SAKARYA ÜNİVERSİTESİ

JOBS

İşletme Bilimi Dergisi
The Journal of Business Science

Sakarya Üniversitesi / Sakarya University
İşletme Fakültesi / Sakarya Business School

Cilt/Volume : 9
Sayı/Issue : 3
Yıl/Year :2021

ISSN: 2148-0737

DOI: 10.22139/jobs

İşletme Bilimi Dergisi
2021
Cilt:9 Sayı:3

İNDEKS BİLGİLERİ/ INDEXING INFORMATION

JOBS

İşletme Bilimi Dergisi
2021
Cilt:9 Sayı:3

İşletme Bilimi Dergisi
2021
Cilt:9 Sayı:3

Dergimize yayınlanmak üzere gönderilen makalelerin yazımında etik ilkelere uyulduğu ve yazarların ilgili etik kurulundan gerekli yasal onayları aldığı varsayılmaktadır. Bu konuda sorumluluk tamamen yazarlara aittir. İşletme Bilimi Dergisi'nde yer alan makalelerin bilimsel sorumluluğu yazara aittir. Yayınlanmış eserlerden kaynak gösterilmek suretiyle alıntı yapılabilir.

It is assumed that the articles submitted for publication in our journal are written in ethical principles and the authors have obtained the necessary legal approvals from the relevant ethics committee. The responsibility of this matter belongs to the authors. Scientific responsibility for the articles belongs to the authors themselves. Published articles could be cited in other publications provided that full reference is given.

İşletme Bilimi Dergisi; www.dergipark.gov.tr/jobs Sakarya Üniversitesi İşletme Fakültesi jobs@sakarya.edu.tr Esentepe Kampüsü 54187 Serdivan/SAKARYA

Bu Sayıda Katkıda Bulunan Hakemler

Reviewers List of This Issue

Doç. Dr. Gökhan ABA	Bandırma Onyedi Eylül Üniversitesi
Doç. Dr. Halil İbrahim CEBECİ	Sakarya Üniversitesi
Doç. Dr. Taşkın KILIÇ	Ordu Üniversitesi
Doç. Dr. Şükrü Anıl TOYGAR	Tarsus Üniversitesi
Doç. Dr. Yıldırım YILDIRIM	Düzce Üniversitesi
Doç. Dr. Yılmaz DAŞLI	Sivas Cumhuriyet Üniversitesi
Dr. Öğr. Üyesi Ali ÜNAL	Hitit Üniversitesi
Dr. Öğr. Üyesi Burhanettin UYSAL	Bilecik Şeyh Edebali Üniversitesi
Dr. Öğr. Üyesi Metin SAYGILI	Sakarya Uygulamalı Bilimler Üniversitesi
Dr. Öğr Üyesi Nurperihan TOSUN	Sivas Cumhuriyet Üniversitesi
Dr. Öğr. Üyesi Selçuk Yasin YILDIZ	Sivas Cumhuriyet Üniversitesi
Dr. Öğr Üyesi Volkan TEMİZKAN	Karabük Üniversitesi
Dr. Beste DESTİCİOĞLU	Milli Savunma Üniversitesi
Dr. Meryem TURGUT	Niğde Ömer Halisdemir Üniversitesi

İşletme Bilimi Dergisi
2021
Cilt:9 Sayı:3

Değerli Bilim İnsanları,

Dergimizin 9. Cilt 3. Sayısı ile İşletme Bilimi Alanının farklı disiplinlerinden çalışmaları sizlere sunmaktan gurur duyuyoruz. Dergimizin bu cildinde farklı disiplinlerden farklı araştırma yöntemleri ile hazırlanmış zengin bir içerik mevcuttur. Üretim Yönetimi, Pazarlama, Örgütsel Davranış, Sağlık Yönetimi, Sağlık Turizmi, Acil Afet Yönetimi gibi farklı disiplinlerden gelen çalışmalarda ölçek uyarlama, bibliyometrik analizler, nicel veri analizi, nitel araştırma ve derleme yöntemleri ile yazılmış yedi makale mevcuttur.

Dergimizin ilk makalesi "Yeşil Verimlilik Kavramının Bibliyometrik Analizi" başlıklı çalışmadır. Erdinç KOÇ ve Ahmed İhsan ŞİMŞEK'in kaleminden çıkanbu çalışma yeşil verimlilik alanında son yıllarda artan çalışmalara paralel olarak yapılan çalışmalar arasındaki ilişkilerin, önemli alt konuların ve alanda yeni yönelimlerin belirlenmesini amaçlamaktadır. Bibliyometrik analiz yöntemi ile hazırlanan çalışma yeşil verimlilik kavramı ile ilgili önemli bir çalışmadır.

Emre YILDIRIM ve Kazım MERT tarafından yazılan "Raf Ve Kasa Fiyatı Uyumsuzluğu: Tüketici Tutumlarının İncelenmesine Yönelik Bir Araştırma" başlıklı makale etik ve hukuk dışı işletme uygulamalarından biri olan raf ve kasa fiyatı uyumsuzluğuna yönelik tüketici tutumlarının incelenmesi amacıyla hazırlanmıştır. Raf ve kasa fiyatı uyumsuzluğu farkındalığı konusunda tüketicilerin hala ciddi bir eksikliğe sahip olduğu sonucunu ortaya koyan çalışma önemli bir probleme dikkat çekmektedir.

"Kişi-Örgüt Uyumunun İş Tatmini ve İş Stresi Üzerine Etkisinde Affetmenin Aracı Rolü: Sağlık Çalışanları Üzerine Bir Araştırma" başlıklı makale Gizem YILDIRIM, Şennur AŞIKOĞLU, Hasan Hüseyin UZUNBACAK. ve Tahsin AKÇAKANAT tarafından yazılmıştır. Bu çalışmada, sağlık çalışanlarının kişi-örgüt uyumlarının, iş tatmini ve iş stresi üzerindeki etkisinde, affetmenin aracılık rolünün olup olmadığının tespit edilmesi amaçlanmıştır. COVID-19 pandemisi nedeniyle olağanın üzerinde çaba sarfeden sağlık çalışanlarının mevcut durumlarının tespit edilmesi önemli olduğundan, çalışmanın alana katkı sağladığına inanılmaktadır.

"Termal Sağlık Turizminde İmaj Hizmet Kalitesi Ve Tekrar Tercih İlişkisi" başlıklı makale Fuat YALMAN ve Tekin SANCAR tarafından hazırlanmıştır. Ülkemizin kalkınmasında önemli bir payı oalcağı düşünülen sağlık turizminin araştırmalara konu edilmesinin ülke kalkınmasına da katkı sağlayacağı açıktır. Bu bağlamda termal amaçlı seyahat eden bireylerin imaj ve hizmet kalitesi algıları ile tekrar tercih etme davranışları arasındaki ilişkilerin belirlenmesi amacıyla gerçekleştirilen bu çalışmanın alan için önemli olduğu düşünülmektedir.

Necla YILMAZ, Pınar ÖKE KARAKAYA ve Seda SÖNMEZ tarafından gerçekleştirilen "Aşı Tereddüdü Ölçeğinin Türkçe Geçerlik Ve Güvenirliği"

çalışması Aşı Tereddüdü Ölçeğinin Türkçe geçerlik ve güvenirlik çalışmasını yapmak amacıyla gerçekleştirilmiştir. Türk toplumunun aşı tereddütlerini ölçmek için kullanılabilecek bir ölçeğin özellikle günümüzde yaşanan COVID-19 aşısı tereddütü gibi halk sağlığını doğrudan ilgilendiren aşılama çalışmalarına ilişkin halkın terreddtülerinin belirlenmesi ve bunlarla mücadele edilmesi açısından önem taşımaktadır.

Sedat BOSTAN ve Merve YAMAN YÜCE'nin hazırlamnış olduğu "Ayvacık Depremi Üzerinden Afet Lojistiği Konusunda Uzman Görüşleri" başlıklı makale 2017 Çanakkale, Ayvacık depremi sonrası ortaya çıkan ihtiyaçların giderilmesi için afet lojistik faaliyetlerini yürüten birim yöneticileri ve uzmanların görüşleri alınarak afet lojistiği faaliyetleri hakkında derinlemesine bilgi edinilmesi amacıyla hazırlanmıştır. Nitel araştırma yöntemleri ile hazırlanan makale bir deprem ülkesi olan Türkiye için önem arz etmektedir.

Dergimizin bu sayısının son makalesi "Akıllı Sağlık Ekosistemi Ve Güncel Uygulama Örnekleri" başlıklı makaledir. Taşkın KILIÇ ve Nurperihan TOSUN tarafından hazırlanan derleme niteliğindeki makale; akıllı sağlık ekosistemi ve güncel uygulama örneklerinin incelenerek değerlendirilmesi amacıyla kaleme alınmıştır.

Yukarıda özet olarak aktarılan makale içerikleri dikkate alındığında dergimizin son sayısınında İşletme Bilimi'ne ve İşletme Bilimi ile alakalı diğer disiplinlere katkı sağlayacak zengin bir içeriğe sahip olduğunu söylemek mümkündür. Bu vesile ile böylesine zengin bir içerik hazırlanmasında katkısı olan başta makale yazarları ve makaleyi incelemek için kıymetli vakitlerinden fedakarlık eden hakemlerimiz olmak üzere dergi yayın kurulumuza ve dergi sekreteryamıza minnetlerimizi sunarız. Gelecek yayınalrımızda da İşletme Bilimine katkı sağlayabilme amacımızdan vazgeçmeyeceğimizi beyan eder, yeni sayılarımızda siz değerli yazar ve okuyucularımızla tekrar buluşmayı ümit ederiz.

Saygılarımızla…

Prof. Dr. Mahmut AKBOLAT
Editör

JOBS

İşletme Bilimi Dergisi
2021
Cilt:9 Sayı:3

İÇİNDEKİLER/*CONTENTS*

Yıl (Year) 2021 Cilt (Vol.) 9 Sayı (No) 3

Araştırma Makaleleri/Research Articles

Derleme Makalesi/Review Article

JOBS

Araştırma Makalesi/Research Article

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

A BIBLIOMETRIC ANALYSIS OF GREEN PRODUCTIVITY CONCEPT

Erdinc KOÇ
Bingöl Üniversitesi,
ekoc@bingol.edu.tr
ORCID ID: 0000-0002-8209-5714

Ahmed İhsan ŞİMŞEK
Fırat Üniversitesi,
aisimsek@firat.edu.tr
ORCID ID: 0000-0002-2900-3032

ABSTRACT

Aim: This study aims to determine the relationships between studies, important sub-topics and new trends in the field, in parallel with the increasing studies in the field of green productivity in recent years.
Method: Using the Web of Science database, 118 studies on green productivity published between 1980 and 2021 were analyzed with bibliometric analyzes through the R and Vosviewer program.
Findings: The results obtained from the analyzes were shared under two separate headings: Descriptive Statistics and Network Analysis. As descriptive statistics, the most productive journals, authors, and countries were shared. With descriptive statistics, it was found out that the most productive journal is the Journal of Cleaner Production and the most productive institution is Xiamen University. The study found that China is the most productive country in the field of green productivity. As part of the network analysis, co-occurrence, co-citation, co-authorship, and country collaboration in the field of green productivity were tried to be revealed. Co-occurrence analysis shows that 21 nodes and six clusters are formed. The authors are divided into seven clusters in the co-authorship analysis, and Li Ke has the most links. The country with the most links in the country collaboration analysis is China. In the co-citation analysis, it is seen that the studies in the field of "green productivity" are divided into three clusters.
Results: As a field of study, green productivity attracts the attention of different science and social sciences disciplines, and the number of publications on this subject is constantly increasing. The interest of different disciplines in the subject field has enabled different keywords to take part in the studies. In addition to showing trends in the field, the study results also show productivity in the corresponding years' range. With our study, researchers who want to work in the field of Green Productivity will be able to identify the guiding articles. Besides, they will be able to identify pioneering researchers, institutions and journals and see the collaborations

Makale Geliş Tarihi/Received for Publication : 28/06/2021
Revizyon Tarihi/ 1th Revision Received : 24/08/2021
Kabul Tarihi/Accepted : 11/12/2021

Atıfta Bulunmak İçin:
Koç, E. ve Şimşek, A,İ. (2021). A Bıblıometrıc Analysıs Of Green Productıvıty Concept. *İşletme Bilimi Dergisi*, 9(3), 393-418.

JOBS

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

made on the basis of country, institution and author in the field of green productivity. In this way, researchers will have the chance to look at the field of green productivity from a broader perspective. Researchers can use this study as a roadmap for their studies.

Keywords: Productivity, Green Productivity, Bibliometric Analysis.

YEŞİL VERİMLİLİK KAVRAMININ BİBLİYOMETRİK ANALİZİ

ÖZ

Amaç: Yeşil verimlilik alanında son yıllarda artan çalışmalara paralel olarak yapılan çalışmalar arasındaki ilişkilerin, önemli alt konuların ve alanda yeni yönelimlerin belirlenmesi bu çalışmanın amacıdır.

Yöntem: Web of Science veri tabanı kullanılarak 1980-2021 yılları arasında yayımlanmış olan yeşil verimlilik üzerine yapılan 118 çalışma, R ve Vosviewer programı aracılığıyla bibliyometrik analizlerle incelenmiştir.

Bulgular: Analizlerden elde edilen sonuçlar, Tanımlayıcı İstatistikler ve Ağ Analizi olmak üzere iki ayrı başlık altında paylaşılmıştır. Tanımlayıcı istatistikler altında en verimli dergiler, yazarlar ve ülkeler paylaşılmıştır. Tanımlayıcı istatistiklerle en verimli derginin Journal of Cleaner Production ve en verimli kurumun Xiamen Üniversitesi olduğu tespit edilmiştir. Araştırma, Çin'in yeşil verimlilik alanında en üretken ülke olduğunu ortaya koymaktadır. Ağ analizi kapsamında yeşil verimlilik alanında birlikte oluşum, ortak alıntı, ortak yazarlık ve ülke iş birlikleri ortaya konulmaya çalışılmıştır. Birlikte oluşum analizi, 21 düğüm ve altı kümenin oluştuğunu göstermektedir. Ortak yazarlık analizinde, yazarlar yedi kümeye ayrılmakta ve Li Ke'nin en çok bağlantıya sahip olduğu görülmektedir. Ülke iş birliği analizinde en fazla bağlantıya sahip ülke Çin'dir. Ortak atıf analizinde "yeşil verimlilik" alanındaki çalışmaların üç kümeye ayrıldığı görülmektedir.

Sonuç: Bir çalışma alanı olarak yeşil verimlilik hem fen bilimlerinde hem de sosyal bilimlerde farklı disiplinlerin ilgisini çekmekte ve bu konudaki yayınların sayısı sürekli artmaktadır. Farklı disiplinlerin konu alanına ilgi göstermesi, farklı anahtar kelimelerin çalışmalarda yer almasını sağlamıştır. Alandaki eğilimleri göstermenin yanı sıra, çalışmanın sonuçları aynı zamanda ilgili yıllar aralığında verimliliği de göstermektedir. Bu çalışma ile yeşil verimlilik alanında çalışmak isteyen araştırmacılar bu alana öncülük eden çalışmaların yanı sıra yeşil verimlilik alanında üretken olan araştırmacılar, kurumlar ve ülkeleri belirleyebilecektir. Bunun yanı sıra ülke, kurum ve yazar bazında yapılan işbirliklerini tespit edebileceklerdir. Bu sayede araştırmacılar yeşil verimlilik alanına daha geniş bir perspektiften bakma imkanı bulabileceklerdir. Yaptığımız çalışma, yeşil verimlilik alanında çalışmak isteyen araştırmacılar için bir yol haritası olarak kullanılabilecektir.

Anahtar Kelimeler: Verimlilik, Yeşil Verimlilik, Bibliyometrik Analiz

JOBS

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

I. INTRODUCTION

Especially from the 20th century on, with industrialization, the increase of the world's population and globalization, the damage caused by humanity to the environment has increased. This has led to a rapid depletion of natural resources. The main concern of the production models developed during this period is to reduce costs and increase profitability (Osmanagić Bedenik, 2018). This led to the destruction of natural resources and disrupted the ecological balance. It became clear that this system was not sustainable, and a new search for environmentally friendly began. Efficiency cannot be addressed only from a narrow perspective, such as reducing costs and increasing profitability. In addition, ensuring sustainability must also be included in the concept of efficiency. The concept of green productivity also entered our lives at this point. According to Tuttle & Heap (2008), green productivity was first introduced at the Rio World Summit in 1992 by the Asian Productivity Organisation (APO). APO described green productivity in 2006 as "Green Productivity (GP) is a strategy for enhancing productivity and environmental performance simultaneously to achieve overall socio-economic development". There are different opinions about the results of the measures to be introduced to protect the environment. In general, it was thought that environmental regulations would impose additional costs on businesses in the traditional approach, but (Porter, 1991; Porter & van der Linde, 1995) argued that strict environmental regulations introduced were not a negative situation for businesses, or even, on the contrary, would increase their competitive advantage. This view, known as the Porter hypothesis, is often debated in the scientific world. Ambec & Barla (2002) and Conrad & Wastl (1995) argued that the measures to be introduced would increase productivity, as they would reduce the costs of businesses. However Jaffe and collegaues (1995) noted that the long-term environmental regulations' positive or negative impact is minimal. In their study against this view, Gray & Shadbegian (1993, 2003) argued that such measures increase costs and reduce efficiency. Furthermore, Sanchez-Vargas and collegaues (2013) noted that environmental regulations will reduce productivity, and the impact of this effect will be limited in large enterprises, while it will be more intense for small businesses.

On the other hand, (Brunnermeier & Cohen, 2003) argued that although these measures would direct businesses to research and development activities, they would increase the costs of private companies in particular. Similarly, Ambec and collegaues (2015) argue that innovation will increase because research and development activities will increase, but more evidence is needed to confirm the hypothesis that productivity will

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

increase. Yi and collegaues (2020) argued that governments should put green productivity incentives into play, thereby creating a win-win situation for both the environment and businesses. Hamamoto (2006), Peuckert (2014) and Xie and collegaues (2017) said that although it negatively affects productivity in the short term, productivity will increase as a result of increased investment in research and development. Similarly, Lanoie and collegaues (2008) argued that it would improve productivity if implemented within a transition period of 3 years, rather than dictating that businesses immediately comply with these measures. Ahmed (2012) and Du and Li (2019) approached this issue in terms of the level of development of countries and said that for developed economies, these measures will increase productivity but would have adverse effects on productivity, as they will increase costs for developing countries.

There are bibliometric studies in green manufacturing (Sangwan & Mittal, 2015), green supply chain (Fahimnia et al., 2015), green energy (Arenas et al., 2018) and green innovation (Albort-Morant et al., 2017). However, there are no bibliometric studies found in green productivity. Green Productivity has become increasingly important in recent years. Although there are many studies in the field of green productivity, a comprehensive literature study on the subject could not be reached in the literature review. We aim to eliminate this deficiency in the field of green productivity with this study. Researchers would be able to identify the influencing articles regarding green productivity as the findings of this study. They will also be able to identify pioneering researchers, institutions, and journals, and see collaborations in the field of green productivity organized by country, institution, and author. Researchers will be able to take a broader look at the field of green productivity as a result of this. Researchers can use this research as a starting point for their research. This study which aims to fill the gap in the field of green productivity, is carried out in two stages of analysis. In the first stage, descriptive statistics related to the studies conducted in the field of green productivity are analyzed, and in the second stage, the network established between the studies is analyzed. The analysis carried out in the study seeks answers to the following two research questions.

RQ1: In what research areas, by whom and in what years were the studies conducted in the field of Green productivity?

RQ2: What are the links between green productivity studies? These links allow the field to evolve in which direction.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

In the second part of the study carried out in this direction, information about bibliometric analysis is provided. The third section describes the methodology of the study. In the fourth part of the study, the analysis results are shared. The fifth section is the conclusion section in which this study conducted in the field of green productivity is evaluated.

II. BIBLIOMETRIC ANALYSIS

Although the concept of bibliometric was first used by Pritchard (1969), it is claimed that it was first used in Campbell's (1896) study "Theory of the National and International Bibliography" (Sengupta, 1992). Following the historical process, it is seen that Lotka's (1926) laws on author efficiency and Bradford's (1934) laws on journal efficiency, as well as Gross and Gross' (1927) citation analysis and Zipf's (1935) word analysis played an essential role in the development of bibliometry (Andres, 2009). Pritchard (1969) describes bibliometrics as "the application of mathematical and statistical methods to books and other media of communication", often used as a synonym for scientometrics. The bibliometric analysis uses the statistical methods to profile publications in a particular discipline, identify qualitative and quantitative variables, and detect trends (Ardito et al., 2018; Rey-Marti et al., 2016; De Bakker et al., 2005). Frequently, statistics on author, year, journal, citation, institution, country, and keywords are shared in bibliometric studies (Xu et al., 2018; Rejeb et al., 2020).

Bibliometric analysis has been widely used in recent years to summarize the results of bibliographic documents (Ellegaard et al., 2015; Martinez-Lopez et al., 2018). In the business literature, it is seen that bibliometric analysis is used in sub-disciplines such as tourism (Ninerola et al., 2019), supply chain (Xu et al., 2018), big data (Ardito et al., 2018), multi-criteria decision-making methods (Diaby et al., 2013), business ethics (Uysal, 2010), capacity management (Dixhit & Jakhar, 2021) and lean manufacturing (De Oliveira et al.,2019). In the current study, the studies in the field of green productivity were examined backwards and subjected to bibliometric analysis using secondary data.

III. METHODOLOGY

In the study, the proposed five-step methodology of Fahimnia and collegaues (2015) was followed. These steps consist of (1) defining the appropriate search terms, (2) initial search results, (3) refinancing of the search results, (4) initial data statistics, and (5) data analysis. In the literature

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

review, it is often seen that Web of Science (Albort-Morant & Ribeiro-Soriano, 2016; Arenas et al., 2018) and Scopus (Fahimnia et al., 2015) are used in studies. Web of Science hosts scientific studies in all disciplines with an online database (Rey-Marti et al., 2016). "Green", "productivity", and "green productivity" were identified as the keywords of the study. The Web of Science database was scanned in this study by entering the keywords "green" or "productivity" in the subject field, and 837 thousand studies were found. When "green productivity" scanned without quotes, 8542 studies were found. When the keyword "green productivity" was scanned, there were 118 studies as of January 2021. It was found that 98 of the studies were articles, 20 of them were proceedings papers, and the studies were between 1980-2021. The full text of a significant majority of the studies was accessed, while the full text of a small number of studies was not accessed. All 118 studies were included in the analysis, as this situation does not pose a problem. The bibliometric analysis and network analysis are used together in the study. The bibliometric analysis mainly evaluates frequencies related to data, while network analysis reveals collaborations and trends in the field (Lewis & Alpi, 2017). In other words, network analysis is used to construct of bibliometric networks and reveals the pattern between studies.

In the past, bibliometric studies aimed to follow academic journal citations, while current studies aim to understand the past and predict the future (Daim et al., 2006). Thanks to bibliometric analysis, assessments of cooperation between researchers, institutions and countries can also be achieved (Rejeb et al., 2020). Programs such as Publish or Perish, HistCite, Gephi, VOSviewer, BibExcel, R are used to perform bibliometric analyses. Each program has its advantages and disadvantages. The fact that HistCite only allows data transfer from Web of Science, Publish or Perish from Google Scholar, and Microsoft Academic Research is considered as the weaknesses of these programs (Fahimnia et al.,2015). For this reason, descriptive statistics were analyzed using the Web of Science online database, and network analyses were analyzed using Vosviewer and R program. Co-authorship, co-occurrence and co-citation analyses were performed with Vosviewer (version 1.6.16), and country collaboration analyses were performed with the R program (Youngblood & Lahti, 2018).

IV. RESULTS

The study's findings are shared in two parts: descriptive statistics and network analysis, following the fourth and fifth steps of Fahimnia and collegaues (2015). The answer of the first research question is the results of

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

descriptive statistics, and the answer of the second one is the results of network analyses.

4.1. Descriptive Statistics

An analysis conducted via the Web of Science showed that all the studies in the relevant literature were written in English. It is understood that 78 studies were evaluated under the science citation index expanded, 78 were evaluated under the social sciences citation index, and five were evaluated under the Emerging Sources Citation Index. Descriptive statistics of this study on green productivity are first explained and the development of the field in the literature is tried to be explained. In this context, the journals, authors, and countries with the highest number of publications in the field of green productivity were determined by statistics to answer the first research question. In addition, it was examined with which subject topics the field was included in studies in different disciplines.

4.1.1. Most Productive Journals

Journal productivity is one of the most critical factors in bibliometry. (Hubert, 1977). It is essential to have information about the journals published in the relevant field to decide which journals should be read when reviewing the literature (Rey-Marti et al., 2018). Journals that often have many studies in their respective literature are considered more productive journals (Albort-Morant & Ribeiro-Soriano, 2016; Oh & Kim, 2020). In the Web of Science database, there are 118 studies in 66 different sources that contain the keyword “green productivity”.

Figure 1 lists the ten journals that publish the most work in the field of green productivity. The most widely published journal of the studies containing the keyword “green productivity” in the Web of Science database is “Journal of Cleaner Production”. 18 studies have been published in this journal. The Journal of Cleaner Production is followed by “Sustainability” with 13 studies and “Energy” with six studies. At the end of the journal ranking showing the journals with the highest number of studies, the journal “Carbon Management” with two studies are included.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

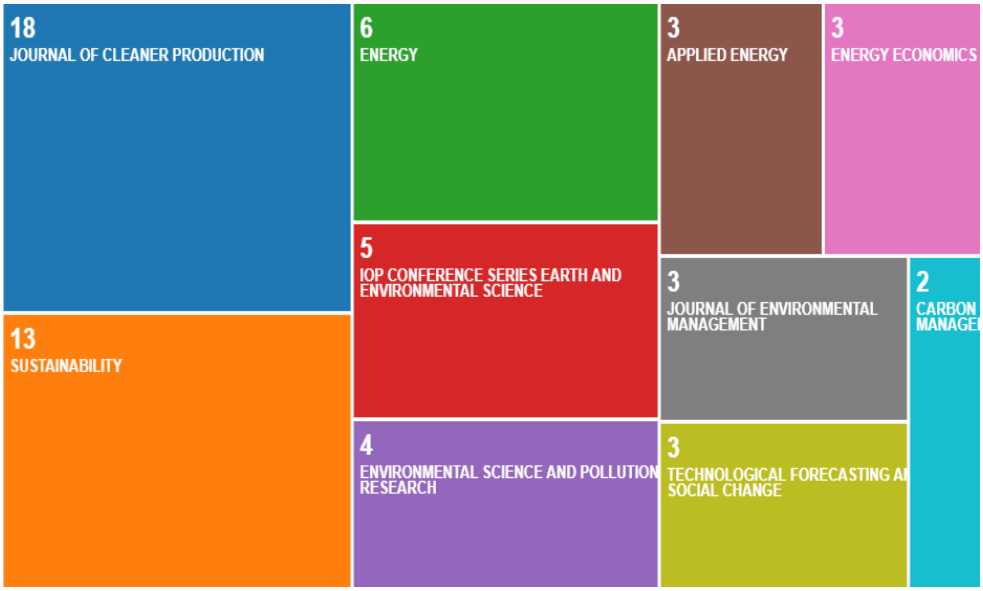

Figure 1. Most Productive Journals

Different disciplines use the green productivity concept. Furthermore, the evaluation of the subject from an environmental, social, and economic point of view contributes to the enrichment of the field (Matondang, 2017). Figure 2 shows different disciplines that publish more than ten publications in the field of green productivity. The field is the subject matter of the studies in more than one discipline encourages cross-fertilization between disciplines (Ardita et al., 2019). The fact that most articles are shown in more than one field explains why the total number is 212. In addition to engineering, business economics, public administration, and operation research (management science) in the fields of economics and business show that the subject is also studied in social sciences. It is thought that the study areas will also be enriched with the number of studies expected to increase in the field of green productivity. It is assumed that the enrichment that is likely to occur in study areas can expand with a multiplier effect and contribute to the field.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

Figure 2. Research areas of green productivity

4.1.2. Most Productive Authors and Organisations

In Figure 3, authors with publications of 3 and above are listed. Only 11 authors in the "green productivity" field have three or more publications, in this table. Co-authored studies are also included in the analysis. It has been observed that many authors not included in Figure 3 have 1 or 2 works. It can be said that a small number of authors specialize in the field of "green productivity". It is understood that the majority of the authors are male, that the field of study is in a male-dominated structure. Li Ke is the author who contributed to green productivity with 12 articles, which is the highest number of studies. The second author with the second highest number of studies is Lin Boqiang, with eight articles. The relatively new field of study causes a limited number of authors working on the subject field. The level of awareness that is expected to increase in the following years will also increase the number of authors working in the field of green productivity. Figure 3 informs theorists and practitioners about the experts in green productivity.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

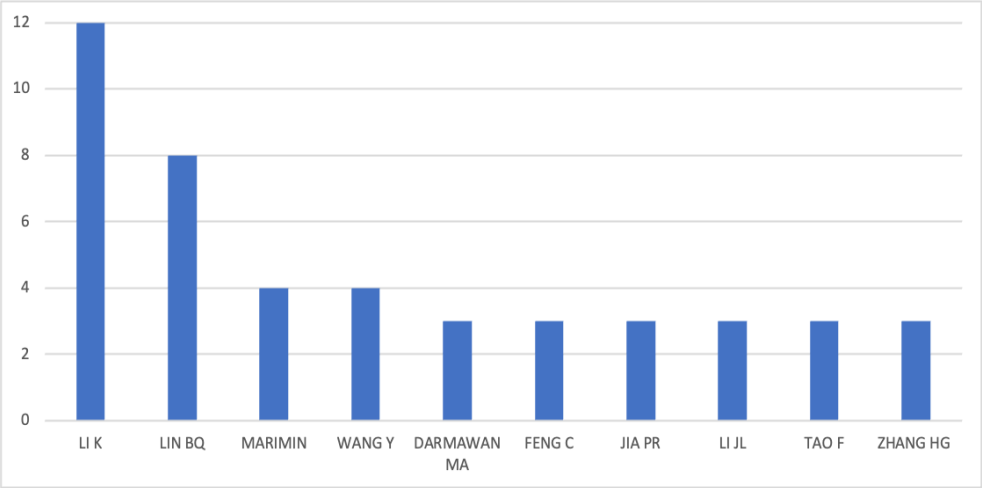

Figure 3. Most Productive Authors

In Figure 4, the organizations that have carried out the most studies are listed. Accordingly, it has been observed that universities in China are very active in the field of "green productivity". Eight of the ten organizations that made the most publications in the field of Green Productivity are in the People's Republic of China. The most publishing institutions in green productivity with 11 publications in each one are Hunan Normal University and Xiamen University. In addition, it is seen in the Figure four that Bogor Agr University in Indonesia has five publications and Inha University in South Korea has 4 publications among the top 10 organizations with the highest number of publications. Figure 4 informs theorists and practitioners about which organizations in the field of green productivity can collaborate with.

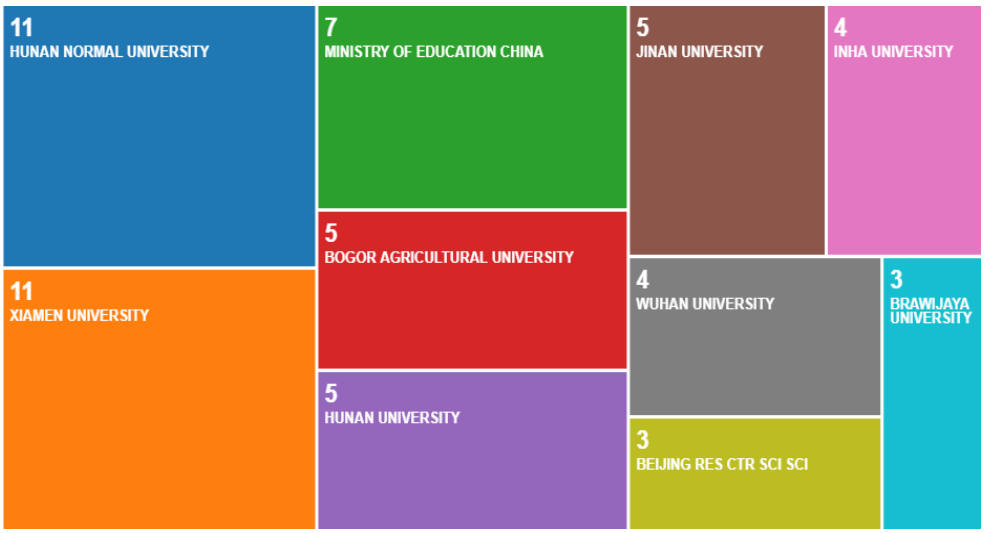

Figure 4. Most Productive Organizations

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

4.1.3. Annual Scientific Production

Figure 5 shows the number of studies published by year. According to this, the first study containing the keyword "green productivity" in the Web of Science database was conducted in 1998. In particular, the number of annual studies, which performed at a fairly low level until 2012, increased significantly after 2012. This result is in line with studies that have identified the increasing importance of the title "green" as a field of study since 2010 (Sharifi, 2021). After 2018, it was observed that it almost doubled. It is known that there were nine studies in green productivity between 2000 and 2010 and 106 studies between 2010 and 2021. In general, there has been a large increase in studies published in the field of "green productivity", especially in the last five years. Sub-reasons such as the importance given to the related subject by the governments and the legal regulations they have developed, the rise in the education level of the people, the increase in awareness and sensitivity towards the environment increase the number of studies titled "green".

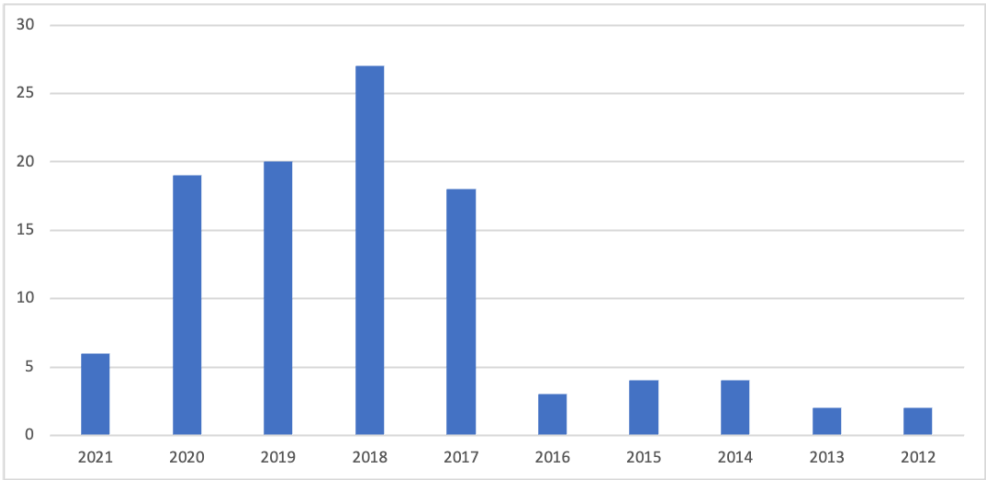

Figure 5. Annual Scientific Production

4.1.4. Most Productive Countries

Figure 6 lists the most productive countries. When examining 118 articles in the Web of Science database, it is observed that China carried out 72 studies. As seen in the most productive organizations chart above, China is very active in the field of "green productivity". Indonesia with 13 studies and South Korea with six studies follows China. When countries were examined, it was found out that Asian countries were very active in the field of "green productivity". It was observed that developed countries do not have a numerical majority in green productivity studies. In contrast to this situation, it is understood from Figure 6 that developing countries have more

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

interest and work on this issue than developed countries. Asian countries have carried out approximately 90% of the work in this area.

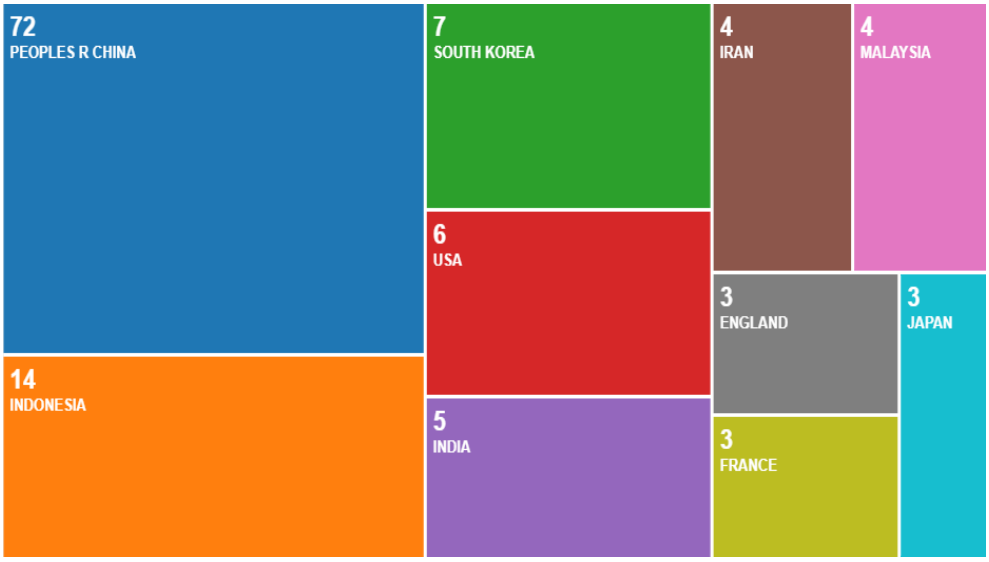

Figure 6. Most Productive Countries

4.2. Network Analyses

4.2.1. Co-Occurrence

Co-occurrence analysis, which analyzes the co-use of word pairs, attempts to determine the topics studied within disciplines and the relationships between these topics from the content of the texts (Sedighi, 2016). It also provides information about different models of cooperation developed between studies. As a result of co-occurrence analysis, it was determined that there were 21 nodes, six clusters and 57 links. It is considered that the study within the cluster has a strong co-citation network with each other, while it is believed that it has limited links with other clusters (Xu et al., 2018). The first cluster (red) consists of directional distance function, directional distance function, environmental pollution, environmental regulation, green productivity growth, green total factor productivity, sustainable development, and total factor productivity. The second cluster (green) consists of China's energy efficiency, environmental efficiency, and meta-frontier. Green productivity index, malmquist-luenberger productivity index and natural rubber make up the third cluster (blue). The fourth cluster (yellow) contains the keywords green productivity, life cycle assessment, and productivity. The fifth cluster (purple) consists of data envelopment analysis and sustainability. Global malmquist-luenberger index and technological progress constitute the sixth cluster (turquoise). "Green productivity" has the highest interoperability with 42 occurrences

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

and 16 links in the analysis, where a minimum of three interoperability is used as a prerequisite. The second highest co-use belongs to "China". "China" has 17 occurrences and 12 links. The concentration of studies in the field of green productivity in China can be seen as the reason for this situation. "Environmental regulation" has the third highest co-use with ten occurrences and seven links.

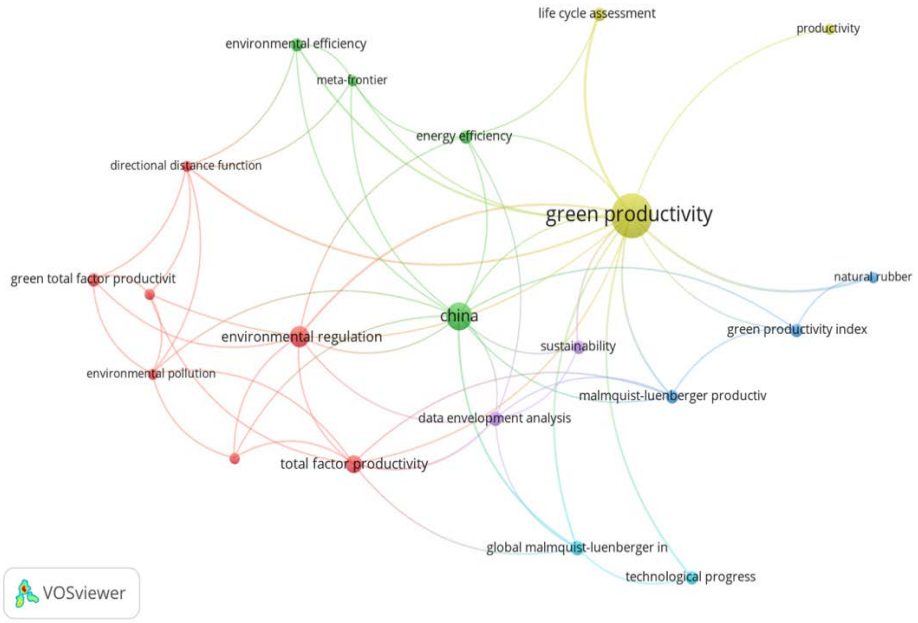

Figure 7. Co-occurrence analysis

4.2.2. Co-authorship

With co-authorship analysis, the authors are divided into seven clusters; as seen in Figure 8, 32 links were identified for 19 authors with a minimum of one study in "green productivity". The total link strength is 41. The total cluster is 7. The first cluster includes Ai and collegaues (2020) and consists of four writers. This group was called green total factor productivity by examining the keywords of the authors' studies (total factor productivity, green total factor productivity, and stochastic frontier analysis). The second cluster consists of Kang and collegaues (2018). By examining the keywords of the authors' studies (low carbon development, ecosystem services, green economy), this group was called the green ecosystem. Lin Boqiang, Shen Xiaobo and Tian Peng (2017) are in the third cluster. By examining the keywords of the authors' studies (energy conservation policy, energy intensity, environmental performance), this group was named green energy policy. The fourth cluster consists of writers Du Kerui, Yan Zheming and

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

Zou Baoling (2020). By examining the keywords of the authors' studies (green technology innovations, renewable energy technology innovations), this group was named green innovations. The fifth cluster includes two authors, Li and Sun (2018). By examining the keywords of the authors' studies (energy efficiency, energy use, energy consumption), this group was named green energy. The sixth cluster consists of Li Ke and Tang Liwei (2019), who has done the most work in the field of "green productivity". By examining the keywords of the authors' studies (energy saving, energy conservation, economic growth model), this group was named green economy. The final cluster includes Yongze and collegaues (2019). By examining the keywords of the authors' studies (environmental pollution, water pollution, air pollution), this group was called "against to pollution". Li Ke, who has the most publications with 12 works in the field of green productivity, has 14 links. Lin Boqiang, who has the second most publications with eight works in the field, has four links. The author receiving the highest citation is Li Ke, with 521 citations. As a result of the analysis, it was determined that the author who received the second most citations was Lin Boqiang. Collaboration between authors enables them to be together in different projects or studies. In addition to the studies of Ke Li and Boqiang Lin, who have the most studies in the related field, in the field of green productivity, the studies they have done on different subjects can be seen in the literature. Kunz, B, Laufenberg, G, and Nystroem, who receive 400 citations, are the authors who receive the third most citations. A network representation showing the relationships between authors who have more than one publication is seen in Figure 8.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

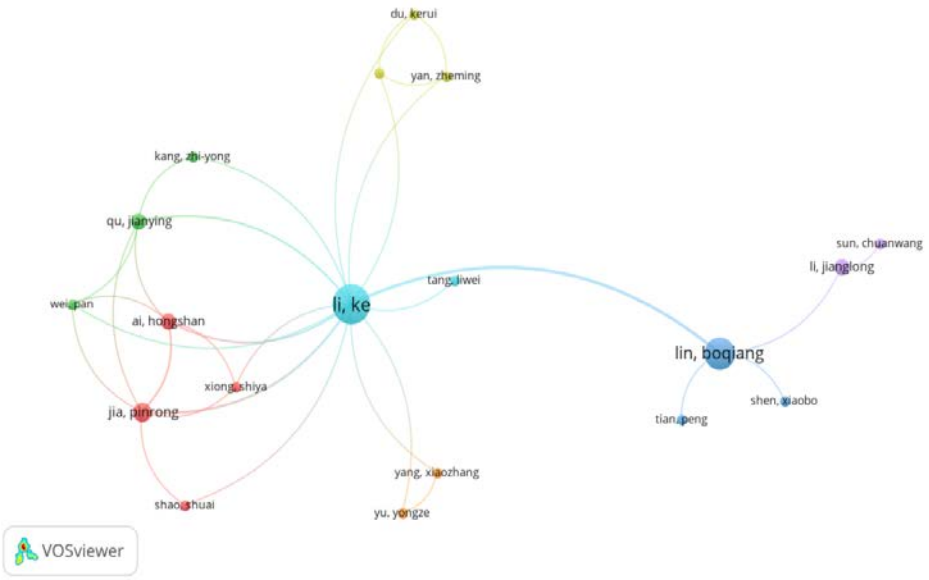

Figure 8. Co-authorship analysis

4.2.3. Country Collaboration

Cooperation between countries in scientific activities is one of the issues emphasized in recent years. An international co-authored article is a frequently used parameter to illustrate the picture of cooperation between countries in scientific activities (Ding et al., 1999). In the time frame set out in Figure 9, countries contributions to the literature and cooperation are shown. In Figure 9, 28 country clusters were formed. Accordingly, as mentioned above, the people's Republic of China stands out as the most productive country. In particular, the People's Republic of China has conducted research together with researchers from many different countries. China is in the most dominant position, as seen in Figure 9, with 72 studies in the field of green productivity. The studies of Chinese researchers Ke Li and Boqiang Lin with researchers from different countries increase the country collaboration. The countries with which the People's Republic of China publishes the most together are Indonesia, Malaysia, and South Korea. In addition, Indonesia stands out as the second most productive country with 14 studies. On the other hand, Indonesia has cooperated with the People's Republic of China, as well as Russia, Malaysia, and Iran. South Korea, the third most productive country with seven studies, has been observed to cooperate with Switzerland, China, and Japan. From the countries mentioned in Figure 9, Turkey, France, Thailand, Canada, the

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

Philippines, and Italy did not cooperate with any country in their work. The United States has six, and India has five studies in the relevant field. In addition, two countries have four, three countries have three, three countries have two and 16 countries have one study on green productivity.

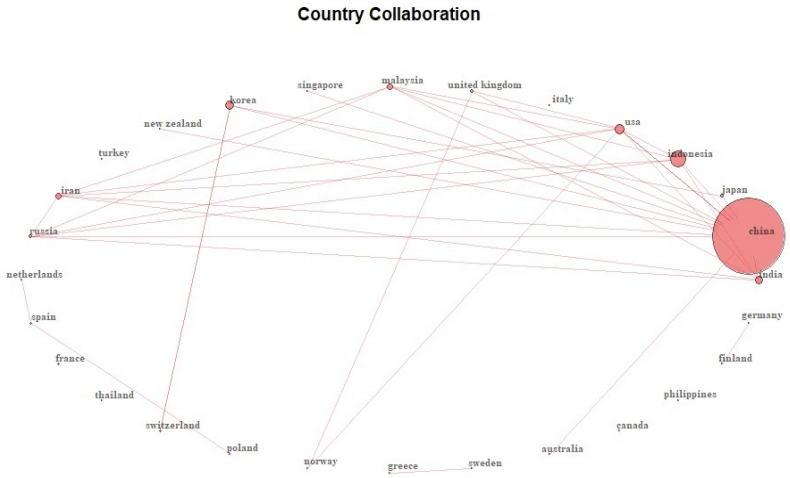

Figure 9. Country Collaboration Map

4.2.4. Co-Citation Analysis

The last analysis conducted within the scope of network analysis is Co-citation analysis (Çilhoroz & Arslan, 2018), which examines the connections between the documents cited by the same study. Co-citation analysis reveals that those documents receiving co-citations can change over the years, and along with this change, the trend of the field moving forward. Figure 10 shows a map of the reference works that the authors are co-quoting, taken as sample articles. The map shows the works with more than ten co-citations. The node's size refers to the citation taken from a study, and the thickness of the link expresses the multiplicity of the linked nodes being quoted together (Ardito et al., 2019). Three clusters and 385 links are revealed on the map, with 30 nodes.

In the studies in the first cluster, the comparison of traditional productivity measurement methods and productivity measurement methods that consider undesirable outputs are emphasized. It has been argued that productivity will be measured more accurately with studies proposing a new productivity index that will use desirable outputs that occur because of production, and undesirable outputs that inevitably occur,

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

in productivity measurements. The Malmquist Luenberger Productivity Index was used as a partner in the studies and the proposed new productivity indexes, which also considered undesirable outputs, were tested in different sectors. For instance, Chung, and collegaues (1997) developed a new productivity index to solve the problems derived from the joint production of undesirable, and desirable outputs and tested this new index on Swedish pulp and paper industries. On the other hand, Hailu & Veeman (2000) tested this productivity index they developed by considering desirable and undesirable outputs, on Canadian pulp and paper industry data. Similarly, made efficiency measurements by taking into account emission changes and not taking into account these changes, and developed a new efficiency index by considering desirable and undesirable outputs (Färe, et al.,2001). They also applied this index, which they had just developed, to the USA manufacturing sector. Oh (2010a) has developed an environmentally friendly productivity growth index. Oh (2010a) found out in the study that traditional productivity measurment methods lead to higher productivity results than the green productivity measurement methods, as they do not take undesirable outputs into account. Zhang and colllegaues (2011) compared the studies in which undesirable outputs are not considered to the studies including undesirable outputs and implemented the derived data on regions in China. On the other side, He and colllegaues (2013) implemented their new green productivity index on China steel and iron industries. In studies conducted in the first cluster, productivity measurement indices performed by ignoring undesirable outputs and efficiency measurement methods performed by adding undesirable outputs into the measurement were compared. It has been argued that the results of methods that are not environmentally sensitive are misleading and high in efficiency.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

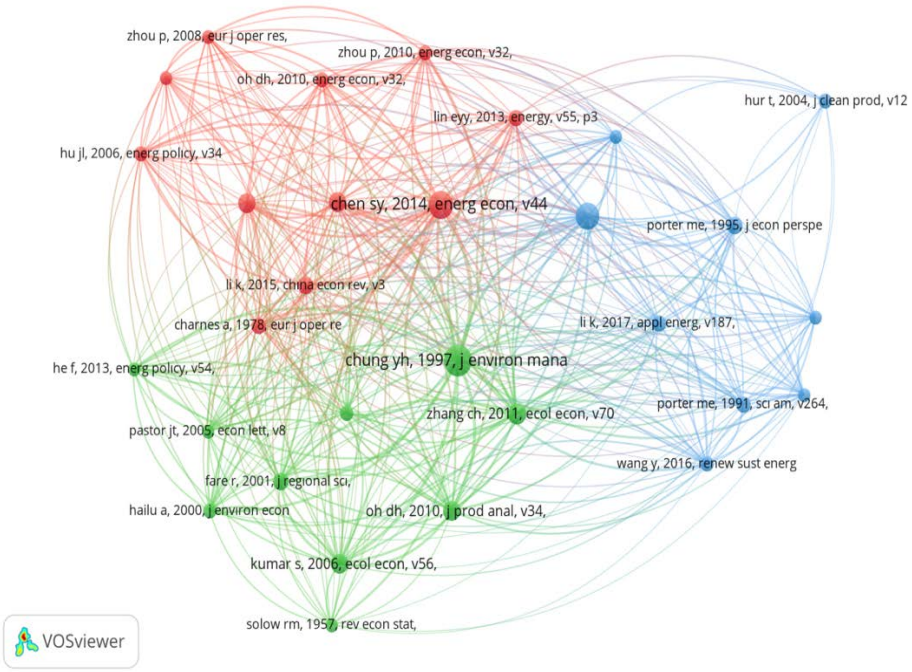

Figure 10. Co-citation map of sample articles' references

The second cluster focused on the relationship between technological development and green productivity. It has been argued that technological developments are the most important factor in the growth of green productivity in recent years. The effects of technological developments on productivity have been analyzed. As a result of technological development, Zhou and colegaues (2010) found out that the total emissions of the 18 countries producing the biggest emissions have decreased. An alternative efficiency index measurement model developed by Oh (2010b) allowed him to measure technological and productivity changes separately. Yu-Ying Lin and collegaues (2013) compared technological productivity changes, scale efficiency changes and technological development of developed and developing countries. In their study, in which they found Green Productivity increase in 36 sectors in China, Li & Lin (2015) found that technological developments are the critical factors for these increases in green productivity. On the other hand, efficiency improvement has a limited impact on green development. In addition, it has been revealed that CO2 emission rates are lower, especially in high-tech products. In addition, environmental regulations introduced in energy-dependent sectors can play an essential role in improving green productivity performance.

In the third cluster, some studies conceptually compare perspectives focused on Green Productivity with those not focused on Green

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

Productivity. Porter (1991) and Porter & van der Linde (1995) argued that the environmental regulations that will come into force would not reduce productivity. Furthermore, Hur and collegaues (2004) have developed two green productivity indicators using environmental management tools such as life cycle assessment (LCA) and total cost assessment (TCA). They tested these green productivity indicators they developed with a Korean petro-chemical company. According to their results, the LCA study showed that reducing the amount of raw materials required could improve environmental performance. TCA results showed that environmental problems are not costly and are very beneficial to the environment. Li & Lin (2017) have researched how environmental regulations affect economic growth. They concluded that the economic growth model of the People's Republic of China could not be supported by total factor energy efficiency (TFEE) and total factor carbon emission efficiency (TFCE). It has been argued that the structural changes in the manufacturing industry will have both positive and negative effects on TFEE and TFCE.

Table 1. Clusters of Co-citation analysis

Cluster 1 (green)		Cluster 2 (red)		Cluster 3 (blue)	
Author	Year	Author	Year	Author	Year
Solow	1957	Charnes	1978	Porter (1991),	1991
Chung	1997	Fare	1994	Porter	1995
Hailu	2000	Hu	2006	Chambers	1996
Fare	2001	Fare	2007	Hur	2004
Pastor	2005	Zhou	2008	Yang	2012
Kumar	2006	Oh	2010	Li	2016
Oh	2010	Lin	2013	Wang	2016
Zhang	2011	Chen	2014	Li	2017
He	2013	Zheng	2014	Xie	2017
Fan	2015	Li	2015		

Traditional productivity measurement methods and productivity measurement methods were compared, taking undesirable outputs into account in cluster 1. In cluster 2, on the other hand, technological impact on green productivity has been the main topic. In cluster 3, perspectives focused on Green Productivity with those not focused on Green Productivity are conceptually compared. Furthermore, the effects of these two perspectives on productivity were put forward.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

V. CONCLUSION

This study reports on the evolution of studies conducted in the field of green productivity between 1980-2021 through the Web of Science online database but presents the studies conducted in the field from a holistic point of view. In addition to showing trends in the field, the study results also show productivity in the corresponding years range. As of 2007, it is seen that the studies carried out in the field of green productivity have an increasing momentum. In response to the growing level of interest, few magazines are at the forefront of the issue. If journals expand the fields and scope of the studies they publish, it will possibly lead to the publication of studies on green productivity in more journals. The search for productivity, which started in the Far East in the 1970s, allowed the producers and consumers to focus their perspectives on green productivity due to rise in the socio-economic development index in developed and developing countries in the 2000s. Although growth rates in Europe, the United States and the Far East do not appear to differ significantly when compared, green productivity studies and productivity studies are more widespread in the Far East, especially in China.

As a field of study, green productivity attracts the attention of different disciplines in both science and social sciences, and the number of publications on this subject is constantly increasing. The interest of different disciplines in the subject field has enabled different keywords to take part in the studies. This situation was confirmed by co-occurrence analysis and six clusters were observed to occur. With these developments, it seems that most authors studying on the subject have one or two articles. It has been determined by co-authorship analysis that some authors studying on the subject have many links and can work together with different authors. However, the authors are divided into seven clusters because of the co-authorship analysis. However, when the authors study their countries' studies together, China's dominant position is seen. In the co-citation analysis, which examines the articles co-cited by the authors, it is understood that the earliest study on the subject date backs to 1957. In addition, although different clusters have been created with co-citation analysis, it is clear that some articles serve as bridges linking the clusters, as it was the case in the studies of Ardito and collegaues (2019). Along with co-citation analysis, links between articles were identified, and clusters were examined in detail. With this study, the study areas related to green productivity were examined. Thanks to the keywords, under which subject headings the studies are evaluated are seen. In this direction, the authors will evaluate the gaps in the field so that future studies can bring innovation to the field. The study will

İşletme Bilimi Dergisi (JOBS), 2021; 9(3): 393-418. DOI: 10.22139/jobs.958744

also be helpful as a summarized literature review on the field of green productivity. The use of studies obtained only through the Web of Science database is a limitation of the study. This is an obstacle to the extraction of the entire map of the area since not all studies in the literature can be reached. To overcome this obstacle, it is recommended to use multiple databases. In addition, only studies in the Web of Science Database (WOS) were used in our study. A more comprehensive study can be carried out in future studies by enriching the databases. However, all studies included in the scope of the study are written in English. Studies in different languages can also be carried out in which research can be covered. Since the study in question focuses on the "green productivity" field, new studies may evaluate the relevant field together with the other fields related to it.

MAKALE BİLGİ FORMU

Yazar Katkıları

Fikir/Kavram: Ahmet İhsan ŞİMŞEK

Araştırma Tasarımı: Erdinç KOÇ

Makale Yazımı: Ahmet İhsan ŞİMŞEK ve Erdinç KOÇ

Veri Toplama: Ahmet İhsan ŞİMŞEK ve Erdinç KOÇ

Analiz: Ahmet İhsan ŞİMŞEK ve Erdinç KOÇ

Eleştirel Okuma: Ahmet İhsan ŞİMŞEK

Çıkar Çatışması Bildirimi

Bu araştırma için herhangi bir kamu kuruluşundan, özel veya kâr amacı gütmeyen sektörlerden hibe alınmamıştır.

REFERENCES

Ahmed, E. M. (2012). Green TFP Intensity Impact on Sustainable East Asian Productivity Growth. *Economic Analysis and Policy*, *42*(1), 67–78.

Ai, H. S., Xiong, S. Y., Li, K., & Jia, P. R. (2020). Electricity price and industrial green productivity: Does the "low-electricity price trap" exist?. *Energy*, 207, 1-11.

Albort-Morant, G., & Ribeiro-Sorıano, D. (2016). A Bibliometric Analysis of International Impact of Business Incubators. *Journal of Business Research, 69,* 1775-1779.

Albort-Morant, G., Henseler, J., Leal-Millan, A., & Cepeda-Carrion, G. (2017). Mapping the field: a bibliometric analysis of green innovation. *Sustainability,* 9(6), 1-15.

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

Ambec, S., & Barla, P. (2002). A theoretical foundation of the Porter hypothesis. *Economics Letters*, *75*(3), 355–360. https://doi.org/10.1016/S0165-1765(02)00005-8

Ambec, S., Cohen, M. A., Elgie, S., & Lanoie, P. (2013). The porter hypothesis at 20: Can environmental regulation enhance innovation and competitiveness? *Review of Environmental Economics and Policy*, *7*(1), 2–22.

Andres, A. (2009). Measuring Academic Research. Chandos Publishing. Cambridge.

Arenas, A. D.; Valencia, G. E.; Duarte, J. E. (2018) Bibliometric anaylsis of green energy research from 2011-2017, *Indian Journal of Science and Technology*, 11(18), 1-7.

Ardito, L., Scuotto, V., Del Giudice, M., & Petruzzelli, A. M. (2018). A bibliometric analysis of research on Big Data analytics for business and management. *Big Data Analytics*, 57(8), 1993-2009.

Brunnermeier, S. B., & Cohen, M. A. (2003). Determinants of environmental innovation in US manufacturing industries. *Journal of Environmental Economics and Management*, *45*(2), 278–293.

Chung, Y. H., Färe, R., & Grosskopf, S. (1997). Productivity and undesirable outputs: A directional distance function approach. *Journal of Environmental Management*, *51*(3), 229–240.

Conrad, K. & Wastl, D. (1995). The impact of environmental regulation on productivity in German industries. *Empirical Economics*, *20*(4), 615–633.

Çilhoroz, Y., & Arslan, İ. (2018). Lean Management Approach in Healthcare Services: A Bibliometric Analysis, *Atlas International Referred Journal on Social Sciences*, 4(10), 540-555.

Daim, T. U., Rueda, G., Martin, H., & Gerdsri, P. (2006). Forecasting Emerging Technologies: Use of Bibliometrics and Patent Analysis, *Technological Forecasting & Social Change*, 73, 981-1012.

Danica M. L., & Kristine M. A. (2017). Bibliometric Network Analysis and Visualization for Serials Librarians: An Introduction to Sci2, *Serials Review*, 43:3-4, 239-245

De Bakker, F. G., Groenewegen, P., & Den Hond, F. (2005). A Bibliometric Analysis of 30 Years of Research and Theory on Corporate Social Responsibility and Corporate Social Performance, *Business & Society*, 44(3), 283-317.

De Oliveira, R. I., Sousa, S. O., & De Campos, F. C. (2019). Lean Manufacturing Implemtation: Bibliometric Analysis 2007-2018. *The International Journal of Advanced Manufacturing Technology*, 101, 979-988.

Diaby, V., Campbell, K., & Goeree, R. (2013). Multi-Criteria Decision Analysis (MCDA) in Health Care: A Bibliometric Analysis, *Operations Research for Health Care*, 2, 20-24.

Ding, Y., Foo, S., & Chowdhury, G. (1999). A bibliometric analysis of collaboration in the field of information retrieval, *The International Information & Library Review,* 30, 367-376.

Dixhit, A., & Jakhar, S. K. (2021). Airport Capacity Management: A Review and Bibliometric Analysis, *Journal of Air Transport Management,* 1-14.

Du, K., & Li, J. (2019). Towards a green world: How do green technology innovations affect total-factor carbon productivity. *Energy Policy, 131*(December 2018), 240–250.

Ellegaard, O., & Wallin, J. A. (2015). The Bibliometric Analysis of Scholarly Production: How Great is the Impact, **S***cientometrics,* 105, 1809-1831.

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green Supply Chain Management: A Review and Bibliometric Analysis, *International Journal of Production Economics,* 162, 101-114.

Färe, R., Grosskopf, S., & Pasurka, C. A. (2001). Accounting for air pollution emissions in measures of state manufacturing productivity growth. *Journal of Regional Science, 41*(3), 381–409.

Gray, W. B.; Shadbegıan, R. J. (1993). Environmental Regulation and Manufacturing Productivity at the Plant Level. In National Bureau of Economic Research Working Paper Series (p. 29).

Gray, W. B.; & Shadbegıan, R. J. (2003). Plant vintage, technology, and environmental regulation. *Journal of Environmental Economics and Management, 46*(3), 384–402.

Hailu, A., & Veeman, T. S. (2000). Environmentally Sensitive Productivity Analysis of the Canadian Pulp and Paper Industry , 1959 **.** 1994 : *Journal of Environmental Economics and Management, 40*, 251–274.

Hamamoto, M. (2006). Environmental regulation and the productivity of Japanese manufacturing industries. *Resource and Energy Economics, 28*(4), 299–312.

He, F., Zhang, Q., Lei, J., Fu, W., & Xu, X. (2013). Energy efficiency and productivity change of China's iron and steel industry: Accounting for undesirable outputs. *Energy Policy, 54*, 204–213.

Hubert, J. J. (1977). Bibliometric models for journal productivity. *Social Indicators Research,* 4(4), 441-473.

Hur, T., Kim, I., & Yamamoto, R. (2004). Measurement of green productivity and its improvement. *Journal of Cleaner Production, 12*(7), 673–683.

Jaffe, A. B., Peterson, S. R., Portney, P. R., & Stavins, R. N. (1995). Environmental Regulation and the Competitiveness of U.S. Manufacturing: What does the evidence tell us? *Journal of Economic Literature, 33*(1), 132–163.

Jia, P. R., Li, K., & Shao, S. (2018). Choice of technological change for China's low carbon development: Evidence from three urban agglomerations. *Journal of*

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

Environmental Management, 206, 1308-1319.

Kang, Z. Y., Li, K., & Qu, J. Y. (2018). The path of technological progress for China's low-carbon development: Evidence from three urban agglomerations. *Journal of Cleaner Production*, 178-644-654.

Li, J. L., & Sun, C. W. (2018). Towards a low carbon economy by removing fossil fuel subsidies. *China Economic Review*, 50, 17-33.

Li, K., & Lin, B. (2015). Measuring green productivity growth of Chinese industrial sectors during 1998-2011. *China Economic Review*, *36*, 279–295.

Li, K., & Lin, B. (2017). Economic growth model, structural transformation, and green productivity in China. *Applied Energy*, *187*, 489–500.

Martinez-Lopez, F. J., Merigo, J. M., Valenzuela-Fernandez, L., & Nicolas, C. (2018). Fifty years of the European Journal of Marketing: A Bibliometric Analysis, *European Journal of Marketing*, 52(1/2), 439-468.

Matondang, N. (2017). Productivity Improvement with Green Approach to Palm Oil Factor Productivity, IOP Conference Series: Materials Science and Engineering, 309, 1-6

Ninerola, A., Sanchez-Rebuli, M. V., & Hernandez-Lara, A. B. (2019). Tourism Research on Sustainability: A Bibliometric Analysis, *Sustainability*, 11(5), 1377.

Oh, D. H. (2010a). A global Malmquist-Luenberger productivity index. *Journal of Productivity Analysis*, *34*(3), 183–197.

Oh, D. H. (2010b). A metafrontier approach for measuring an environmentally sensitive productivity growth index. *Energy Economics*, *32*(1), 146–157.

Oh, J., & Kim, A. (2020). A bibliometric analysis of COVID-19 research published in nursing journals. *Science Editing*, 7(2), 118-124.

Osmanagić Bedenik, N. (2018). Business between profitability and sustainability. EFZG working paper series, (03), 1-10.

Peuckert, J. (2014). What shapes the impact of environmental regulation on competitiveness? Evidence from Executive Opinion Surveys. *Environmental Innovation and Societal Transitions*, *10*, 77–94.

Porter, M.E. (1991). America's green strategy. *Scientific American*, 264 (4), 1–5.

Porter, M. E., & Van Der Lınde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *Journal of Economic Perspectiv*, *9*(4), 97–118.

Rejeb, A., Simske, S.; Rejeb, K., Treiblmaıer, H., & Zailani, S. (2020). Internet of Things Research in Supply Chain Management and Logistics: A Bibliometric Analysis, *Internet of Things*, 12, 1-16.

Rey-Marti, A., Ribeiro-Soriano, D., & Palacios-Marques, D. (2016). A Bibliometric Analysis of Social Entrepreneurship, *Journal of Business Research*, 69, 1651-1655.

Rubashkina, Y., Galeotti, M., & Verdolini, E. (2015). Environmental regulation and competitiveness: Empirical evidence on the Porter Hypothesis from European manufacturing sectors. *Energy Policy, 83*, 288–300.

Sanchez-Vargas, A.; Mansilla-Sanchez, R.; Aguilar-Ibarra, A. (2013). An empirical analysis of the nonlinear relationship between environmental regulation and manufacturing productivity. *Journal of Applied Economics, 16*(2), 357–372.

Sangwan, K. S., & Mittal, V. K. (2015). A bibliometric analysis of green manufacturing and similar frameworks. *Management and Environmental Quality*, 26(4), 566-587.

Sedighi, M. (2016). Application of word co-occurrence analysis method in mapping of the scientific fields (Case study: the field of Informetrics), *Library Review,* Vol. 65 No. 1/2, 52-64.

Sengupta, I. N. (1992). Bibliometrics, Informetrics, Scientometrics and Librametrics: An Overview. *Libri,* 42(2). 75-98.

Sharifi, A. (2021). Urban sustainability assessment: An overview and bibliometric analysis, *Ecological Indicators,* 121, 1-18.

Tang, L. W., & Li, K. (2019). A comparative analysis on energy-saving and emissions-reduction performance of three urban agglomerations in China, *Journal of Cleaner Production*, 220, 953-964.

Tian, P., & Lin, B. Q. (2017). Promoting green productivity growth for China's industrial exports: Evidence from a hybrid input-output model, *Energy Policy*, 111, 394-402.

Tuttle, T., & Heap, J. (2008). Green productivity: Moving the agenda. *International Journal of Productivity and Performance Management, 57*(1), 93–106.

Uysal, Ö. Ö. (2010). Business Ethics Research with an Accounting Focus: A Bibliometric Analysis from 1988-2007. *Journal of Business Ethics,* 93, 137-160.

Xıe, R. H., Yuan, Y. J., & Huang, J. J. (2017). Different Types of Environmental Regulations and Heterogeneous Influence on "Green" Productivity: Evidence from China. *Ecological Economics, 132*, 104–112.

Xu, X., Chen, X., Jıa, F., Brown, S., Gong, Y., & Xu, Y. (2018). Supply Chain Finance: A Systematic Literature Review and Bibliometric Analysis, *International Journal of Production Economics,* 204, 160-173.

Yan, Z. M., Zou, B. L., Du, K. R., & Li, K. (2020). Do renewable energy technology innovations promote China's green productivity growth? Fresh evidence from partially linear functional-coefficient models. *Energy Economics,* 90, 1-11.

Yi, M.; Wang, Y., Yan, M., Fu, L., & Zhang, Y. (2020). Government R&D subsidies, environmental regulations, and their effect on green innovation efficiency of manufacturing industry: Evidence from the Yangtze River economic belt of China. *International Journal of Environmental Research and Public Health, 17*(4), 1–

İşletme Bilimi Dergisi (JOBS), 2021; 9(3):393-418. DOI: 10.22139/jobs.958744

17.

Yongze, Y, Yang, X., & Li, K. (2019). Effects of the terms and characteristics of cadres on environmental pollution: Evidence from 230 cities in China, *Journal of Environmental Management*, 232, 179-187.

Youngblood, M., & Lahti, D. (2018). A Bibliometric Analysis of the Interdisciplinary Field of Cultural Evolution, Palgrave Communications,

Yu-Yıng Lin, E., Chen, P. Y., & Chen, C. C. (2013). Measuring green productivity of country: A generlized metafrontier Malmquist productivity index approach. *Energy*, *55*, 340–353.

Zhang, C., Lıu, H., Bressers, H. T. A., & Buchanan, K. S. (2011). Productivity growth and environmental regulations - accounting for undesirable outputs: Analysis of China's thirty provincial regions using the Malmquist-Luenberger index. *Ecological Economics*, *70*(12), 2369–2379.

Zhou, P., Ang, B. W., & Han, J. Y. (2010). Total factor carbon emission performance: A Malmquist index analysis. *Energy Economics*, *32*(1), 194–201.