational Dynamics. Liu C, Van Wart M and Wang XH are among the authors who have written the most articles, each with six articles. California State University San Bernardino is the institution that publishes the most articles. City University Hong Kong and KDI School of Public Policy and Management are other leading institutions that follow. The USA is the region with the highest contribution in digital leadership research, followed by China and the United Kingdom. These data help us understand the global distribution of digital leadership studies and the regions where academic contributions are concentrated.

Graph 2. The most cited journals, institutions, countries and authors
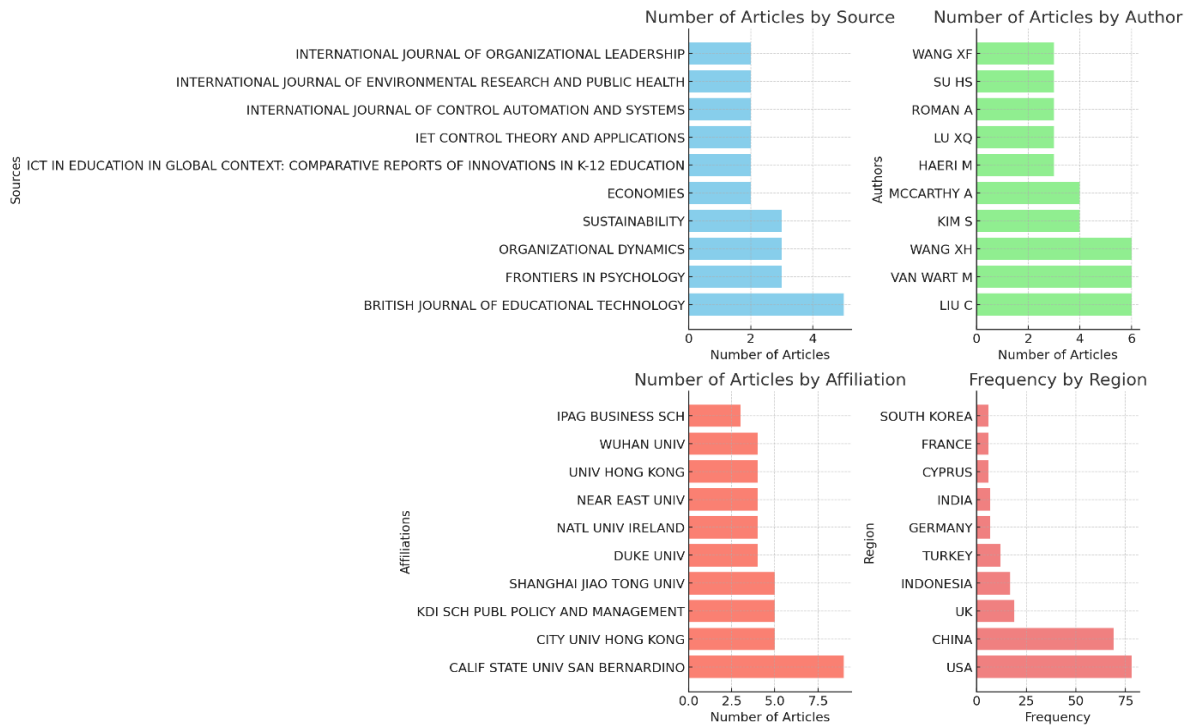
Lotka's law: Lotka's law is a rule that defines the productivity distribution of scientific publications. This law suggests that scientific productivity generally fits a particular model, with a small number of researchers publishing a large number of papers and a large majority publishing a small number (Lotka, 1926). The validity of Lotka's law can be seen in the given graph and data. Graph 3 shows that 93.5% wrote only one document and only 0.8% wrote six documents. This supports a small number of researchers publishing a large number of papers and a large majority publishing a small number of papers, as envisaged by Lotka's law.

Graph 3. Lotka's law
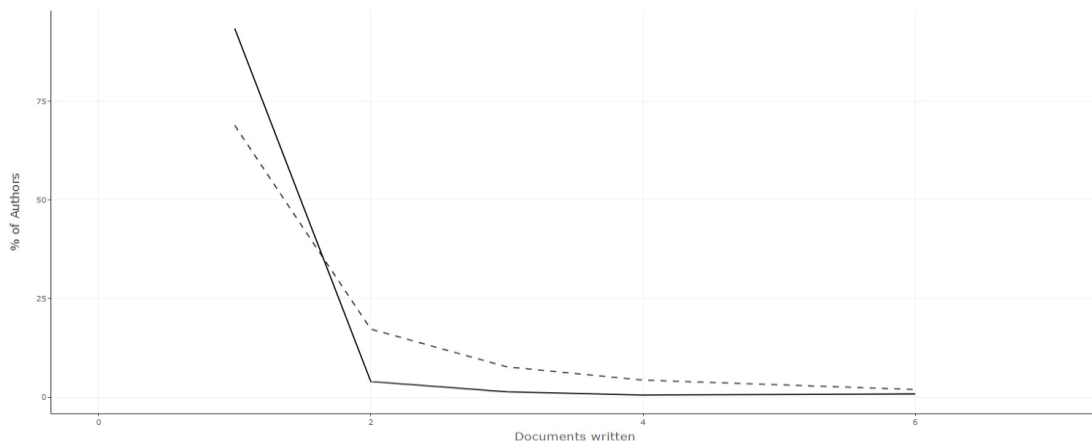
Corresponding Author's Countries Analysis: MCP (Multiple Country Publications) and SCP (Single Country Publications) are two important metrics that show international cooperation in scientific publications. While MCP refers to publications created with the cooperation of authors from more than

one country, SCP refers to publications made with the contributions of authors from a single country. These metrics are used to evaluate countries' participation in international research networks and scientific cooperation (Moshobane et. al. 2022).

Graph 4 shows the number of scientific publications on digital leadership in various countries and whether these publications are within the scope of international cooperation (MCP) or single-country cooperation (SCP). The United States (USA) and China are the countries that publish the most in the field of digital leadership. While the USA stands out with a high number of SCPs, the MCP rate is also noteworthy. This shows that research in the US are largely based on local collaborations, but international collaborations also have an important place. China has a more balanced distribution in the MCP and SCP, indicating that China attaches great importance to both local and international cooperation. The United Kingdom exhibits a profile in which MCP is more prominent. This shows that the UK is more focused on international cooperation in its research on digital leadership. These countries are mostly represented by the SCP, which shows that research are largely based on local collaborations. International cooperation rates are lower. Türkiye and Spain are among the countries that contribute to MCP, although SCP is predominant. This shows that these countries are participating in some international collaborations as well as local collaborations in digital leadership research. Countries such as France, Germany, Colombia, Israel and Italy are represented by both the SCP and the MCP, indicating that these countries are open to both local and international cooperation. Countries such as Malaysia, Cyprus, Ethiopia, Greece, Hungary and Japan have lower number of publications and higher rate of SCP. This shows that digital leadership research in these countries is often limited to local collaborations.

Graph 4. Corresponding Author's Country
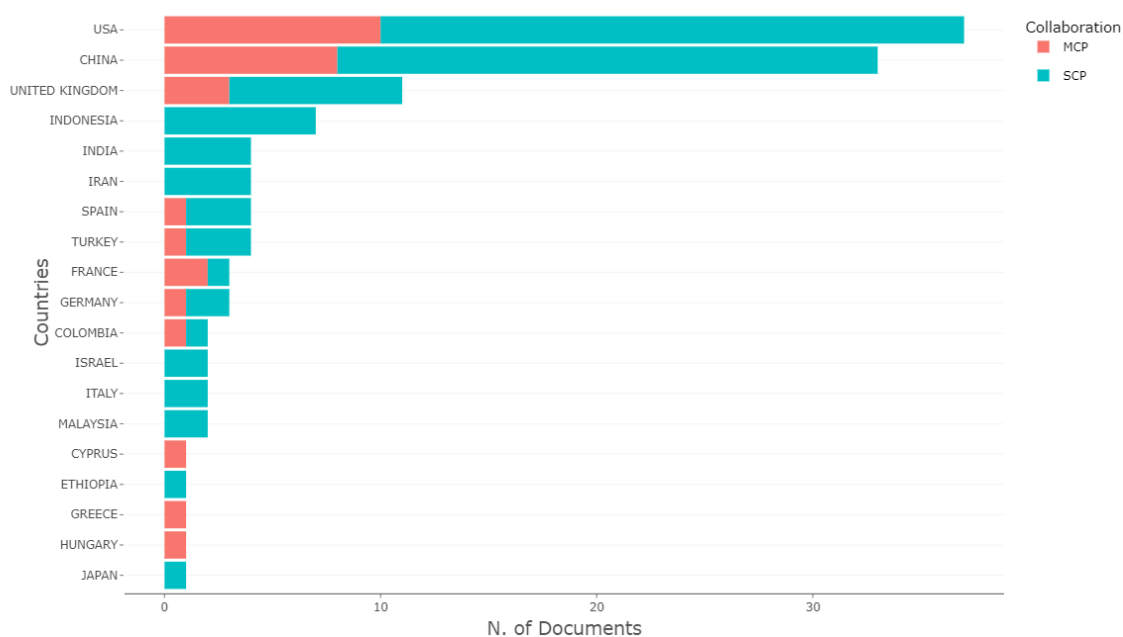
These data provide important information about which countries cooperate more internationally in the field of digital leadership and which countries base their research more on local collaborations. Increasing international cooperation is of utmost importance in terms of sharing and developing scientific knowledge.

*Tree Map and Word Cloud Analysis***:** The tree map and word cloud analysis given in Figure 3 and Figure 4 show the proportional distribution of different issues related to digital leadership and these issues in the total publication. Each frame reflects the relative size of a topic and how widespread it is in the field of research.

- Impact, model, technology, and performance: These four topics are among the most researched themes, each with a rate of 6%. This shows that the impact of digital leadership, models, use of technology and performance have a central place in research.

- Communication, information, and work: These topics, each with a rate of 5%, emphasize the importance of communication strategies, information management and business processes in digital leadership.

- Transformational leadership, systems, and face-to-face: These more specific topics account for 4% and there is still significant research interest in these areas.

- Other less common topics include trust, innovation, management, and teams. These issues reveal the importance of the human factor and teamwork within the scope of digital leadership.

- Themes such as algorithm, adoption, business, and education were represented with lower rates (2%), indicating the potential for further research in these areas.

Figure 3. Tree map

Overall, this tree map analysis shows that digital leadership research spans a diverse and comprehensive spectrum. The wide distribution of research topics emphasizes the multidisciplinary nature of this field and the need to combine different perspectives. While the bulk of the publications

focused on more technical and practical issues, human-oriented and theoretical issues attracted less research interest, which may signal the need for further work on these issues in the future.

Figure 4. Word Cloud

Thematic Map Analysis: The thematic development of the area is shown in Graph 5. In thematic mapping analysis, overlap network clusters are shown as bubbles on the Graph in the context of centrality and intensity ranking developed by Callon et al. (1991). The number of repetitions of words in the cluster determines the size of the bubbles. The X axis represents the centrality of the network cluster, and the Y axis represents its density. Centrality is the measure of the degree to which a network cluster interacts with other graph clusters, in other words, the importance of a work theme. Density, on the other hand, is a metric that measures the intrinsic strength of a cluster network and theme development. Accordingly, motor themes are included in the upper right quadrant. These themes have high centrality and intensity; they are themes with a high level of development and a high level of importance in structuring a research topic. The niche themes in the upper left quadrant have high intensity and low centricity, indicating that they have limited relevance. The newly emerging or declining themes in the left lower quadrant are themes with low centrality and intensity; they are minimally developed and marginal themes. The main themes in the lower right quadrant are themes with high centrality but low density. Although these themes are important for the field, they have not developed sufficiently (Cahlik, 2000; Cobo et al., 2011, 2015).

Based on this, it is observed that both centrality and intensity are high, and the most important themes of the field are shared leadership, communication technology, distributed teams, firm performance, moderating role, transformational leadership, innovation, knowledge, implementation, distributed leadership, institutions, etc. The themes such as computer-mediated communication, systems, transformation, dynamic capabilities, design, consensus, agents, collaboration, etc. in the lower right quadrant of the graph have high centrality and low intensity, and as more publications are made, the potential to be motor themes is high (Cobo et al., 2011; Cobo et al., 2015). Niche themes of the study include decision-making, algorithms, systems, etc.

Graph 5. Thematic Map
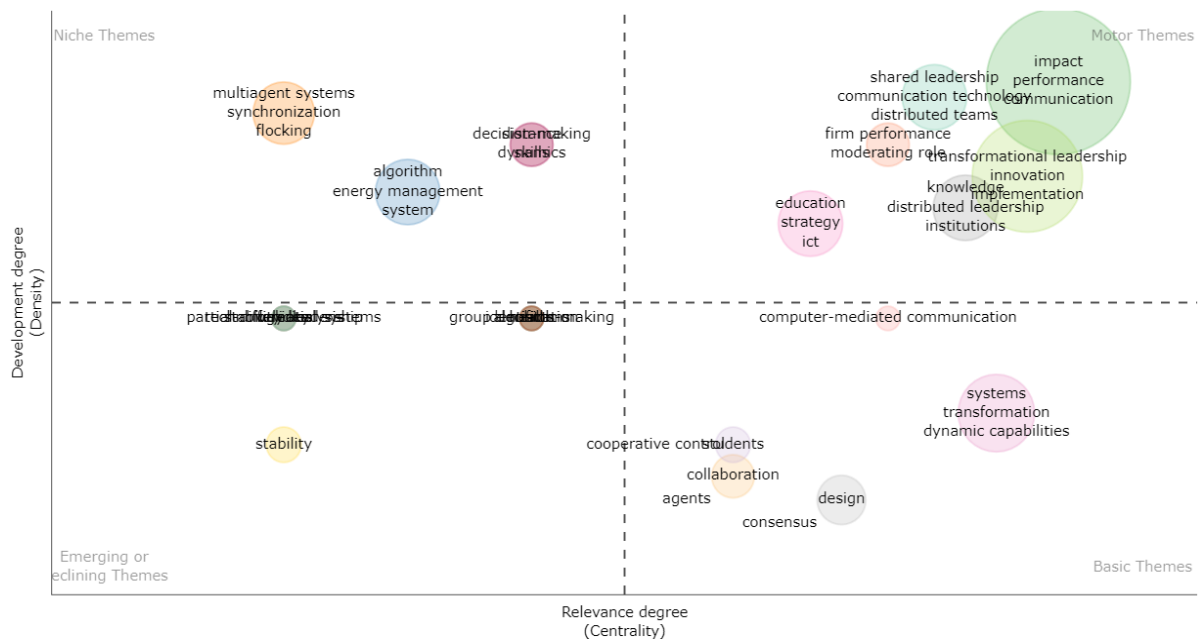
Trend Topic Analysis: The trend topic analysis shown in the Graph 6 shows how research trends in various themes related to digital leadership have changed over the years. This analysis allows us to understand when certain topics are popular and focus changes in the field of research.

- Performance and impact: These two themes have shown a noticeable increase since 2013 and attracted the most attention, especially between 2019 and 2021. This indicates that there is an increasing emphasis on business performance and overall effects of digital leadership.

- Communication and trust: Communication and trust found more place in research after 2015. These two themes are considered critical elements for the effective implementation of digital leadership.

- Technology and information: Technology has started to attract attention since 2013 and has reached an important peak especially in 2019. Information management, on the other hand, began to come to the fore after 2015. These two topics emphasize the important elements related to the management of technological tools and information flow in digital leadership.

- Model, algorithm and agents: The research interest in these technical issues has increased especially between 2019 and 2021, which indicates a concentration on the development of digital leadership models and algorithms.

These trends show that in addition to the basic concepts in the field of digital leadership, more technical studies for implementation are increasing. The change in research interest reveals that the field is constantly evolving and that leadership practices are transforming with technological advances. In particular, the rise of topics such as algorithm and model development are an indication that digital leadership is moving towards a more data-driven and analytical approach.

Graph 6. Trendy Topic Analysis
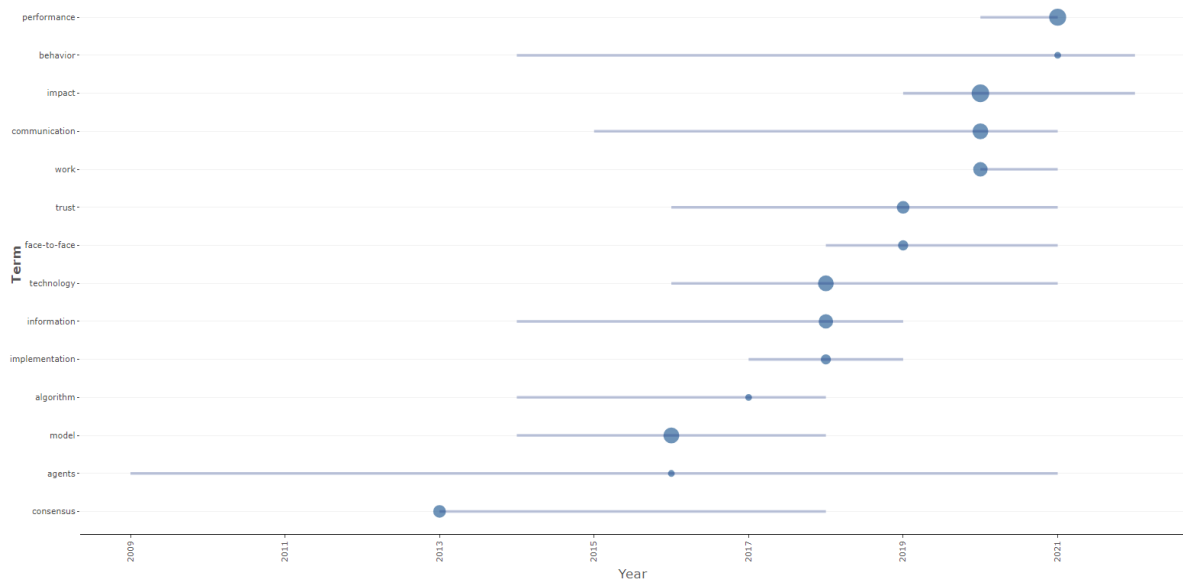
Thematic Evaluation: Graph 7 shows the thematic evolution of publications on digital leadership over three main periods: 2000-2010, 2011-2015 and 2016-2022. Each period reveals how specific themes have evolved and changed over time.

2000-2010 Period: In this period, the theme of "virtual leader" stands out as dominant. This shows that virtual leadership was an intense research topic in the early days and the foundations of the concept of virtual leadership were laid during this period.

2011-2015 Period: The theme of "virtual leader" continues in this period, but new themes have emerged. Themes such as "virtual teams", "leadership", "multi-agent systems" and "e-leadership" show that research on virtual leadership has diversified and deepened. The theme "virtual teams" indicates a growing interest in the management of virtual teams. The "Leadership" theme indicates that the focus remains on general leadership issues. "Multi-agent systems" and "e-leadership" themes indicate that digital and technological leadership approaches have gained importance.

2016-2022 Period: Thematic diversity has increased further in this period. Themes such as "digital leadership" and "e-leadership" reflect the increasing interest in researching the effects of digital transformation on leadership.

"Multi-agent systems" and "virtual leader" themes remain important in this period, which shows that the concepts of multi-agent systems and virtual leadership have always found a place in research.

In general, Graph 7 clearly reveals how digital leadership research has evolved over time, which themes have come to the fore in different periods, and how research focuses have diversified. This thematic evolution shows that the topic of digital leadership has become an increasingly broad and deep field of research.

Graph 7. Thematic Evaluation
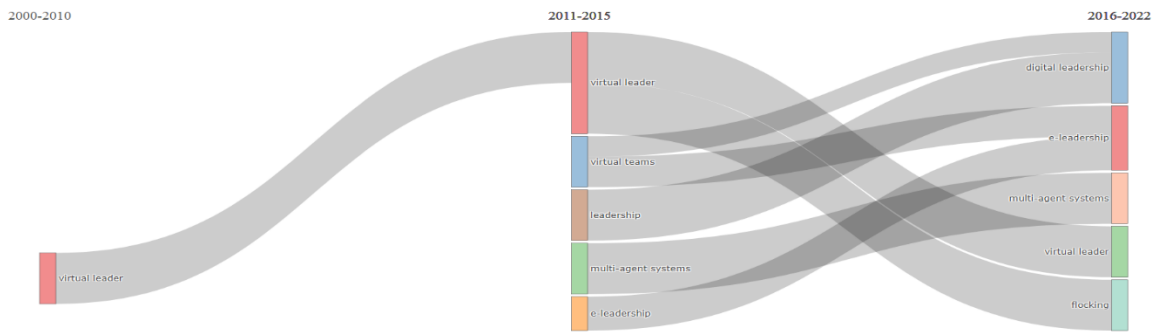
Multiple Correspondence Analysis (Title /Unigram): Multiple Correspondence Analysis (MCA) is a multidimensional statistical technique used to visualize and understand the relationships between categorical data. MCA analyzes how the variables and observations in the dataset are distributed across multiple dimensions, revealing patterns between these variables. MCA, which is frequently used especially in fields such as social sciences and marketing research, helps to simplify complex relationships in data (Greenacre, 1984). In the Graph 8, the studies on digital leadership were analyzed with Multiple Correspondence Analysis (MCA) at the level of single words (unigram). The axes in the graph show the percentage explanatory power of the dimensions: Dim 1 58.29% and Dim 2 9.47%. These two dimensions were used to understand the distribution of data and to visualize the relationships between words.

Garph 8. MCA analysis
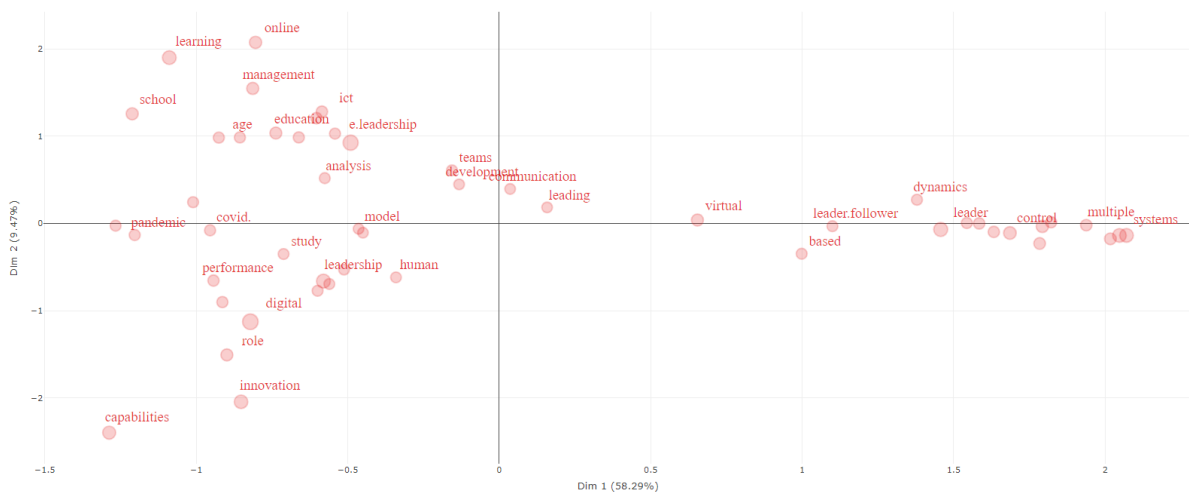
Top Left Corner (Online Education and Management): This region is heavily involved in topics related to digital education and e-leadership. It is seen that online learning and e-leadership issues have gained importance especially during the COVID-19 pandemic. This highlights how digital leaders apply management skills in online education and the role of information and communication technologies

(ICT) in this process. The words that appear in this region are: "online," "learning," "management," "school," "education," "ict," "e-leadership."

Bottom Left Corner (Pandemic and Digital Transformation): This region represents studies that highlight the effects of the pandemic on digital leadership and performance. It is understood that digital transformation and innovation issues came to the fore during the pandemic. This refers to how digital leaders develop innovative solutions in times of crisis and their roles in this process. The words that appear in this region are: "pandemic," "covid," "performance," "digital," "role," "innovation."

Top Right Corner (Virtual Leadership and Communication): This region includes topics related to virtual leadership and communication. It is an area where studies on team management and communication skills of virtual leaders are concentrated. Leadership, effective communication and leadership strategies in the virtual environment are the main themes in this region. The words that appear in this region are: "virtual," "leader," "communication," "leading."

Bottom Right Corner (Leadership Dynamics and Control Systems): This region represents studies on leadership dynamics and control systems. Research focusing on multiple systems and leader-follower dynamics appears to be concentrated here. This shows how leaders manage organizational control and leadership dynamics. The words that appear in this region are: "leader," "control," "dynamics," "systems."

In general, Graph 8 shows how studies on digital leadership are concentrated in different thematic areas and the relationships between these areas. This type of analysis provides important clues for future research in the field of digital leadership and helps to provide a comprehensive understanding of the current literature.

4.2. Bibliometric Analysis

4.2.1. Co-Occurrence Network Analysis

 Co-Occurrence Network Analysis given in Figure 5 was carried out for the Conceptual Structure map. Red Cluster ("Digital Leadership and Performance Management"): According to the results of the Co-occurrence analysis, the words under Cluster 1 draw attention as themes and concepts frequently discussed together in digital leadership research. A theme that can be created based on these words can be "Digital Leadership and Performance Management". The words under this theme highlight the impact of digital leadership on performance management and the important elements that need to be addressed in this context.

The concepts that contribute to the theme of Digital Leadership and Performance Management are; One of the ultimate goals of digital leadership is to increase the *performance* of individuals and organizations. Digital tools and strategies make performance evaluations and development plans more effective. Digital leadership plays a key role in the success of modern organizations, and various

elements need to be considered in order for this type of leadership to be implemented effectively. Effective *communication* is one of the cornerstones of digital leadership; clear and open communication ensures that teams are directed correctly, and organizational goals are achieved. While digital leadership models (*model*) determine which strategies leaders should use in the digital age and how they can be successful, information management (*information*) is critical for making the right decisions. Effective collection, analysis, and use of information directly affects leadership performance.

Figure 5. Co-Occurrence Network Analysis
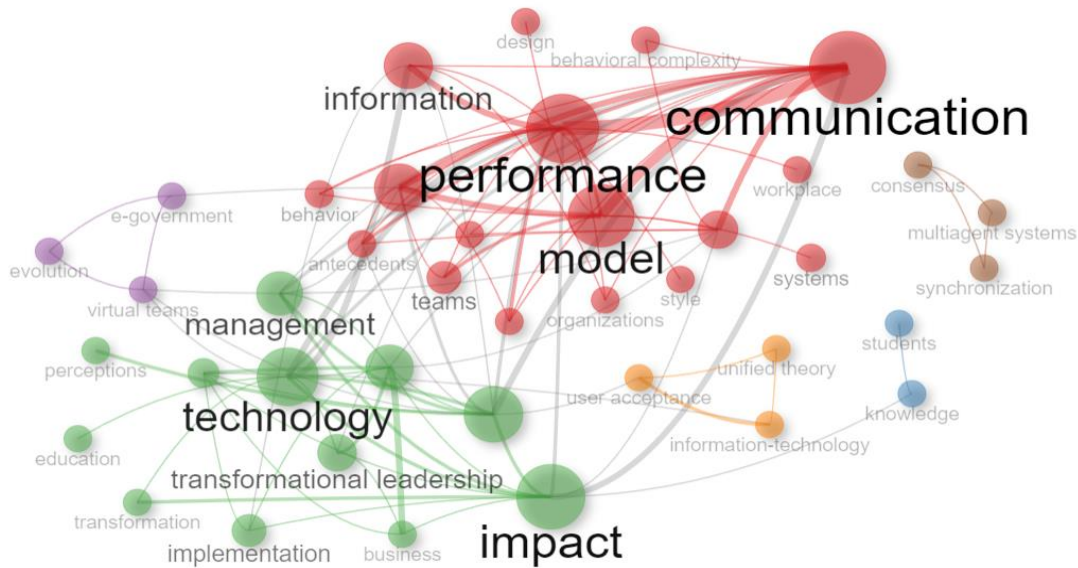
While digital systems and technologies increase operational efficiency by supporting leadership processes, *team* management stands out as an important factor for successful digital leadership. Trust is a critical element for the success of digital leadership, and it is essential to adopt a reliable and transparent management style. The value of face-to-face communication should also be remembered; hybrid models should include both digital and face-to-face interactions.

Behaviors of leaders directly affect the motivation and performance of teams; therefore, digital leadership requires positive and motivating behaviors. Well-designed digital strategies and systems (*design*) make it easier for leaders to achieve their goals, while the *antecedents* of digital leadership help us understand how leaders prepare for digital transformation and what factors affect this process. Creativity plays an important role in developing digital solutions, and organizations determine the effectiveness of digital leadership. Shared leadership increases the distribution of powers and responsibilities and the participation of team members.

While digital leadership styles express the individual approaches and methods of leaders, digital *workplace*s enable leaders and teams to work efficiently using digital tools. *Behavioral complexity* refers

to the ability of digital leaders to adapt to various situations, and this requires digital leaders to be flexible and adaptive.

Digital leadership and performance management require effective management of a range of complex and interconnected elements. Each of these elements plays an important role in the success of digital leaders and should therefore be addressed in a holistic approach.

Blue Cluster (Knowledge and Student Experience in Digital Education): The words *knowledge* and *students* in Cluster 2 can be evaluated under the theme of knowledge transfer and student experience in digital education. This theme emphasizes the importance of knowledge management and student engagement in digital educational settings.

- *Knowledge*: In digital education, knowledge plays a critical role in both content and information management. Effective presentation of knowledge ensures students' active participation in the learning process and improves learning outcomes. Digital platforms make it possible to transfer information quickly and effectively to a wide audience. In addition, the digitalization of information access and information sharing processes ensures that learning materials are constantly updated, and students have access to the most up-to-date information. This improves quality in education and supports student success.

- *Students*: Students are at the heart of digital education processes. Digital education platforms support student-centered learning approaches and enrich the student experience. Students' interaction with digital tools allows them to participate more in the learning process. Furthermore, digital education offers students flexibility, allowing them to progress at their own pace of learning. This increases student motivation and responds better to individual learning needs.

Knowledge and student experience in digital education play an important role in increasing the quality of education and student success. Effective management of knowledge and student-centered approaches are key factors that determine the success of digital educational environments. This theme provides an important framework for academic research towards the development of innovative and effective methods in digital education.

Green Cluster (Transformation and Innovation in Digital Leadership): The theme that can be created based on the words in Cluster 3 can be "Transformation and Innovation in Digital Leadership". This theme addresses how digital leadership creates transformation and innovation in businesses and education.

Digital leadership has profound effects on organizations' performance, ways of doing business, and competitiveness. Effective management of digital transformation processes increases the efficiency and adaptation ability of businesses and educational institutions. Digital technologies enable leaders to make strategic decisions and develop innovative solutions. The effective use of these technologies plays a critical role in adapting to the digital age. By transforming work processes, digital leadership supports

modern ways of working, such as remote work and flexible work hours, which increases productivity and employee satisfaction in the workplace.

Digital transformation reshapes management understanding and leadership styles. Data-driven decision making, and innovative management techniques enable leaders to lead their organizations more effectively. Transformational leadership drives organizational change and encourages innovation by motivating employees. Innovation is one of the key elements of digital leadership and is critical to gaining a competitive advantage. Successful implementation of digital transformation strategies plays a vital role in achieving organizations' goals and requires planning, resource management, and performance monitoring.

In the business world, digital leadership is imperative to gain a competitive advantage and adapt quickly to market dynamics. Digital business models support sustainable growth. The factors that determine the success of digital leadership include the competencies of the leaders, organizational culture, and technological infrastructure. Digital leadership in education creates student-centered learning environments by transforming learning processes and pedagogical approaches and increases equality in education. Digital leadership influences the perceptions and attitudes of employees and stakeholders; positive perceptions and strong leadership facilitate the adoption of organizational change. Digital transformation radically changes ways of doing business, cultures, and strategies, and requires continuous improvement and adaptation.

This assessment comprehensively addresses how digital leadership makes an impact in the context of transformation and innovation, and what elements need to be considered in order to be successful.

Purple cluster (Evolution of E-Government and Virtual Teams in Digital Leadership): Cluster 4 addresses the effects of digital leadership on e-government practices, management of virtual teams, and evolution of these processes.

E-government refers to the provision of public services through digital platforms. Digital leadership plays a critical role in effectively implementing e-government practices and better serving citizens. Digital transformation increases efficiency in the public sector and facilitates citizens' interactions with the state.

Virtual teams stand out as an important element of digital leadership. Digital technologies enable geographically dispersed teams to work together effectively. Digital leaders optimize the coordination and collaboration of virtual teams, ensuring the successful execution of projects.

Digital leadership supports the continuous evolution of organizations and ways of doing business. In the digital age, leaders have to adapt quickly to innovations and adapt to changing conditions. This process of evolution makes it possible for organizations to remain competitive and achieve sustainable growth.

This theme comprehensively addresses the role of digital leadership in the management of e-government practices and virtual teams, and how these processes have evolved. Digital leaders make strategic decisions in these areas, make their organizations ready for digital transformation and support continuous development.

Orange Cluster (Information Technologies and User Acceptance): Cluster 5 focuses on information technology adoption and user acceptance.

Information technologies form the basis of digital leadership. The technological infrastructures of organizations determine the effectiveness and efficiency of digital transformation processes. User acceptance is a critical factor in the successful implementation of new technologies. Digital leaders develop strategies to increase the adoption of technologies by taking into account user needs and expectations. Unified Theory of Acceptance and Use of Technology (UTAUT) is a comprehensive model developed to explain the acceptance of information technologies. Digital leaders can better understand and manage the process of adopting technological innovations by using this theory.

This theme addresses the strategic approaches of digital leaders to ensure the effective use of information technologies and user acceptance. Taking these elements into account in digital transformation processes plays an important role in the success of organizations.

Brown Cluster (Multi-agent Systems and Synchronization): Cluster 6 deals with multi-agent systems in the context of digital leadership and the synchronization and reconciliation processes in these systems.

Reconciliation is the basis of decision-making processes in multi-mediated systems. Digital leaders increase the effectiveness and acceptability of decisions by ensuring consensus among various stakeholders. Multimediated systems involve the coordination of independent agents interacting with each other. These systems need a collective approach to solving complex problems. Digital leadership requires strategic coordination and management to ensure the efficient operation of such systems. Synchronization ensures that agents in multi-mediated systems work in harmony. Digital leaders optimize the overall performance of the system by ensuring this harmony and make it easier to achieve the goals.

This theme examines how digital leadership drives reconciliation and synchronization processes in multi-mediated systems and the effects of these processes on organizational success. Digital leaders manage these elements effectively, ensuring that complex systems work efficiently and harmoniously.

4.2.2. Co-Citation Analysis

Co-Citation Analysis was shown in Figure 6.

Red Cluster: Looking at the articles in Cluster 1, it is seen that e-leadership, virtual teams and digital transformation issues are mainly discussed. Therefore, the proposed theme for this cluster can be

"Digital Leadership and Virtual Team Management". Under this theme, the definition of e-leadership, the management of virtual teams, and the effects of digital transformation processes on organizations are examined in detail.

Figure 6. Co-citation Network Analysis

The articles in Cluster 1 cover digital leadership and virtual team management comprehensively. For instance, Avolio et al. (2000) discuss the effects of e-leadership on theory, research, and practice. This study examines the theoretical foundations of the concept of digital leadership and its applications in practice. Avolio et al. (2014), on the other hand, reconsider the transformations in the resource and transmission of leadership and explain how these transformations are shaped in the digital age. Purvanova and Bono (2009) analyze the context of transformational leadership in face-to-face and virtual teams, while highlighting the challenges faced in virtual leadership. Cascio and Shurygailo (2003) discuss how e-leadership and virtual teams affect organizational dynamics. This study examines the strategies used in the management of virtual teams and the effectiveness of these strategies. DeSanctis and Poole (1994), on the other hand, use adaptive structuring theory to capture the complexity of the use of advanced technology. This theory helps us understand the role of digital leadership in the use of technology. Van Wart et al. (2019) aim to operationalize the definition of e-leadership and identify e-leadership elements. This study discusses the components of e-leadership in detail and shows how this concept can be applied in practice. Hertel et al. (2005) review the current empirical research on the management of virtual teams. This study discusses the strategies required for the effective management of virtual teams and the applicability of these strategies.

While Avolio et al. (2003) examine the concept of digital leadership and how leadership styles change in virtual environments, Van Wart et al. (2017) emphasize the integration of information and communication technologies (ICT) into leadership theories and the technological infrastructure required for the effectiveness of e-leadership. Hunsaker and Hunsaker (2008) offer strategies for the effective management of virtual teams. While Dasgupta (2011) discusses how trust can be established in digital leadership and virtual team management, Lilian (2014) addresses the emerging opportunities and challenges for virtual team leaders. Brake (2006) focuses on the leadership of global virtual teams and how team members in different cultural regions can be managed. Daft and Huber (1986) describe the learning processes of organizations and how digital leaders can drive communication in virtual teams. Gurr (2004) examines the application of digital leadership in the education sector and effective strategies. While Schwarzmüller et al. (2018) discuss the effects of digital transformation on leadership, Venkatesh et al. (2003) examine how technology acceptance can be increased in digital leadership. Darics (2020) discusses the role of leadership and non-verbal communication in instant messaging, while Hertel et al. (2006) discuss competency assessment in virtual teams and the effects of these competencies on performance. Finally, Hilbert and López (2011) emphasize the effects of technological capacity worldwide and the importance of the technological infrastructure required for digital leadership.

These studies provide a comprehensive perspective on digital leadership and virtual team management, providing important information on how leaders can overcome these new challenges. Each of them provides an in-depth analysis of the dynamics and requirements of leadership in the digital age, while revealing the skills and strategies necessary for e-leaders to be successful.

The articles in Cluster 1 provide a broad perspective on digital leadership and virtual team management. These studies provide a wide range of information from theoretical foundations to practical applications of digital leadership. E-leadership and virtual team management are among the most important issues faced by organizations in the digital age. In this period when digital transformation processes are accelerating, leaders and managers need to have digital skills, manage virtual teams effectively and use digital technologies strategically. These articles emphasize the critical role of digital leadership and virtual team management on organizational success.

Blue Cluster: Looking at the articles in Cluster 2, it is seen that issues such as multi-agent dynamic systems, coordination and consensus problems, information flow and collaborative control are mainly discussed. Therefore, the proposed theme for this cluster can be "Coordination and Consensus in Multi-Agent Systems". Under this theme, the role of coordination mechanisms, consensus algorithms, and information flow in multi-agent systems are examined in detail.

The articles in Cluster 2 cover coordination and consensus in multi-agent dynamic systems comprehensively. For example, Olfati-Saber (2006) discusses herding algorithms and theory for multi-

agent dynamic systems. This study made significant contributions to the development of algorithms that enable agents to act together. Olfati-Saber and Murray (2004), on the other hand, address consensus problems with varying topology and time delays in agent networks. This study examines how agents can coordinate under different topology and latency conditions. Vicsek et al. (1995) examine a new type of phase transition in a system of self-moving particles. This study helps us understand the dynamics of self-organizing systems. Fax and Murray (2004) discuss information flow and collaborative control of tool formations. This study emphasizes the importance of information flow and collaborative control in multi-agent systems. Jadbabaie et al. (2003) examine how groups of mobile autonomous agents can be coordinated using the nearest neighbor rules. This study contributes to our understanding of how agents coordinate by interacting with each other and group dynamics.

The articles in Cluster 2 cover coordination and consensus in multi-agent systems from a broad perspective. These studies provide a wide range of information from theoretical foundations to practical applications of multi-agent systems. Multi-agent systems have important applications in various fields such as robotics, communications, biology, and social sciences. Therefore, the algorithms and methods developed to ensure the coordination and consensus of the agents are critical to the success of these systems. These articles make important contributions to the understanding of coordination and consensus processes in multi-agent systems.

Green Cluster: Looking at the articles in Cluster 3, it is seen that digital leadership skills and the relationship of these skills with organizational competencies and psychological well-being are discussed. Therefore, the proposed theme for this cluster can be "Digital Leadership Skills and Psychological Well-Being". Under this theme, the relationships between the development of digital leadership skills, the contribution of these skills to organizational success, and the psychological well-being of leaders are examined in detail.

The articles in Cluster 3 focus on digital leadership skills and the organizational and individual results of these skills. For example, El Sawy et al. (2016) discuss how LEGO builds the foundations and organizational competencies for digital leadership. This study provides important information on the development of digital leadership skills and the role of these skills in the digital transformation of the organization. Zeike et al. (2019) examine the relationships between digital leadership skills and psychological well-being. This study defines the skills that digital leaders should have and discusses the effects of these skills on the psychological health of leaders. It is stated that developing digital leadership skills can reduce leaders' stress levels in the workplace and increase their overall psychological well-being.

The articles in Cluster 3 draw attention to the importance of digital leadership skills at the organizational and individual level. Digital leadership skills are critical for organizations to be successful in their digital transformation processes. The development of these skills can help

organizations gain a competitive advantage by enabling them to use digital technologies effectively. In addition, the positive effects of digital leadership skills on leaders' psychological well-being can increase overall satisfaction and productivity in the workplace. These articles emphasize that digital leadership skills are important for both organizational success and individual health.

Purple cluster: Looking at the articles in Cluster 4, it is seen that issues such as the leadership of virtual teams, the importance of communication and trust, leadership styles in virtual teams and innovation are mainly discussed. Therefore, the proposed theme for this cluster can be "Leadership, Communication and Innovation in Virtual Teams". Under this theme, leadership strategies, communication methods, and trust-building processes in virtual teams, as well as the innovation dynamics in these teams, are examined in detail.

The articles in Cluster 4 cover leadership, communication and innovation in virtual teams comprehensively. For example, Kayworth et al. (2001) provide a theoretical rationale for IT infrastructure investments. This study emphasizes the importance of the technological infrastructure required for the effective functioning of virtual teams. Malhotra et al. (2007) discuss strategies for managing virtual teams. This study details the challenges faced by virtual team leaders and the strategies they can use to overcome these challenges. Bell and Kozlowski (2002) provide a typology for effective leadership of virtual teams. This study addresses leadership styles and approaches that can be used in the management of different types of virtual teams. Hambley et al. (2007) examine the effects of leadership style and communication environment on team interaction styles and outcomes. This study provides important findings on how leadership and communication should be managed in virtual teams.

Zigurs (2003) discusses whether leadership in virtual teams is an oxymoron or an opportunity. Jarvenpaa and Leidner (1999) examine the role of communication and trust in global virtual teams. This study emphasizes the importance of building and maintaining trust in virtual teams. Liao (2017) discusses the effects of leadership on different layers by considering leadership in virtual teams from a multi-level perspective. Carte et al. (2006) examine emerging leadership in self-directed virtual teams in a longitudinal study. This study analyzes concentrated and shared leadership behaviors in virtual teams. Gibson and Gibbs (2006), on the other hand, discuss the effects of geographical distribution, electronic dependence, dynamic structure and national diversity on team innovation by separating the concept of virtuality.

The articles in Cluster 4 cover leadership, communication and innovation in virtual teams from a wide perspective. These studies detail the leadership strategies, communication methods, and trust-building processes required for the effective management of virtual teams. In addition, the dynamics that drive innovation in virtual teams are addressed. For virtual teams to be successful, leaders need to communicate effectively, build trust, and create an innovative culture. While these articles emphasize

the importance of leadership and communication in virtual teams, they provide important information on how innovation can be promoted in these teams.

Orange Cluster: Looking at the articles in Cluster 5, it is seen that the role of leadership in a digitalized world and how e-leadership is defined through information and communication technologies (ICT) are discussed. Therefore, the proposed theme for this cluster can be "Leadership and E-Leadership Competencies in the Digitalized World". Under this theme, the effects of digitalization on leadership, digital leadership skills, and how leadership is defined through ICT are examined in detail.

The articles in Cluster 5 focus on how leadership evolves in the digitalizing world and how e-leadership competencies are defined. For example, Cortellazzo et al. (2019) provide a review addressing the role of leadership in a digitalized world. This study discusses the effects of digitalization on leadership and emphasizes the challenges and opportunities faced by digital leaders. In this context, the skills and competencies that digital leaders should have are discussed in detail.

Roman et al. (2019) define e-leadership as communication competence through ICT. This study evaluates the concept of e-leadership with an exploratory approach and discusses the role of ICT on leadership. Defining e-leadership competencies and how these competencies contribute to the performance of leaders is one of the main focuses of the study. The skills and strategies required to effectively lead through ICT are examined in detail in this study.

The articles in Cluster 5 cover the effects of digitalization on leadership and e-leadership competencies from a wide perspective. The challenges and opportunities faced by leaders in the digitalizing world are discussed in detail in these articles. Digital leadership means not only the effective use of digital technologies, but also the management of digital transformation processes and the consideration of the human factor in these processes. In this context, the competencies and skills of digital leaders are critical for organizations to succeed in their digital transformation processes. These articles make important contributions to the understanding of the concepts of digital leadership and e-leadership and to the development of competencies in these fields.

Brown Cluster (Cluster 6 Digital Transformation and Business Model Innovation): The study in Cluster 6 addresses how digital transformation affects business model innovation and the role of digital leadership in this process. This study conducted by Mihardjo and Sasmoko (2019) examines how existing companies in the telecommunications sector develop business model innovation with digital leadership and co-creation strategies. In this context, it is emphasized that digital leadership plays a stimulating role in business model innovation and this process becomes more effective with co-creation strategies.

Gray Cluster (Cluster 7 Measurement Problems in Management and Leadership Research): The study in Cluster 8 discusses measurement problems in leadership research and the effects of these problems on management. Podsakoff et al. (2003) examine the reliability and validity of the

measurement tools used in leadership research and examine how these measurement problems are reflected in leadership research. The study highlights the importance of accurately measuring the concept of leadership and highlights the methodological challenges in this area.

Light Green Cluster (Cluster 8 Leadership Theories and Future Orientations): The study in Cluster 8 addresses current leadership theories, research trends and future orientations. This study conducted by Avolio et al. (2009) examines the current theoretical approaches in the field of leadership and the applications of these approaches in practice. The study also discusses emerging new trends in leadership research and the research that needs to be done in this area in the future.

The Most Global Cited Document: The most global cited articles are seen in Graph 9. According to this graph, Su Hs, 2009, IEE T Automat Cont ranks first with 655 citations. The article in question discussed the virtual leadership with agents (Su et al., 2009). Avolio BJ 2000, Leadership Quart ranks 2nd with 229 citations. The title of the article in question is "E-Leadership: Implications for Theory, Research, and Practice" (Avolio et al., 2000). The article analyzes how information technologies will affect leadership and organizations. Dargan L, 2008, Sociol Ruralis ranks third. This article, on the other hand, discusses leadership and innovation (Dargan and Shucksmith, 2008).

Graph 9. Most Global Cited Document
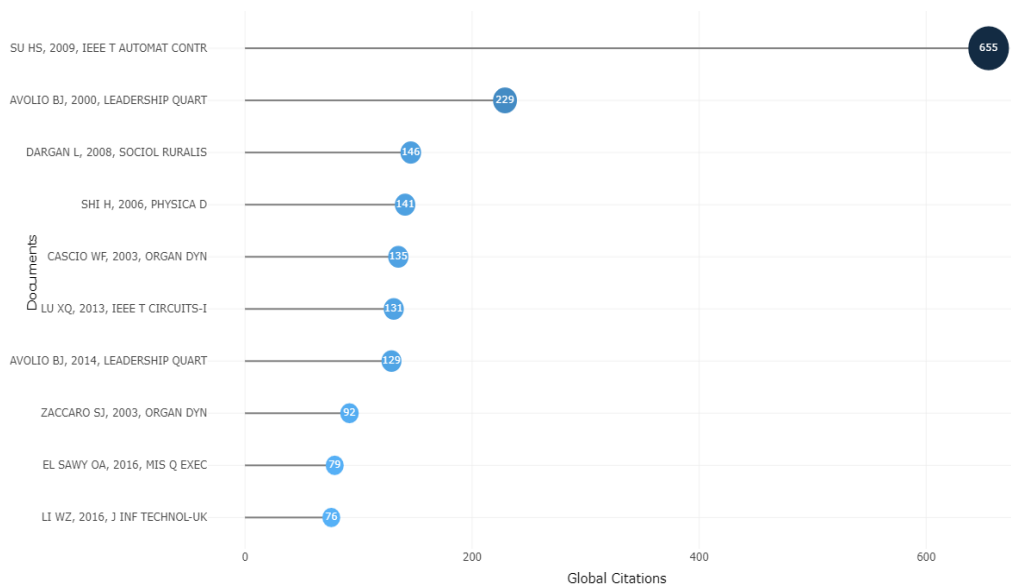
5. DISCUSSION

This section is examined under four separate headings. In the first heading, the performance analysis findings will be weighed. In the second heading, the findings of the most recent fifty articles in the data set obtained as a result of the search strategy were examined under the heading of "Evaluation in terms of Current Publications". In the third sub-heading, "Evaluation in terms of Co-Occurrence Analyses" and finally, in the fourth heading, "Evaluation in terms of Co-Citation Analyses" were evaluated separately.

Evaluation in terms of Performance Analyses: The results of bibliometric analysis in the field of digital leadership reveal that the field has shown significant growth and development over the years. 2000-2022, 141 publications show that this field has become the focus of academic attention. Especially since 2013, there has been a significant increase in the number of publications, and it reached its peak in 2022. However, this increase does not always find a proportional reflection in citation numbers, indicating the need for further analysis on the quality and impact of digital leadership research. In particular, the high rate of international cooperation (24.11%) reveals that the field attracts attention at a global level and that researchers from various countries conduct joint studies.

Bibliometric analysis also reveals the thematic evolution of digital leadership studies. While the focus was on virtual leadership in the 2000-2010 period, themes such as virtual teams, multi-agent systems and e-leadership came to the fore in the 2011-2015 period. In the 2016-2022 period, research on the effects of digital transformation on leadership has increased. Thematic mapping and trend analyses show that topics such as performance, communication, trust and technology management are critical in the field of digital leadership. These findings emphasize that research in the field of digital leadership has a versatile and dynamic structure, emphasizing the importance of further interdisciplinary work and international cooperation in the future. In this context, an in-depth examination of the theoretical and practical contributions of digital leadership research will allow the field to develop further.

Evaluation in terms of Current Publications: Digital leadership plays an important role in today's business world and refers to the interactions of leaders with digital technologies, their ability to manage digital transformation processes, and the adaptation of organizations to the digital age (Chatterjee et al., 2023). Digital leadership differs from traditional leadership with the intensive use of technology, the adoption of innovative approaches, and the prominence of digital skills (Yao, et al., 2024). Leaders are expected to have high digital literacy, strategic vision, and change management competencies (Behie et al., 2023).

Digital leaders make strategic decisions by directing digital transformation processes and determine the digitalization roadmap of the organization. For the success of these processes, leaders need to use technology effectively and adopt digital strategies (Shin et al., 2023; Mollah et al., 2023). In addition, digital leaders play a critical role in technology and innovation management, increasing the competitiveness of organizations and enabling them to produce continuous innovative solutions (Nieken, 2023; Zulu et al., 2023).

Digital leadership is a broad concept that covers the ways leaders interact with digital technologies, their roles in digital transformation processes, and their effects on organizational performance. This study aims to develop strategies and applications suitable for the requirements of the digital age by addressing various dimensions of digital leadership. These dimensions include technology

and innovation management, cultural change, digital skills, and employee relationships with competencies (Behie et al., 2023; Memon and Ooi, 2023; Tian et al., 2023).

Recent academic publications on digital leadership emphasize the importance of the role of leaders in digital transformation processes and how interaction with digital technologies shapes their leadership abilities. For example, the study of Sagbas et al. (2023) examined the effect of digital leadership on entrepreneurial intention and business performance through innovative behavior, while Xia et al. (2023) investigated how digital leadership affects digital entrepreneurship success through role models. These studies show the effects of digital leadership on organizational success and innovation.

While the research of Fatima and Masood (2024) evaluates the impact of digital leadership on open innovation and the serial mediation model in this effect, Luo et al. (2024) reveal the cultural diversity of this issue by addressing digital leadership models in the field of early childhood education in China. Al Dilby and Farmanesh (2023) examined the impact of digital leadership on job satisfaction and how this impact is shaped by work-life balance and trust in leaders.

Öngel et al. (2023) analyzed the effects of digital leadership on individual creativity and employee performance from an intergenerational perspective, while Zhang and Duan (2024) developed distributed non-fast formation follow-up control for UAVs within the framework of virtual leader-follower. These studies show the diversity and wide scope of digital leadership in terms of technological applications and innovation management.

In addition, Lin (2024) determined future research agendas by conducting a systematic literature review on digital leadership, while Wang and Dong (2024) examined the impact of telecommunication intensity on individual employee performance in China and the mediating and regulatory roles of job design and e-leadership in this impact.

As a result, digital leadership is a broad concept that reshapes leadership approaches in the modern business world, focusing on technological skills, strategic thinking, and innovative management. Academic studies in this field reveal various dynamics of digital leadership at organizational, technological, and individual levels and these studies shed light on the development of strategies and applications suitable for the requirements of the digital age.

Evaluation in terms of Co-occurrence Analyses: In co-occurrence analyzes, Cluster 1 covers the themes of digital leadership and performance management. Digital leadership plays a key role in the success of modern organizations, and various elements need to be considered in order for this type of leadership to be implemented effectively. Prominent keywords in this cluster include "performance," "communication," "model," "knowledge management," "systems," "team management," and "trust." For digital leaders to be successful, they need to improve their performance management processes by using effective communication, reliable management style, digital strategies and systems. Current publications

highlight the impact of digital leadership on performance management and explain how digital tools and strategies make these processes more effective (Shin et al., 2023).

The keywords in Cluster 2 are "knowledge" and "students" and can be evaluated under the theme of knowledge transfer and student experience in digital education. Knowledge management and student engagement in digital educational settings play a critical role in increasing the quality of education and student success. Effective presentation of knowledge ensures students' active participation in the learning process and improves learning outcomes. Digital platforms make it possible to transfer information quickly and effectively to a wide audience, while supporting student-centered learning approaches. Current publications emphasize the importance of knowledge management and student experience in digital education and show the potential of innovative methods in this field to increase the quality of education (Luo et al., 2024).

Cluster 3 addresses the themes of transformation and innovation in digital leadership. Digital leadership has profound effects on organizations' performance, ways of doing business, and competitiveness. Effective management of digital transformation processes increases the efficiency and adaptation ability of businesses and educational institutions. Prominent keywords in this cluster are "digital transformation," "innovation," "strategic decisions," and "productivity." Digital leaders adapt their organizations to the digital age by making strategic decisions and developing innovative solutions. Current publications emphasize that digital transformation and innovation are one of the basic elements of digital leadership and organizations need to develop digital leadership skills in order to be successful in these processes (Behie et al., 2023).

Cluster 4 addresses the effects of digital leadership on e-government practices and management of virtual teams. E-government refers to the provision of public services through digital platforms, and digital leadership plays a critical role in effectively implementing these practices. Virtual teams stand out as an important element of digital leadership, and digital technologies enable geographically dispersed teams to work together effectively. Prominent keywords in this cluster are "e-government," "virtual teams," "digital transformation," and "innovation." Digital leaders optimize the coordination and collaboration of virtual teams, ensuring the successful execution of projects. Current publications comprehensively address the role of digital leadership in the management of e-government practices and virtual teams, and how these processes have evolved (Mollah et al., 2023).

Cluster 5 focuses on information technology adoption and user acceptance. Information technologies form the basis of digital leadership, and the technological infrastructures of organizations determine the effectiveness and efficiency of digital transformation processes. User acceptance is a critical factor in the successful implementation of new technologies, and digital leaders develop strategies to increase the adoption of technologies by taking into account user needs and expectations. Prominent keywords in this cluster are "information technologies," "user acceptance," and "digital

leadership." Current publications address the strategic approaches of digital leaders to ensure the effective use of information technologies and user acceptance and emphasize that this process plays an important role in the success of organizations (Zulu et al., 2023).

Cluster 6 deals with multi-agent systems in the context of digital leadership and the synchronization and reconciliation processes in these systems. Reconciliation is the basis of decision-making processes in multi-mediated systems, and digital leaders increase the effectiveness and acceptability of decisions by ensuring consensus among various stakeholders. Prominent keywords in this cluster are "multi-mediated systems," "synchronization," and "consensus." Digital leaderships require strategic coordination and management to ensure the efficient operation of such systems. Current publications examine how digital leadership drives reconciliation and synchronization processes in multi-mediated systems and the effects of these processes on organizational success (Nieken, 2023).

Co-occurrence analyzes and comparative evaluation of current publications reveal that themes such as digital leadership and performance management, knowledge and student experience in digital education, transformation and innovation in digital leadership, the evolution of e-government and virtual teams, information technologies and user acceptance, multi-agent systems and synchronization have recently taken an important place in the academic literature. While these themes emphasize the critical role of digital leadership and technological transformation processes in the modern business world, they show that digital leaders' ability to make strategic decisions, produce innovative solutions, and develop digital skills are decisive for the success of organizations. Digital leadership creates positive effects both at the organizational and individual level by shedding light on the development of strategies and applications suitable for the requirements of the digital age.

Evaluation in terms of Co-Citation Analyses: In co-citation analyzes, it is seen that Cluster 1 is defined as "Digital Leadership and Virtual Team Management" and the articles in this cluster cover digital leadership, virtual team management and digital transformation comprehensively. For instance, Avolio et al. (2000) discuss the effects of e-leadership on theory, research, and practice, while Purvanova and Bono (2009) analyze the context of transformational leadership in face-to-face and virtual teams. Cascio and Shurygailo (2003) examine the strategies used in the management of virtual teams and the effectiveness of these strategies. These studies present the theoretical foundations of the concept of digital leadership and its applications in practice in detail. When valuated in terms of Current Publications, digital leadership plays an important role in today's business world and refers to the interactions of leaders with digital technologies, their ability to manage digital transformation processes, and the adaptation of organizations to the digital age (Chatterjee et al., 2023). Recent academic studies emphasize the effects of digital leadership on organizational success and innovation. For example, Sagbas et al. (2023) examined the effect of digital leadership on entrepreneurial intention and business performance through innovative behavior, while Xia et al. (2023) investigated how digital leadership affects digital entrepreneurship success through role models. In addition, while Fatima and Masood

(2024) evaluated the impact of digital leadership on open innovation and the serial mediation model in this effect, Luo et al. (2024) discussed digital leadership models in the field of early childhood education in China.

This evaluation shows that the themes of Cluster 1 have an important place in the current academic literature and that digital leadership and virtual team management issues are still valid. Digital leadership is of strategic importance in the modern business world, with dimensions such as technology and innovation management, cultural change, digital skills, and employee relationships with competencies. Accordingly, the critical role of digital leadership on organizational success and innovation is supported by current studies and sheds light on the development of strategies and applications suitable for the requirements of the digital age.

In Cluster 2, issues such as multi-agent dynamic systems, coordination and consensus problems, information flow and collaborative control are discussed. For example, Olfati-Saber (2006) discusses herding algorithms and theory for multi-agent dynamic systems. Olfati-Saber and Murray (2004), on the other hand, address consensus problems with varying topology and time delays in agent networks. The reflection of these themes in current publications is seen indirectly, especially in the context of digital leadership and digitalization. In the field of technology and innovation management, the focus is on how digital leaders ensure coordination between teams and systems and develop collaborative strategies. In this respect, the effective use of coordination and consensus mechanisms in the digitalization process is emphasized.

In Cluster 3, digital leadership skills and the relationship of these skills with organizational competencies and psychological well-being are discussed. For example, El Sawy et al. (2016) discuss how LEGO builds the foundations and organizational competencies for digital leadership. Zeike et al. (2019) examine the relationships between digital leadership skills and psychological well-being. In current publications, the importance of digital leadership and the effect of developing these leadership skills on organizational success are frequently emphasized. For example, Behie et al. (2023) state that digital leaders should have high digital literacy, strategic vision, and change management competencies. These studies show that digital leadership is critical for both organizational success and individual health.

In Cluster 4, issues such as the leadership of virtual teams, the importance of communication and trust, leadership styles in virtual teams and innovation are discussed. For example, Kayworth et al. (2001) provide a theoretical rationale for IT infrastructure investments. Malhotra et al. (2007) discuss strategies for managing virtual teams. In current publications, the relationship between virtual team management and digital leadership is frequently emphasized. It is stated that digital leaders need to manage virtual teams effectively and optimize their communication processes. For example, Shin et al.

(2023) emphasize that digital leaders should determine the digitalization roadmap of organizations by making strategic decisions in virtual teams.

Cluster 5 discusses the role of leadership in a digitalized world and how e-leadership is defined through information and communication technologies (ICT). For example, Cortellazzo et al. (2019) provide a review addressing the role of leadership in a digitalized world. Current publications discuss the challenges and opportunities faced by leaders in the digitalization process in detail. It is stated that digital leaders should make strategic decisions in their digital transformation processes and use technology effectively. For example, Zulu et al. (2023) emphasize that digital leadership plays a critical role in technology and innovation management.

In Cluster 6, how digital transformation affects business model innovation and the role of digital leadership in this process are discussed. Mihardjo and Sasmoko (2019) examine how the companies in the telecommunications sector develop business model innovation with digital leadership and co-creation strategies. Current publications emphasize the importance of business model innovation in digital transformation processes and the role of digital leadership in this process. It is stated that digital leaders need to develop new business models by managing the digitalization processes of organizations.

In Cluster 7, measurement problems in leadership research and the effects of these problems on management are discussed. Podsakoff et al. (2003) examine the reliability and validity of the measurement tools used in leadership research. Current publications focus on the validity and reliability of the methodologies used in digital leadership and e-leadership research. It is emphasized that appropriate methodological approaches should be developed to accurately measure the effects of digital leadership.

In Cluster 8, current leadership theories, research trends and future orientations are discussed. Avolio et al. (2009) examine the current theoretical approaches in the field of leadership and the applications of these approaches in practice. Current publications discuss the development of digital leadership theories and new research trends in this field. Future directions of digital leadership are addressed in the context of technology and innovation management. Accordingly, it is seen that studies on the theoretical foundations and practical applications of digital leadership continue to increase.

Co-citation analyzes and comparative evaluation of current publications show that themes such as digital leadership and virtual team management, coordination in multi-agent systems, digital leadership skills and psychological well-being, leadership in virtual teams, e-leadership competencies in the digitalizing world, digital transformation and business model innovation, measurement problems in leadership research and the future of leadership theories have recently taken an important place in the academic literature. While these themes emphasize the critical role of digital leadership and technological transformation processes in the modern business world, they put forward that digital leaders' ability to make strategic decisions, produce innovative solutions, and develop digital skills are

decisive for the success of organizations. Digital leadership creates positive effects both at the organizational and individual level by shedding light on the development of strategies and applications suitable for the requirements of the digital age.

This study emphasizes the power of bibliometric analyzes and citation analyzes in evaluating the scope and impact of the existing literature within the scope of digital leadership studies. However, these analyses do not provide information directly about the quality of the research, which is a significant limitation. As a matter of fact, these limitations have increased the interest in scientific metrics (Lim and Kumar 2023; Karayel et. al. 2022). It is important to note that only the WoS Core Collection database is used in this study and other databases are not taken into account. The search is limited to keywords and only English articles are included in the analysis among the publications found. Therefore, studies published in other languages with important findings may be excluded. Despite these limitations, the research findings have the potential to motivate future studies.

6. CONCLUSION

In today's digitalizing world, workplaces are taking on an uncertain, complex and variable structure. Therefore, a new leadership model is needed instead of the classical leadership approach. Digital leadership is an important leadership model that can meet the expectations of today's business world. Digital leadership is the combination of various leadership skills and characteristics that play a significant role in the firm's digital transformation (Malik et al., 2024). In leadership theory, digital leadership is described as the style of leadership that is a combination of transformational leadership style and the use of digital technology (Erhan et al., 2022: 1525). Also, digital leadership is used as an umbrella term that comprises leadership styles such as technology leadership, virtual leadership, e-leadership, and leadership 4.0., all of which share a similar meaning and are used interchangeably throughout the literature (Karakose et al., 2022: 3).

Digital leadership can be considered as an approach that enables the digitalization of businesses (Erhan et al., 2022: 1527). However, some studies in the literature have revealed that leaders do not need to be experts in digital technologies to achieve digital transformation. Basic technical knowledge and skills are sufficient, as it is more important for leaders to understand how these new technologies can influence the structures, processes, and operations of their organizations (Müller et al. 2024; Imran et al., 2020).

The study provides a comprehensive and holistic perspective on the field of digital leadership with using bibliometric analysis. Especially with the results obtained from the thematic analysis, an important gap in the field of digital leadership has been filled and a contribution has been made to the field.

As a result of the research, it is observed that research on the theoretical foundations and practical applications of digital leadership continues to increase, but Digital Leadership research is in

the growth phase and has not yet reached the maturity level. Tigre et al. (2023) also determined that in their research. Moreover, the concepts of virtual leadership and e-leadership were used before digital leadership and that research in the field of digital leadership has a versatile and dynamic structure, which demonstrates that digital leadership studies are suitable for studies from different disciplines and that international cooperation is important.

It is understood that topics such as performance, communication, trust and technology management are critical in the field of digital leadership. According to Imran et al. (2020), performance and development are key roles of leadership in ensuring the digital transformation of organizations. According to Sağbaş and Erdoğan (2022), digital leaders are responsible for maintaining effective communication with employees, the executive team, and the information technology team inside the business as well as coordinating across these three groups to realize digitalization or digital applications. Also, for leaders, digital technologies mean new forms of communicating and organizing (El Sawy et al., 2020). Ziek and Smulowitz (2014) also determined in their study that one of the most used keywords in digital leadership studies is communication. Communication is a skill that helps leaders to influence their followers (Hambley et al., 2007). For this reason, strong communication is very important for digital leadership.

According to the results of the research, it is understood that themes such as the management of virtual teams, digital leadership skills and psychological well-being, e-leadership competencies in the digitalizing world, digital transformation and business model innovation, and the future of leadership theories have an important place in the academic literature on digital leadership.

Digital leadership focuses on technology, strategic thinking, and innovative approach while reshaping leadership approaches. Research in the field of digital leadership provides a better understanding of digital leadership in organizational, technological and individual terms and helps to develop strategies for these areas. According to Karippur and Balaramachandran (2022), it is crucial for business leaders to adopt an effective leadership style and have the right capabilities to inspire their employees to innovate and sustain in the digital age (Karippur and Balaramachandran, 2022). Many businesses are looking for leaders, who can keep up with technology and lead their organizations to adapt to change and innovation (Nuryadin et al., 2023).

In conclusion, digital leadership has strategic importance in today's business world, due to some important dimensions such as technology, innovation management, cultural change, digital skills, digital competencies, and employee relationships, and is critical to the success and innovation of organizations. Digital leaders contribute to the development of strategies and applications suitable for the needs of the digital age we live in. For this reason, digital leaders need to manage the digitalization processes of businesses and develop innovative business models.

Based on the findings and conclusions of this study on digital leadership, several recommendations are proposed to further develop and implement effective digital leadership strategies. First, it is essential to refine the theoretical foundations of digital leadership by incorporating interdisciplinary approaches that intersect with fields such as information technology, psychology, and organizational behavior. Longitudinal studies should be conducted to examine the long-term effects of digital leadership on organizational performance, innovation, and employee well-being, providing deeper insights into the sustainability and evolution of these practices. A combination of qualitative and quantitative research methods, should be utilized to explore the multifaceted nature of digital leadership.

Additionally, the role of emerging technologies such as artificial intelligence, blockchain, and the Internet of Things in shaping digital leadership must be investigated to understand their impact on leadership styles, decision-making processes, and organizational dynamics. Expanding research to diverse cultural and geographical contexts will help identify both universal and context-specific aspects of digital leadership. Implementing comprehensive leadership development programs focused on enhancing digital competencies, including strategic thinking, technological literacy, and innovation management, is also crucial.

Cultivating a digital culture within organizations that encourages continuous learning, experimentation, and adaptation to new technologies is vital. Leaders should model digital behaviors and support their teams in adopting digital tools and processes. Developing and utilizing digital communication and collaboration tools to facilitate seamless interactions among virtual teams, while emphasizing trust-building, maintaining open lines of communication, and fostering a sense of community despite physical distances, is recommended.

Prioritizing the psychological well-being of employees in digital environments by implementing support systems and policies that address digital fatigue, work-life balance, and mental health is critical. Leveraging data analytics to make informed decisions and drive performance improvements will require digital leaders to be proficient in using data to identify trends, measure outcomes, and optimize organizational processes. Providing incentives and support for organizations undergoing digital transformation, including facilitating access to digital technologies, funding for innovation projects, and training programs for digital skills development, is necessary.

Developing standards and guidelines for digital leadership practices will ensure consistency, transparency, and accountability, helping organizations benchmark their efforts and strive for continuous improvement. Investing in education and training programs that enhance digital literacy at all levels of society, including organizational leaders, employees, students, and the broader community, is essential. Encouraging collaboration between academia, industry, and government to drive research and innovation in digital leadership, and creating platforms for knowledge exchange and joint initiatives, will address the challenges and opportunities of digital leadership. By following these recommendations,

stakeholders can advance digital leadership, ensuring organizations are well-equipped to navigate the complexities of the digital age and achieve sustainable success.

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Scale Development on the Effect of Social Media Influencers on Purchase Intention *

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Abstract

A Social Media Influencer (SMI) is a new independent third party that uses social media to shape audience attitudes. SMIs are present on most digital media platforms such as Facebook, Instagram, Twitter and YouTube, and build their sphere of influence by sharing their experiences on a wide range of specific topics such as fitness, fashion, beauty, DIY, vacation, entertainment, etc. with their followers. While making these posts, SMI creates a desire in social media users who are interested in those topics to follow influencers with high influence. This is because similar topics are also of interest to social media users and they feel SMI as a reflection of themselves. Therefore, every behavior of the influencer attracts more attention. This situation makes the job of marketers and brands easier. Because instead of their efforts to reach the target audience by developing many strategies, there is the SMI who brings together potential buyers who have formed their own target audience. In addition, reaching SMIs for advertising deals is less costly than reaching classic influencers. The purpose of this study is to develop and validate a scale that can measure the effect of SMIs' attitudes and behaviors on consumer purchase intention. Accordingly, the population of the study consisted of social media users who follow at least one SMI. Questionnaire method was used as a data collection tool in the research. While creating the scale items, expressions and phrases obtained from short interviews with consumers who use social media and follow at least one SMI were utilized in addition to the relevant domestic and foreign literature. Within the scope of the research, 821 questionnaires were accepted as valid and evaluated. As a result of the Structural Equation Model (SEM) application, it was determined that there is a significant effect of SMI on the effect of purchase intention.

Keywords: Social media influencer, scale development, purchase intention

1. INTRODUCTION

For today's businesses that are exposed to intense competition conditions, it has become imperative to realize marketing efforts through social media. However, it is not enough for businesses to realize their marketing efforts only on social media platforms. Because marketing efforts made through social media are no longer attractive to users and have become repulsive for those exposed to too many promotional images and videos. At this point, businesses have turned to SMI, which is expressed as independent people who will support them in sharing their marketing content online. SMIs gain the sympathy of consumers by collaborating with brands that correspond to their areas of expertise. Consumers can accept and trust the opinions of SMIs they see as their own, and even be influenced by SMIs in their purchasing decisions. There are many studies (Lim et al., 2017, p. 30; Nam and Dan, 2018, p. 4710; Casaló et al., 2020, p. 510; Saima and Khan 2020; Schouten et al., 2020, p. 258; Belanche et al., 2021, p. 186; Kurdi et al., 2022) on the effect of SMIs' attitudes and behaviors on consumers' purchase intentions. From this point of view, the study seeks to answer the question "Do the attitudes and behaviors of SMIs affect the consumer's purchase intention?". This study was conducted on subjects who use at least one of the social media platforms and have SMI followers on at least one of the social media platforms. The findings of this study are limited to purchase intention variables. It is assumed that the sample group determined in the study accurately represents the population.

It is assumed that the questionnaires used within the scope of the research provide appropriate data for the purpose of the research. It is assumed that the scales used in the research effectively measure the effect of SMIs on the purchase intention of consumers who are social media users.

Within the scope of the research, it is assumed that they are sufficiently informed about the subject, that they give answers to the questions in the questionnaire form that are compatible with their real situation, and that they are sufficient in terms of quality and quantity. In the pilot study, validity and reliability analyses were conducted on the scales in SPSS 24 program. In this context, item analysis and internal consistency were examined with Cronbach Alpha coefficient. The validity of the scale was tested with EFA and the confirmation of the factor structures was examined with AMOS 25 program.

2. SOCIAL MEDIA INFLUENCER

Online shopping offers many benefits both in terms of information search and the purchasing process. Today, consumers prefer to passively search and collect information through SMI (Minh et al., 2021, pp. 81-82). According to Schickel (2000) people are always excited about SMI. SMI is seen as a special part of the virtual community that spreads information through various social media channels by sharing stories, photos, experiences or opinions about many objects, services and products, etc. (Minh et al., 2021, pp. 81-82). SMI also play an "initiating" and "influencing" role in the consumer purchase process. They create awareness, develop the community's interest in the brand and connect it to the product. Therefore, consumers tend to believe that a product endorsed by SMI is a good product (Malik and Guptha, 2014, p. 137). SMI, whose opinions about products resonate with other consumers, use the

power of blogs and social networking sites to leverage conversation for brands, but many see it as a way to express themselves as individuals. By giving their followers this sense of identity, SMI are seen as relatable and trustworthy, allowing them to be important messengers for consumers seeking advice on products (Forbes, 2016, p. 79). SMI can be anyone from a fashion blogger on Instagram to a wedding photographer on Pinterest to a cybersecurity expert tweeting on Twitter. Today, some influencers represent and/or recommend brands on various social media platforms such as YouTube, Instagram and TikTok. Consumers today prefer to seek the opinions of other consumers and influencers in order to make informed decisions. Therefore, it can be said that SMI is now critical in forming consumer opinions about a brand's products or services (Chopra et al., 2020, p. 2).

Influencer marketing can be defined as a type of marketing that focuses on using influencers to mediate and influence a brand's message to the wider market. Compared to paid advertising, it is more likely to find influencers more credible. This is because social media users such as Instagram and Twitter have the ability to follow these influencers and are therefore exposed to being influenced by their views and opinions (Anongdeth and Barre, 2019, p. 10). Influencer marketing is often done by brands to build strong relationships with consumers through influencers, a strategy that is mutually beneficial for all. With the increase in the number of offers by various brands, consumers often look for authenticity in the brands they interact with. Brands often use SMI experiences shared on both social media and traditional media, along with their posts and advertisements respectively, to promote the familiarity and trust factor. This makes the product more relevant and trustworthy for consumers (Arora, 2019, pp. 87-88).

In addition to instant sharing, reviewing posts, transferring information and entertainment, research has revealed that SMIs play a critical role in the purchase intention stage, one of the purchase decision processes, by collecting information about post-purchase experiences in daily life (Bu et al., 2022, p. 855). According to Rebelo (2017, p. 30), social media users' purchase intentions;

- When they pretend to buy the product,

- When they can buy the product,

- It can happen when they are willing to buy the product promoted by the SMI.

Many authors have investigated the impact of social media influencer on consumers' purchase intention and the results are positive (Lim et al., 2017, p. 30; Nam and Dan, 2018, p. 4710; Casaló et al., 2020, p. 510; Schouten et al., 2020, p. 258; Belanche et al., 2021, p. 186). Purchase intention depends on many factors other than influencer characteristics, such as the need for a product, perceived value, price, brand perception, and others. Therefore, SMI characteristics may not make a consumer buy a product, but they can certainly make them consider buying it when the need arises and other factors are favorable (Khan and Khan, 2020, p. 17).

3. METHOD

Purpose of the Study: The purpose of this study is to develop and validate a scale that can measure the effect of SMI's attitudes and behaviors on consumer purchase intention. With this study, it is aimed to contribute to product marketers and to fill the gap in the related literature by providing meaningful inferences through statistical analysis on consumers' attitudes towards the scales.

Population and Sample: The population of this study consists of social media users who follow at least one SMI in Turkey. Purposive sampling was used in the study. Data were collected in digital environment. Therefore, it was easier to reach the population units and sampling was not taken. According to Israel (1992), if the population is more than 100,000, the sample size should be at least 400 people at 95% reliability level. Sekaran (2003) stated that the sample size should be 384 people for a population of 100,000 or more. In this study, 821 social media users were reached.

Data Collection Tool: A questionnaire form was used as a data collection tool; online survey application was preferred because it is possible to reach more people more easily. Internet-based online surveys are fast, easy and inexpensive. Smartphone versions of online surveys have been developed and have become one of the most widely used data collection tools today (Burns and Veeck, 2020, p. 174).

3.1. Scale Development and Validation Study

For the scale, procedures are carried out through 10 steps determined by Carpenter (2018).

Step 1: Exploring the intended meaning and breadth of the theoretical concept

Within the scope of the study, a conceptual framework was drawn by examining the national and international literature. With the creation of the theoretical structure, the statements required for the item pool were collected from secondary sources. Negative statements were not created in order not to cause misunderstandings and reduce reliability. Then, interviews (consisting of open-ended questions) were conducted with social media users (target audience) who follow social media influencers. From the answers received, useful statements were created to be used in the item pool. For this purpose, distinctive and determinative words related to the content of the subject, which would help to measure the attitudes of the target audience, were selected.

Phase 2: Submission of the Item Pool for Expert Opinion

At this stage, 27 statements were created for the "Effect of SMI on Purchase Intention Scale" and added to the item pool. The opinions of 11 academicians working in the department of marketing and conducting scientific studies on the subject were consulted. The quality and number of experts (between 5-40) are important for content validity (Wilson et al., 2012; Ayre & Scally, 2014). The experts were asked to evaluate each item according to the statements "1=Not Necessary", "2=It should be corrected", "3=Necessary.

Table 1. Number of expert opinions on the scale of the effect of SMI on purchase intention

No	Statements	1= Number of experts who said "Not Necessary"	2= Number of experts who said "Should be corrected"	3= Number of experts who said "Necessary"
		Expert opinions		
1	I follow SMI to discover new products on the market.	3	3	5
2	SMIs help me discover new trends in the market.	1	0	10
3	Watching the experiences of the SMI I follow triggers my need for that product.	0	1	10
4	Thanks to SMI, I am informed about the discounts of brands.	4	4	3
5	SMI allows me to follow seasonal discounts.	4	4	3
6	The coupon codes offered by influencers are more realistic than others.	7	3	1
7	SMI's posts help me predict my next purchase.	1	4	6
8	SMI reminds me of products I plan to buy in the future.	1	0	10
9	The promotional videos SMI shares in their stories influence my purchase plans.	0	1	10
10	I think the products SMI promotes are of good quality.	2	0	9
11	SMI's expectation-performance comparison of the product affects my purchase tendency.	3	0	8
12	I am not interested in SMI's posts about product experiences.	4	0	7
13	I am motivated to buy the product used by the SMI that I believe reflects my personality.	1	1	9
14	I would like to buy every outfit that SMI looks good in.	1	2	8
15	I will buy another product from SMI in the future.	1	3	7
16	I would consider purchasing the products/services that SMI purchases in the future.	0	2	9
17	If I need the product that SMI is promoting, I will probably buy it.	0	2	9
18	I am likely to buy a product that SMI recommends.	0	1	10
19	SMI's brand shares influence me to include that brand in my purchase plan.	2	3	6
20	SMI's information about promotions increases my online store visits.	2	1	8
21	I would be happy to learn about the products/services SMI purchases.	4	3	4
22	SMI's brand shares increase my trust in the brand.	3	0	8
23	I can buy other products of the brand that SMI promotes.	2	2	7
24	SMI's posts get me excited about the product.	3	1	7
25	SMI's posts make me want to make an unplanned (spontaneous) purchase of that product.	1	2	8
26	SMI's posts make me want to buy, ignoring the price of the product.	0	2	9
27	I would encourage my close circle to use the product offered by SMI.	2	1	8

Phase 3 and 4: Calculation of Content Validity Ratios (CVR) and Construction of the Scale

When calculating the Content Validity Ratios (CVR), all statements in the item pool that were marked as "2=Must be corrected" and "Necessary" were taken into consideration. Each statement was evaluated by 11 experts and the CVRs were calculated using the formula below.

CVR= NE / (N/2) -1

NE: Total Experts who said Necessary and Should be Corrected

N: Number of All Experts

Table 2. CVR reference table

Panel Size	Proportion Agreeing Essential	CVRCritical Exact Values	One-Sided p-Value	Ncritical (Min. No. of Experts Required to Ag reeItem Essential)	Ncriticalv Calculated From CRITBINOM Function
11	0.818	0.636	0.033	9	8

Source: Ayre and Scally, 2014: 82

Table 3. CVR and comments on the item pool of the SMI's effect on purchase intention scale

No	Ne*	CVR**	Comment	No	Ne*	CVR**	Comment
1	8	0.454	Eliminated	15	10	**0.810**	Remained
2	10	**0.810**	Remained	16	11	**1.000**	Remained
3	11	**1.000**	Remained	17	11	**1.000**	Remained
4	7	0.272	Eliminated	18	11	**1.000**	Remained
5	7	0.272	Eliminated	19	9	**0.636**	Remained
6	4	-0.272	Eliminated	20	9	**0.636**	Remained
7	10	**0.810**	Remained	21	7	0.272	Eliminated
8	10	**0.810**	Remained	22	8	0.454	Eliminated
9	11	**1.000**	Remained	23	9	**0.636**	Remained
10	9	**0.636**	Remained	24	8	0.454	Eliminated
11	8	0.454	Eliminated	25	10	**0.810**	Remained
12	7	0.272	Eliminated	26	11	**1.000**	Remained
13	10	**0.810**	Remained	27	9	**0.636**	Remained
14	10	**0.810**	Remained				

According to Table 3, the CVRs of statements 1, 4, 5, 6, 11, 12, 21, 22 and 24 were below 0.636, so these statements were excluded. The average CVR of the remaining 19 statements is 0.824. Therefore, since $0.824 \geq 0.636$, the content validity of the scale is statistically significant. The remaining statements constitute the final version of the scale.

Steps 2 and 3: Determining the sample, pre-testing the sample and checking the quality of the data

It is considered that the determined questions should first be applied to a small group of at least 100 people as a pre-test (Rana et al., 2022; Zenker et al., 2021). In this context, a sample of 258 people was reached. It was determined that the number obtained was sufficient for the analysis in accordance with the literature (Hollebeek et al., 2019; Lu et al., 2019).

Step 4: Reorganizing the Scale into a Factorial Structure

A correlation test was performed through the SPSS 24 program and it was determined that there were no unrelated items. According to Exploratory Factor Analysis, Bartlett's chi-square value is .05 or less. KMO=0.60 or higher. Factor loading values are above 0.50. Therefore, these values show that the applied analysis is meaningful (Hair et al., 2014).

According to Table 4, the majority of the participants are female (61.60%), 30 years of age or younger, predominantly undergraduate graduates and working in the private sector. Normality analysis was performed to examine the distribution of the data other than demographic variables.

Table 4. Demographic variables

Variable	Group	n	%	Variable	Group	n	%
Gender	Female	159	61.60	**Profession**	Academician	2	0.80
	Male	99	38.40		Not working	31	12.00
Age	30 and below	140	54.30		Retired	9	3.50
	31-40 years	69	26.70		Housewife	1	0.40
	41-50 years	29	11.20		Doctor	3	1.20
	51 and above	20	7.80		Officer	30	11.50
Marital status	Married	114	44.20		Engineer	3	1.20
	Single	144	55.80		Student	59	22.90
Education	High school and below	43	16.60		Teacher	4	1.60
	Associate Degree	51	19.80		Private Sector	113	43.70
	Undergraduate	128	49.60		Health Worker	3	1.20
	Postgraduate	36	14.00	**Experience**	Less than 3 years	95	36.80
Income	5,000 TL and below	116	45.00		3-6 years	57	22.10
	5,001-7,500 TL	62	24.00		7-10 years	39	15.10
	7,501-10,000 TL	39	15.00		11-14 years	26	10.10
	10,001-12,500 TL	12	4.70		15 years and above	41	15.90
	12,501-15,000 TL	11	4.30				
	15,001 TL and above	18	7.00				

Table 5. Normality analysis

	Central Tendency Measurements			
Scale and Sub-dimensions	**Mean**	**Median**	**Skewness**	**Kurtosis**
Impact of SMI on Purchase Intention	2.921	3.000	-0.009	-0.873

When the table related to the scales was examined, it was determined that the sample showed a normal distribution since the Skewness and Kurtosis values were between +1.96 and -1.96 (Hair et al., 2014). As a result of the analysis, it was seen that the scale developed provided appropriate values since the KMO value was 0.948 (KMO>0.60), Bartlett's sphericity test result was 0.001 (Bartlett's<0.05), Cronbach's Alpha reliability coefficient was 0.936, the value was above 0.60, the Average Variance Explained (AVE) value measuring convergent validity was greater than 0.50, and the value measuring Convergent Reliability (CR) was greater than 0.70 (Hair et al, 2014), it was seen that the developed scale provided appropriate values.

Table 6. Exploratory factor analysis and parallel analysis

Statement		Factor Load Value (SPSS)	Cronbach Alfa (α)	PA Results (Ncases: 258; Nvar: 9; Ndataset:100; Percent: 95; Brian Oc)		
				Raw Data	Means	Percently
Impact of SMI on Purchase Intention *% of Variance: 62.072 ;Eigen-value: 5.963*				5.963	1.284	1.364
INTENTION 4	SMI reminds me of products I plan to buy in the future.	0.755				
INTENTION 5	The promotional videos SMIs share in their stories influence my purchase plans.	0.790				
INTENTION 6	I think the products SMI promotes are of good quality.	0.797				
INTENTION 8	I am willing to buy the product used by the SMI that I believe reflects my personality.	0.782	α= 0.936 AVE= 0.620 CR= 0.963			
INTENTION 10	I will buy another product from SMI in the future.	0.799				
INTENTION 13	I am likely to buy a product that the SMI recommends.	0.823				
INTENTION 15	SMI's information about promotions increases my online store visits.	0.718				
INTENTION 16	I can buy other products of the brand that SMI is promoting.	0.822				
INTENTION 19	I would encourage my close circle to use the product offered by SMI.	0.800				

Extraction Method: Maximum Likelihood (ML); Rotation Method: Direct Oblimin
KMO: 0.948; Bartlett's sphericity test; (χ2=1583.742; df=36; p=0.001)

Horn (1965) proposed the parallel analysis method against the commonly used Kaiser-Guttman decision rule for the number of factors with Eigen-value > 1. The Eigen-value>1 method assumes that the analyzed correlation matrix is the population correlation matrix (Cho et al., 2009).

Table 7. Unidimensionality analysis (Kaiser-Gutman Criteria)

Factors	Number of Statements	1.Eigenvalue	2.Eigenvalue	Total Variance
Intention	9	5.963	0.570	62.078

Implementation of Steps 5-9: During the implementation of steps 5, 6, 7, 8 and 9, the application of EFA analysis and the required values of factor loading values were explained in detail and to a significant extent (Carpenter, 2018). In this context, the analyses were performed with the Maximum Likelihood method, the factor loading value was determined as 0.50, and Direct Oblimin was preferred as the rotation method.

Table 8. Deleted statements

Deleted Statements		
INTENTION 1	SMIs help me discover new trends in the market.	
INTENTION 2	Watching the experiences of the SMI I follow triggers my need for that product.	It was deleted because the Factor Load Value was below 0.50.
INTENTION 3	SMI's posts help me predict my next purchase.	
INTENTION 7	SMI's posts are influential in determining the quantity of the product I buy.	
INTENTION 9	I would like to buy every outfit that SMI looks good in.	
INTENTION 11	I would consider purchasing the products/services that SMI purchases in the future.	
INTENTION 12	If I need the product that SMI is promoting, I will probably buy it.	
INTENTION 14	SMI's brand shares influence me to include that brand in my purchase plan.	
INTENTION 17	SMI's posts make me want to make an unplanned (spontaneous) purchase of that product.	
INTENTION 18	SMI's posts make me want to buy, ignoring the price of the product.	

In this context, the confirmatory factor analysis was repeated four times during the process of creating the scale, and the EFA and PA are shown in Table 6.

Figure 1. CFA
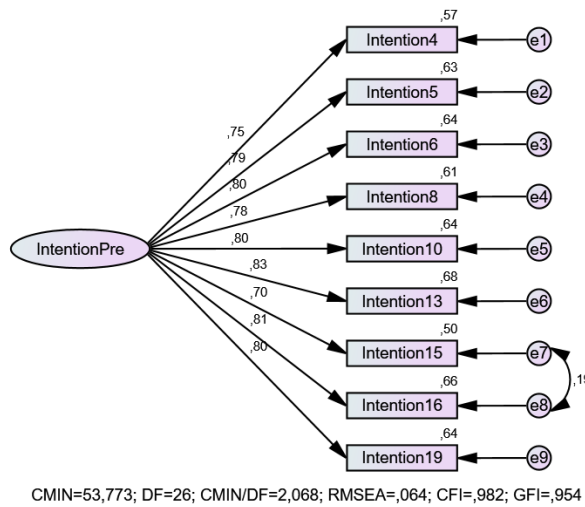

CMIN=53,773; DF=26; CMIN/DF=2,068; RMSEA=,064; CFI=,982; GFI=,954

Table 9. The goodness of fit values

X²(df)	p	RMSEA	CFI	GFI	SRMR	AVE	CR
2.068	0.001	0.064	0.982	0.954	0.027	0.618	0.963

When the results of model improvement via AMOS were analysed, it was determined that applying a covariance between Intention 15 and Intention 16 variables would improve the model. Covariance application expresses the positive change in the model as a result of the movement of two different variables together.

Table 10. Measurement model

			β1	β2	Ss	t	p
Measurement model							
Intention 4	<---	INTENTION PRE-TEST	0.753	1.000			
Intention 5	<---	INTENTION PRE-TEST	0.792	1.078	0.082	13.202	<0.001
Intention 6	<---	INTENTION PRE-TEST	0.800	1.036	0.077	13.366	<0.001
Intention 8	<---	INTENTION PRE-TEST	0.782	1.084	0.083	13.024	<0.001
Intention 10	<---	INTENTION PRE-TEST	0.799	1.063	0.080	13.350	<0.001
Intention 13	<---	INTENTION PRE-TEST	0.826	1.106	0.080	13.872	<0.001
Intention 15	<---	INTENTION PRE-TEST	0.704	0.952	0.083	11.516	<0.001
Intention 16	<---	INTENTION PRE-TEST	0.812	1.108	0.082	13.592	<0.001
Intention 19	<---	INTENTION PRE-TEST	0.802	1.105	0.082	13.413	<0.001

β1: Standard Coefficients, β2: Non-Standard Coefficients

According to the measurement model, no item was found with a factor value below 0.50. The scale consists of 9 items under one dimension. Since the analyses are limited to the responses of the sample group, these analyses should be tested on a larger sample and the scale should be tested (Wulani et al., 2014). The scale developed in this context is being tested again with a new sample of 821 people.

Table 11. Demographic variables (n=821)

Variable	Group	n	%	Variable	Group	n	%
Gender	Female	480	58.50		Academician	8	1.00
	Male	341	41.50		Not working	66	8.00
Age	30 and below	478	58.20		Retired	33	4.00
	31-40 years	197	24.00		Housewife	4	0.50
	41-50 years	91	11.10		Doctor	15	1.80
	51 years and above	55	6.70	**Profession**	Officer	67	8.20
Marital Status	Married	335	40.80		Engineer	24	2.90
	Single	486	59.20		Student	206	25.10
Educational level	High school and less	159	19.40		Teacher	11	1.30
	Associate Degree	172	21.00		Private Sector	369	44.90
	Undergraduate	372	45.30		Health Worker	18	2.30
	Postgraduate	118	14.30		Less than 3 years	328	40.00
Income Level	5,000 TL and below	356	43.40		3-6 years	199	24.20
	5,001-7,500 TL	173	21.10	**Experience**	7-10 years	110	13.40
	7,501-10,000 TL	132	16.10		11-14 years	68	8.30
	10,001-12,500 TL	67	8.20		15 years and above	116	14.10
	12,501-15,000 TL	36	4.40				
	15,001 TL and above	57	6.80				

The test procedures are conducted using only the relevant items of the 10 steps identified by Carpenter (2018). According to Table 10, the majority of the participants (58.50%) are female, more than half of them are 30 years old or younger, have a bachelor's degree and work in the private sector. Normality analysis is performed to examine the distribution of the data other than demographic variables.

Table 12. Normality analysis

Scale and Sub-dimensions	Central Tendency Measurements			
	Mean	Median	Skewness	Kurtosis
The Effect of SMI on Purchase Intention	3.134	3.222	-0.207	-0.858

According to table 12, it is seen that the Skewness and Kurtosis values are between +1.96 and -1.96, so it is understood that the sample is normally distributed (Hair et al., 2014).

Table 13. Item averages

Statement	N			Mean	Median	Standard Deviation
The Effect of SMI on Purchase Intention						
INTENTION 4	SMI reminds me of products I plan to buy in the future.		821	3.2765	3.0000	1.27367
INTENTION 5	The promotional videos SMI shares in their stories influence my purchase plans.		821	3.0877	3.0000	1.35236
INTENTION 6	I think the products SMI promotes are of good quality.		821	3.1498	3.0000	1.27096
INTENTION 8	I am motivated to buy the product used by the SMI that I believe reflects my personality.		821	3.2460	3.0000	1.31701
INTENTION 10	I will buy another product from SMI in the future.		821	2.9354	3.0000	1.37822
INTENTION 13	I am likely to buy a product that SMI recommends.		821	3.0889	3.0000	1.31803
INTENTION 15	SMI's information about promotions increases my online store visits.		821	3.2838	3.0000	1.32282
INTENTION 16	I can buy other products of the brand that SMI promotes.		821	3.1181	3.0000	1.31388
INTENTION 19	I would encourage my close circle to use the product offered by SMI.		821	3.0219	3.0000	1.38969
Average				**3.1342**	**3.0000**	**1.3263**

The averages of the answers given were determined to be approximately at the level of 3. From this point of view, it is understood that the prepared scale was perceived by the participants and the general attitudes towards SMI were considered important. The EFA analysis was performed on the developed scale again and it was seen that the scale item distribution was compatible with the other analysis. PA was applied to the sample in order to test the randomness.

Table 14. Exploratory factor analysis and parallel analysis

Statement		Factor Load Value (SPSS)	Cronbach Alfa (α) AVE CR	PA Results (Ncases: 821; Nvar: 9; Ndataset:100; Percent: 95; Brian Oc)		
				Raw Data	Means	Percently
The Effect of SMI on Purchase Intention *% of Variance: 60,596;Eigen-value: 5,843*				5.843	1.162	1.206
Intentıon 4	SMI reminds me of products I plan to buy in the future.	0.712				
Intentıon 5	The promotional videos SMI shares in their stories influence my purchase plans.	0.756				
Intentıon 6	I think the products SMI promotes are of good quality.	0.796				
Intentıon 8	I am motivated to buy the product used by the SMI that I believe reflects my personality.	0.792	α= 0.932 AVE= 0.606 CR= 0.961			
Intentıon 10	I will buy another product from SMI in the future.	0.822				
Intentıon 13	I am likely to buy a product that SMI recommends.	0.809				
Intentıon 15	SMI's information about promotions increases my online store visits.	0.746				
Intentıon 16	I can buy other products of the brand that SMI promotes.	0.812				
Intentıon 19	I would encourage my close circle to use the product offered by SMI.	0.755				

Extraction Method: Maximum Likelihood (ML)
Rotation Method: Direct Oblimin
KMO: 0.958;
*Bartlett's sphericity test; (χ2=4749.848; df=36; p=0.001)*

As a result of the analysis, the KMO value was 0.958 (KMO>0.60), Bartlett's sphericity test result was 0.001 (Bartlett's<0.05), Cronbach's Alpha reliability coefficient was 0.932, the value was above 0.60, the Average Variance Explained (AVE) value measuring convergent validity was greater than 0.50, and the value measuring Combined Reliability (CR) was greater than 0.70 (Hair et al, 2014, p. 2017), it was understood that the developed scale provided the appropriate values again. However, although the results of the analysis provided the desired values, the items were analyzed for scale distribution in accordance with the Kaiser-Guttman Rule and showed that the prepared scale was distributed in the correct sub-dimensions.

Table 15. Unidimensionality analysis (Kaiser-Gutman Criteria)

Factors	Number of Statements	1.Eigenvalue	2.Eigenvalue	Total Variance
The Effect of SMI on Purchase Intention	9	5.843	0.519	60.590

As a result of the EFA analysis, the values provided the desired qualifications. However, since CFA has obvious advantages over EFA, CFA test was applied to the scale (Hair et al., 2017).

Figure 2. CFA
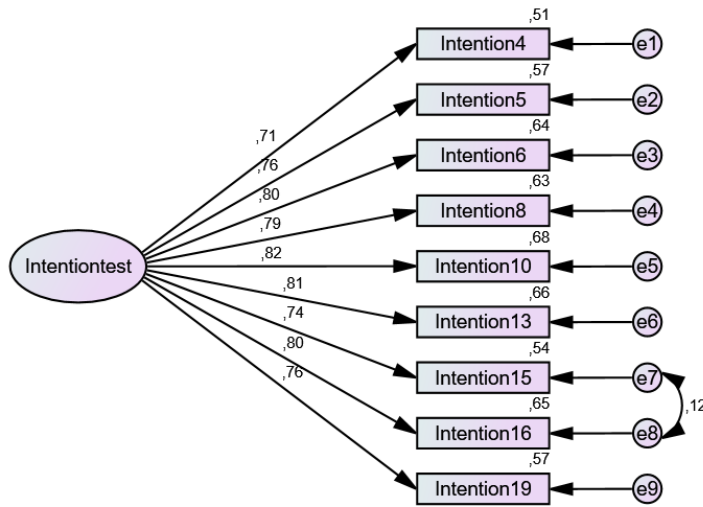
CMIN=57,292; DF=26; CMIN/DF=2,204; RMSEA=,038; CFI=,993; GFI=,985

As a result of the analysis, X2(df) value should be below 5, p value should be below the significant level of 0.05, GFI value should be above 0.85, RMSEA value should be below 0.08, CFI value should be above 0.90, SRMR value should be below 0.08, NFI value should be above 0.90, AVE value should be above 0.50 and CR value should be above 0.70 (Schermelleh-Engel et al., 2003). The goodness of fit values for the analysis are presented in Table 16.

Table 16. The goodness of fit values

X^2(df)	p	RMSEA	CFI	GFI	SRMR	AVE	CR
2.204	0.001	0.038	0.993	0.985	0.017	0.605	0.961

With the increase in the number of samples, some values decreased and some values increased, but all the results obtained are within the limit values.

Table 17. Measurement model

			β1	β2	Ss	t	p
Measurement Model							
Intention 4	<---	INTENTION	0.713	1.000			
Intention 5	<---	INTENTION	0.756	1.126	0.054	20.957	<0.001
Intention 6	<---	INTENTION	0.798	1.117	0.051	22.112	<0.001
Intention 8	<---	INTENTION	0.792	1.149	0.052	21.956	<0.001
Intention 10	<---	INTENTION	0.823	1.249	0.055	22.797	<0.001
Intention 13	<---	INTENTION	0.811	1.178	0.052	22.483	<0.001
Intention 15	<---	INTENTION	0.737	1.073	0.053	20.356	<0.001
Intention 16	<---	INTENTION	0.805	1.165	0.052	22.272	<0.001
Intention 19	<---	INTENTION	0.757	1.159	0.055	20.986	<0.001

β1: Standard Coefficients, β2: Non-Standard Coefficients

As a result of the measurement model, there were no items with a factor value below 0.50. The scale was retested as nine statements under a single dimension. Although tests were conducted on two different tests and samples related to the research, it is not possible to say that the scale is valid and consistent. Therefore, it is necessary to test the validity and invariance of the scale. The testing process is done with multi-group analysis through AMOS 25 program. In the process, comparison and modeling of the two previous analyses are made (Byrne, 2016). In this context, an invariance analysis was conducted to cover both samples. The results of the analysis are presented in Table 18.
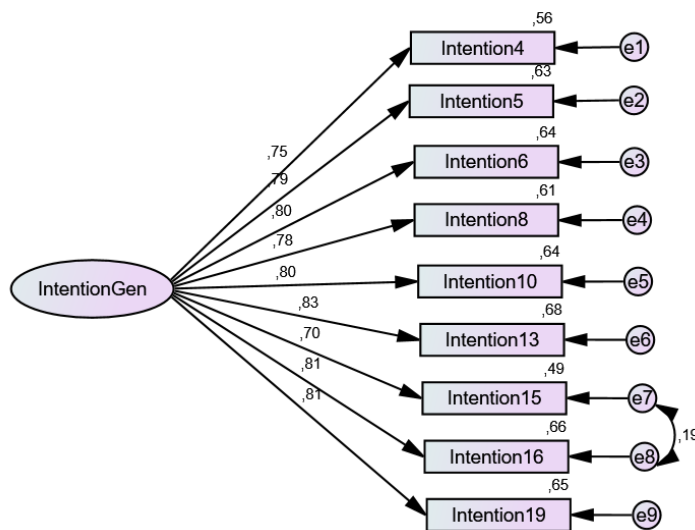
Table 18. Invariance analysis

Model	χ^2	df	χ^2/df	RMR	SRMR	CFI	RMSEA	$\Delta\chi^2$	Δdf	ΔCFI	p-value for $\Delta\chi^2$
Grup1	53.773	26	2.068	0.045	0.027	0.982	0.064	-	-	-	-
Grup2	57.292	26	2.204	0.027	0.016	0.993	0.038	-	-	-	-
Model 1:Configural	111.065	52	2.136	0.037	0.027	0.991	0.032	-	-	-	-
Model2:Weak Metric)	116.117	60	1.935	0.053	0.029	0.991	0.029	4.890	8.000	0.001	0.769
Model 3:Scalar	116.119	61	1.904	0.054	0.029	0.991	0.029	0.002	1.000	0.000	0.964
Model 4: Strong	125.89	70	1.798	0.055	0.034	0.991	0.027	9.432	9.000	0.000	0.398
Model 5: Partial (Intention 4 :a1)	111.31	53	2.100	0.039	0.027	0.991	0.032	14.020	17.000	0.001	0.666

$\Delta\chi^2$: χ^2 change ($|\chi^2_n- \chi^2_{n-1}|$); Δdf: df change ($|df_n-df_{n-1}|$); $\Delta\chi^2$/df: χ^2/df change ($|\chi^2_n/ df_n -| \chi^2_{n-1}/ df_{n-1})$; ΔCFI: CFI change ($|CFI_n-CFI_{n-1}|$); ΔCFI<0,01**; p-value for $\Delta\chi^2$: χ^2 *significance value of change* (p<0.05*)

Since the ΔCFI value was below 0.01 (Cheung & Rensvold, 2002) between the two samples as a result of the analysis, it is possible to say that the developed scale has the property of invariance and is suitable for the use of large masses (Byrne, 2016).

Figure 3. CFA

CMIN=111,347; DF=53; CMIN/DF=2,101; RMSEA=,032; CFI=,991; GFI=,977

Intention General: invariance analysis regarding intention

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The scale of the effect of Social Media Influencer on purchase intention is one-factor and consists of nine items. The items in the scale have factor loading values between 0.70 and 0.81.

4. CONCLUSION

In today's digital age following one-way communication, multi-directional communication has paved the way for influencer marketing. With influencer marketing, brands aim to continue their marketing activities effectively by using SMI as an intermediary, which has an impact on social media and attracts them with their behavior, in a way that the message to be given to the right audience, at the time it is requested, in a way that will receive the most effective feedbacks. Many brands now continue their marketing efforts by choosing the SMI with the strongest authority to represent the product. In addition, social media users who interact with individually sympathetic SMI are also influenced by the SMI's purchasing decisions. In the analysis conducted in this study, a scale development study on the effect of SMI's attitudes and behaviors on consumers' purchase intention was prepared. In the study, 27 statements regarding the effect of SMI on purchase intention were created. As a result of the scale development studies, the number of statements related to the scale is nine. As a result of EFA and CFA, the scale related to the effect of SMI on purchase intention is one-factor. In this context, re-analyses were conducted on the main population with the scales developed and it was concluded that the scale could be used in the model.

Structural equation modeling was conducted to determine whether the effect of general attitudes towards SMI on purchase intention is significant. As a result of the established measurement model, it was determined that a one-unit increase in general attitudes towards SMI will cause an increase of 0.829 on the effect of SMI on purchase decision. As a result, it is concluded that general attitudes towards SMI have a positive and significant effect on the effect of SMI on purchase intention. The studies on the effect of general attitudes towards SMI on purchase intention are as follows; and it is possible to say that the finding in this research model generally supports the results of other studies.

In the research model, the effect of general attitudes towards SMI on purchase intention was investigated. Although there are studies in which the relationship between variables is negative and insignificant, as a result of the review of the literature, there are many studies that examine the effect of social media users' attitudes towards SMI on purchase intention and find a positive relationship between variables. For example, in Nandagiri and Philip's (2018: 64) study, it was concluded that the product shared by the SMI on the social media platform is generally received with a positive effect by the follower, and the follower is willing to purchase the products exhibited by the SMI. According to the study conducted by Reinikainen et al. (2020) on YouTuber, it was revealed that SMI credibility positively affects brand trust and purchase intention. Lou and Yuan's (2018) research showed that the informative value of influencer-generated content, influencer credibility, attractiveness, and similarity

to followers positively influence followers' trust in influencers' branded posts, which subsequently affects brand awareness and purchase intentions. Lim et al. (2017, p. 30) found that respondents with a positive attitude towards SMI will generally intend to purchase the product endorsed by influencers.

Lou and Yuan (2019, p. 62) investigated the impact of the characteristics of SMI on consumers' purchase intentions and found that the informative value of posts and credibility positively affect purchase intentions. Nam and Dan (2018, p. 4710) conclude that consumers tend to strongly trust influencers and that consumer purchase intentions are significantly influenced by four factors, including influencer trust, quality of content, relevance between influencer and product, and consumer involvement. Similarly, Khan and Khan (2020, p. 17) found that SMI's credibility, information quality and entertainment value have significant direct effects on attitudes towards SMI as well as significant indirect effects on consumers' purchase intention.

Some of the attributes in the study were important in shaping consumers' purchase intentions, while others were not. SMI credibility was found to have the most significant direct impact on purchase intention. Information quality and entertainment value related to SMI credibility were also found to be among the other factors that most influence consumer purchase intention. Therefore, it is critical for a brand to choose a trustworthy SMI that can both create quality content and entertain, in order to positively influence consumers' purchase intentions. Today, with the latest legal regulations, it is mandatory for SMIs to indicate "sponsored content" when using advertisements in content sharing.

Kay et al. (2020) found that consumers exposed to micro-influencer sponsored content report higher levels of product knowledge and that products endorsed by SMI are more attractive. In the same study, it is stated that consumers exposed to micro-influencers, referred to as "sponsored content", have higher purchase intentions than those exposed to macro-influencers (Kay et al., 2020, p. 1). Although there are many studies showing a positive relationship between these two variables, there are also studies that conclude that the effect of attitudes towards SMI on purchase intention is negative. In the study conducted by Nandagiri and Philip (2018), it was concluded that there is a negative and non-significant relationship between the effect of marketing efforts made by SMI on consumers' purchase intention. Again, Johansen and Guldvik (2017, p. 89) concluded that marketing campaigns conducted by SMI do not have a direct effect on purchase intentions, and that influencer marketing does not have a stronger effect on purchase intentions than regular online advertisements. The scale developed regarding the effect of SMI's attitudes and behaviors on consumers' purchase intention can provide important perspectives to marketing and brand managers. It is important to conduct future studies only on users who use certain social media platforms in order to obtain more precise results for marketers and brands that continue their impressive marketing efforts using social media platforms. In addition, the findings of the study are limited to the variables prepared for the effect of SMI's attitudes and behaviors on consumer purchase intention. It is also possible that the developed scale can contribute to the elimination of the gap in the literature on the subject.

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Economics and Administrative Sciences Faculty

Assessing the Regulatory Impact of the Turkish Competition Authority on Market Dynamics: A Statistical Approach Using Kernel Estimation and its Simulation

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Abstract

Established in Turkey in 1994, the Competition Authority plays a key role in safeguarding and promoting competition in markets. Its main tasks include monitoring agreements, detecting collusive practices and preventing the formation of cartels, as well as conducting inspections to thwart monopolistic tendencies. It also ensures healthy competition by monitoring mergers and acquisitions. The Authority's decisions have a profound impact on the market for goods and services, promoting better opportunities for consumers. Its effective and independent functioning is essential for Turkey's sustainable economic growth and the functioning of the competitive market mechanism. Through statistical evaluations, this study aims to assess the impact of the authority in preventing imperfect competition in Turkey's goods and services markets. The analysis of the Competition Law and related legislation sheds light on the Authority's role and regulatory tools, while statistical trends reveal its proactive stance in regulating competition infringements and maintaining a fair market environment.

Keywords: Administrative fine, computation, statistics, Turkish competition authority, merger.

Article Type	Application Date	Admission Date
Research Article	February 14, 2024	May 15, 2024

1. INTRODUCTION

Creating a competitive market environment is important for Turkey's economic growth and sustainable development. Competition plays a crucial role in the effective functioning of markets and in providing consumers with more choices. Therefore, the Competition Authority was established in Turkey to protect and promote competition. This institution has taken on the responsibility of monitoring and enhancing competition, which has a profound impact on Turkey's economic future. The history of the Competition Authority dates back to the 1980s, a period that marked the first steps of Turkey's transition to a free market economy. The promotion and protection of competition in the markets were particularly emphasised during this period. The "Competition Protection Law", adopted by the Turkish Grand National Assembly in 1994, officially established the Competition Authority and symbolised the moment when the Authority began to function as an independent regulatory body.

The main objective of the Competition Board is to protect and promote competition among businesses. This means not only giving consumers more choices, but also maintaining the vitality of competition among companies. The authority has a wide range of powers and responsibilities aimed at preserving and maintaining competition. One of the basic tasks of the Competition Authority is to prevent monopolistic situations in which one company could maintain a dominant position in a particular market. Preventing such situations is crucial to maintaining competition and ensuring that consumers have access to a range of options. The Competition Authority closely monitors such threats, carries out market analyses and, if necessary, implements regulations. Another important task of the authority is to prevent the formation of cartels, which involve secret agreements and price coordination among companies. These agreements restrict competition and harm consumers. The Competition Authority works effectively to detect these cartels and take action against such improper actions, thereby ensuring fair and unrestricted competition.

In addition, the Competition Authority effectively monitors agreements that may restrict competition between undertakings and identifies collusive practices. The detection of such agreements and actions is of immense importance for the healthy functioning of competition, and the Authority works diligently in this area. Monitoring collusion among companies not only ensures that competition is maintained but also prevents companies from gaining unfair advantages. The Authority also supervises mergers and acquisitions of companies. This supervision aims to ensure that mergers among companies do not restrict competition and maintain balance in the markets. Supervising these processes ensures that competition works well and that consumers continue to have access to a range of options. This supervision doesn't limit the growth or mergers of companies, but rather plays a balancing role for the healthy functioning of competition and the maintenance of market equilibrium.

This study examines the computational distribution of the number of competition law infringements and the fines imposed for these infringements between 2008 and 2022. These data and the artificially generated forms underline the crucial role of the authority in shaping the competitive

environment in Turkey. *In addition, merger statistics for the same period show the direction of mergers and acquisitions.* The competition authority plays a key role in protecting and promoting competition in Turkey when the artificially generated data represent a picture showing how the numbers of events behave such that a decrease or a fluctuation is observed. Its effectiveness supports the country's economic growth while offering consumers more choices. The work of the Competition Board is of great importance for Turkey's economic future and will continue to support the country's sustainable economic growth. Competition is the key to transform Turkey into a more competitive and sustainable economy in the global market.

2. LITERATURE REVIEW

Many studies in the literature highlight the importance of competition authority decisions and their significant impact on market dynamics. For example, Nilssen (1997) conducted a noteworthy study in the Norwegian insurance sector, claiming that the decisions of the Norwegian Competition Authority in the last two merger cases were inconsistent. The research suggested that these decisions were not primarily based on economic factors, but rather on political influences and inconsistent data. In Ireland, Massey (2010) looked at the Competition Authority's merger procedures, highlighting delays in decisions and problems with decision analysis, suggesting a need for a re-evaluation of the Authority's merger process. Massey (2011) focused on two merger decisions of the Canadian Competition Bureau, showing a preference for qualitative over quantitative evidence, resulting in inconsistent decisions due to inadequate economic analysis and a lack of econometric methods. Van der Burg and Van den Bulck (2015) conducted a study of eight merger cases in the media sector handled by the Belgian and Dutch competition authorities, emphasising the responsibility of the media sector to consider both the economic and non-economic interests of consumers and society.

Cunha and Vasconcelos (2018) analysed how the approval of mergers by competition authorities in Stackelberg markets affects the market. Their analysis included two types of decisions: one that did not consider subsequent outcomes due to initial decisions, and another that assumed that a merger decision would trigger further mergers, leading to predictions about the final state of the market. However, this approach has been criticised as short-sighted. Sushkevitch (2012) focused on the activities of the Russian competition authority and their impact in the period following a merger decision. Redkina, Molodchik, and Jardon (2021) examined the Russian Competition Authority's scrutiny of mergers of foreign firms, to identify whether the decisions reflected a nationalist or a stimulatory economy. Their discrete choice model, applied to merger data for selected years, highlighted the influence of political and policy conditions on merger decisions.

In another study focusing on EU countries, Mainenti (2019) discussed the transfer of powers in merger cases from local institutions to the Competition Authority, suggesting that the transfer of powers did not have a significant impact between 2004 and 2012 due to problems in the decision-making

mechanism, such as the entry of new EU members, firms with a negative impact on competition, and sensitive sectors. Saggers (2008) scrutinised the European Commission's vertical merger guidelines, while in Italy, Noce, Bolasco, Allegra, Ruocco and Capo (2006) used a textual analysis tool to test the consistency of the Competition Authority's decisions and construct a predictive model of the Authority's decision-making process. Karagök and Rutz (2014) examined the merger notification process of the Swiss Competition Authority, highlighting the growing literature on mergers but the lack of studies on notification thresholds.

Cardoso, Pitelli, and Figueiredo (20-21) examined the compliance of merger decisions by the Brazilian Competition Authority with the Merger Guidelines and found that despite compliance with the guidelines, there was a high number of challenges to decisions, suggesting that some decisions were made outside the guidelines. In Malaysia, the Uber-Grab merger was studied by Rahman, Khan, Azmi and Zakaria (2020), who found that the legal infrastructure of the Malaysian Competition Authority was inadequate. Their study concluded that the merger legislation was not comprehensive enough to adequately protect competition. This literature review highlights how merger decisions by competition authorities are influenced by economic, political and social factors and provides valuable insights into the consistency of these decisions.

3. METHOD AND OBJECTIVE

In Turkey, the Competition Authority is entrusted with the task of preventing unfair competition. It operates within the legal framework established by Law No. 4054 on the Protection of Competition. It has considerable powers to ensure the competitiveness of the goods and services markets. Using its legal powers, the Competition Authority can intervene in the activities of companies that violate fair competition and is also empowered to impose fines on these companies. This study aims to examine the impact of the Competition Authority's legal powers and sanctions in curbing unfair competition. The study aims to assess the effectiveness of the existing legislation. Law No. 4054 serves as the cornerstone of competition protection in Turkey. Secondary legislation consists of the detailed regulations issued under the umbrella of this law. These regulations, communiqués and guidelines provide the framework for the activities of the Competition Board. This secondary legislation sets out the procedures and processes governing the functions and implementation of the Authority. The primary objective of this study is to shed light on the specific legal powers and responsibilities vested in the Competition Authority. In order to achieve this objective, a document review technique was used. This method has been instrumental in conducting a thorough analysis of the legal infrastructure of the Competition Authority.

As a result, this study aims to provide a representation for the role and impact of the Competition Authority in preventing unfair competition and also provide the numbers for each case when the computational statistics are performed. In doing so, it can contribute to a deeper understanding and better

evaluation of the measures taken to safeguard competition in Turkey. The simulated data sets replicated 10,000 times give the numbers of events in the near future as well. In addition, this research has examined decision records and statistics available on the official website of the Turkish Competition Authority. It represents changes in merger and acquisition notifications between the years 2008 and 2022.

When some statistics such as first moment as a mean and scale estimate, we can have a chance to provide the confidence interval as well. Since the asymptotic theory trusts that the maximum likelihood estimators and their counterparts such as the mean from smooth function are asymptotically normal, the confidence interval for the estimated value $\hat{\theta}$ is given as below:

$$\hat{\theta} \pm z_{\frac{\alpha}{2}} \sqrt{Var(\hat{\theta})},$$

where $\hat{\theta}$ can represent the statistics such as mean, minimum, maximum values, etc. Note that these statistics are delivered by a data set with sample size n replicated at m times. For each replication, each statistic can be held to get a vector of values generated artificially when the smooth function used for modelling the real data set is used.

3.1. Statistical Method: Modelling Based on Kernel

As it is known, the statistical methods mainly depend on the assumptions. The necessary conditions for assumptions cannot be easy to satisfy if the parametric techniques are used. The nonparametric technique should be preferred especially when the sample size of the data set is low. In our case, the Smooth Kernel Distribution is preferred to overcome the disadvantages while applying some statistical methods. Kernel density estimation (KDE) is a non-parametric approach for estimating the probability density function of a random variable from a sample of data. Unlike parametric methods that assume a particular underlying distribution, Kernel density estimation is data-driven, relying on no pre-defined assumptions about the distribution of the data. This makes it a flexible and robust choice for modelling complex data sets where the underlying distribution is unknown or not well understood. In other words, the smoothing methods are capable of performing a data-adaptive approach while performing the modelling on the data. In the smoothing case, the chosen kernel function is a kind of function that can also be trying the best modelling on the data. Further, since in our motivation the artificial data are generated, the general results from the artificial data set will be around the real data set. Such a motivation is generally enough approach for modelling when the necessary statistics from the generated data are provided.

The smoothing technique based on kernel density is a method used for identifying the distributional structure of the data while performing a modelling. In the kernel method, a parametric model is not used. The kernel density is an empirical method and it is used when the finite points are data set. Especially, if the number of sample size is low, the kernel method as a non-parametric approach

should be preferred by the researcher. In the kernel density technique, a data-adaptive function is tried to be estimated instead of using directly a parametric model approach while modelling. The formula for the kernel density estimator is defined in the following form:

$$\hat{f}(x; h) = \frac{1}{nh} \sum_{i=1}^{n} \frac{K(x - X_i)}{h},$$

where K is the kernel function and it satisfies to be a probability density function if the equation $\int_{-\infty}^{\infty} K(x)dx - 1 = 0$ holds and h is called the smoothing parameter or bandwidth at histogram ($h > 0$). A kernel estimate can be obtained by centering a scaled kernel at X and averaging the n kernel ordinates there. The estimate becomes larger as the number of samples falling within a bandwidth increases, compared to regions containing fewer observations. This method is comparable to the histogram method in that instead of adding the number of observations in a bin, we add the kernel ordinates over the window width which is h.

The Gaussian distribution or standard normal is one frequent option for K:

$$\phi(x) = \frac{1}{\sqrt{2\pi\sigma^2}} \exp\left(-\frac{x^2}{2\sigma^2}\right).$$

The random variable X is assumed to be normal and $X \sim N(0, \sigma^2)$ (Alain, 2024; Hastie, et al. 2009, Casella & Berger, 2021).

Techniques and consulting artificial data sets are considered as precautions to avoid the bad effects that may occur when the sample size is small. Note that for the smoothing technique, alternative smooth function can also be tried to perform a probable more precise modelling, however; since the replication number is increased to generate the artificial data, the numbers will be already around these results obtained. Additionally, the parametric model proposed by Vila et al., 2023 provides a comparison between the parametric function and the smooth function. The results of Vila et al., 2023 show that the smooth function is capable of performing a precise fitting when it is compared with the trimodal normal distribution as a parametric model. Note that when the numerical optimization and the generation procedures are taken into account, the numerical results can be values given in Figures 1-3. Thus, the simulated data are accepted to be reliable owing to the fact that the probable best fitting on the data have been accomplished.

Numerical optimization schema is in the following order:
1. Transfer to data set into the case where the unit interval is set
2. Model the unit interval data set
3. Generate an artificial data set with sample size n=15 which represents the years from 2008 to 2022 when the proposed smooth kernel function determined by SmoothKernelDistribution in Mathematica is used
4. Replicate the artificially generated data sets at 10 000 times and product by total number of event

5. Provide the statistics such as first moment, scale estimate, minimum, maximum, %25 and %75 from the artificially generated data sets.

The empirical first moment, i.e., $\text{Moment}[data, 1]$ and the scale estimate, i.e., $\text{Sqrt}[\text{Moment}[data, 2] - \text{Moment}[data, 1]\verb|^|2]$ are evaluated by functions in Mathematica 12.0. The corresponding statistics are computed when the smooth function is used. Thus, these statistics are more accurate due to precise fitting performed by smooth function. Since the artificial data set with sample size $n = 15$ is replicated; for each set, the minimum and maximum values are chosen. The same procedure is conducted for the data sets at the quantiles %25 and %75; thus, we can observe the behaviour of the data set at these quantiles as probability values which show what the generated values are around for these quantiles. In other words, the general appearance of the generated data for these quantiles can be pictured. Note that the computational schema is also used by references (Vila et al., 2023, Özen & Çankaya, 2023).

4. STATISTICAL RESULTS FOR SOME INDICATORS ON THE DECISIONS OF THE COMPETITION AUTHORITY

An in-depth evaluation was carried out by reviewing the activity reports and decision statistics available on the official website of the Turkish Competition Authority. The main objective was to assess the overall effectiveness and impact of the institution. The analysis included a thorough review of the distribution of decisions, the incidence of competition violations and the figures on mergers and acquisitions documented from 2008 to 2022. These extensive findings were methodically organised and presented in tabular form to allow for detailed and insightful analysis.

Examining the patterns of the distribution of decisions over this significant period provided valuable insights into the range and frequency of cases dealt with by the Turkish Competition Authority. This research shed light on the types of cases, the volume of investigations conducted and the outcomes or resolutions of these cases. It provided a detailed understanding of the types of issues addressed and the actions taken, demonstrating the institution's active role in ensuring fair competition practices and addressing market concerns. In addition, the analysis of competition infringements allowed a thorough examination of the prevalence and types of anti-competitive behaviour, thereby facilitating an assessment of the level of compliance with competition laws and regulations in the market over the years covered.

In addition, a careful examination of the data on mergers and acquisitions provided valuable insights into the landscape of corporate activity, highlighting the frequency and nature of significant corporate mergers and acquisitions during the period. This examination may have revealed trends in market concentration, potential problems of market dominance and the general health of competitive dynamics in different industries and sectors.

The presentation of this data in tabular form and the simulated data sets facilitated a comprehensive comparative analysis, allowing a detailed examination of the trends, shifts and tendencies observed in the decisions and activities of the Turkish Competition Authority during the period under review. This approach serves a comprehensive overview to assess the institution's role in ensuring fair market competition, monitoring market behaviour and promoting competitive market conditions in Turkey and we can examine the distributional behaviour of the real data set. The data set is transformed to the unit interval. Thus, the discrete data set is transferred to a continuous case. The unit interval case of the discrete data is evaluated by means of each year divided by total of years. The advantage of such approach to make a unitization is that the data set can be modelled numerically precisely. In other words, the potential bad convergence while performing optimization done by Mathematica can be avoided. After modelling the transferred data set is completed, the artificially generated data based on the unit interval are product by a total of years which are 2008-2022.

Table 1. Types and Distribution of Competition Authority Decisions

Year	Competition Violations	Mergers and Acquisitions	Privatisations	Negative Clearance-Exemption	Other	Decisions on Judicial Decisions	Total
2022	78	238	7	19	40	4	386
2021	74	302	7	22	46	9	460
2020	65	220	0	34	34	2	355
2019	69	207	1	35	27	2	341
2018	88	210	13	44	22	1	378
2017	80	179	5	32	22	2	320
2016	83	200	9	33	13	5	343
2015	89	151	8	35	16	6	305
2014	163	215	0	59	16	11	464
2013	191	194	19	58	23	7	492
2012	303	282	21	50	19	12	687
2011	283	239	14	54	15	12	617
2010	252	210	66	96	2	21	647
2009	178	144	2	46	3	25	398
2008	132	231	24	57	9	14	467

Source: https://www.rekabet.gov.tr/tr/Sayfa/Yayinlar/karar-istatistikleri

The statistics show that the number of competition infringement decisions varies from year to year. For example, a record number of competition infringement decisions were taken in 2012 and 2013, but in recent years this number has fallen to a lower level. This shows that the Competition Authority continues to monitor competition and fight infringements. The number of merger and acquisition decisions seems to have increased over the years. Since 2010, there has been a steady increase in such transactions. This may reflect the growth of the Turkish economy and changing market dynamics. Privatisation decisions seem to have followed a steady course. These decisions may indicate the withdrawal of the state from the economy or the results of privatisation policies. It can be observed that negative determination-exemption decisions vary over the years. These decisions are taken to regulate transactions that prevent or restrict competition. The other category of decisions may cover various

competition-related issues. Decisions in this category also vary from year to year. Decisions based on judicial decisions are an indicator of the application of the law. These decisions also vary from year to year.

Figure 1. Total numbers of competition authority decisions for years 2008-2022
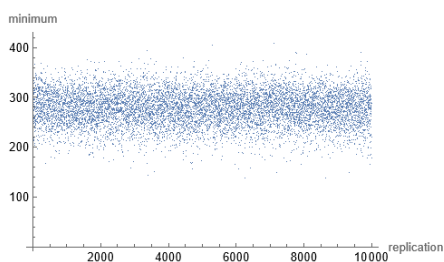
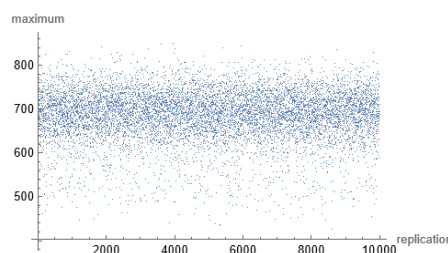**Figure 1(a):** Empirical first moment evaluated by smooth function
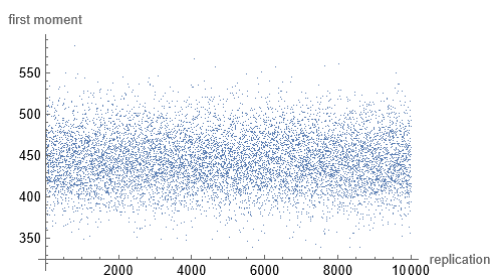
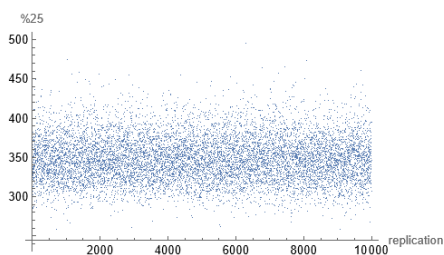**Figure 1(b):** Scale estimate evaluated by smooth function
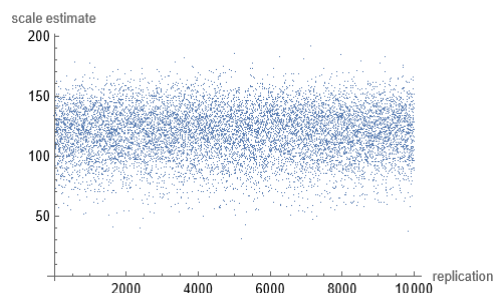
Figure 1(c): Minimum values of artificial data

Figure 1(d): Maximum values of artificial data

Figure 1(e): Quantile at %25 of artificial data

Figure 1(f): Quantile %75 of artificial data
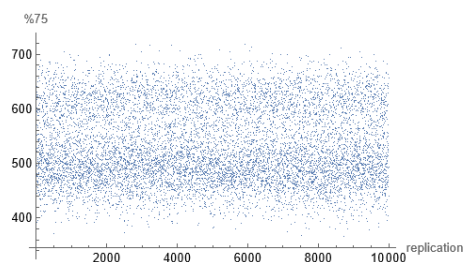
Overall, these statistics show that the competition authority is working dynamically and taking various measures to protect competition in Turkey. Further, the precautions can be taken according to the statistics provided. Particular attention is paid to antitrust violations and mergers and acquisitions, as these are factors that directly affect economic competition and market dynamics. The fair and impartial enforcement of the authority's decisions is crucial for the protection of the rule of law. In a general setting, the artificial data set shows that these numbers can also be observed in this way. When the minimum and scale estimates statistics are taken into account, it can be easily observed that the

numbers can get a decreasing trend, especially when the actions from law are applied. For Turkey to maintain its competitiveness in the national and international arena, the Competition Board must continue to play an active and effective role. This will help to support economic growth by promoting innovation, increasing efficiency and making long-term contributions to the national economy (see Figure 1).

Table 2. The Summarized Values of the Simulated Total Numbers of Competition Authority Decisions for Years 2008-2022

	Statistic	Standard deviation	Confidence interval
Empirical first moment	443.717	32.6008	[379.821, 507.614]
Scale estimate	119.180	21.4078	[77.222, 161.139]
Minimum	278.443	33.5332	[212.72, 344.167]
Maximum	685.353	56.3782	[574.854, 795.852]
%25 quantile	347.979	28.3829	[292.350, 403.608]
%75 quantile	532.868	69.8685	[395.928, 669.808]

Table 3. Distribution of Competition Violation Decisions

Year	Rejection Decision	Penalised	Opinion Expressed	Process Terminated Upon Commitment	Terminated by Settlement	Total
2022	28	9		7	34	78
2021	44	5		25	*	74
2020	46	16		-	3	65
2019	52	10		*	7	69
2018	66	11		*	11	88
2017	69	7		*	4	80
2016	65	9			9	83
2015	78	*		*	11	89
2014	130	11		*	22	163
2013	142	14	35	*	*	191
2012	273	9	21			303
2011	238	9	36			283
2010	239	9	4			252
2009	170	5	3			178
2008	129	3				132

Source: https://www.rekabet.gov.tr/tr/Sayfa/Yayinlar/karar-istatistikleri

Table 3 shows a fluctuating trend over the years in the number of rejection decisions, companies penalised, companies with observations, cases closed with commitments and settlements concluded by the Competition Authority. A rejection decision refers to cases examined by the Competition Authority that were rejected, i.e. no violation of competition rules was found. It's worth noting that the number of rejection decisions fluctuates over the years, with an increase between 2009 and 2013, followed by a decrease in the following years. Sanctioned companies represent the sanctions imposed on companies found to have infringed competition rules. In 2022, penalties were imposed on 9 companies. This

number was higher in 2014 and 2013. The fluctuation in the number of companies penalised reflects the approach of the Competition Authority in dealing with infringement cases.

Figure 2. Total numbers of competition violation decisions

Figure 2(a): Empirical first moment evaluated by smooth function
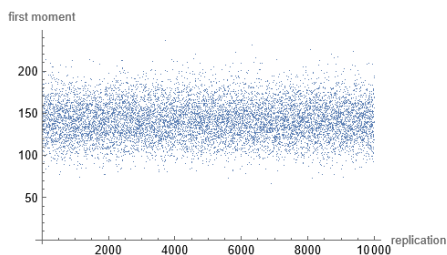
Figure 2(b): Scale estimate evaluated by smooth function

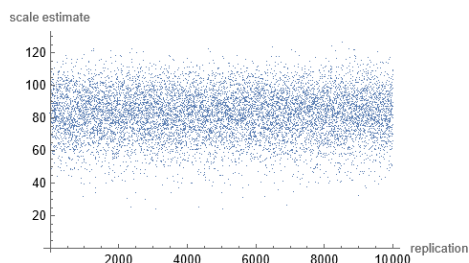**Figure 2(c):** Minimum values of artificial data
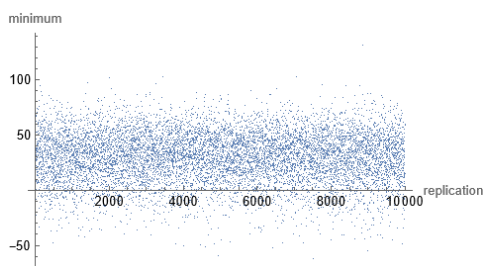
Figure 2(d): Maximum values of artificial data
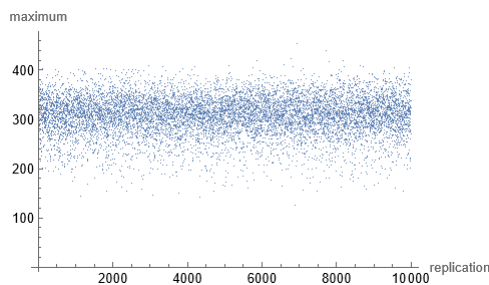
Figure 2(e): Quantile at %25 of artificial data
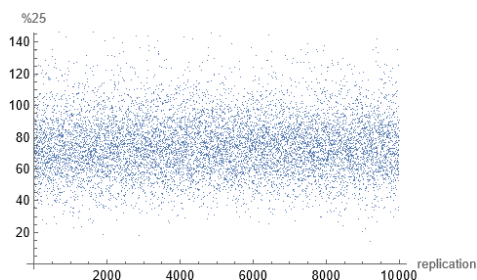
Figure 2(f): Quantile %75 of artificial data
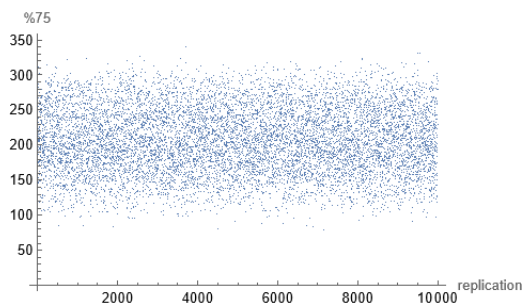
The number of companies with an opinion in 2022 was not specified. However, this number had increased in previous years. Undertakings with views are those which provide information and views during the course of an FCA investigation. Commitments refer to a mechanism that allows companies to close investigations by making specific commitments in relation to alleged infringements of competition law. In 2022, 7 companies closed cases with commitments, demonstrating their commitment to safeguarding competition. In 2022, 34 companies settled cases. Settlements allow companies to avoid sanctions by reaching a settlement to allegations of competition law infringements. Overall, these statistics show that the Competition Authority uses different mechanisms and sanctions to protect competition. The different results from year to year reflect the way in which competition and

business behaviour are shaped. It shows that the Competition Authority works effectively and uses a variety of tools to combat competition law infringements (see Figure 2).

Table 4. The Summarized Values of the Simulated Total Numbers of Competition Violation Decisions for Years 2008-2022

	Statistic	Standard deviation	Confidence interval
Empirical first moment	141.740	22.4712	[97.697, 185.7820]
Scale estimate	82.3144	14.3668	[54.156, 110.4730]
Minimum	29.8674	21.7481	[-12.7582, 72.4929]
Maximum	307.288	38.8864	[231.072, 383.5040]
%25 quantile	74.6379	18.3979	[38.5787, 110.697]
%75 quantile	206.301	45.8829	[116.372, 296.230]

When Tables 3 and 4 are examined, it is observed that there exists decreasing for the total values, which implies that the precautions taken affect the total results tending to be decreasing. Especially, in Table 4, the lower band of minimum statistic has been negative, which shows that the values go to zero and in the near future there is no potential problem occurred by competition violation decisions.

Table 5. Mergers/Acquisitions by Characteristics

Year	Acquisitions	Joint Ventures	Mergers	Transfers within the Scope of Privatisation	Total
2022	160	76	2	7	245
2021	214	83	5	7	309
2020	150	62	8	*	220
2019	140	66	1	1	208
2018	152	56	2	13	223
2017	141	32	6	5	184
2016	161	32	7	9	209
2015	125	25	1	8	159
2014	130	63	4	18	215
2013	125	68	1	19	213
2012	190	91	1	*	282
2011	168	68	3	*	239
2010	202	5	3		210
2009	128	12	4		144
2008	209	19	3		231

Source: https://www.rekabet.gov.tr/tr/Sayfa/Yayinlar/karar-istatistikleri

This table shows that the number of different types of transactions varies over the years. Acquisitions refer to an enterprise buying or gaining control of another enterprise. In 2022 there were 160 acquisition transactions. This number is lower than in previous years. The decrease in the number of acquisitions may reflect changes in companies' growth strategies or fluctuations in economic conditions. Joint ventures are collaborations between two or more enterprises to create a new enterprise or to jointly operate an existing one. There were 76 joint venture transactions in 2022. This may be an indicator of cooperation between enterprises. Mergers involve two or more enterprises joining together to form a new entity. In 2022, there were only 2 merger transactions. This suggests that mergers are rare.

Figure 3. Total numbers of mergers/acquisitions by characteristics

**Figure 3(a):** Empirical first moment evaluated by smooth function
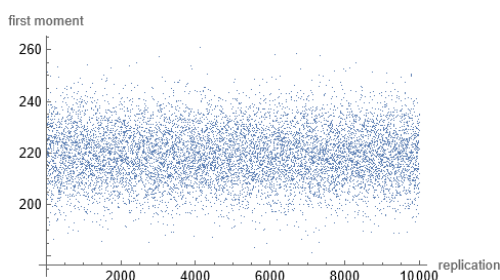
**Figure 3(b):** Scale estimate evaluated by smooth function
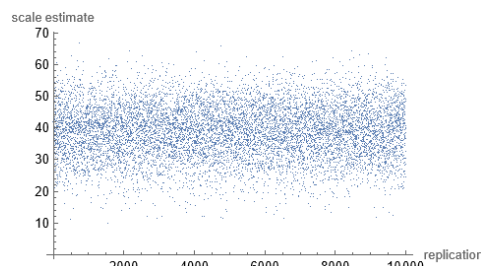
**Figure 3(c):** Minimum values of artificial data
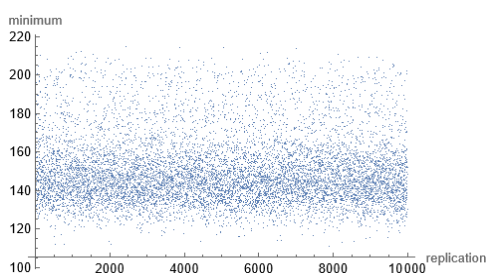
Figure 3(d): Maximum values of artificial data
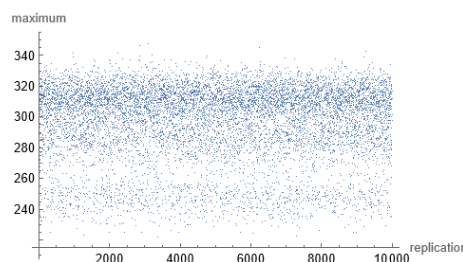
Figure 3(e): Quantile at %25 of artificial data
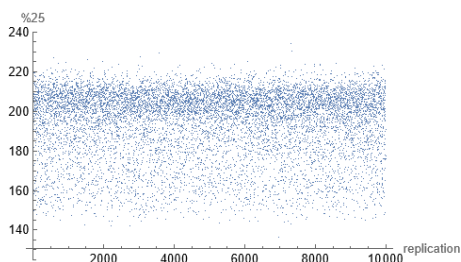
Figure 3(f): Quantile %75 of artificial data
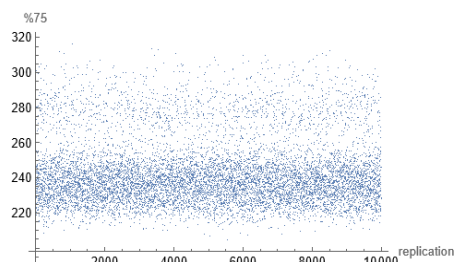
Transfers under privatisation refer to transactions carried out by the government to privatise public assets. In 2022 there were 7 transfers under privatisation. Overall, the total number of transactions varies from year to year. While the total number of transactions was 309 in 2021, it decreased to 245 in 2022. These changes could be influenced by various factors such as economic conditions, business strategies and government policies. In addition, there may be years with no privatisation transactions, while other years may see more transactions. In general, these data reflect how factors such as business growth strategies, collaborations and privatisation can show variability (see also Figure 3(b)). The dynamics of the business world can vary from year to year and the Competition Authority carefully

monitors these transactions (see Figure 3). Changes in these data over the years may be influenced by factors such as economic conditions, business dynamics and government policies.

Table 6. The Summarized Values of the Simulated Total Numbers of Mergers/Acquisitions by Characteristics for Years 2008-2022

	Statistic	Standard deviation	Confidence interval
Empirical first moment	219.314	10.6277	[198.484, 240.143]
Scale estimate	38.7903	8.22200	[22.6755, 54.9052]
Minimum	149.899	17.4077	[115.781, 184.018]
Maximum	297.513	23.6050	[251.248, 343.777]
%25 quantile	194.667	16.9094	[161.526, 227.809]
%75 quantile	242.166	18.3400	[206.22, 278.1120]

Each figure from 1-3(a)-(f) show the summarized statistics from the data set generated artificially for the sample size, $n = 15$ replicated 10,000 times. Figures 1-3(a) and 1-3(b) represent the empirical first moment as a mean from the central tendency measure and the scale estimate from the dispersion measure. Figures 1-3(c)-(d) represent the minimum and maximum values of the data with sample size, $n = 15$, respectively. Figures 1-3(e)-(f) represent the simulated data for $n = 15$ at the quantiles %25 and %75, respectively.

The statistic, standard deviation and confidence intervals of first moment, scale estimate, minimum, maximum, %25 and %75 quantiles obtained by the replicated form of the sample size n are given in Tables 2,4 and 6. Note that even though the mean is used as a summarizing statistic for each case of statistic, standard deviation, etc. from the replicated form of the artificial data set is used, the confidence interval is based on the standard deviation of the artificial data set for the sake of the larger form of the confidence band. In other words, we give a rough confidence interval for how far it can go down, if it can go down, and how far it can go up, if it can go up.

5. CONCLUSION AND DISCUSSION

In Turkey, the Competition Authority plays a crucial role in supporting economic growth and ensuring the effective functioning of the market mechanism. The main focus of the authority is to ensure economic balance by protecting and promoting competition between companies. The Competition Authority aims to prevent restrictions on competition, in particular by closely monitoring agreements between companies. Preventing the formation of cartels is of great importance in this respect. Cartels are organisations that distort competition and harm consumers. The Competition Authority identifies such organisations and imposes sanctions, thereby helping to transform markets into healthy competitive environments. In addition, the Authority issues regulations to prevent the creation of monopoly situations. Monopoly situations can lead to one or more players dominating the market, which can restrict competition. The Competition Authority's intervention ensures that markets remain balanced and that consumers have more choices. This encourages the provision of quality products and services.

The Competition Authority also closely monitors mergers and acquisitions. Such transactions can affect competition in the market and threaten the healthy continuation of competition. The Authority evaluates these transactions and, if necessary, imposes regulations to protect competition in the market. A strong legal infrastructure is necessary for the Competition Authority to operate effectively. The legal basis for its decisions protects its independence and impartiality. This ensures a fair competitive environment for companies and consumers. The role and functioning of the Competition Authority is crucial for Turkey to remain competitive in domestic and international markets. A more competitive market environment promotes innovation, increases efficiency and contributes to the national economy in the long term. Therefore, the efforts of the Competition Authority should be seen as an integral part of supporting Turkey's economic growth and sustainable competitive advantage.

This study examines the Competition Authority's decisions on competition violations between 2008 and 2022. After modelling the real data, the artificial data obtained show to what extent the decisions of the Competition Authority on competition violations will affect the goods and services market in the near future. The artificial data and its statistics clearly show that the decisions on competition violations and administrative fines have varied over the years. It may be useful to discuss some important points when the results of numerical simulation are taken into evaluation as well. It is worth noting that the number of infringement decisions issued by the Competition Board has fluctuated over the years. Although a record number of infringement decisions were taken in 2012 and 2013, this number has decreased in recent years. This may reflect the variability of the Competition Authority's monitoring and regulation. The increase or decrease in infringement decisions may be due to changes in the competition environment or developments in monitoring methods. Mergers and acquisitions seem to have increased over the years. In particular, there has been a steady increase in such transactions since 2010. This may be related to the growth of business in Turkey, new business opportunities and market changes. The Competition Authority plays a crucial role in ensuring the protection of competition by closely scrutinising such transactions.

Privatisation decisions seem to have followed a steady course over the years. This may reflect the withdrawal of the state from the economy or the results of the privatisation policy. Privatisation transactions can be the result of economic policies such as the privatisation of the public sector or the transfer of privatised assets. Administrative fines show significant fluctuations over the years. A high number of fines in 2021 stands out and may warrant special scrutiny. The variability of administrative fines may depend on government policies, economic conditions and the behaviour of companies.

Turkey's competition policy and the activities of the Competition Board are crucial for the healthy functioning of the economy and the competitiveness of the business community. Statistics show that the Competition Authority operates dynamically and makes decisions in a manner that is sensitive to economic variables. However, these data also show that competition policy requires careful monitoring and evaluation in order to maintain its stability and effectiveness. Administrative fines and

proceedings underline the need for companies to comply with competition rules and are an important tool for protecting economic competition. The promotion of competition and the protection of competitiveness are essential to support economic growth and to ensure that consumers have access to a variety of choices. The work of the Competition Authority plays a crucial role in achieving these objectives and is important for data-based policy formulation and improvement. In this framework, the statistical values computationally evaluated can be indicators for decision-makers how many the numbers of competition there should be necessary. The statistical trends in all three areas (total decisions, competition infringement decisions and mergers/acquisitions) indicate that the Competition Authority is playing a proactive and increasingly participatory role in the Turkish market. The increasing effectiveness of the authority in regulating competition infringements and controlling mergers and acquisitions indicates a strong commitment to maintaining a fair and competitive market environment. This trend may also indicate an increase in the enforcement and awareness of competition law in Turkey. Overall, the efforts of the Competition Authority during the period under report demonstrate its integral role in protecting competition and market integrity.

As a result, the economic competition environment in Turkey is a complex area where competition rules and regulations need to be constantly reviewed and updated. The work of the competition authority plays a crucial role for Turkey in maintaining its economic competitiveness and creating a fair business environment. These statistics can help policymakers, business leaders and consumers make more informed decisions to protect and promote competition. It underlines the importance of competition for economic growth, innovation and consumer welfare in the near future.

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MAKÜ | Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty

Multidimensional Performance Evaluation Using the Hybrid MCDM Method: A Case Study in the Turkish Non-Life Insurance Sector

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Abstract

The aim of this study is to assess and rank the financial and service network performance of seven Turkish non-life insurance companies from 2018 to 2022 using the ENTROPY- MEREC - MACONT decision model. The study evaluates multidimensional firm performance based on selected performance indicators. The weights of these indicators were determined using ENTROPY and MEREC (method based on the removal effects of criteria) procedures. The MACONT (mixed aggregation by comprehensive normalization technique) procedure is used to obtain the multidimensional performance ranking of non-life insurance companies over time. The results of the MEREC and ENTROPY procedures indicate that the number of agencies, asset size, technical profit, and return on assets are generally effective criteria for the multidimensional performance of non-life insurance companies. The MACONT ranking results show that company IC2 had the best multidimensional performance during the analysis period. The validity and consistency of the results of the proposed decision model were tested using various sensitivity analyses.

Keywords: Insurance, Multidimensional Performance, ENTROPY, MEREC, MACONT.

Article Type	Application Date	Admission Date
Research Article	February 18, 2024	May 15, 2024

1. INTRODUCTION

In societies, individuals and companies within the economic system may face various risks and uncertainties. Realized risks can result in significant costs for these entities (Işık et al., 2023: 1391). Insurance organizations play a crucial role in protecting these entities and minimizing the costs associated with potential risks. Insurance functions to establish stability in financial markets and provide a peaceful environment in societies (Camino-Mogro & Bermúdez-Barrezueta, 2019; Akotey et al., 2013; Deniz and Aydın, 2022).

The insurance sector plays a crucial role in the economy of every country, whether developed or developing. In addition to providing financial security, insurance companies offer long-term financing to economic systems through significant investments funded by their premium income. Furthermore, they contribute to the development of other sectors within the economic system, thereby benefiting the entire country's economy. This is achieved through functions such as employment creation and tax revenue generation for the government (Işık, 2021b; Zhang et al., 2023a; Msomi & Nzama, 2023).

Insurance companies are organizations that provide coverage for individuals and organizations against uncertainty in exchange for a mutually agreed upon financial price, known as a premium. They are crucial in compensating both individuals and businesses for any losses they may incur due to various risks and returning them to their previous positions before the damage occurred. Currently, insurance companies hold a central position alongside banks in the country's financial sector. Efficient and successful performance is crucial for insurance companies (Işık et al., 2023; Mazviona et al. 2017). Good performance not only enhances the company's market value but also promotes the long-term development of the insurance industry. The insurance industry's growth has a positive impact on other sectors of the economy, including infrastructure, banking, automotive, and health. Therefore, it plays a crucial role in ensuring stability and prosperity in the national economy (Banarjee & Majumdar, 2018).

The objective of this study is to propose a hybrid decision model comprising of ENTROPY, MEREC, and MACONT procedures. A study will be conducted on the Turkish insurance sector to test the consistency and validity of the proposed model. As of the end of 2022, 45 out of the 70 companies operating in the Turkish insurance sector provide services in the non-life branch. In 2022, the Turkish insurance sector achieved a premium production of 235 billion TL. Non-life insurance companies produced 204 billion TL, accounting for 83% of the total premium production (TSB Sector Report, 2022). The study evaluated the performance of non-life insurance companies in Turkey using financial and service network indicators. The top 20 non-life insurance companies in terms of premium production were selected as case study examples for multidimensional performance evaluation. According to year-end data from 2022, the analysis covers 35% of the total non-life premium production, including the COVID-19 pandemic period, and involves 7 non-life insurance companies.

The contributions of the study to the previous literature on performance in the insurance sector are presented below:

i. Previous studies in literature have primarily focused on evaluating insurance companies' financial performance through financial ratios. However, this study takes a multidimensional approach to evaluate insurance companies, considering both financial performance and service network performance criteria.

ii. The ENTROPY and MEREC weighting methods were used to identify the financial and service network indicators that affect the performance of insurance companies, and the results obtained were combined with the common weighting method to calculate more optimal objective weights.

iii. The MACONT ranking methodology used in the study is a state-of-the-art approach used for the first time in multi-dimensional performance assessment in the insurance sector.

iv. The study tested the validity of the proposed hybrid multidimensional performance evaluation model through a comprehensive sensitivity analysis.

The other parts of the study are organized as follows: in the second part, a comprehensive literature review on the subject is explained. The third section explains the methodology of the study. The fourth section presents the application results. This section also includes the results of the sensitivity analysis. Finally, the fifth section presents the conclusions of the study and suggestions for future research.

2. LITERATURE REVIEW

This section is divided into two parts. The first part of our paper examines previous literature in detail, while its second part identifies critical research gaps in previous literature associated with insurance industry.

2.1. Literature Summary on The Methods That Make Up The Proposed Model

MCDM methods are commonly used for performance measurement in various fields. For instance, Varmazyar et al. (2016) used MCDM methods to measure the performance of research and technology organizations, Belke (2020) evaluated the macroeconomic performance of G7 countries, Özcan and Ömürbek (2020) evaluated the performance of an iron and steel enterprise, and Bassed et al. (2020) evaluated the performance of manufacturing industries. evaluated its financial performance. Mešić et al.'s work is another example of the use of MCDM methods in performance measurement. (2022), Ersoy and Taslak (2023), Althaqafi (2023), Altıntaş (2024), and Baihaqi et al. (2024) conducted evaluations on logistics performance index of the Western Balkan countries, corporate sustainability performance in the energy sector, green supply chain management performance, press freedom performances of G7 countries, and shipyard performance respectively, using various MCDM methods.

Upon examining the previous literature on the subject, it is evident that numerous studies have been conducted on performance in the insurance sector in recent years using MCDM techniques. However, these studies have primarily focused on financial performance. This study differs from previous literature by conducting a multidimensional performance evaluation that considers both the service network performance and financial performance of insurance companies.

This section examines national and international studies that use MCDM methods for performance analysis in the insurance sector. It then summarizes studies that used the ENTROPY, MEREC, and MACONT procedures in the proposed multidimensional performance evaluation model. Işık et al. (2023) investigated the causal relationship between premium production and financial performance of non-life insurance companies in Turkey using LOPCOW, SWARA II and MARCOS methods. Bektaş (2023) evaluated the performance of companies in the BIST insurance index in his study in which he used a hybrid MCDM model consisting of MEREC, MABAC and COCOSO methods. Mohanta and Sharanappa (2023) evaluated the performance of the Indian insurance industry with neutrosophic two-stage network data envelopment analysis. Hamzeh et al. (2022) used ENTROPY and TOPSIS methods in their study where they focused on the performance of Iranian insurance companies. Beiragh et al. (2020) examined the sustainability performance of insurance companies with AHP and DEA methods. Pala (2022) analyzed the financial performances of insurance companies operating in BIST using the CRITIC and MULTIMOOSRAL methods, focusing on the 2019-2020 period. In their study where they evaluated the COVID-19 pandemic performance of insurance companies in terms of health services, Ecer and Pamucar (2021) used the MARCOS method. Işık (2021a) evaluated the financial performance of an insurance company operating in Turkey using an integrated MCDM model consisting of AHP, CRITIC and WEDBA methods. Mandic et al. (2017) analyzed the performance evaluation of insurance companies operating in Serbia based on Fuzzy AHP and TOPSIS methods. Alenjagh (2015) analyzed the performance of insurance companies in the Tehran Stock Exchange using a combined ANP and PROMETHEE model. Tsai et al. (2008) analyzed Taiwan property and liability insurance companies using a performance evaluation model consisting of GIA and AHP techniques.

Table 1 summarizes the literature on ENTROPY, MEREC, and MACONT procedures, which constitute the multidimensional performance evaluation model proposed in the study.

Table 1. Previous Literature Studies Utilizing ENTROPY, MEREC and MACONT Procedures

ENTROPY MCDM Procedure

Author	Method	Problem
Senir (2023)	ENTROPY-CRITC	Ranking the importance of logistics performance indicators
Mansyur and Saban (2023)	ENTROPY-TOPSIS	Financial performance analysis of the transport and storage sector
Topal (2021)	ENTROPY-COCOSO	Financial performance analysis of electricity generation companies
Siew et al. (2021)	ENTROPY-EDAS	Performance assessment of construction companies
Özgüner and Özgüner (2020)	ENTROPY-TOPSIS	Supplier selection and evaluation problem
Ulutaş (2019)	ENTROPY-MABAC	Staff selection problem
Rani et al. (2019)	ENTROPY-VIKOR	Evaluation of renewable energy sources
Ömürbek et al. (2017)	ENTROPY-ARAS-MOOSRA	Evaluation of countries' quality of life performance
Akçakanat et al. (2017)	ENTROPY-WASPAS	Performance evaluation in the banking sector
Çakır and Perçin (2013)	ENTROPY-TOPSIS	Evaluation of research and development (r&d) performance of countries

MEREC MCDM Procedure

Author	Method	Problem
Kara et al. (2024)	MEREC-AROMAN	Determining the level of sustainable competitiveness
İnce et al. (2024)	MEREC-CODAS	Comparison of pre-COVID-19 and COVID-19 period logistics performances of G20 countries
Oğuz and Satır (2024)	MEREC-COBRA	Analyzing profitability performance
Zhang et al. (2023b)	SF-PT-EDAS-MEREC	Stock investment selection
Lukic (2023)	MEREC-WASPAS	Performance analysis of the Serbian economy
Puska et al. (2023)	MEREC-CRADIS	Electric car selection issue
Mastilo et al. (2023)	MEREC-MARCOS	Banking sector evaluation in Bosnia and Herzegovina
Ecer and Zolfani (2022)	MEREC-DNMA	Assessment of economic freedom ın OPEC countrıes
Mishra et al. (2022)	MEREC-MULTIMOORA	Evaluation of the low carbon tourism strategy
Ayçin and Arsu (2021)	MEREC-MARCOS	Evaluation of a country's social development index
Keshavarz-Ghorabaee (2021)	SWARA-MEREC-WASPAS	Location-based selection of distribution centres
Rani et al. (2021)	MEREC-ARAS	Selection of technology for treating food waste

Table 1 (Continued)

MACONT MCDM Procedure

Author	Method	Problem
Liang (2024)	EXPTODIM-MACONT	Evaluation of smart classroom teaching in basic english
Ecer and Torkayesh (2024)	MACONT	Sustainable circular supplier selection
Ulutaş et al. (2024)	MACONT	Evaluation of third-party logistics service providers
Wen and Liao (2024)	PL-MACONT-I	Demonstrate the feasibility of the proposed method
Gamal et al. (2024)	SF-MACONT	Sustainability assessment of energy storage systems
Shuangliu and Huazai (2023)	PL-MACONT	Quality assessment of ındustry-education integration for rural vocational education
Truong and Li (2023)	DS-MACONT-e-STEP	Determining the most appropriate investment decision in transportation budget allocation.
Simic et al. (2023)	CEBOM-MACONT	Decision process for sustainable management of end-of-life tyres
Yürüyen et al. (2023)	MEREC-CRITIC-LOPCOW-MACONT	Performance evaluation of logistics enterprises
Chakraborty et al. (2023)	G- MACONT	Selection of health service suppliers
Wen and Liao (2021)	MACONT	Selection of a pension service provider
Wen et al. (2020)	MACONT	Logistics provider selection

2.2 Research Gaps

In the literature review, it is seen that the majority of studies on performance measurement in the insurance sector focus on financial performance. No study has been found in the literature that concentrate on service network performance as well as financial performance in the insurance sector. In order to address this critical gap, the present paper introduces a new set of criteria to analyse insurers' performance in a multidimensional framework by incorporating both financial and service network performance into the decision-making process.

Furthermore, when literature is reviewed in detail, the lack of a generally accepted or applied mathematical tool or decision support system that measures and evaluates multidimensional performance in the insurance industry is the second major research gap in the literature. In order to fill the second crucial gap, the present paper introduces a novel hybrid decision making model consisting of ENTROPY, MEREC and MACONT algorithms to rank the overall performance of insurers. In conclusion, the originality of the present study stems from the fact that it uses a new set of criteria and a new mathematical tool in measuring and evaluating the overall performance in the non-life insurance sector.

3. RESEARCH METHODOLOGY

This section explains the proposed ENTROPY-MEREC-MACONT hybrid MCDM decision model for assessing the multidimensional performance of Turkish non-life insurance companies. Some critical advantages of the MCDM approaches included in the recommended decision framework for performance analysis in the present research can be summarized as follows: in the ENTROPY method, there is no need for expert evaluation when computing the criteria weights. Hence, this procedure is an objective data-based technique and does not involve inconsistencies related to expert opinions (Bakır and Atalık, 2018). Most methods for determining criterion weights use variations in criteria to calculate the weights. Besides, the MEREC model provides a novel approach to the identification of objective criterion weights, as it measures the elimination influence of criteria on the performance of alternatives (Keshavarz-Ghorabaee et al., 2021). In addition, the MEREC method is preferred because it is up-to-date, easy to calculate and understand, and has a solid mathematical infrastructure (Ecer & Ayçin, 2023). As for the MACONT method responsible for the ranking of alternatives, it combines three linear normalization procedures depending on the criterion type, thus reducing the biases caused by techniques using a single normalization tool. Furthermore, by measuring the performance of one alternative compared to other alternatives with only one reference alternative, the method facilitates its use and produces convincing results. (Wen et al., 2020).

The flow chart of the multidimensional performance evaluation model proposed in the study is presented in Figure 1.

Figure 1. Flow Chart of the Study
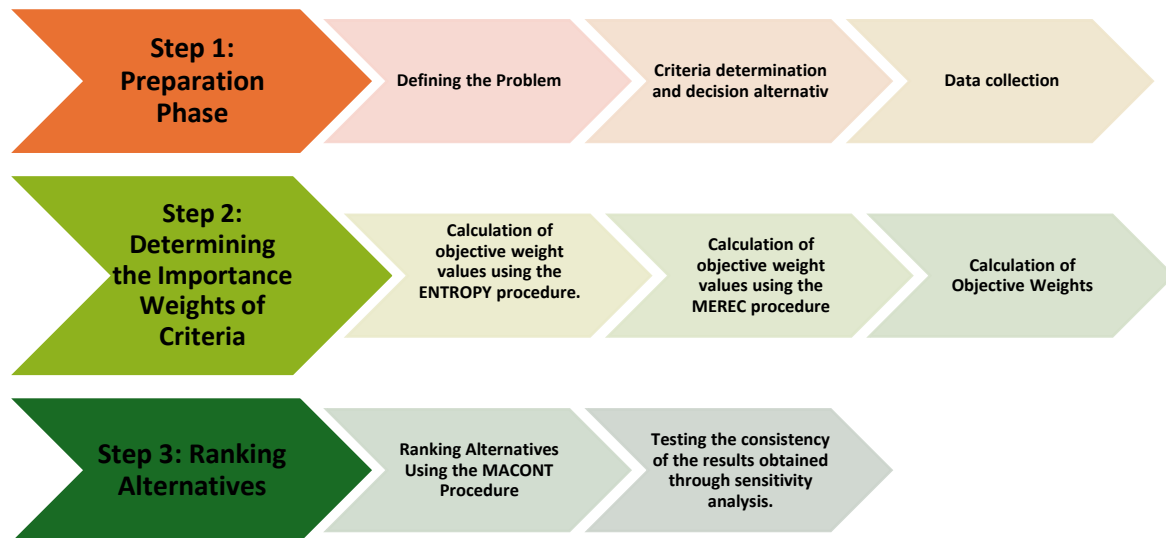
Source: Figure 1 was constructed by the author.

3.1. ENTROPY

The ENTROPY method is an objective method that allows determining criterion weights using decision matrix elements. The application procedures of the ENTROPY method consist of 4 steps. These steps are as follows (Wang and Lee, 2009; Ulutaş, 2019; Işık, 2019):

Step 1: Create a decision matrix that includes all alternatives and criteria.

$$X = \left[x_{ij}\right]_{m*n} = \begin{bmatrix} x_{11} & x_{12} & \cdots & x_{1n} \\ x_{21} & x_{22} & \cdots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{m1} & x_{m2} & \cdots & x_{mn} \end{bmatrix} \tag{1}$$

Step 2: The decision matrix is normalized to convert the criteria into units of the same type. Here, Equation (2) is used for the criteria targeting benefit, and Equation (3) is used for the criteria targeting cost.

$$r_{ij} = \frac{X_{ij}}{mak_{ij}} \tag{2}$$

$$r_{ij} = \frac{min_{ij}}{X_{ij}} \quad min_{ij} \neq 0 \tag{3}$$

Step 3: Calculation of ENTROPY values for each criterion.

$$e_{j} = -k \sum_{j=1}^{n} r_{ij} * \ln(r_{ij)}, \quad i=1,2,3.......m \ \ j=1,2,3......n \tag{4}$$

$e_j = entropy\ coefficient$

$k = 1/ln_m$

$r_{ij} = normalized\ values$

Step 4: In the last step of the ENTROPY method, the weights of the criteria are calculated using Equation (5).

$$w_j = \frac{1-e_j}{\sum_{i=1}^{n}(1-e_j)} \tag{5}$$

3.2. MEREC

Keshavarz-Ghorabaee et al. (2021) is based on the approach that the change in the total weights of the evaluation criteria determines the weight coefficient of a criterion. The MEREC procedure calculation steps are as follows (Keshavarz-Ghorabaee et al., 2021a: 8; Işık, 2022: 366):

Step 1: A decision matrix containing n alternatives and m criteria is created. The elements of the decision matrix must be greater than zero. In case of a negative value, it should be converted to positive values with an appropriate technique.

$$X = \begin{bmatrix} X_{11} & \cdots & X_{1j} & \cdots & X_{1n} \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ X_{m1} & \cdots & X_{mj} & \cdots & X_{mn} \end{bmatrix} \tag{6}$$

Step 2: Equation (7) is used to normalise the decision matrix.

$$n_{ij}^{x} = \begin{cases} \frac{min_{xij}}{xij} & if\ j \in benefit\ criterion \\ \frac{xij}{maks_{xij}} & if\ j \in cost\ criterion \end{cases} \tag{7}$$

Step 3: The alternatives overall performance value (S_i) is determined using Equation (8).

$$S_i = \ln\left(1 + \left(\frac{1}{m}\sum_j \left|\ln\left(n_{ij}^x\right)\right|\right)\right) \tag{8}$$

Step 4: Equation (9) is used to calculate the performance of the alternatives (S'_{ij}) by removing each criterion from the set separately.

$$S'_{ij} = \ln\left(1 + \left(\frac{1}{m}\sum_{k,k\neq j}|\ln(n_{ik}^x)|\right)\right) \tag{9}$$

Step 5: Sum of absolute deviations (E_j) the criterion's removal effect is measured by calculating it using Equation (10), based on the values obtained from step 3 and step 4.

$$E_j = \sum_i |S'_{ij} - S_i| \tag{10}$$

Step 6: The weights for the criteria E_j değeri are calculated in accordance with Equation 11.

$$W_j = \frac{E_j}{\sum_k E_k} \tag{11}$$

3.3. Common Weighting

Equation (12) combines the criteria weights obtained from ENTROPY and MEREC methods (Işık, 2022; Zavadskas & Podvezko, 2016).

$$W_{j,combined} = \frac{W_{j,ENTROPY} W_{j,MEREC}}{\sum_{J=1}^m W_{j,ENTROPY} W_{j,MEREC}} \tag{12}$$

3.4. MACONT

The MACONT method was developed in 2020 by Wen, Liao, and Zavadskas (Wen et al., 2020). The method steps are listed below according to Wen et al. (2020) and Aksakal et al. (2022).

Step 1: A decision matrix has been created.

$$X = [x_{ij}]_{mxn} \tag{13}$$

Step 2: The decision matrix undergoes normalization using three techniques. The first technique is linear summation-based normalization, as shown in Equation 14, and the normalized value is denoted by $\hat{x}_{ij}^1$.

$$\hat{x}_{ij}^1 = \begin{cases} x_{ij}/\sum_{i=1}^m x_{ij} & (criteria\ for\ use\ benefit) \\ \frac{1}{x_{ij}}/\sum_{i=1}^m \frac{1}{x_{ij}} & (for\ cost\ criteria) \end{cases} \tag{14}$$

The second normalisation technique is based on the linear ratio, as shown in Equation 15. The normalised value is denoted by $\hat{x}_{ij}^2$.

$$\hat{x}_{ij}^2 = \begin{cases} x_{ij}/max_i x_{ij} & criteria\ for\ use\ benefit \\ min_i x_{ij}/x_{ij} & for\ cost\ criteria \end{cases} \tag{15}$$

The linear maximum-minimum normalisation technique, as shown in Equation 16, is the third normalisation technique. The normalised value is denoted by $\hat{x}_{ij}^3$.

$$\hat{x}_{ij}^3 = \begin{cases} (x_{ij} - min_i x_{ij})/(max_i x_{ij} - min_i x_{ij}) & for\ benefit\ criteria \\ (x_{ij} - max_i x_{ij})/(min_i x_{ij} - max_i x_{ij}) & for\ cost\ criteria \end{cases} \tag{16}$$

The three decision matrices are normalised using Equation 17. The values of θ and μ as shown in Equation 17, are taken as 0.330 (Yürüyen et al., 2023: 739).

$$\hat{x}_{ij} = \theta \hat{x}_{ij}^1 + \mu \hat{x}_{ij}^2 + (1-\theta - \mu)\, \hat{x}_{ij}^3 \tag{17}$$

Step 3: Equations 18 and 19 are used to find the two mixed adders U_{1i} and U_{2i}

$$U_{1i} = \delta \frac{\pi_i}{\sqrt{\sum_{i=1}^m (\pi_i)^2}} + (1-\delta) \frac{Q_i}{\sqrt{\sum_{i=1}^m (Q_i)^2}} \tag{18}$$

$$U_{2i} = \beta\, max_j(w_{jBR}(\hat{x}_{ij} - \bar{x}_j)) + (1-\beta) min_j\big(w_{jBR}(\hat{x}_{ij} - \bar{x}_j)\big) \tag{19}$$

$\pi_i = \sum_{j=1}^n w_{jBR}(\hat{x}_{ij} - \bar{x}_j)$ and $Q_i = \prod_{\gamma=1}^n (\bar{x}_j - \hat{x}_{ij})^{w_{jBR}} / \prod_{\omega=1}^n (\hat{x}_{ij} - \bar{x}_j)^{w_{jBR}}$ and γ, criterion $\hat{x}_{ij} < \bar{x}_j$ represents the part that satisfies the condition ω, criterion $\hat{x}_{ij} \geq \bar{x}_j$ The condition is met. However, the sum of the weights of the criteria should equal 1. The study will use δ and β values 0,5 (Yürüyen vd., 2023: 739).

Step 4: For each alternative, calculate U_i(final comprehensive score) using the following formula.

$$U_i = \frac{1}{2}\left(U_{1i} + \frac{U_{2i}}{\sqrt{\sum_{i=1}^m (U_{2i})^2}}\right) \tag{20}$$

3.5. Borda Count (BC) Procedure

The BC rank aggregation algorithm, suggested by Jean-Charles de Borda (1781), is a commonly utilised technique for acquiring optimum alternative priority ranks with minimum deviation from the initial ranking results of the alternatives. The process steps of BC are given below (Biswas et al., 2022; Işık et al., 2024).

Step 1. Determining the final ranks of the alternatives for different years in a decision problem with m alternatives.

Step 2. Giving points to each alternative depending on the BC approach. Taking into account the Borda rule, the alternatives are given scores (m-1), (m-2), (m-3), etc. from best to worst. This procedure is carried out separately for each year.

Step 3. Getting BC scores for each alternative. Here, the sum of the BC scores for each alternative across all years gives the total BC score.

Step 4. Ranking of alternatives based on their total BC points. Alternatives are ranked from highest to lowest considering their total Borda points. As a result, the alternative with the largest BC point is identified as the best alternative.

4. CASE STUDY

The study proposes a hybrid model combining ENTROPY, MEREC and MACONT methods to assess multidimensional performance of Turkish non-life insurance companies. ENTROPY and MEREC methods are used to determine the importance weights of the criteria in line with the proposed hybrid model, while MACONT method is used to evaluate the multidimensional performance of

insurance companies. After calculating the multidimensional performance scores of the companies, we conducted a sensitivity analysis to test the consistency of the results. This section presents the results of the analyses used to evaluate the multidimensional.

4.1. Data

As of the end of 2022, there are 45 non-life insurance companies operating in the Turkish insurance sector. The study focuses on eight of the top 20 companies in terms of premium production, namely Ak Sigorta (IC1), Anadolu Sigorta (IC2), HDI Sigorta (IC3), Ray Sigorta (IC4), Zurich Sigorta (IC5), Ankara Sigorta (IC6), and Doğa Sigorta (IC7), which have complete data on multidimensional performance evaluation criteria. The analysis includes the data of these companies from 2018 to 2022, compiled from their annual reports and insurance statistics published by TSB. As some companies' annual reports for 2023 were not completed, the data was limited to 2022. Figure 2 presents the criteria used in the multidimensional performance assessment.

Figure 2. Multidimensional Performance Evaluation Criteria
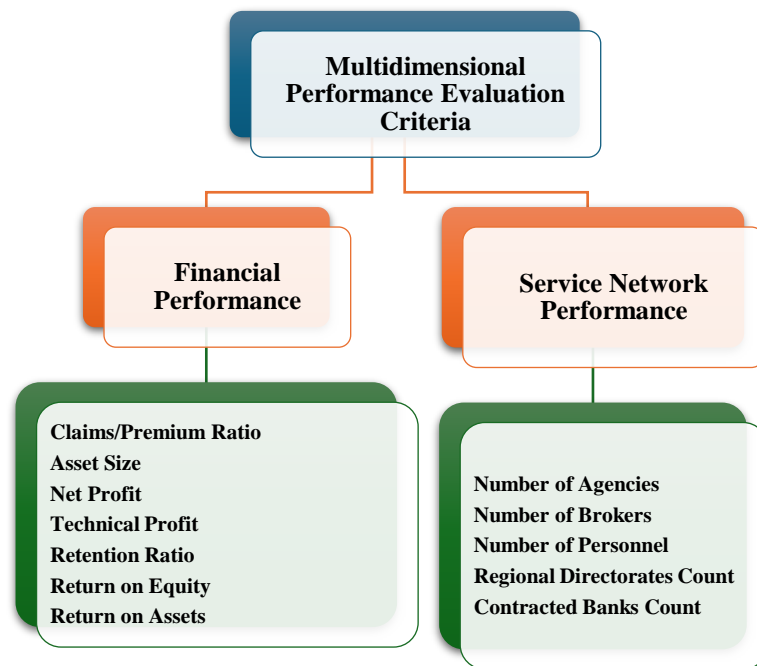
Source: Figure 2 was constructed by the author.

Number of Agencies (C1), Number of Brokers (C2), Number of Personnel (3), Number of Regional Offices (C4), Number of Contracted Banks (C5), Claims/Premium Ratio(C6) Asset Size (C7), Net Profit (C8), Technical Profit (C9), Retention Ratio (C10), Return on Equity (C11), and Return on Assets (C12). The evaluation criteria for performance are multidimensional and include the following: Criteria C3 and C6 are cost-side criteria, while all other criteria are benefit-side criteria.

Table 2 below explains the criteria for evaluating performance in multiple dimensions.

Table 2. Multidimensional Performance Evaluation Criteria

Criteria	Description
Number of Agencies	An individual or entity with the authority to negotiate or conclude insurance contracts on behalf of insurance companies.
Number of Brokers	An insurance broker is a person, either individual or legal entity, whose profession is to represent those who wish to conclude an insurance contract and to assist them in selecting the companies with which to conclude the contract.
Number of Personnel	Number of employees in insurance companies.
Number of Regional Offices	Directorates of insurance companies located in different regions of Turkey (including the Northern Cyprus branch for some companies).
Number of Contracted Banks	Number of banks working as distribution channels of insurance companies.
Claims/Premium Ratio	The ratio of incurred losses to earned premiums.
Asset Size	Total value of insurance companies' assets.
Net Profit	It represents the financial profit of insurance companies.
Technical Profit	Insurance companies' profits from insurance activities.
Retention Ratio	The conservation ratio is the ratio of the net premiums received by insurance companies, which are not transferred to reinsurance companies but kept by the company, to the gross premiums received.
Return on Equity	It is the ratio that shows how effectively the investments made by the insurance company shareholders are used in the company.
Return on Assets	This ratio indicates the total profit made by insurance companies per asset they own.

4.2. Results of The ENTROPY Algorithm

The study conducted an analysis of a 5-year period from 2018 to 2022. This section presents the implementation steps of the ENTROPY algorithm for the 2018 data.

Table 3 displays the initial decision matrix created using the study's data set.

Table 3. Initial Decision Matrix (2018)

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	3000	69	650	10	1	0.74	3515000000	228000000	368000000	0.59	0.34	0.06
IC2	2319	105	1260	10	6	0.90	7904032000	307574000	502067448	0.67	0.19	0.04
IC3	1915	93	328	9	7	0.90	2058235962	58152135	58516585	0.58	0.12	0.03
IC4	1138	80	261	8	2	0.79	926672507	28391530	23319435	0.46	0.13	0.03
IC5	164	67	276	9	4	0.53	1220373467	80147161	142058634	0.68	0.26	0.07
IC6	761	21	113	5	2	0.85	677605905	32577735	26809463	0.79	0.17	0.05
IC7	1655	66	256	8	2	0.85	13731303377	64064838	-9669602	0.45	0.41	0.00

To convert the negative values in the decision matrix into positive values, we applied the Z-score standardization transformation (Arslan, 2023; Zhang et al., 2014) to the column containing the C9 criterion in the decision matrix. The transformed matrix is presented in Table 4. The formula used for this transformation is $z_{ij} = \frac{x_{ij} - \bar{X}_j}{\sigma_j}$

Table 4. Initial Decision Matrix after Transformation

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	1.000	0.657	0.174	1.000	0.143	0.715	0.256	0.741	0.739	0.749	0.829	0.988
IC2	0.773	1.000	0.090	1.000	0.857	0.588	0.576	1.000	1.000	0.850	0.456	0.593
IC3	0.638	0.886	0.345	0.900	1.000	0.590	0.150	0.189	0.137	0.731	0.291	0.430
IC4	0.379	0.762	0.433	0.800	0.286	0.668	0.067	0.092	0.068	0.588	0.326	0.467
IC5	0.055	0.638	0.409	0.900	0.571	1.000	0.089	0.261	0.300	0.867	0.628	1.000
IC6	0.254	0.200	1.000	0.500	0.286	0.624	0.049	0.106	0.075	1.000	0.425	0.732
IC7	0.552	0.629	0.441	0.800	0.286	0.620	1.000	0.208	0.004	0.566	1.000	0.071

Table 5 shows the standardized matrix obtained by applying Equation (2) and Equation (3) to standardize the elements of the decision matrix.

Table 5. Standardized Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	1.000	0.863	0.235	1.000	0.077	0.633	0.418	0.127	0.004	0.675	0.176	0.156
IC2	0.812	0.820	0.101	1.000	0.538	0.645	1.000	1.000	1.000	0.892	0.723	0.800
IC3	0.959	1.000	0.204	0.900	1.000	0.705	0.478	0.004	0.112	0.858	0.003	0.005
IC4	0.489	0.655	0.511	0.800	0.077	1.000	0.177	0.336	0.222	0.536	0.755	0.746
IC5	0.146	0.705	0.546	0.800	0.308	0.661	0.132	0.356	0.155	0.811	0.703	1.000
IC6	0.432	0.403	1.000	0.900	0.077	0.797	0.108	0.281	0.171	1.000	1.000	0.708
IC7	0.542	0.647	0.541	0.900	0.385	0.618	0.150	0.206	0.005	0.684	0.279	0.264

Table 6 presents the normalized decision matrix, which is obtained by dividing each element in the standardized decision matrix by the sum of all standardized decision matrix elements in the column where it is located.

Table 6. Normalized Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	0.274	0.138	0.060	0.169	0.143	0.149	0.117	0.285	0.318	0.140	0.210	0.231
IC2	0.212	0.210	0.031	0.169	0.857	0.122	0.263	0.385	0.430	0.159	0.115	0.138
IC3	0.175	0.186	0.119	0.153	1.000	0.123	0.069	0.073	0.059	0.137	0.074	0.101
IC4	0.104	0.160	0.150	0.136	0.286	0.139	0.031	0.036	0.029	0.110	0.083	0.109
IC5	0.015	0.134	0.142	0.153	0.571	0.208	0.041	0.100	0.129	0.162	0.159	0.234
IC6	0.069	0.042	0.346	0.085	0.286	0.130	0.023	0.041	0.032	0.187	0.107	0.171
IC7	0.151	0.132	0.153	0.136	0.286	0.129	0.457	0.080	0.002	0.106	0.253	0.017

Equation (4) was used to obtain the ENTROPY values for each criterion. Then, Equation (5) was used to calculate the importance weights of the criteria. For instance, the weight coefficient for the first criterion was calculated as follows using Equation (4) and Equation (5):

$$E_{ij} = \frac{-(-1,757)}{\ln(7)} = 0,903, \quad 1\text{-}0,903 = 0,097, \quad W_1 = \frac{0,097}{1,176} = 0,082$$

Table 7 presents the ENTROPY values and criteria weights for all criteria in 2018.

Table 7. 2018 ENTROPY Criteria Importance Weights and Values for Data

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
E_{ij}	0.903	0.964	0.897	0.990	0.927	0.991	0.754	0.821	0.712	0.991	0.953	0.922
$1\text{-}E_{ij}$	0.097	0.036	0.103	0.010	0.073	0.009	0.246	0.179	0.288	0.009	0.047	0.078
W_{ij}	0.082	0.031	0.088	0.009	0.062	0.008	0.209	0.152	0.245	0.008	0.040	0.066

Table 7 shows the impact levels of the criteria used to determine the multidimensional performance of insurance companies in 2018. The criteria were ranked in the following order: C9, C7, C8, C3, C1, C12, C5, C11, C2, C4, C10, and C6.

The ENTROPY procedure was used to calculate criteria importance weights for all years. The results are presented in Table 8.

Table 8. ENTROPY Procedure Criteria Weights and Importance Rankings for All Years

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
2018	0.082	0.031	0.088	0.009	0.062	0.008	0.209	0.152	0.245	0.008	0.040	0.066
Ranks	5	9	4	10	7	12	2	3	1	11	8	6
2019	0.094	0.039	0.114	0.010	0.018	0.004	0.156	0.186	0.262	0.008	0.076	0.034
Ranks	5	7	4	10	9	12	3	2	1	11	6	8
2020	0.099	0.033	0.123	0.002	0.050	0.007	0.187	0.197	0.216	0.008	0.051	0.026
Ranks	5	8	4	12	7	11	3	2	1	10	6	9
2021	0.043	0.010	0.063	0.001	0.104	0.003	0.143	0.129	0.125	0.004	0.068	0.306
Ranks	8	9	7	12	5	11	2	3	4	10	6	1
2022	0.045	0.012	0.075	0.001	0.111	0.005	0.117	0.142	0.269	0.007	0.106	0.110
Ranks	8	9	7	12	4	11	3	2	1	10	6	5

4.3. Results of the MEREC Algorithm

The normalized decision matrix in Table 9 is presented, consisting of normalized values obtained with the help of Equation (7) to transform the decision matrix in Table 4.

Table 9. Normalised Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	0.055	0.304	0.516	0.500	1.000	0.822	0.193	0.125	0.006	0.756	0.351	0.072
IC2	0.071	0.200	1.000	0.500	0.167	1.000	0.086	0.092	0.004	0.666	0.638	0.120
IC3	0.086	0.226	0.260	0.556	0.143	0.998	0.329	0.488	0.031	0.774	1.000	0.165
IC4	0.144	0.263	0.207	0.625	0.500	0.881	0.731	1.000	0.062	0.963	0.891	0.152
IC5	1.000	0.313	0.219	0.556	0.250	0.588	0.555	0.354	0.014	0.653	0.463	0.071
IC6	0.216	1.000	0.090	1.000	0.500	0.943	1.000	0.872	0.057	0.566	0.684	0.097
IC7	0.099	0.318	0.203	0.625	0.500	0.949	0.049	0.443	1.000	1.000	0.291	1.000

Equation (8) was used to calculate the S_i values for each alternative. For the first alternative, the value was calculated as follows.

$$S_1 = \ln\left(1 + \left(\frac{1}{12}(|\ln(0,055)| + |\ln(0,0304)| + |\ln(0,516)| + |\ln(0,500)| + |\ln(1,000)|\right.\right.$$

$$+ |\ln(0,822)| + |\ln(0,193)| + |\ln(0,125)| + |\ln(0,006)| + |\ln(0,756)|$$

$$\left.\left.+ |\ln(0,351)| + |\ln(0,072)|)\right)\right) = 0.137$$

The values for all other S_i were calculated using Equation (8) 0.117, 0.084, 0.139, 0.017, 0.023, and 0.109.

Once the S_i values had been determined, the S'_{ij} values were calculated for each alternative by removing each criterion from the criteria set separately. The first alternative was calculated using Equation (9) as follows.

$$S'_{11} = \ln\left(1 + \left(\frac{1}{12}(|\ln(0.0304)| + |\ln(0.516)| + |\ln(0.500)| + |\ln(1.000)| + \right.\right.$$

$$|\ln(0.822)| + |\ln(0.193)| + |\ln(0.125)| + |\ln(0.006)| + |\ln(0.756)| + |\ln(0.351)| +$$

$$\left.\left.|\ln(0.072)|)\right)\right) = 0.091$$

Table 10 shows the matrix of S'_{ij} values for all alternatives.

Table 10. S'_{ij} Values

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	0.091	0.214	0.178	0.176	0.137	0.140	0.149	0.180	0.179	0.134	0.174	0.035
IC2	0.092	0.168	0.117	0.167	0.086	0.117	0.134	0.131	0.101	0.086	0.199	0.043
IC3	0.111	0.181	0.171	0.116	0.141	0.084	0.166	0.137	0.098	0.089	0.181	0.105
IC4	0.012	0.060	0.079	0.139	0.142	0.136	0.149	0.139	0.142	0.142	0.051	0.039
IC5	0.017	0.108	0.081	0.031	0.025	0.002	0.006	0.006	0.007	0.018	0.068	0.102
IC6	0.141	0.023	0.075	0.023	0.034	0.018	0.023	0.012	0.031	0.069	0.054	0.051
IC7	0.074	0.161	0.160	0.111	0.128	0.106	0.155	0.168	0.109	0.109	0.132	0.018

Equation (10) is used to calculate the effect of removing each criterion on the overall performance of the alternatives E_j Eşitlik (10) For instance, to calculate the effect of removing the first criterion, follow these steps.

$$E_1 = |0.091 - 0.137| + |0.092 - 0.117| + |0.111 - 0.084| + |0.012 - 0.139| + |0.017 - 0.017|$$
$$+ |0.141 - 0.023| + |0.074 - 0.109| = 0.378$$

The values for E_j are calculated as follows: 0.446, 0.355, 0.138, 0.138, 0.128, 0.031, 0.176, 0.192, 0.093, 0.088, 0.409, and 0.501, respectively, using Equation (10).

The objective weights of the criteria were calculated using Equation (11). For instance, the objective weight coefficient for the first criterion is calculated as follows.

$$W_1 = \frac{0.378}{2.934} = 0.129$$

Table 11 presents the weights of all criteria calculated using the 2018 data.

Table 11. Importance Weights for MEREC Procedure Criteria Related to Year 2018 Data

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
W_{ij}	0.129	0.152	0.121	0.047	0.044	0.011	0.060	0.065	0.032	0.030	0.139	0.171

Upon analysing Table 11 using the MEREC procedure for 2018, the criteria's impact levels in determining the multidimensional performance of insurance companies were determined as follows: C12, C2, C11, C1, C3, C8, C7, C4, C5, C9, C10, and C6.

The MEREC procedure's calculation steps were applied to the data for all years, and Table 12 shows the calculated criteria importance weights.

Table 12. MEREC Procedure Criteria Weights and Importance Rankings for All Years

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
2018	0.129	0.152	0.121	0.047	0.044	0.011	0.060	0.065	0.032	0.030	0.139	0.171
Ranks	4	2	5	8	9	12	7	6	10	11	3	1
2019	0.173	0.150	0.091	0.074	0.055	0.013	0.040	0.031	0.046	0.018	0.139	0.170
Ranks	1	3	5	6	7	12	9	10	8	11	4	2
2020	0.193	0.094	0.071	0.019	0.055	0.031	0.059	0.063	0.067	0.038	0.108	0.202
Ranks	2	4	5	12	9	11	8	7	6	10	3	1
2021	0.125	0.102	0.088	0.028	0.069	0.017	0.099	0.073	0.049	0.061	0.116	0.173
Ranks	2	4	6	11	8	12	5	7	10	9	3	1
2022	0.198	0.064	0.090	0.021	0.068	0.033	0.078	0.075	0.071	0.052	0.078	0.172
Ranks	1	9	3	12	8	11	4	6	7	10	5	2

4.4. Results of the Combined Weighting Algorithm

In order to identify more consistent and optimal weights for the criteria, the criteria weights from the ENTROPY and MEREC methodologies were computed as indicated in Equation (12). This allowed us to obtain more optimal results by combining the advantageous aspects of both methods. As seen in Figure 3, the final weight values of the criteria are provided in Table 13.

**Table 13**. Combined Criteria Weights

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
2018	0.139	0.061	0.139	0.005	0.035	0.001	0.164	0.130	0.101	0.003	0.073	0.148
Rank	3	8	4	10	9	12	1	5	6	11	7	2
2019	0.217	0.078	0.139	0.010	0.013	0.001	0.083	0.077	0.161	0.002	0.141	0.077
Rank	1	6	4	10	9	12	5	8	2	11	3	7
2020	0.231	0.037	0.105	0.000	0.033	0.003	0.133	0.150	0.174	0.004	0.067	0.063
Rank	1	8	5	12	9	11	4	3	2	10	6	7
2021	0.049	0.009	0.050	0.000	0.065	0.000	0.129	0.086	0.055	0.002	0.072	0.482
Rank	8	10	7	12	5	11	2	3	6	9	4	1
2022	0.099	0.008	0.074	0.000	0.084	0.002	0.102	0.118	0.210	0.004	0.091	0.208
Rank	5	9	8	12	7	11	4	3	1	10	6	2

Upon examining the importance weights of the multidimensional performance indicators presented in Table 13, it is evident that the importance weights of the performance evaluation criteria have changed over the years in the 2018-2022 period when determining the multidimensional performance of the insurance companies included in the analysis. The COVID-19 pandemic,

inflationary environment, and exchange rate fluctuations in Turkey have caused changes in the criteria that determine the performance of insurance companies over time.

Table 13 shows that the criteria C1 (number of agencies), C7 (asset size), C9 (technical profit) and C12 (return on assets) are generally effective in determining the multidimensional performance of insurance companies in the 2018-2022 period. However, the criteria C4 (number of regional offices), C6 (claims/premium ratio) and C10 (retention ratio) have a low impact on the multidimensional performance of insurance companies.

Figure 3. Combined Criteria Weights
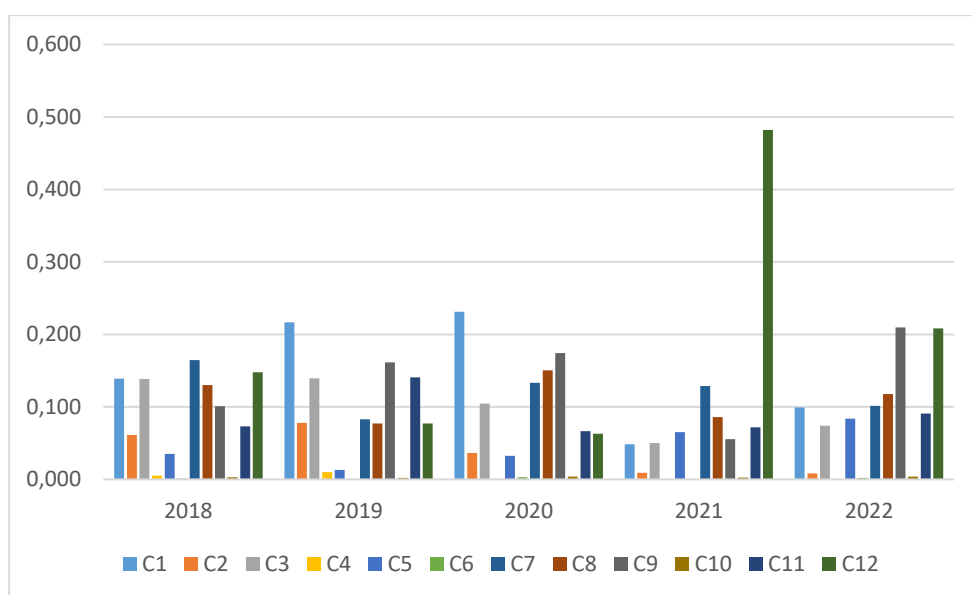
4.5. Results of the MACONT Algorithm

This section presents the ranking of non-life insurers employing the MACONT approach, based on multidimensional financial and service network performance indicators. The decision matrix elements presented in Table 4 were utilized to obtain the normalised decision matrix, according to the first normalisation technique, by applying the process given in Equation (14). The related data are presented in Table 14.

Tablo 14. First Normalised Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	0.274	0.138	0.060	0.169	0.042	0.149	0.117	0.285	0.318	0.140	0.210	0.231
IC2	0.212	0.210	0.031	0.169	0.250	0.122	0.263	0.385	0.430	0.159	0.115	0.138
IC3	0.175	0.186	0.119	0.153	0.292	0.123	0.069	0.073	0.059	0.137	0.074	0.101
IC4	0.104	0.160	0.150	0.136	0.083	0.139	0.031	0.036	0.029	0.110	0.083	0.109
IC5	0.015	0.134	0.142	0.153	0.167	0.208	0.041	0.100	0.129	0.162	0.159	0.234
IC6	0.069	0.042	0.346	0.085	0.083	0.130	0.023	0.041	0.032	0.187	0.107	0.171
IC7	0.151	0.132	0.153	0.136	0.083	0.129	0.457	0.080	0.002	0.106	0.253	0.017

Table 15 shows the decision matrix normalised using Equation (15) with the second normalisation technique.

Table 15. Second Normalised Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	1.000	0.657	0.174	1.000	0.143	0.715	0.256	0.741	0.739	0.749	0.829	0.988
IC2	0.773	1.000	0.090	1.000	0.857	0.588	0.576	1.000	1.000	0.850	0.456	0.593
IC3	0.638	0.886	0.345	0.900	1.000	0.590	0.150	0.189	0.137	0.731	0.291	0.430
IC4	0.379	0.762	0.433	0.800	0.286	0.668	0.067	0.092	0.068	0.588	0.326	0.467
IC5	0.055	0.638	0.409	0.900	0.571	1.000	0.089	0.261	0.300	0.867	0.628	1.000
IC6	0.254	0.200	1.000	0.500	0.286	0.624	0.049	0.106	0.075	1.000	0.425	0.732
IC7	0.552	0.629	0.441	0.800	0.286	0.620	1.000	0.208	0.004	0.566	1.000	0.071

Table 16 displays the third normalized matrix, which was created by normalizing the elements of the decision matrix using Equation (16) and the third normalization technique.

Table 16. Third Normalised Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	1.000	0.571	0.532	1.000	0.000	0.432	0.217	0.715	0.738	0.421	0.759	0.987
IC2	0.760	1.000	0.000	1.000	0.833	0.000	0.554	1.000	1.000	0.655	0.232	0.561
IC3	0.617	0.857	0.813	0.800	1.000	0.006	0.106	0.107	0.133	0.381	0.000	0.387
IC4	0.343	0.702	0.871	0.600	0.167	0.290	0.019	0.000	0.064	0.050	0.050	0.426
IC5	0.000	0.548	0.858	0.800	0.500	1.000	0.042	0.185	0.296	0.694	0.476	1.000
IC6	0.211	0.000	1.000	0.000	0.167	0.139	0.000	0.015	0.071	1.000	0.189	0.712
IC7	0.526	0.536	0.875	0.600	0.167	0.124	1.000	0.128	0.000	0.000	1.000	0.000

After calculating the matrices generated by the three normalization techniques, they were combined using Equation (17). Table 17 presents the resulting combined normalized matrix.

Table 17. Combined Normalised Matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
IC1	0.760	0.457	0.258	0.726	0.061	0.432	0.197	0.582	0.600	0.436	0.601	0.738
IC2	0.583	0.739	0.040	0.726	0.649	0.234	0.465	0.797	0.812	0.556	0.267	0.432
IC3	0.478	0.645	0.429	0.619	0.766	0.237	0.108	0.123	0.110	0.416	0.120	0.307
IC4	0.276	0.543	0.488	0.513	0.178	0.365	0.039	0.042	0.054	0.247	0.152	0.335
IC5	0.023	0.441	0.474	0.619	0.414	0.739	0.057	0.182	0.242	0.575	0.422	0.747
IC6	0.178	0.080	0.784	0.193	0.178	0.296	0.024	0.054	0.060	0.732	0.240	0.540
IC7	0.411	0.433	0.494	0.513	0.178	0.289	0.821	0.139	0.002	0.222	0.753	0.029

After obtaining the combined normalized matrix, Equation 18-20 is used to calculate the final comprehensive score (U_i) for each alternative using the two mixed aggregators (U_{1i}) ve (U_{2i}) Table 18 presents the multidimensional performance ranking of π_i, Q_i, U_{1i}, U_{2i}, U_i and insurance companies for each alternative.

Table 18. 2018 Results of the MACONT Procedure on Data

	π_i	Q_i	U_{1i}	U_{2i}	U_i	**Ranking**
IC1	0.144	0.708	0.426	0.014	0.474	1
IC2	0.152	0.846	0.471	0.007	0.369	3
IC3	-0.058	1.046	0.129	-0.004	-0.004	5
IC4	-0.127	0.410	-0.141	-0.012	-0.296	7
IC5	-0.039	0.686	0.083	-0.003	-0.015	6
IC6	-0.092	0.546	-0.046	0.007	0.100	4
IC7	0.020	1.281	0.327	0.017	0.464	2

Upon analysing the results of the multidimensional performance evaluation for 2018, presented in Table 18, it is evident that IC1 (Ak Insurance) performed the best, while IC4 (Ray Insurance) performed the worst.

The MACONT procedure was applied separately for the period 2018-2022, and Table 19 presents the results of the multidimensional performance ranking of insurance companies for all years.

Table 19. MACONT Procedure Ranking Results for Alternatives, 2018-2022

	2018	**2019**	**2020**	**2021**	**2022**
IC1	1	2	2	4	6
IC2	3	1	1	2	1
IC3	5	3	3	3	7
IC4	7	5	5	6	3
IC5	6	4	4	7	2
IC6	4	6	6	5	4
IC7	2	7	7	1	5

Table 19 presents the results of the MACONT procedure for ranking non-life insurance companies based on their performance from 2018-2022. Upon examination of the results of the Macont procedure, it was determined that Anadolu Insurance Company (IC2) maintained the top three ranks by demonstrating stable performance in all years considered, as indicated by financial and service network indicators. Although Ray Insurance (IC4) and Ankara Insurance (IC6) companies have shown improvements in their performance in some years, their overall performance based on financial and service network indicators is generally poor.

4.6. Results of the Borda Count Algorithm

As mentioned before, our study covers a period of 5 years. Therefore, the rankings of the companies on a yearly basis are determined within the framework of the proposed methodology. However, it reveals that the final decision regarding the evaluation of companies is not clear. In such cases, the literature suggests various integration methods in order to aggregate the year-wise ranking results and reduce the problem to a single result (Biswas et al., 2022; Işık et al., 2024). One of them is the Borda Count (BC) approach. BC scores calculated for each alternative also provide a consensus ranking between the performance rankings obtained by utilizing five different data. The rankings obtained based on the performance indicators of five diferent years covering the 2018–2022 period are merged with the Borda rule and the findings are given in Table 20.

Table 20. Final Rankings of Insurers Based on BC Method

	Rank Based Number					Total	Aggrated Rank
	2018	**2019**	**2020**	**2021**	**2022**		
IC1	6	5	5	3	1	20	2
IC2	4	6	6	5	6	27	1
IC3	2	4	4	4	0	14	3
IC4	0	2	2	1	4	9	7
IC5	1	3	3	0	5	12	5
IC6	3	1	1	2	3	10	6
IC7	5	0	0	6	2	13	4

The MACONT ranking results based on the BORDA procedure demonstrate that Anadolu Sigorta (IC2) performed the best, while Ray Sigorta (IC4) performed the worst.

4.7. Rank Reversal Feature-Based Sensitivity Analysis

This section applies sensitivity analysis to test the reliability and validity of the results obtained from the proposed MCDM model for evaluating the multidimensional performance of insurance companies. A sensitivity analysis was chosen to test the resistance of the proposed model to the order reversal problem. According to Demir (2022), changing the decision matrix by alternative addition or removal may affect the ranking results. The proposed model, including ENTROPY, MEREC and MACONT methods, will be tested for validity using six different scenarios in which the decision matrix elements are changed. The aim is to examine the variability that may occur in ranking results. The scenarios are arranged so that each evaluation excludes the worst alternative in the previous scenario. In each new scenario, the remaining alternatives are ranked according to the updated initial decision matrix (Stevic et al., 2020).

Figure 4 shows the new ranking results according to six different scenarios.

Figure 4. Re-ranking of Alternatives Based on Different Scenarios
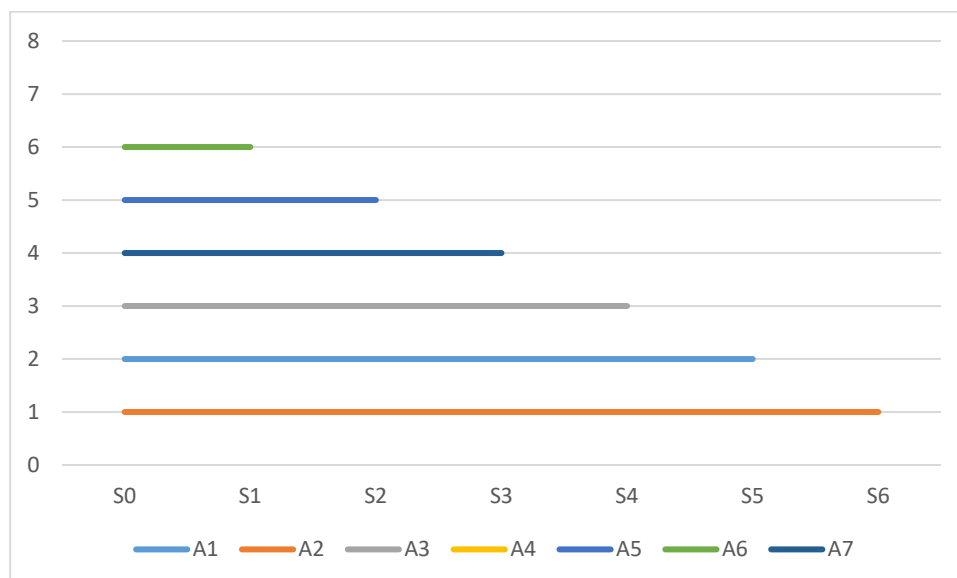

Source: Figure 4 was constructed by the author.

Based on the sensitivity analysis results presented in Figure 4, it is evident that alternative IC1 is the optimal choice in all scenarios. These findings confirm the consistency, robustness, and feasibility of the proposed MCDM performance evaluation model.

4.8. Sensitivity Analysis Based on Various Criteria Weights

To examine the impact of changes in importance weights of criteria on decision alternative rankings, we created 100 different scenarios. In each scenario, we reduced the importance weight of one evaluation criterion by 10% and added this amount proportionally to the other criteria, ensuring the sum of weight values remained at 1. Figure 5 shows the ranking results for the alternatives in the new scenarios. The sensitivity analysis was applied for all years of the study, and the results were approximately consistent. An example of the application of the sensitivity analysis based on sensitivity analysis based on various criteria weights for 2018 is shown below.

Figure 5. Ranking Results of Decision Alternatives Across 100 Scenarios (2018)
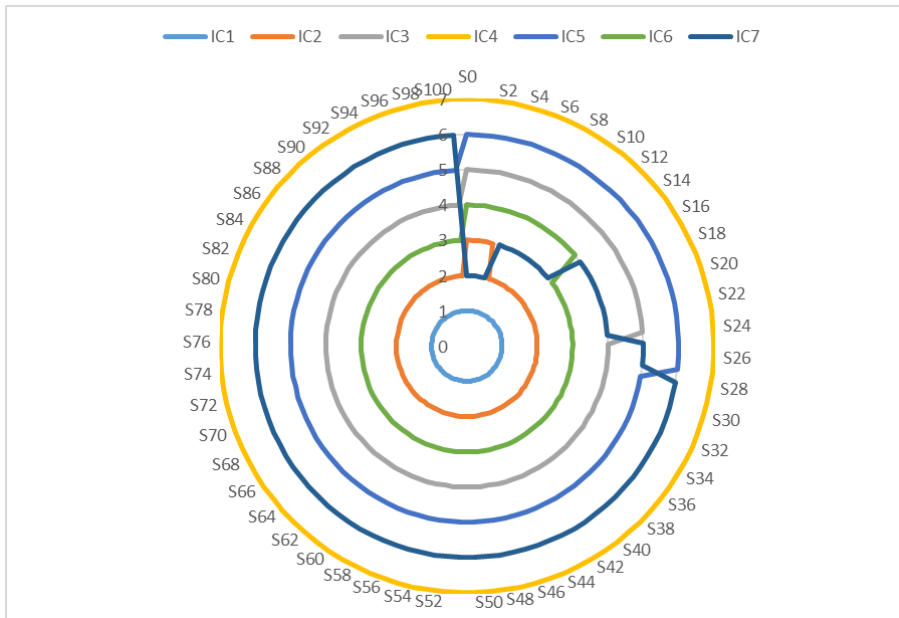
When the results given in Figure 5 are analysed, it is seen that the best alternative IC1 is not affected by different criteria weighting scenarios and the ranking of the alternative does not change for all scenarios. According to the results reported in Figure 5, it is seen that there are no major and significant changes in the performance rankings of other decision alternatives in different scenarios. In conclusion, the ranking results obtained with the sensitivity analysis applied confirm that the hybrid performance evaluation model proposed in the study is consistent, robust and applicable.

4.9. Comparison with Alternative Decision Algorithms

The results obtained with the hybrid model consisting of the ENTROPY-MEREC and MACONT methods proposed in the study were compared with the ranking results obtained with different MCDM methods. The relevant results are shown in Table 21.

Table 21. Results Ranking from Various MCDM Techniques

	MACONT	ROV	CRADIS
IC1	2	2	2
IC2	1	1	1
IC3	3	4	4
IC4	7	5	6
IC5	5	5	5
IC6	6	6	5
IC7	4	3	3

After the data for the 2018-2022 period, which constitutes the study period, was analyzed with ROV (Range of Value) and CRADIS (Compromise Ranking of Alternatives from Distance to Ideal Solution) procedures, the ranking results obtained for all years were combined with the BORDA method and a general result was obtained. Table 21 shows that the sequencing results obtained with the ROV and CRADIS procedures are largely similar to those obtained with the MACONT procedure. Comparative analysis results with different decision algorithms confirm that the model proposed in the study provides consistent results.

5. DISCUSSION, PRACTICAL AND MANAGERIAL IMPLICATIONS

Performance assessment of insurers, which provide protection to their customers from various risks in almost all economies, is of great critical significance for the successful management of risks, improvement of insurance service quality, and sustainability of the financial system and the economy (Aydın, 2019; Aydın, 2021).

When the prior performance measurement studies in the Turkish non-life insurance sector are analysed in detail, it is observed that researchers and practitioners have used different MCDM methods, criteria, alternatives, and periods. According to the results of current study, the top three most successful companies in terms of multidimensional performance in the Turkish non-life insurance sector are Anadolu Sigorta (IC2), Ak Sigorta (IC1), and HDI Sigorta (IC3). However, Isik et al. (2024) found Halk Sigorta and Anadolu Anonim Türk to be the most successful and unsuccessful insurance companies, respectively. Akpınar and Pehlivan (2023) reported that the non-life insurance company with the best performance is BNP Paribas and the non-life insurance company with the worst performance is Unico. Koca and Bingöl (2022) identified Allianz Sigorta as the most successful company and Generali Sigorta as the most unsuccessful company in their study. Demir and Arslan (2022) found that the most successful and least successful non-life insurance companies are Allianz Sigorta and Halk Sigorta, respectively. Aydın (2021) determined Anadolu Sigorta and Ak Sigorta as the firms with the highest and lowest performance scores, respectively. Akyüz et al. (2020) reported that Allianz Sigorta and Anadolu Anonim Türk Sigorta are the two most successful companies, whereas Unico and Ergo Sigorta are the two least successful companies. The comparison of the findings of the studies that measure and rank the performance of non-life insurers in the past literature with the results of the present study indicates that there are differences between the findings. The main reason for this may be attributed to

the inclusion of different alternatives, criteria sets, and period periods in the decision-making process in each study.

The existing manuscript has practical implications as follows.

i. The first practical contribution of the work is to provide a novel, comprehensive, and integrated framework for measuring the financial and non-financial performance of insurers.

ii. The proposed MCDM tool has a basic and straightforward mathematical procedure that can be easily applied by DMs without advanced mathematical knowledge.

iii. The combined weighting procedure integrating the Entropy and MEREC procedures allows DMs to obtain more acceptable weighting coefficients. Moreover, DMs can obtain more robust and reliable results by applying the MACONT procedure based on joint weighting because the proposed decision framework is resistant to the order inversion problem.

iv. Validation tests provide evidence that the proposed decision-making framework produces consistent results.

The managerial implications from existing manuscript can be summarized as follows;

i. The findings of the current article are of great importance, firstly, in terms of supervisory mechanisms that monitor the performance of insurers. Supervisory authorities can easily monitor insurers' performance thanks to the proposed model.

ii. Analysis of insurers' performance, both financial and non-financial, provides sector managers and employees with various vital information, especially on gaining competitive advantage. It also provides critical information about whether the policies implemented by insurers are successful or not, based on the findings of the performance analysis of other industry stakeholders.

iii. Regular performance analyzes are also very important for insurance customers. because this makes it easier for insurance customers (i.e., policyholders) to choose an insurer.

iv. The empirical results obtained can provide an important road map for senior management in improving insurers' financial performance and service network.

6. CONCLUSION

Recently, there has been an increased interest in the insurance sector due to the frequent occurrence of financial crises, epidemics, and natural disasters. The insurance sector serves the purpose of minimizing the negative consequences of these events and ensuring that the insured are least affected by these situations (Işık et al., 2023). The COVID-19 pandemic in Turkey, the earthquake on 6 February 2023 that affected 11 provinces, the inflationary environment, and the fluctuations in the exchange rate

all highlight the social and economic significance of the insurance sector. Therefore, it is necessary to measure and evaluate the performance of insurance companies.

The aim of this study is to examine the multidimensional performance of non-life insurance companies operating in Turkey based on criteria based on financial and service network performance. For this purpose, a new integrated MCDM model consisting of ENTROPY, MEREC and MACONT methods has been proposed to evaluate the multidimensional performance of insurance companies. With the proposed model, unlike many studies in the literature, not only the financial performances of insurance companies but also their service network performances were evaluated. In addition, the results of the proposed model were tested with different sensitivity analyzes and it was determined that it gave valid results.

The objective importance weights of the evaluation criteria used in the multidimensional performance evaluation of insurance companies were determined using the ENTROPY and MEREC methods recommended in the model. Then, the results of these two methods were combined to obtain the final importance weights of the criteria. When the results of the common weighting method were examined, the three most effective criteria on the financial and service network performance of insurance companies in 2018 were determined to be C7 (asset size), C8 (asset profitability) and C1 (number of agencies), respectively. According to the study results, it can be said that their asset structures are decisive on the performance of the insurance companies included in the analysis in 2018. Table 12 results for 2019 indicate the first three criteria that determine the performance of insurance companies as C1 (number of agencies), C9 (technical profit) and C11 (return on equity capital), respectively. It can be stated that both the technical profit obtained from insurance activities and the return on equity, which is the measure of the profit earned by company partners in return for the capital they invested, were effective on the performance of insurance companies in the year in question. In addition, it is seen that the number of agencies criterion has a high impact weight in determining performance in the first two years included in the analysis. The fact that agencies are the distribution channel with the highest share in the premium production of non-life insurance companies can be shown as supporting this situation. In 2020, the three most effective criteria in determining the multidimensional performance of insurance companies were determined as C1 (number of agencies), C9 (technical profit) and C8 (net profit), respectively. It can be said that the determinants of multidimensional performance in the year in question were the profitability of the companies and the effective use of the agency distribution channel. The results for 2021-2022 obtained from the common weighting procedure can be interpreted as the multidimensional performance of insurance companies with a solid asset structure, efficient use of their assets and high asset profitability. When the results are examined, it can be said that insurance companies that want to increase their multi-dimensional performance in terms of financial and service network should give importance to their profitability and agency distribution channel.

The 2018-2022 ranking results of all companies obtained from the MACONT procedure were combined using the BORDA method and an overall ranking result was obtained. According to these results, Anadolu Sigorta ranked first in the multidimensional performance ranking evaluated according to financial and service network indicators. The company's multidimensional performance was driven by its nearly 100 years of experience in the sector, its history and deep-rooted traditions that have earned the trust of its customers, as well as its strong market position with a high share of premium production. By the end of 2022, the Company will rank second in premium production in the non-life insurance sector with a market share of 11.64%. In addition, the strong bancassurance distribution channel of Anadolu Sigorta, a subsidiary of İşbank, together with the synergy of İşbank, can be considered to be effective in the company's multidimensional successful performance. The results obtained from the MACONT procedure based on BORDA showed that Ak Sigorta ranked second in the multidimensional performance ranking. This success can be attributed to Ak Sigorta high market share in the non-life insurance sector. In addition, the company has a very strong bancassurance network with 710 Akbank branches. It can be said that these conditions are supportive of the company's success. The analysis results indicate that the multidimensional performances of Ray, Zurich, and Ankara sigorta companies were generally low during the period covered. This may be due to the fact that these companies are ranked lower in terms of premium production and market share. To test the consistency and robustness of the hybrid decision model proposed in the study, sensitivity analysis was conducted based on different criterion weights and rank reversal features. Additionally, a comparison analysis was performed using different MCDM algorithms. The results of the model were found to be consistent and reliable.

In contrast to previous studies, this research evaluates firm performance from multiple dimensions by considering both financial and service network performance of insurance companies. This approach contributes to the existing literature. Furthermore, the decision model suggested in the study can be applied to various research areas, including assessing firm-level performance, comparing performance across countries, and analyzing sector-specific performance.

The first limitation of this study relates to the data period and the companies included in the analysis. The second limitation is that the results obtained are valid only for non-life sector companies. Additionally, in future studies, researchers or practitioners can integrate subjective weighting methods such as BWM, LMAW, LBWA, AHP, DEMATEL, etc., and obtain more detailed results using different decision criteria. Besides, in future studies, more comprehensive decision support systems can be produced using methods based on fuzzy numbers or gray numbers. In this context, decision support models based on gray numbers such as grey MABAC, grey MAIRCA, grey MARCOS, grey LOPCOW, grey SWARA or intuitionistic fuzzy, neutrosophic fuzzy, pythagorean fuzzy, picture fuzzy, q rung orthoair fuzzy, and spherical fuzzy sets can be used.

The study does not necessitate Ethics Committee permission.

The study has been crafted in adherence to the principles of research and publication ethics.

The author declares that there exists no financial conflict of interest involving any institution, organization, or individual(s) associated with the article.

The entire work was carried out by its only, stated author.

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MAKÜ | Journal of Mehmet Akif Ersoy University
Economics and Administrative Sciences Faculty

Home, Office or Hybrid? Which is the Ideal Working Model for Software Developers? *

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* This study is derived from Muhammet Tortumlu's PhD thesis, under the supervision of Hasan Hüseyin Uzunbacak.

Abstract

The main aim of this research is to examine the impacts of the radical changes in work model choice brought about by the Covid-19 pandemic on the emotions and attitudes of employees. The study group consists of 113 software developers who have returned to working from the office after Covid-19, 163 who continue to work from home, and 131 who are hybrid working from home. As a result of the research, it was seen that there were significant differences in the levels of job-related affective well-being, loneliness at work and leader member exchange between home-based, office-based and hybrid employees. Job related affective well-being and leader member exchange were found to be higher in hybrid employees compared to those working from home and office, and loneliness at work was found to be lower. There was no significant difference between the study groups in the levels of coworker exchange. Due to the current nature of the research findings, they have been discussed within the framework of limited studies in the field literature.

Keywords: Loneliness at Work, Job Related Affective Well-Being, Leader Member Exchange, Coworker Exchange, Software Developers.

Article Type	Application Date	Admission Date
Research Article	February 27, 2024	June 26, 2024

1. INTRODUCTION

The invention and widespread use of personal computers in the early 1970s, the proliferation of internet usage throughout the world, and the development of information and communication technology have created a revolution that has fundamentally changed business processes. This revolution has formed the foundation for the transition from an industrial society to an information age, which is now referred to as the digital age. Digitalization refers to the adoption or increase in the use of digital or computer technology by an organization, industry, country, etc. (Brennen & Kreiss, 2014). As individuals' interactions with each other change through new generation phones and social media platforms, businesses have also transformed the way they produce, market, and apply all of their business processes. This digital transformation is a process that results from changes caused by technological advancements (Chew, 2013). Technological advancements have led to the emergence of new forms of work and have necessitated the restructuring of organizations and organizational elements. In particular, the development of information and communication technology (ICT) and subsequent digitalization has made working from home (WFH), or working from a location physically distant from the employer, possible. This phenomenon is gradually erasing the importance of the physical dimension of organizations. Therefore, considering today's conditions, it has become necessary to examine how working conditions and situations affect organizations and employees.

In addition to technological advancements, changes in the social and economic context, such as the reduction of distance between places and the partial elimination of traditional workplaces, have begun to alter the way work is conducted and the social behaviors of employees. This has led to a need for re-organization and re-examination of organizational and intra-organizational relationships. The shift towards virtual environments, as a result of changing social patterns, has prompted companies and employees to experiment with different working methods. Many multinational corporations, for instance, offer opportunities such as hybrid working, which allows employees to working from home and divide their working hours between home and the office, through the use of information and communication technologies. Hybrid working from home (HWFH) is a flexible approach that allows employees to divide their time between working from office (WFO) and WFH, typically 2-3 days per week at home and the remaining days in the office (Bloom et al., 2022). The outbreak of the COVID-19 pandemic in 2019 has made it necessary for citizens in most countries to live in isolation at home as a result of lockdowns. The pandemic has led some businesses, especially those in the information technology sector, to fully implement WFH or hybrid working systems (Belingheri et al., 2020; Lan et al., 2020). As a result, the HWFH model is mainly used by companies in the information technology sector that provide software services.

In the information technology sector, companies providing computer software services conduct their operations by using software programs with employees known as "software developers". Software developers, in addition to the opportunities to work remotely and in a hybrid environment as part of their

working conditions, have also become an attractive profession for those who want to work in this sector due to the digitalization of businesses. The rapid digitalization of work has caused an increase in the number of software developers worldwide, including in Turkey. According to research conducted by Evans Data Corporation (2019), the number of software developers has increased by 500,000 in a year and is predicted to reach 27 million by 2023 and 45 million by 2030. As seen, the digitalization of work and processes is increasing interest in digital-focused careers. Some predictions suggest that artificial intelligence will eliminate many jobs in the future, but digital and software-focused careers will maintain their importance (Harari, 2018).

Today, organizations have become more responsive to the needs of their employees. Employee happiness, satisfaction with the organization and relationships, and emotional attachment to the organization are critical factors for organizations. Businesses that wish to retain qualified employees can develop practices to improve working conditions to make employees happy and satisfied. In the aftermath of the pandemic, research has been conducted extensively over the past two years on the attitudes of employees towards WFO, WFH, and HWFH models. Research shows that flexibility in working is one of the most important factors in deciding whether to accept a job offer (IWG Global Workspace Survey, 2019; Microsoft, 2021). The results of a survey by FlexJobs (2021) show that 58% of employees prefer to search for a different job rather than WFO (Pelta, 2021). According to the same survey, 65% of employees plan to continue working remotely on a full-time basis after the pandemic. Another survey found that employees consider the HWFH model more attractive than WFH (Vargas-Llave et al. 2020). Although WFH workers can interact with leaders and colleagues in a digital environment, they may face difficulties in sharing and forming connections. This can lead to isolation and dissatisfaction in their work lives.

According to research conducted by Kaspersky (2021a), 69% of employees reported that remote working negatively impacted their emotional health. In a survey conducted by Microsoft (2021), 40% of employees who WFH reported considering changing jobs. Another study found that 53% of remote workers felt isolated and alone (Kaspersky, 2021b). It is clear that remote working styles, which lack face-to-face interaction and are far from office environments, can lead to various negative impacts on human emotions and behavior. According to Tortumlu (2023), in his research on software developers working from home, the most significant disadvantages of remote work include loneliness and social isolation. Office environments are an important source of social interaction and a requirement for the current generation of employees in many companies (Rañeses et al., 2022). However, it is also not possible to claim that traditional office environments are ideal for all employees. A research conducted by Barrero and colleagues (2020) in the US, which included 35,000 participants, found that 32% of employees definitely did not want to return to working in the office after the pandemic.

Organizations can overcome this dilemma by implementing a HWFH model. The HWFH model is appealing because it combines the benefits of WFO, such as the opportunity for collaboration,

innovation, and face-to-face interaction with the flexibility and cost savings of WFH. HWFH arrangements create an alternative option by combining the benefits of being in the office with the benefits of WFH. HWFH workers can protect against loneliness on the days they WFO with the support of colleagues and managers (Knight et al., 2022). The results of this study support the idea that spending some working hours with colleagues and managers can balance the social disadvantages of WFH. According to the Cisco's (2021) Global Hybrid Work Research, which involved the participation of 10,000 employees in Middle East and Africa countries, HWFH workers are in better physical and mental health; 76% of the participants said that HWFH and WFH models improved their lives, and 67% of participants said that HWFH improved their family relationships.

In a study conducted by Fujitsu in 2021 on its employees in Japan, it was found that 15% of the employees chose the office as their preferred working location, 30% opted for their homes, and the remaining 55% preferred a combination of home and office, commonly referred to as a hybrid model (Scott & Gratton, 2021). In a research conducted for 6 months with 1600 employees in a multinational company, when comparing WFO (5 days) with the HWFH modal (3 days in the office, 2 days at home), it was found that there was a 35% decrease in burnout rates, an increase in job satisfaction and performance, and a decrease in sick leave rates in the hybrid working model. It was stated that these are important factors in retaining employees and increasing productivity (Bloom et al., 2022). The findings of these studies indicate that the HWFH is a win-win situation for both organizations and employees. In addition, according to the report "Agenda of Human Resources Leaders" by PwC Turkey (2021), based on a research conducted with over forty human resources managers, 94% of the managers who participated in the research stated that they believe the HWFH model will be permanent.

According to the research done by Wontorczyk and Roznowski (2022) on the level of job commitment among WFO, HWFH, and WFH workers, no significant difference was found in the levels of job commitment among workers in the three different models, but it was found that WFH workers had a higher level of job commitment in relation to relationships and social media use. In the research conducted by Uru et al. (2022) during the Covid-19 period, it was found that the relationship between work engagement and organizational identification is stronger among HWFH and WFH workers compared to WFO workers. In the research done by Bloom and colleagues (2022) comparing the job satisfaction, performance, and intention to leave of WFO and HWFH workers, it was found that returning to a HWFH model increases performance and job satisfaction and decreases the intention to leave. The physical distance between WFH workers and their colleagues and leaders can make their attitudes different than those of other working models. Managers argue that the HWFH model is necessary for productivity, employee happiness, and employee retention. In an article published in Khaleej Times, it was found that 50% of employees who are uncomfortable with less interaction with their colleague's experience burnout and 30% feel more anxious while working remotely (Rañeses et

al., 2022). On the other hand, the attractiveness of the HWFH model (Vargas-Llave et al. 2020) for employees may differentiate the affective well-being of employees from other working models.

Technological innovations and the ease brought by digitalization have led organizations to seek new ways of working. Especially with the outbreak of the Covid-19 pandemic in 2019, WFH has been forced and many companies have started to let their employees WFH. As the impact of the pandemic decreases, a return to WFO has begun. However, some companies in the IT sector have preferred WFH models such as WFH and HWFH. Today, criteria for organizations to decide on the ideal working model for their employees are limited. The potential differences in feelings and attitudes of individuals who WFO before the Covid-19 pandemic and those who switched to WFH or HWFH models after the pandemic could be an important factor for organizations to consider when choosing a working model. As research in this area is limited and further research is needed. Recently, companies like Apple, Twitter, Disney, and Getir have decided to return to full-time office work system. These decisions may be due to the negative effects of WFH on employees or problems that arose in business processes.

This situation shows that it is important for managers and employees to research which working method is more effective from different variables. Therefore, this research aims to determine whether there are significant differences in the levels of loneliness at work, job-related affective well-being, leader-member exchange, and coworker exchange among individuals who work in the software development sector in three different working models (WFH, WFO, and HWFH). The question of this research is:

Are there significant differences in levels of job-related emotional well-being, loneliness in the workplace, leader-member interaction, and interaction with coworkers between hybrid working from home workers, working from home workers, and working from the office workers?

2. METHODOLOGY

2.1. Participants

Before delving into participant information, we would like to express that artificial intelligence applications were utilized during the translation phase of this study into English.

The research group consists of 407 individuals who work as software developers in companies operating in the IT sector in Istanbul. All of the participants were WFO workers before the Covid 19 pandemic. Within this study group, 113 participants continue to working from office (WFO) for five days a week, 163 participants working from home (WFH) only since the Covid-19 pandemic, and 131 participants work with a hybrid working from home (HWFH) model (3 days home, 2 days office or 2 days home, 3 days office). Non-probability sampling method, purposive sampling, was used to form the study group. The purposive sampling method is when researchers start with the most accessible respondents and continue to sample until they reach the desired size (Büyüköztürk et al., 2016).

2.2. Data Collection Process

Ethical approval was sought before the research process began. All participants gave their consent to participate in the research by marking the field at the beginning of the questionnaire. Due to the difficulty of reaching the target group of the research, the data collection process took 8 months (01.01.2022-01.08.2022). A plan of action was first formed before the research began, and the data collection process was completed.

Leading companies in the IT sector in Turkey were identified and senior managers were contacted to conduct interviews and share surveys over a period of one month. Contacts were made with the Software Industrialists Association (YASAD) to share the research survey with member companies, permissions were obtained, and the research survey was shared. During this process, social media accounts of individuals working as software developers were tracked and contacted, and surveys were sent to those who were appropriate for the scope of the research. Throughout this implementation process, the responses of each group and participant reached by the survey were coded and tracked. During the ongoing period, interviews with companies operating in the IT sector were repeated frequently, and the research survey was shared, and a sufficient number of participants were reached in the 8-month period.

2.3. Measures

Both face-to-face interviews and Google Forms were used to collect data for the research. The survey form created consists of a total of 5 sections. In the first section, the working model, age, gender, tenure, educational status, and marital status of the employees were asked. The other 4 sections consist of the Loneliness at Work Scale, Job-Related Affective Well-Being Scale, Leader-Member Exchange Scale, and Coworker Exchange Scale.

Loneliness at Work Scale: The Loneliness at Work Scale (LWS) was developed by Wright, Burt and Strongman (2006) to determine individuals' perceptions of loneliness in their work life. The scale was adapted into Turkish by Doğan and colleagues (2009). The LWS evaluates the loneliness that employees experience in their work life. The LWS consists of a total of 16 items in two dimensions, "emotional deprivation" and "social companionship". The items that measure the emotional deprivation dimension are 1,2,3,4,5,6,7,8,9, and the items that measure the social companionship dimension are 10,11,12,13,14,15,16. The LWS is arranged on a 5-point Likert scale from strongly disagree (1) to strongly agree (2). The items 5,6,10,11,12,14,15 and 16 are reverse coded. The scale includes statements such as "I feel emotionally distant from my co-workers" and "I am satisfied with my relationships at work.

Job-Related Affective Well-Being Scale: The Job-Related Affective Well-Being Scale (JRWS) was developed by Sevastos (1996) and a study on its validity and reliability in Turkish was conducted by Duyan and colleagues (2013). The scale has 12 items. The scale consists of four monopolar

dimensions: enthusiasm, anxiety, depression, and relaxation. The EWSW is designed in a 6-point Likert scale. The items measuring the anxiety and depression dimensions are reverse coded in the scale.

Coworker Exchange Scale: The Coworker Exchange Scale (CWXS) was developed by Sherony and Green (2002) to measure the quality of employees' relationships with other work colleagues. The Turkish validation of the scale was conducted by Tortumlu and Uzunbacak (2022). The CWXS consist of one-dimensional and 5 items. There is no reverse-coded statement in the scale. The scale is designed in a 5-point Likert scale. The scale includes statements such as "My relationships with my colleagues are extremely productive" and "My colleagues understand my needs and problems related to the job".

Leader-Member Exchange Scale: The Leader-Member Exchange Scale (LMXS) was developed by Liden and Maslyn (1998) and was adapted to Turkish by Baş and colleagues (2010). The scale consists of 4 dimensions (influence, helpfulness, contribution and professional respect) and 12 items. The scale is designed in a 5-point Likert scale and no reverse coded item. The scale includes items such as "My supervisor is good enough to be a friend" and "I enjoy working with my supervisor."

2.4. Data Analysis

A causal comparison research model was used to determine whether there is a significant difference between the levels of loneliness at work, job-related affective well-being, leader-member exchange, and coworker exchange in the work life according to the working model of the working group. The causal comparison model is utilized in research to establish the reasons and results of variations between groups of participants, without any changes to the conditions or participants (Büyüköztürk et al., 2016). The demographic characteristics and descriptive statistics of the participants were analyzed using the SPSS 22 program. One-way analysis of variance (ANOVA) was used to determine whether there was a statistically significant difference in the levels of loneliness, emotional well-being related to work, leader-member interaction, and interaction with colleagues among software developers according to the working models. Before performing the variance analysis, the assumption of homogeneity of variances in the data set was controlled by performing the Levene test. The Levene test showed that the variances were equivalent, as it did not yield a statistically significant result ($p > .05$). The normality assumption of the variables in the data set was checked. When skewness and kurtosis values were examined, it was seen that values were in the range of ± 1.50. According to Tabachnick and Fidell (2013), if the skewness and kurtosis values are within the range of ± 1.50, it indicates that the normal distribution assumption is met. Tukey or Hochberg's GT2 tests were chosen to determine the sources of differences (Field, 2005).

The reliability of the scales used in the study was determined by calculating the Cronbach's Alpha Coefficient. Confirmatory Factor Analysis (CFA) was performed to determine whether the scales have construct validity. AMOS 21 program was used to analyze the data obtained from the participants within the scope of the research model.

2.5. Confirmatory Factor Analysis Results

In this part of the study, Confirmatory Factor Analysis (DFA) was performed in order to reveal the validity of the LWS, JRWS, CWES and LMXS scales used in the research for the study group. The CFA analyses were carried out through the AMOS 21 program. The results of the analyses were decided according to goodness of fit indices. The most commonly used of these values is the Chi-square (χ^2) or CMIN (minimum discrepancy) in the AMOS program. This value shows whether the sample is consistent with the theoretically proposed theoretical model. Consistency is achieved if the value of χ^2 is divided by the df (degree of freedom) and the result is less than 3, which indicates good fit, and between 3 and 5, which indicates acceptable fit.

The compatibility is determined by dividing the χ^2 value by the df (degree of freedom) and if the result is less than 3, it shows good compatibility, and if it is between 3 and 5, it shows acceptable compatibility. Another index of compatibility is RMSEA (The root mean square error of approximation) and CFI (Comparative Fit Index). RMSEA values below .1 are considered acceptable (MacCallum, Browne & Sugawara, 1996). It has been stated that CFI is the index of compatibility that is least affected by the sample size. Kline (2015) suggests that reporting χ^2/df, χ^2 p-value, RMSEA, and CFI is sufficient for assessing compatibility. The results are analyzed within the scope of the compatibility values shown in Table 2. Jackson and colleagues (2009) emphasize that reporting at least one of the indices such as χ^2/df, χ^2 p-value, TLI, CFI, NFI, IFI, and RMSEA value is sufficient in DFA and path analysis. In this study, the χ^2/df, CFI, RMSEA, and GFI values are also reported as compatibility indexes in the DFA and path analysis. The validity analysis results and compatibility values of LWS, WRWS, CWXS, and LMXS used in the three different study groups are shown in Table 1.

Table 1. Good of Fit Indices

Fit Indices		χ^2	χ^2/df	GFI	CFI	RMSEA
Working	**Measures**					
	LWS	204.793	2.048	.91	.90	.083
	WRWS	130.070	2.710	.91	.93	.071
WFH	CWXS	6.062	1.212	.99	.99	.075
	LMXS	89.164	1.820	.92	.97	.070
	LWS	220.681	2.252	.90	.91	.085
	WRWS	92.920	1.896	.90	.95	.088
WFO	CWXS	19.919	2.944	.93	.96	.076
	LMXS	111.917	2.238	.91	.96	.085
	LWS	170.915	1.726	.90	.92	0.86
	WRWS	162.660	3.320	.91	.90	0.95
HWFH	CWXS	14.142	3.535	.96	.98	0.70
	LMXS	108.381	2.212	.90	.96	0.73

The results of the CFA conducted to test the validity of the four different scales applied to the three different study groups in the research can be seen in Table 1. During the analysis process, modifications were made to the error terms as suggested by the program, and the values presented in

Table 1 were obtained as a result. After it was determined that the validity of the scales used in the research was ensured by DFA, reliability analysis was carried out to calculate the internal consistency of the scales related to the variables. The internal consistency reliability coefficients (Cronbach's alpha value = α) were examined for reliability. A scale is considered reliable if its reliability coefficient is higher than 0.40. As a result of the reliability analysis carried out within the scope of this research, it was seen that the reliability coefficients of the scales used were between 0.65 and 0.95.

3. RESULTS

The averages of the variables and dimensions according to the three different study models in the research are presented in Table 2. The scores for the research variables of loneliness in work life, interaction with colleagues, and interaction with leader members range from 1 to 5, while the scores for emotional well-being in relation to work range from 1 to 6.

Table 2. Mean and Standard Deviation of Variables

Variables	WFH $\bar{X}$ (SS)	WFO $\bar{X}$ (SS)	HWFH $\bar{X}$ (SS)
1. Loneliness at work	1.98 (0.66)	1.92 (0.71)	1.70 (0.56)
a. Emotional deprivation	1.93 (0.78)	1.92 (0.78)	1.72 (0.63)
b. Social Companionship	3.60 (0.70)	3.73 (0.83)	3.93 (0.61)
2. Job-related affective well-being	4.14 (0.80)	4.03 (0.93)	4.40 (0.81)
a. Enthusiasm	3.83 (0.98)	3.74 (1.21)	4.13 (0.98)
b. Relaxation	3.40 (0.91)	3.32 (1.27)	3.58 (1.05)
c. Depression	2.20 (0.89)	2.35 (1.01)	2.00 (0.90)
d. Anxiety	2.70 (0.97)	2.70 (1.21)	2.40 (0.98)
3. Coworker Exchange	4.06 (0.70)	3.97 (0.78)	4.14 (0.71)
4. Leader-Member Exchange	4.05 (0.75)	3.88 (0.91)	4.17 (0.80)
a. Influence	4.18 (0.92)	3.89 (1.12)	4.30 (0.90)
b. Helpfulness	3.85 (0.91)	3.70 (1.02)	4.03 (0.90)
c. Contribution	3.93 (0.80)	3.97 (0.94)	4.02 (0.88)
d. Professional Respect	4.22 (0.92)	3.94 (0.11)	4.30 (0.93)

The standard deviation (SS) and mean values ($\bar{X}$) of the variables used in the research according to the working models are shown in Table 2. The results of the mean difference analysis of the levels of loneliness at work, job-related affective well-being, coworker exchange, and leader member exchange among employees who WFH, WFO, and HWFH models are shown in Table 3.

Table 3. Results of ANOVA

Variables	Working Model	n	$\bar{x}$	SS	F	p	Differences
Loneliness at work	WFH (A)	163	1.98	0.052	6.550*	.002	A-C B-C
	WFO (B)	113	1.92	0.067			
	HWFH (C)	131	1.70	0.049			
Job-related affective well-being	WFH (A)	163	3.83	0.088	3.954*	.020	A-C B-C
	WFO (B)	113	3.74	0.114			
	HWFH (C)	131	4.13	0.095			
Leader-member exchange	WFH (A)	163	4.05	0.058	3.610*	.028	B-C
	WFO (B)	113	3.88	0.086			
	HWFH (C)	131	4.17	0.069			
Coworker exchange	WFH (A)	163	4.06	0.055	1.623	.199	–
	WFO (B)	113	3.97	0.073			
	HWFH (C)	131	4.14	0.062			

The difference analysis results shown in Table 3 are related to the averages of the variables presented in Table 2. Therefore, Table 2 should be considered when comparing the results of the difference analysis. According to Table 3, levels of loneliness at work differ significantly among working models. The levels of loneliness at work of HWFH workers are lower than those of other working models. Job-related affective well-being levels also vary among working models. HWFH workers have higher means of job-related well-being compared to those WFH and WFO. When looking at the analysis results on whether the levels of leader-member exchange differ among working models (Table 3), HWFH workers have higher levels of leader-member exchange compared to those WFO. However, the levels of coworker exchange do not differ among the three working models.

4. CONCLUSION

The digitization of the working life and working styles has led to the emergence of new working models. Some organizations in the IT sector are able to perform their services with the use of computer programs and applications and offer their employees the opportunity to work remotely. Organizations that had not experienced WFH prior to the Covid-19 pandemic were forced to switch to WFH due to pandemic restrictions. As the effects and restrictions of the pandemic have decreased, some organizations have returned to WFO while others have continued to implement the WFH model. It is of interest to understand what effects this change has had on the attitudes and feelings of employees. Therefore, the aim of this study is to determine whether the levels of job-related affective well-being, loneliness at work, leader-member exchange, and coworker exchange of software developers who WFH, in the WFO and in a HWFH differ in the IT sector.

The changes in work and lifestyles, accelerated by digitization and the recent Covid-19 pandemic, affect people's habits, feelings, behavior and attitudes. The ability to work remotely has led to changes in people's perceptions of work and the workplace, and organizations are increasingly inclined to implement new forms of work. However, it is a matter of research to understand what changes these new conditions will bring about in the feelings, behavior and attitudes of employees. In this research, the levels of job-related affective well-being, loneliness at work, leader-member exchange and coworker exchange of employees WFH, WFO and in a HWFH model were determined and the results were analyzed.

When the levels of loneliness at work were examined, it was seen that the highest average value was found in the employees WFH and the lowest average value was found in the HWFH employees. HWFH employees had the lowest average in the emotional deprivation dimension of loneliness in work life, while they had the highest average in the social companionship dimension. On the other hand, the lowest average in the social companionship dimension was found in the employees WFH. Loneliness in work life is an important feeling that can arise from many reasons in organizational life. Employees WFH are socially isolated due to factors such as the working environment of the home. Social isolation

is defined as the lack of objective interaction with others (Cornwell & Waite, 2009). Employees WFH are deprived of important resources such as support from work colleagues. Employees WFH perform their tasks physically separated from the workplace, colleagues, and managers. Physical separations can fuel feelings of social isolation and loneliness (Cowan, 2020). This situation can lead the employee to a lack of social networks and isolation (Tortumlu, 2023; Cacioppo & Hawkley, 2003). Therefore, one of the reasons for the higher levels of loneliness in work life among employees WFH may be social isolation and lack of social networks. Indeed, a study found that 53% of WFH workers reported feeling isolated and alone (Kaspersky, 2021b). Additionally, software developers working from home perceive loneliness as the biggest disadvantage of remote work (Tortumlu, 2023). Being isolated for a long period of time can make the employee feel less "belonging" to the organization and even increase the intention to leave the company (Larson et al., 2020).

The results of the difference analysis conducted within the scope of the research indicate that the level of loneliness at work of HWFH workers differs from that of home and WFO workers. However, it is understood that the levels of loneliness at work do not significantly differ between WFH and WFO workers. The HWFH model offers the flexibility of working both in the WFO and WFH, thus reducing the disadvantages that arise from working in an office environment or at home. While WFH workers can only interact with colleagues and managers through digital tools, HWFH workers can have face-to-face interactions with their work environment on certain days of the week. This is an important factor that prevents feelings of loneliness at work (Cowan, 2020). HWFH workers are protected from feelings of loneliness on the days they work in the office by the support of their colleagues (Knight et al., 2022). Working in the HWFH is an important factor in displaying positive behaviors (Bloom et al., 2022). On the other hand, it is difficult to say that working in the office is an ideal model even in sectors that have the opportunity to work remotely technically. Especially in office environments, it can be encountered with negative situations such as bullying, rough behavior and mobbing. Individuals who WFO all day are more likely to be exposed to these behaviors. Negative behaviors such as mobbing (Tetik, 2010) and workplace bullying (Li et al., 2022) have been found to increase loneliness in work life.

Based on the research results, when examining the levels of job-related affective well-being of employees, it was found that the highest average value was found in HWFH employees, while the lowest average value was found in WFO employees. HWFH employees had the highest average on the dimensions of enthusiasm and relaxation in terms of job-related affective well-being, while they had the lowest average on the dimensions of depression and anxiety. The results of the difference analysis showed that the levels of job-related affective well-being of HWFH employees differ from that of WFO and WFH employees. The fact that the level of job-related affective well-being of HWFH employees is higher than that of WFO and home-based employees explains this result. However, no significant difference was found between the levels of job-related affective well-being of WFO and WFH employees. The flexibility provided by the HWFH model to the employee can be an important source

of internal motivation. According to the Broaden and Build Theory (Fredrickson, 1998), it is claimed that happy people can have a wide range of creative and flexible thinking repertoires and can generate different solutions to problems. This undoubtedly brings important results for the individual and the organization in terms of developing innovative ideas, productivity, and intellectual capital (Fisher, 2010, p. 384). The internal motivation of an employee with a flexible working environment is an important factor in becoming a happier person (Ab Wahab & Tatoglu, 2020; Hayman, 2010). The HWFH flexibility provided by the organization to its employees is revealing the trust of the employee in the organization, as well as the trust of the organization in its employees. Trust in leaders and colleagues reduces loneliness in the working life and increases happiness. (Taşpınar & Eryeşil, 2021).

In another perspective, the role of relationships with colleagues and interactions with leaders in the happiness of employees is significant. An employee who only interacts with the organization through digital tools may not be satisfied with this interaction. It may be difficult for a newly joining WFH employee to share with their colleagues, perceive support, and become attached to their manager and organization. The lack of sharing and interaction can make the employee anxious and unhappy. Although the employee interacts with family and social friends outside of work, the satisfaction obtained from the relationship with colleagues who share the same job and conditions will be different. The relationship with colleagues and leader is an emotionally nourishing source for the individual. According to the Job Demands-Resources Theory, the source of negative stress is the lack of relationship and support (Wontorczyk & Roznowski, 2022). Within this framework, Bakker and Demerouti (2017) stated that job demands factors are uncomfortable physical working environments and emotionally mandatory interactions. The Conservation of Resources Theory (Hobfoll, 1989) argues that creating basic resources that make life satisfying and enjoyable throughout life is essential. When a person experiences a surplus of these positive resources, they experience a positive well-being experience; when they cannot access these resources, they experience stress or well-being deficiency (Hobfoll, 1989, p. 517). The deficiency in resources can lead to workplace isolation. Workplace isolation is a two-dimensional structure that represents the isolation perceived from others in the workplace and both colleagues and the company's support network (Marshall et al., 2007). Workplace isolation negatively affects employee happiness (D'Oliveira & Persico, 2023). Therefore, the physical attachment of HWFH employees to the office is critical in employee happiness.

Another finding of the research is that the highest average level of leader-member exchange is found among HWFH workers, while the lowest average value is found among WFH workers. HWFH workers had the highest average value in all dimensions of leader-member exchange, including impact, responsibility, and professional respect. WFH workers, on the other hand, had the lowest average value in leader-member exchange dimensions. The results of the difference analysis showed that the leader-member exchange levels of HWFH workers differ from those of WFH and WFO. The higher level of leader-member exchange of HWFH workers is responsible for this result. The flexibility provided by

the organization and leaders to HWFH workers can increase positive attitudes towards the organization and leaders. The flexibility provided to the employee is related to the autonomy provided in the work. Employees experiencing more autonomy in their work improve the quality of leader-member exchange (Volmer et al., 2012). Various studies have found that employees with high-quality leader-member exchange experience more autonomy in the workplace (Zhang et al., 2012), are more responsible (Ilies et al.), and have more opportunities to express their ideas about the organization (Bernerth et al., 2016).

HWFH workers being in the office on specific days of the week and interacting with their manager in a physical environment can increase interaction. In the case of WFH workers, it is difficult to talk about this interaction. Because WFH workers interact with their leader through digital tools. In the case of office workers, this interaction is continuous and frequent. The frequency and continuity of interaction can be evaluated from two different perspectives. The first is that the organizational environment, the leader and the colleagues are ideal for the employee, they are happy while working, and as a result, they are emotionally attached to the organizational elements. In this case, the office worker's leader interaction may be positively affected by the office environment. However, it is difficult to say that the first situation is generally widespread and the majority. In the second case, the employee's approach to organizational elements is average or negative. Although the level of interaction with the leader is average or positive for office workers, there is a higher possibility of being affected by employees who have problems with their leader, complain or spread rumors and gossip in the organization in order to achieve various goals. Gossip in the workplace leads to cynical behavior and psychological contract violation (Kuo et al., 2015). Psychological contract violation reduces leader-member exchange and increases cynicism (Gültekin, 2014; Kırboğa, 2017). Being in the office environment during working hours is a routine situation for WFO workers. However, one of the main goals of HWFH workers being in the office on certain days of the week is to ensure organizational interaction. Therefore, this interaction may be more meaningful for the HWFH worker, and the levels of leader-member exchange and coworker exchange may be higher. Indeed, all these factors, which emerged as a result of the research, indicate that the level of leader-member exchange of WFO workers is higher than that of HWFH workers.

According to the analysis conducted within the framework of the research, the lowest average for coworker exchange was found to belong to WFH workers, while the highest average belonged to HWFH workers. However, the results of the analysis show that there is no significant difference in coworker exchange among the groups. This result is due to the groups receiving similar average values. Although the lack of face-to-face contact would be expected to result in a much lower level of coworker exchange among WFH workers, the research found that there is no significant difference in coworker exchange among the groups. There could be many reasons for this outcome. Employees who have worked together in the same organization for many years, and who have formed a certain level of emotional bond, may not be affected by the working model in terms of their interaction. On the other

hand, it may be difficult for newly joined employees or individuals to achieve similar interactions while working remotely. Especially, WFH programmers may have limited opportunities to interact and recognize their colleagues in physical environments and dependent on the social activities and human resources practices of their organizations.

4.1. Limitations and Future Research

This research was conducted on software developers WFH, WFO, and in a HWFH model in software service companies in Istanbul, in the IT sector. Although the number of software developers in Turkey is currently at a lower level compared to other occupational groups, it can be said that it is a group of employees whose numbers are increasing year by year. Therefore, the results of the research cannot be generalized to all employee groups. In this respect, it can be considered as a limitation of the research that the results and outcomes of the research should be evaluated only for software developers. On the other hand, the Covid-19 pandemic that the world faced in 2019 also changed working conditions, and the research was conducted in a period that can be considered new in terms of these changes. Additionally, this research is a quantitative study and it is assumed that the surveys filled out are unbiased and impartial.

This research focuses specifically on the potential differences in emotions, behaviors, and attitudes of employees caused by the rapidly changing work conditions and situations resulting from the development of information technologies and factors arising from the Covid-19 pandemic. Within this framework, similar samples can be analyzed by comparing the different emotional states and behaviors of WFH, WFO, and HWFH workers. By forming three different groups within WFH, WFO, and HWFH workers, focus group interviews can be conducted to understand how working conditions affect emotions, attitudes, and behaviors, which can provide a deeper understanding of the subject. Additionally, research on evaluating different working models from the perspective of managers will contribute significantly to the literature. On the other hand, it is necessary to study organizations that have been forced to return to WFH but have returned to WFO after the threat of the pandemic has decreased. Because examining the main factors that lead these organizations to make this decision can provide important information to researchers and practitioners.

4.2. Managerial Implications

The physical separation of an employee from the office environment can keep the individual in the midst of social mobility. Otherwise, WFH can lead to social isolation. Physical separations can lead to social isolation and loneliness (Cowan, 2020). Social isolation refers to the lack of interaction with others (Cornwell & Waite 2009). Individuals who are deprived of social networks due to social isolation can exhibit withdrawal behavior (Cacioppo & Hawkley, 2003). On the other hand, family and friendship networks can support healthy behaviors (Christakis & Fowler, 2013). The employee's low-level interaction experience with the leader and colleagues can further isolate and unhappiness the individual.

These negative effects can be prevented by organizations' practices aimed at increasing the leader and coworkers' interactions. It is believed that the employee's relationship with the manager and social interaction play an important role in perceiving job stress (Karasek, 1979). Managerial support positively affects work attitudes (Ng & Sorensen, 2008). Additionally, support from colleagues can also lead to positive work attitudes (Kossek et al., 2011). Different work models may also lead to different employee feelings, work attitudes, and behaviors. Research in the field of organizational behavior has revealed that loneliness in the workplace decreases work performance (Ozcelik & Barsade, 2011), inhibits creativity (Peng et al., 2017), reduces organizational commitment (Ayazlar & Güzel, 2014; Stoica & Brate, 2013) and leads to depression (Erzen & Çikrikci, 2018). In addition, it is claimed that loneliness increases the likelihood of death by 26% (Holt-Lunstad et al., 2015). Strong evidence has been found that both social isolation and loneliness are associated with death, cardiovascular disease, depression, and anxiety (Leigh-Hunt vd., 2017).

The differences in national currency values among countries, particularly in Turkey as a developing country, can give an employee the opportunity to work remotely for a competing business in another country and benefit from that country's higher salary, while still being able to live well in their own country. Therefore, IT companies in Turkey may face difficulty in retaining their employees. While salary is an important factor in the intention to leave a job, organizations can prevent this intention by establishing healthy communication with employees, building strong ties and creating conducive working environments. Research conducted by Seyrek and Inal (2017) on IT employees found that organizational loyalty reduces the intention to leave a job, while an increase in job alternatives increases the intention to leave a job.

In this research, the loneliness at work, job-related affective well-being, and exchanges between leaders and coworkers of software developers WFH, WFO, and in a HWFH manner were compared in the IT sector. It was found that the positive emotions and attitudes of HWFH software developers were higher than those of other groups. Based on the data obtained from this research, it can be recommended that businesses with software developers in their companies implement a HWFH model. However, some businesses in this sector also have employees WFH from different cities or countries. In this case, the opportunity for HWFH is eliminated. Especially for companies with many employees, an office environment can be prepared for employees living in the same city or region to increase interaction. As seen in the research, the biggest factor in reducing the loneliness of WFH workers is their colleagues. In this regard, some suggestions can be made to managers.

The International Labour Organization (ILO) has stated that all efforts should be made to ensure that managers and employees can connect with each other when considering the risk of social isolation for remote workers (ILO, 2020). Within the organizational structure, an interaction unit can be established to control relationships only among coworkers, establish a harmonious environment, and organize face-to-face and digital interactions. It has been argued that high-quality organizational

interaction can help employees develop positive energy and ultimately lead to higher happiness by developing more personal resources (Le et al., 2020). Research has provided clear evidence that the quality of organizational interaction affects employees' attitudes, job outcomes and well-being (Dulebohn et al., 2012; Epitropaki & Martin, 1999; González-Navarro et al., 2019).

Employees can be given the opportunity to use shared offices where they can work together in their region. In a research conducted by Ağcadağ Çelik (2021), it was found that employees who use shared offices are highly satisfied with the provision of all the necessary facilities that a ready-made office provides. Periodically, social events such as sporting activities, games, and trips can be organized by bringing all employees together. Because face-to-face interactions among employees can increase organizational loyalty by building emotional ties. One day of the week, at a specific time, out of work, online meetings can be held where everyone can express themselves and share about their general lifestyle. Additionally, research results show that the well-being levels of WFH workers are affected by relationships with coworkers and leaders. Leaders have an impact on the well-being of WFH workers. In fact, the leader having more out-of-work interactions with WFH workers can make the employee feel better. The leader can increase face-to-face and online meetings with employees more frequently at certain periods.

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Application Area and Scope of the Principle of Social Risk

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Abstract

The administration can only be subjected to financial liability due to its nature and structure as a legal entity. As a requirement of the rule of law principle, the compensation of damages arising from the execution of public services by the administration is evaluated within the theory of "service fault". However, the financial liability of the administration is not limited to service fault. As a requirement of the social state principle, in addition to the principle of balancing the sacrifice, there is also the strict liability of the administration based on the principle of danger or risk. If the administration causes damage while engaging in dangerous activities or using hazardous vehicles, it is held liable even in the absence of fault. Nonetheless, the characteristic that distinguishes social risk liability from the principle of strict liability is that the causal link between the damage and the administrative activity is not sought. The social risk principle ensures that the administration is held strictly liable for damages caused by actions of anarchy and terrorism that disrupt public order.

Keywords: *Financial responsibility of the administration, Conditions of responsibility, Defective responsibility, Service defect, Conditions of service defect.*

Article Type	Application Date	Admission Date
Research Article	April 3, 2024	June 27, 2024

1. INTRODUCTION

The inseparable relationship between society and administration is gaining more and more importance every day. With the increasing role of individuals in this relationship, new areas of liability of the administration emerge, often not adequately met by traditional definitions. The financial liability of the administration, one of these types of liability, can be defined as the situation in which the state is held liable for the actions that result in damages to individuals while carrying out public duties. The financial liability defined for the administration includes the compensation from the financial resources of the administration for the damages caused to an individual or an institution as a result of the activities of the administration. This liability intends to ensure that the administration is cautious in its activities and protects the rights of those damaged (Gözler, 2006). The financial liability of the administration is not a sanction or punishment mechanism, but a process that seeks to compensate for the damage suffered and holds the public authority liable for its acts and procedures (Akpınar & Yeşilbaş, 2011). The financial liability of the administration has reached its current point by developing day by day. Previously, the idea of the irresponsibility of the state was dominant, yet this concept has been left behind over time and the idea that the administration should be held liable for the damages caused by its faulty procedures and actions has gained acceptance. Subsequently, with the increase and complexity of the activities carried out by the administration, along with the increase in the damages suffered by individuals correspondingly, the liability of the administration based on the service fault became inadequate as well, and the principle of strict liability emerged. As of the early 19th century, the idea suggesting that the state should intervene in the economic and social domain was confronted with a lack of responsibility with the rise of democracy and freedom. Expanding state duties increased the losses incurred by individuals and led to tensions between the state and individuals. With the developments in democracy and rights, the idea that the state should compensate for damages gained importance. In this period, it was recognized that the state should be considered as two separate entities in the context of both private and public law (Esin, 1973).

Fault liability is one of the main types of liability of the administration. However, alongside this, strict liability can also be mentioned. The types of strict liability are divided into two: risk liability and the principle of equality against public burdens (Gözler & Kaplan, 2015). Furthermore, in recent years, social risk liability based on the principle of risk has emerged in order to compensate people who have been damaged by social events such as acts of terrorism and illegal meetings/demonstrations and has been developed by doctrine and judicial decisions. The Council of State holds the administration liable for damages arising from events such as natural disasters and terrorism within the framework of the social risk principle. This principle stipulates that the administration should intervene effectively for public security and the welfare of citizens and be fully prepared for future risks. The decisions of the Council of State guide the administration in determining its strategies for social risks. In this framework,

the Council of State's holding the administration liable in such cases underscores the importance of social risk management and social welfare in public administration (Bahtiyar, 2004).

The purpose of this study is to examine the principle of social risk, which is one of the states of strict liability, after analysing the state of strict liability within the scope of the financial responsibility of the administration, and to clarify how this principle finds an application area for terrorist incidents, which is one of the biggest social problems of today. Therefore, in the context of this study, the lawsuits filed due to terrorist incidents and the decisions of the Council of State on these lawsuits will be explained by giving examples. The scope of the study will consist of the decisions of the Council of State on how the damages suffered by individuals as a member of the society are compensated within the framework of the social risk principle developed in accordance with the principle of social state.

As a method in the study, a library study was conducted. In addition, case examples and decisions within the scope of the subject for the legal field were also utilised. The sources obtained by the scanning and evaluation method were analysed and transferred to the article with a descriptive narrative method. The study consists of three parts. In the first part of the study, necessary explanations have been made on the perfect liability of the administration, the cases of perfect liability and the principles of perfect liability. In the second part of the study, comprehensive information is given on the emergence, basis, characteristics, and application area of social risk liability, which is one of the principles of strict liability. In the third part of the study, the concept of terrorism is clarified and the regulations on this problem in French and Turkish law are discussed, and finally, the decisions of the Council of State in various years regarding the compensation of damages arising from terrorist incidents are critically analysed. In the relevant sections of the article we will also clarify the answers to the following questions; What difficulties can the administration face in legal processes when implementing the principle of social risk? How should the administration deal with actions that carry social risk in connection with the principle of social risk? What role did the terrorist incidents in Türkiye, which increased especially after the 1980s, play in the development of the principle of social risk?

According to the Turkish Language Society, liability means to assume one's own actions or the consequences of any incident that falls within one's jurisdiction, accountability (Türkçe Sözlük, 2023). In Civil Law, when a person or institution commits an act that causes damage and because of this act, a victim is damaged, the damaged person or victim may claim compensation from the perpetrator to compensate for the damage. That is, the perpetrator is held liable only for the cause of the damage, without fault or negligence. This principle aims to protect the rights of victims and ensures compensation for the damage. The principle of strict liability in civil law is recognized as a fundamental principle in the legal systems of many countries and aims to protect the rights of victims (Atay & Odabaşı, 2010). Damage is an inevitable element of the concept of liability. It is present in two distinct areas where the administration bears liability in private law and public law, and liability in private law is based on fault.

Persons may suffer damages to their property or personal rights because of the activities carried out by the administration. The administration is obliged to compensate for these damages (Tan, 2020).

2. TYPES OF LIABILITY IN GENERAL

Liability is classified into three categories: political liability, criminal liability, and financial liability. Since the administration is not a real person, it has only financial (legal or asset) liability (Gözübüyük, 2006).

Political Liability: Political liability refers to the ability of administrators to be accountable for their political actions and the need to bear the consequences of those actions. In democratic systems of government, since sovereignty rests with the people, political liability must be directed to the public or their representatives, the elected parliaments (Kaboğlu, 2019). The political liability of ministers can arise from almost any conceivable issue administrative, economic, social, financial, etc. The works on inflation, the appointment of a governor to a province or an ambassador to a country, the referral of a minister to the Supreme Court, or the dismissal of a minister by a vote of no confidence before referral to the Supreme Court (Gözler, 2023).

Article 98 of the 1982 Constitution explains the political responsibilities to be imposed on Ministers under the heading "The means of information and control of the Grand National Assembly of Turkey" According to Article 98 of the 1982 Constitution,

> *The Grand National Assembly of Turkey shall exercise the power to obtain information and supervise through parliamentary enquiry, general debate, parliamentary investigation and written questions. A parliamentary enquiry consists of an enquiry to obtain information on a specific subject. General debate is the discussion of a specific issue concerning the society and the activities of the State in the General Assembly of the Grand National Assembly of Turkey. Parliamentary enquiry consists of an enquiry against the Vice Presidents and ministers pursuant to the fifth, sixth and seventh paragraphs of Article 106. Written question consists of deputies asking questions in writing to the Vice Presidents and ministers to be answered in writing within 15 days at the latest. The form, content and scope of parliamentary enquiry, general debate and written question motions as well as the procedures of enquiry shall be regulated by the Rules of Procedure of the Parliament.*

Criminal Liability: Criminal Liability is a type of civil liability imposed on natural persons who are deemed to have committed an offence. This responsibility is realised through the imposition of sanctions by the authorities of the state. Criminal liability includes the responsibility to understand the legal meaning and consequences of an action. If an action constitutes an offence, criminal liability arises (İnce, 2023). Article 38 of the 1982 Constitution essentially bases criminal responsibility on three basic principles: "legality, innocence and individuality". The principle of legality means that no one shall be punished for an act which the law in force at the time it was committed does not criminalise; no one shall be punished with a heavier penalty than the penalty prescribed for that offence in the law at the time when the offence was committed (Article 38 of the Constitution). The principle of innocence (presumption of innocence) states that no one can be considered guilty until his/her guilt is established

by a judgement; in other words, no one can be considered guilty until a final judgement is rendered by the judicial organs that he/she has committed a crime. According to Article 38 of the 1982 Constitution, "criminal responsibility is personal". According to Article 20 of the Turkish Penal Code, "criminal responsibility is personal". No one can be held responsible for the act of another. Criminal sanctions cannot be imposed on legal persons. However, the sanctions in the nature of security measures prescribed by law due to the offence are reserved.

Fiscal Responsibility: In fiscal responsibility, the damage caused by a person to another person is compensated by the state from the assets of the damaging person. In other words, in case of breach of financial responsibility, according to the relevant legal regulations or contracts, compensation, sanctions or other legal consequences may be in question. It is therefore important to fulfil financial responsibility, otherwise legal liability may arise. Therefore, the compensation of the damage by the state, not by the consent of the damaging party, is called liability. There are two types of fiscal responsibility: civil and administrative responsibility. Civil liability arises within the framework of private law relations between individuals or organisations. It is particularly based on contracts, debts or other financial commitments. Administrative liability relates to problems that arise when the state or public institutions fulfil their legal obligations or perform their duty to provide public services. Administrative liability is based on legal regulations and constitutional provisions, and such liability is usually resolved in administrative courts. Administrative responsibility is the responsibility of the administration in the field of private law, and administrative liability is the responsibility of the administration in the field of public law (Gözler ve Kaplan, 2020). According to the provisions of Article 125 of the Constitution which states that "…The judicial remedy is open against all actions and proceedings of the administration... The administration is obliged to pay the damages arising from its own actions and proceedings" and Article 129 which states that "…Compensation lawsuits arising from the faults committed by civil servants and other public officials while exercising their powers can only be filed against the administration, provided that they are recourse to them and in accordance with the form and conditions specified by law...", persons who have suffered damage may file a lawsuit against the administration (Yıldırım, 2020). It is a well-known principle of administrative law that special and extraordinary damages incurred by individuals during the execution of public services must be compensated by the administration providing the relevant service. This legal responsibility of the administration is a consequence of the rule of law (Ergen, 2008). "In accordance with the generally accepted basic principles of Administrative Law, in order for the financial responsibility of the administration to be ruled, there must be a cause-and-effect relationship between the administrative behaviour and the damage." (Danıştay 8. Daire Başkanlığı, 2022a). The principle of social state has played an active role in the formation, development, and effectiveness of perfect liability. With the understanding of the Social State, the fields of activity of the state have gradually expanded, so the possibility of the administration harming individuals has become inevitable. Therefore, such cases have become more frequent in the courts. This has led to the

development of the concept of administrative responsibility. The financial responsibility of the administration is divided into two categories; defective and faultless liability (Gözler ve Kaplan, 2015).

3. FAULT LIABILITY –

Fault, a concept related to punishment, refers to deficiencies in the fulfillment of an existing duty. When one does not act in accordance with the requirements of the duty, they are at fault, and whoever is at fault is obliged to compensate for the damage caused (Gözler ve Kaplan, 2015). What is essential in fault is that the person does not act carefully, unselfishly, and in compliance with the rules. Thus, even if the legal entity is behind the procedure or action in private law, the fault pertains to a real person or persons (Atay ve Odabaşı, 2010).

3.1. Conditions of the Fault Liability of the Administration

Fault: Three basic elements are mentioned in order for the fault liability of the administration to arise: administrative action, fault, and damage. Fault, which is defined as the failure to perform a task as required, either intentionally or unintentionally, is a value judgement in law regarding whether or not the perpetrator shall be held liable for the act committed (Turabi, 2012). With regard to the statement in a decision the Council of State,

> *The fact that the crimes related to tax evasion in the Tax Procedure Law cannot be properly graded according to the degree of gravity of the moral element in the crime and that all cases other than the intentional commission of the offense are considered as fault and the possibility that the great difference between evasion and fault penalties may from time to time lead to results that damage the relationship between crime and punishment is expressed as the justification for this amendment (Danıştay 4. Daire Başkanlığı, 2021),*

All cases other than the intentional commission of the offense are accepted as fault. While fault includes all faults in private law and brings liability without any distinction between gross fault and slight fault, in administrative law, the fault must be gross for the administration to be liable for damages in difficult-to-execute activities, and this assessment is made by the judge.

Administrative Actions and Administrative Acts: The second condition for the responsibility of the administration is the existence of a (defective) action or act of the administration that results in damage.

Damage: Damage is the loss or deprivation of the increase or decrease in the assets of the person or the mental or physical pain, distress or tension experienced by the person (Sahin, 2020). Damage is a necessary element in all lawsuits in which the administration is held liable and is taken as a criterion in the compensation procedure. However, the injured party should neither be impoverished nor enriched as a result of the compensation (Atay ve Odabaşı, 2010). In order for the responsibility of the administration to arise, the damage must have the following characteristics (Gözler ve Kaplan, 2020):

Link of Causation: Article 125 of the 1982 Constitution, after stating that the judicial remedy is open against all kinds of actions and proceedings of the administration, the last paragraph stipulates that the administration is obliged to pay the damages arising from its own actions and proceedings. As a rule, the administration is obliged to compensate the damages that can be causally linked to the public service it carries out, and the damages arising from administrative actions and/or transactions are compensated within the framework of administrative law rules, in accordance with the principles of service defect or perfect liability (Danıştay 10. Daire Başkanlığı, 2022). Apart from the principle of social risk, the administration cannot be held liable if there is no direct cause and effect relationship between the administrative acts and/or actions alleged to have caused the damage and the damage (Atay and Odabaşı, 2010).

3.2. Service Fault (Service Defect)

Any damage caused to persons by public officers while exercising their powers or performing their duties constitutes a fault of service of the relevant public institution ... It can be stated that the legislator aims to prevent officials and public officers from being brought before the judiciary for their justified or unjustified acts committed while exercising their powers, to ensure that the public service is provided continuously and completely, and to determine a more reliable compensation liable for the victim. (General Assembly of Civil Chambers, 16/12/2015).

The administration is obliged to compensate the damage caused by the public service. In order to compensate the damage, a causal link must be established with the administrative action. If the damage is caused solely by the action of the injured party, the administration is not liable for compensation. The fault of the injured party or third party may reduce or eliminate the responsibility of the administration. (Danıştay 10. Daire Başkanlığı, 2017/408 E., 2021/5396)

Defect of duty is a type of defect that does not have a direct counterpart in the French and German legal systems but is positioned between personal defect and defect of service. This type of fault arises during the performance of the administration or public services, and the person responsible, i.e. the person who committed the fault, can be identified and personalized. A defect of duty arises from errors or omissions made by a public official in the performance of his/her duties. However, there are no clear and universal criteria that distinguish misconduct from personal fault. That is, it is not always easy to determine whether a public official's fault is a dereliction of duty or a personal fault. Factors to be taken into account when making this distinction may include whether the public official's fault is directly related to the execution of the service, and the context in which the act or omission occurred. Nevertheless, there are no standards that are generally applicable and applicable to all cases. Therefore, each case must be evaluated in its own particular circumstances (Akyılmaz, 2021).

3.3. Personal Fault

It is a personal fault for officials and other public officers, while exercising their powers or fulfilling their duties in the execution of the service of the administration; to refrain from fulfilling their obligations related to the duty, to engage in an activity outside the service by using their official title,

service tools, and equipment; to harm the beneficiaries of the service by acting with feelings such as grudge, hatred, and hostility (Akyılmaz, 2011).

4. STRICT LIABILITY

The damages suffered by individuals due to the activities of the administration are not always attributable to a faulty activity or behavior of the administration. In the compensation of damages caused by certain actions of the administration, regardless of whether the administration is at fault or not, the compensation of damages is called strict liability. Article 125 of the Constitution is an indication of the liability of the administration. In strict liability, in order for the administration to be held liable, it is sufficient that there is a causal link between the attitude and behaviour of the administration and the damage incurred, and there is no requirement that the attitude and behaviour of the administration be unlawful (Kalabalık, 2004).

> *The administration is generally liable to compensate damages caused by its services, following administrative law principles. Faultless liability entails compensating special damages incurred during public service, secondary to fault liability. Public officials' damages during duty must be compensated under strict liability, as seen in a police officer's armed clash. (Danıştay 10. Daire Başkanlığı), (27.06.2022).*

4.1. Liability due to the Formation of Inequality Against Public Burdens

As the benefit arising as a consequence of the activities carried out by the administration for the public good, the damage that occurs without any fault of the administration is shared with the society in line with the equitable principle as a requirement of the principle of social state. In this type of liability, fault or hazardous activities are not in question, and since it would be unequal to attribute the negative consequences that occur during the activities of serving the public to certain individuals or groups, the administration is held liable even if it is without fault. This is mostly encountered in terrorist incidents, which are within the scope of social risk, and in public works services, which are administrative activities (Yıldırım, 2020).

4.2. Strict Liability

The damages suffered by individuals due to the activities of the administration are not always attributable to a faulty activity or behavior of the administration. In the compensation of damages caused by certain actions of the administration, regardless of whether the administration is at fault or not, the compensation of damages is called strict liability. Article 125 of the Constitution is an indication of the liability of the administration (Kalabalık, 2004).

We can explain the situations where the principle of danger is applicable as follows:

Dangerous Activities and Use of Dangerous Vehicles by the Administration; If damage occurs due to the use of dangerous things such as explosive substances, firearms, etc. used by the

administration, the administration is liable for this damage, even if there is no fault attributed to the administration (Gözler ve Kaplan, 2015).

Use of Dangerous Methods (Occupational Risk); The administration is liable for the damages incurred by the public official during/due to his/her duty or the damages incurred by third parties due to the activities of the administration, provided that it is accepted as a requirement of the service (Gözler ve Kaplan, 2015)

Social Risk (Social Hazard); The administration is also responsible for social incidents that may be caused by itself, that it is obliged to prevent but fails to prevent, or that occur when it fails to take the necessary measures to prevent the occurrence of greater harm (Kalabalık, 2004).

5. THE SOCIAL RISK PRINCIPLE

In the doctrine, the social risk principle is referred to as "societal damage", "social damage", and "societal hazard", and it aims for a fair distribution within the society by having the state compensate the private damages of individuals, reflecting the principle of general liability in the context of administrative law (Kaneti, 1980). The social life of our age harbors a number of dangerous situations, especially for individuals who live their lives within the public order, for it is the main duty of the state of law to protect the existing public order without abolishing the freedoms in question. However, due to some of its duties, the state sometimes delays in preventing the social events that arise; as a result, third parties may suffer damages (Akgül, 2008). Such situations have led to the expansion of the scope of the understanding of strict liability and have created the principle of "social risk", which has an important place in terms of ensuring fairness and justice (Akgül, 2008).

5.1. Historical Development of the Social Risk Principle

Humans are social beings in need of living in society. This need has brought about the necessity to live in tribes in the past and under state rule today. Living in society comes with certain disadvantages as well as advantages. Internal and external political struggles have affected the members of society and the state. This process of being negatively affected can sometimes even reach quite critical damages similar to death. The principle of social risk has emerged on the grounds that it is contrary to the understanding of the social state of law, which attaches importance to equity, that the damages incurred as a result of this social turmoil are blamed on the aggrieved persons who do not bear any fault. As a requirement of this principle, the state is responsible for the damages incurred as a result of the aforementioned turmoil situations when the human being is a part of the society and this damage has the feature of being repaired by the state (Çoban, 2003).

5.2. The Fundamental Basis of the Social Risk Principle

The fundamental basis of this principle is the decisions on the liability of the administration, which must be regulated in the constitutions of all legal states, and the special laws, if any, on this matter

(Bayer, 2018). Article 5 of the 1982 Constitution comprehensively defines the fundamental aims and duties of the state. The primary duty of the state is to protect the independence and integrity of the Turkish nation, the indivisibility of the country, the Republic and democracy. Furthermore, the state is obliged to protect the fundamental rights and freedoms of individuals and to eliminate political, economic, and social obstacles that restrict them. The state, which must act in accordance with the social rule of law and the principle of justice, must guarantee the social and economic rights of individuals and observe social justice. The State is also responsible for preparing the necessary conditions for the development of the material and spiritual existence of individuals. This requires developing policies in areas such as education, health, social security and culture. Article 5 of the 1982 Constitution emphasizes that the state has a range of responsibilities that safeguard both security and the well-being and freedom of individuals (Coşkun, 2008).

5.3. The Characteristics of Social Risk Principle

Although the principle of social risk emphasizes the strict liability of the administration, this view is questioned by some. The criticism emphasizes the service fault of the administration in not preventing damages. Damages affecting social solidarity are compensated by the administration; yet, the acceptance of this situation as strict liability is objected. The payment of damages that the administration fails to prevent reveals a fault of service; therefore, it is advocated that the principle of social risk is not strict liability (Akyılmaz and Sezginer, 2001).

5.3.1. Absence of a Causal Link between the Damage and the Administration

The causal link refers to the relationship between an incident and its resulting damage. The absence of a causal link between the damage and the administration refers to a situation where the administration is incapable of determining the cause of the damage or where the actions of the administration are ineffective in the cause of the damage. The absence of a causal link is an important factor in determining the responsibility of the administration. Failure to attribute the damage to the actions of the administration may lead to difficulties in proving the fault of the administration and, therefore, to the questioning of its liability. This is an important concept in terms of legal assessment and attribution of responsibility. The principle of social risk does not require a causal link between the damage caused and the administrative action. Within the scope of the principle, the necessary condition for an individual to be considered responsible for a damaging act is the existence of a causal relationship between the damage and the behaviour of the person considered responsible. However, the principle of social risk constitutes an exceptional aspect of this principle (Köksal, 2010).

Social risk liability is the only and perfect form of liability where no causal relationship is sought for the damage caused by administrative activities. This liability does not include the behaviour of administrative personnel or a potential danger that may arise on the administration's premises but includes actions that are completely beyond the control of the administration or actions of individuals

distant from the administration that cannot be prevented or that would cause greater damage if prevented. In social risk, there is no clear causal link between the damage and the actions of the administration, reflecting the broad responsibility of the administration and the absence of fault in such cases. Therefore, social risk liability ensures that the administration bears a broad social responsibility for the protection of social order (Çoban, 2003a).

Some jurists argue that the causal link must be sought in all types of strict liability of the administration. According to this view, the concept of strict liability includes the idea that the causal link continues even if the fault requirement of liability is removed. Faultless liability generally means that the fault of the administration is not sought in damages arising from the execution of a certain activity by the administration. However, some jurists argue that the causal link between the actions of the administration and the damage cannot be ignored. In other words, the existence of a causal relationship between the acts of the administration and the damage is important even in cases of strict liability. This view argues that strict liability allows the causal link between the acts of the administration and the damage to be questioned and that this link should be examined. Thus, within the scope of strict liability, it can be assessed whether the acts of the administration were effective in the occurrence of the damage. This represents, from a legal perspective, an understanding of strict liability in which not only fault plays a role, but also the principle of causation (Çağlayan, 2009; Gözler, 2023).

5.3.2. The Situation Where the Damage is Caused by Hazards that cannot be prevented by the Administration or Would Lead to More Significant Damages if Prevented

Under the social risk principle, the main factor giving rise to liability is the activities of individuals or communities that are unfamiliar to the administration, which cannot be prevented by the administration or which, if prevented, would lead to greater damages. Pursuant to this principle, the source of the damage is usually individuals or communities other than the administration. The activities of these persons are beyond the control of the administration and cannot be interfered with by the administration.

5.3.3. The Inevitability of Damage to Sustaining Coexistence

Individuals living in society can be affected by mass movements, war, and attacks. The concept of social risk argues that these risks should be shared as a natural consequence of living together. Nevertheless, it is noted that the principle of the social state may create difficulties in ensuring equality among those damaged by threats to society. For instance, the differences in the value of vehicles damaged in a terrorist attack reveal that much as society shares the risk equally, compensation is unequal. This situation renders the compatibility with social justice controversial (Akyılmaz, 2004).

5.3.4. The Fault of a Party Suffering Damage

If the damage resulting from the activity of the administration is caused by the fault of the party suffering the damage, both the fault and the strict liability of the administration shall be excluded.

However, if the damage increases as a consequence of the fault of the party suffering the damage, the Administration shall be partially liable. Damaged persons cannot claim compensation for their damages if they were in an unlawful position at the time of the damage. For example, persons who have occupied public property do not have the right to claim compensation from the administration for the damages arising from the measures taken by the administration to end their occupation (Odyakmaz ve Kaymak, 2011).

6. THE IMPLEMENTATION OF THE SOCIAL RISK PRINCIPLE

The principle of social risk incorporates the fundamental idea that the risks faced by individuals and groups in society should be distributed equitably. This principle advocates that the various risks that are an inevitable part of social life should be borne equally by all and that the responsibility for dealing with these risks ought to be distributed equally. Although it is not possible to draw a basic framework for the applicability of the social risk principle within the framework of doctrine or jurisprudence, it is generally applied to social events arising from mass and social movements, such as meetings and demonstrations, and acts of terrorism. In this section, the cases where the social risk principle is applied will be discussed in detail. However, when the case law of the Council of State on damages arising from earthquakes and the principle of social risk are evaluated together with the constitutional principles, certain conclusions can be reached (Öztoprak, 2020).

6.1. Social Risk Principle Implementation in Social Incidents

The notion that it is not consistent with justice to leave the mass movements caused by the social and economic conditions in which the society exists, and the damages caused by these incidents on individuals who are without fault has given rise to the principle of social risk. This principle embraces the concept that the damages incurred by certain individuals under the influence of turmoil in society shall be compensated within the framework of the principle of social risk, on the basis that the state is an organization that bears liability on behalf of society (Çoban, 2003b). Mass movements, in the context of social events, are collective movements including meetings and demonstrations, and as a result of such mass movements, individuals may face the risk of harm. Third parties may also be harmed in the struggle between law enforcement officers and demonstrators in the process of dispersing illegal assemblies and demonstrations (Çağlayan, 2009).

For damages caused by the actions of third parties, the social risk principle compensation is applied without gross negligence. In our country, there is no current law on compensation for damages arising from mass movements, and there are serious deficiencies and limited regulations in the legislation. For example, the Law No. 6684, adopted on 28 February 1956, was enacted on the payment of damages incurred by individuals due to the events that occurred in Istanbul and Izmir on the 6th and 7th days of September (Bayer, 2018). However, although this law envisaged that the damages arising from the social event in question would be compensated by the administration, it set a certain upper

limit for the damages and left the part of the damages exceeding this amount on the victims (Azrak, 1980).

6.2. Social Risk Principle Implementation in Terrorist Incidents

In Türkiye, the financial liability of the administration and strict liability are determined by the constitution and legal regulations. The social risk principle advocates fair compensation for damages caused by social incidents, especially mass impacts such as terrorism. This principle provides a framework suitable for justice, taking into account the difficulties in determining fault (Sever, 2017).

In our country, the principle of social risk is frequently applied to the damages incurred as a result of terrorist acts and the fight against terrorism. This principle has gained more importance with the increase in terrorist incidents. Terrorist attacks threaten the security of the society and may cause economic, social and psychological destruction. The government uses the social risk principle and cooperates with the security forces to ensure the security of the society and minimise the damages. Success can be achieved in the fight against terrorism through effective solutions and preventive measures. However, adopting a balanced and fair approach in practice is important for social peace and justice (Çoban, 2003b). In the doctrine, there are various views on the sources of administrative responsibility and the social risk principle for terrorism-related damages. Some experts base the responsibility on the principle of equality and social state, and the social risk principle on the idea of solidarity, equality and justice. The military administrative judiciary and the Council of State have different approaches to the causal link and the social risk principle in the assessment of terrorism-related damages. While the Council of State considers the principle of social risk as a third type of liability different from strict liability, the military administrative judiciary assesses terrorism-related damages based on the principle of equality. The differences on the nature of the social risk principle reveal a clear distinction between the doctrine and the Council of State (Sever, 2017).

6.3. Social Risk Principle Implementation in the Scope of Isolated Incidents

While the social risk principle focuses on general risks in a broad community, the isolated incident addresses the specific risk or damage faced by a particular individual or small group of people. In this context, the social risk principle generally deals with collective liability and far-reaching damages, whereas the isolated incident refers to more specific, limited, and isolated situations. Even though the social risk principle typically covers the general risks of social life, it may be implemented by administrative jurisdictions regarding occupational risks at times, and in the context of isolated incidents at other times. The Council of State considered the isolated case of the death of a journalist writer as a result of a political attack and approved the claim for material and moral compensation on the basis of the principle of strict and collective liability (Danıştay 10. Daire Başkanlığı, 18.03.1998).

The administrative judiciary has applied the principle of social risk, particularly in individual cases. A Council of State decision on the death of a journalist writer as a result of a political attack

included compensation based on the principle of faultless and collective responsibility. However, Law No. 5233 only regulates terrorist acts and excludes damages caused by mass movements and isolated incidents. Although this restricts the compensation for damages other than terrorist acts, it emphasises the importance of the social risk principle. In these areas, the responsibility of the administration should be assessed according to the social risk principle and damages should be compensated. However, Law No. 5233 limits the compensation of non-terrorist damages by the administration through legal regulations (Bayer, 2018).

7. LAWSUITS FILED IN ADMINISTRATIVE JURISDICTION DUE TO TERRORIST INCIDENTS

According to Article 1 of the Anti-Terror Law; "Terrorism is defined as the use of force and violence; "Terrorism is defined as any criminal act committed by a person or persons belonging to an organisation with the aim of changing the characteristics of the Republic, political, legal, social, secular, economic order specified in the Constitution, disrupting the indivisible integrity of the State with its territory and nation, endangering the existence of the Turkish State and the Republic, weakening or destroying or seizing the State authority, destroying fundamental rights and freedoms, disrupting the internal and external security of the State, public order or public health by using force and violence, pressure, intimidation, intimidation or threat" (Erol, 2013).

Terrorism is a concept that involves the continuous use of violence to achieve political goals. Terrorism has become an ideology used systematically. The elements of terrorism include violence, political goals, fear, threat and psychological effects on society. Therefore, terrorism often arouses anxiety and fear. "Authorisation" refers to the planned and implemented form of terrorism. Various damages may occur as a result of terrorist acts. In addition to damages to the administration, the economic interests of the state and public personnel may also be damaged. The damages of public personnel may be compensated by the administration in accordance with the principle of occupational risk. Third parties may also be harmed without having anything to do with the incident (Bozkurt and Kanat, 2007).

7.1. Judicial Decisions In French And Turkish Law

The social risk principle is a principle of liability initially developed in France with the purpose of compensating the state for the damages caused by the war. This principle emerging as one of the principles of administrative liability in France, came into force with the enactment of laws regarding primarily war damages and later on damages arising from mass movements (Öztoprak, 2020). Until 1905, law enforcement activities in France were considered outside the state's liability. The principle of social risk is a principle of liability initially developed in France in order to compensate the state for the damages caused by the war. This principle, which emerged as one of the principles of administrative liability in France, was put into practice firstly with the enactment of laws covering war damages, and later with the enactment of laws covering damages arising from mass movements (Öztoprak, 2020).

However, in 1905, the Tomaso Greco judgement ruled that the state could be held liable for law enforcement activities if it was at fault. Tomaso Greco's claim for compensation for injuries sustained when his house was shot at was rejected. Although the French Council of State rejected the claim for compensation in the Tomaso Greco case, it paved the way that the fault of the administration in damages arising from law enforcement activities could be discussed and its responsibility could be accepted. However, in its subsequent judgements, it limited the state's liability for law enforcement activities to cases of gross negligence. In one case, the Turkish Ambassador to Paris was killed in an armed attack. The French Council of State ruled that the failure to prevent the attack could not be considered "grave fault" and therefore the state could not be held responsible for the resulting damage (Gözler ve Kaplan, 2015). For a quarter of a century, Turkey has witnessed various lawsuits regarding compensation for damages caused by terrorism in the fight against terrorism. Terrorist incidents aimed at disrupting the constitutional integrity of our country and creating ideological differences in society have imposed certain burdens on us as individuals as well as the burdens we have endured as a society.

7.2. Liability of the Administration for Damages Caused by Terrorist Incidents in Judicial Decisions

While the liability of the administration was mainly based on the principle of service fault for the compensation of damages arising from terrorist activities until the 1990s, after the 1990s, it is noted that the principle of strict liability of the state started to be taken as the basis for the compensation of damages arising from terrorist activities (Erol, 2013). The Council of State initially compensated damages arising from acts of terrorism based on the principle of service defect. Considering that the state has the duty to ensure the security of life and property and that individuals should be protected against external dangers, liability was accepted in case of service defect. However, in terrorist incidents, absolute fault was not sought, and the culpable responsibility of the administration was subject to certain conditions. Especially in cases where there was no public control and no advance notice, there could be no administrative fault. This situation was evaluated by taking into consideration the unpredictable nature of terrorist acts and the fact that they cannot be prevented even today. The Council of State started to compensate the damages arising from terrorist activities based on the principle of the state's strict liability. This change is based on the principle of "social risk" that emerged with the increase in terrorist activities. Especially after 1990, the Council of State, taking into account the fact that people living in certain regions of Turkey suffered damages due to personal grudges or belonging to their community, decided that the damages should be compensated in accordance with the principle of social risk, regardless of the special and extraordinary characteristics of the damage (Akpınar and Yeşilbaş, 2011).

It is not possible to compensate the victims of terrorist acts under the principle of strict liability because there is no causal link. The administration can only be held liable for damages arising from terrorist acts within the framework of fault liability. In Turkey, the liability of the administration for compensation is subject to special legal regulations and there is no general legal regulation. The social

risk jurisprudence of the Council of State has been criticised with the increase in terrorist incidents. While Gözler (2006) and Çağlayan (2009) argue that the theory of strict liability will preserve the causal link and the damages cannot be compensated according to the social risk principle, Çoban (2003), Günday (2004), Gözübüyük (2006) and Tan state that the social risk principle should be accepted as a service defect and the damages should be compensated by the society. In the Turkish administrative law doctrine, while the majority of the Turkish administrative law doctrine accepts that the damages arising from terrorist incidents should be compensated based on the strict liability of the administration, some critics criticise that the social risk principle focuses only on the prevention of terrorism. While some academics state that it is important to determine the relationship between the damage and the social event or terrorist act and that there is no need for the strict liability of the administration, they emphasise that the compensation of the damages by the administration is not in accordance with the principle of equity and fairness in legal terms (Çağlayan, 2009; Gözler, 2023).

8. CONCLUSION

The State is a public power with special powers and compensation for damages arising from its activities is an essential requirement of the rule of law and social state concept. Turkish administrative law has adopted the principle of liability instead of nonliability of the administration. However, the basis and conditions of the liability of the administration are not specified in the law, and a wide discretionary power is given to the administrative judiciary.

In order for the administration to be held liable, there must first be an administrative procedure or action and damage must occur as a result of this procedure or action. It is crucial that the damage is associated with the action or procedure of the administration, namely that a causal link is present. However, the mere existence of this link is not sufficient; it shall also be assessed whether the administration complies with the principles of service fault or strict liability. If the administration causes the damage without fault, it may be held liable. If it is required to assess whether it is at fault, it is examined within the framework of the principle of service fault. These conditions are important for determining the liability of the administration for the damage and are taken into account to ensure that it acts fairly.

The social risk principle enables the administration to be held liable for damages arising from its risky services, based on its strict liability. This principle intends to compensate for damages and to ensure justice. Even if the administration is without fault, it bears liability for damages arising from risky services. This concept highlights the need for administrations that provide risky services necessary to ensure the security and welfare of society to protect the rights of individuals who are damaged. Particularly in extraordinary situations such as terrorism, it ensures compensation for damages arising from risky services carried out by the administration and takes a fair approach to relieve the

victimization. The principle of social risk is a significant legal principle that expands the liability of the administration in a way that contributes to the welfare of society.

Türkiye lacks established case law and legislation in respect of the strict liability of the administration and the principle of social risk. Those damaged often apply to administrations with compensation claims yet are generally rejected and resort to the administrative judiciary. For mass incidents, legislative amendments are required to compensate damages through settlements.

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