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CONSUMER COMFORT IN SOCIAL SCIENCES: A BIBLIOMETRIC ANALYSIS

SOSYAL BİLİMLERDE TÜKETİCİ KONFORU: BİBLİYOMETRİK ANALİZ

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Abstract

This research aims to analyze consumer comfort studies in the research areas of business, behavioral sciences, and social sciences using performance and science mapping analysis, which are part of the bibliometric analysis method. This paper uses the Web of Science database to examine the most significant authors, journals, keywords, theories, countries, and their citations. This research uses VOSviewer software, specifically for citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, co-authorship analysis, keyword clustering, and graphical visualization. Additionally, the research employs the SPAR-4-SLR (Scientific Procedures and Rationales for Systematic Literature Reviews) protocol for conducting a bibliometric analysis. According to findings, the *Facilities* journal has the highest number of studies. The United States is the most frequently cited country. The most used keywords are client relationships, interpersonal communication, and repurchase intention. The studies of consumer comfort are mostly influenced by Fornell, J. F., Spake, D. F., Parasuraman, A., and Patterson, P. G. Additionally, comfort theory is commonly used in related studies followed by the signaling theory, social identity theory, and self-efficacy theory. The research offers guidance for future research, identifying potential areas of study and contributing to the progression and enhancement of research on consumer comfort. An investigation of studies on consumer comfort is expected to provide precious guidelines for future researchers, managers, and entrepreneurs.

Keywords: Consumer comfort, comfort theory, bibliometric analysis, SPAR-4-SLR protocol

JEL Classification: M10**,** M30, M31

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Öz

Bu araştırmanın amacı işletme, davranış bilimleri ve sosyal bilimler alanlarındaki tüketici konforu çalışmalarını bibliyometrik analiz yöntemini kullanarak değerlendirmektir. Araştırmada tüketici konforu alanındaki en önemli yazarları, dergileri, ülkeleri, anahtar kelimeleri, teorileri ve atıfları incelemek için Web of Science veri tabanı kullanılmıştır. Bununla birlikte araştırmada, atıf analizi, ortak atıf analizi, bibliyografik birleştirme, ortak kelime analizi, ortak yazarlık analizi, anahtar kelime kümeleme ve grafiksel görselleştirme için VOSviewer yazılımı kullanılmıştır. Araştırmada ayrıca bibliyometrik analiz yapmak için SPAR-4-SLR protokolü takip edilmiştir. Bulgulara göre, *Facilities* en fazla çalışmanın yayınlandığı dergidir. Amerika Birleşik Devletleri en sık atıf yapılan ülkedir. En çok kullanılan anahtar kelimeler müşteri ilişkileri, kişilerarası iletişim ve yeniden satın alma niyetidir. Tüketici konforu çalışmaları en çok Fornell, J. F., Spake, D. F., Parasuraman, A. ve Patterson, P. G. tarafından etkilenmiştir. Ek olarak, ilgili çalışmalarda konfor teorisi yaygın olarak kullanılmakta ve bunu sinyal teorisi, sosyal kimlik teorisi ve öz yeterlilik teorisi takip etmektedir. Araştırma, gelecekteki araştırmalar için rehberlik etmekte, potansiyel çalışma alanlarını belirlemekte ve tüketici konforu üzerine yapılan araştırmaların ilerlemesine ve gelişmesine katkıda bulunmaktadır. Tüketici konforu üzerine yapılan çalışmaların incelenmesinin gelecekteki araştırmacılar, yöneticiler ve girişimciler için değerli bilgiler sağlaması beklenmektedir.

Anahtar Kelimeler: Tüketici konforu, konfor teorisi, bibliyometrik analiz, SPAR-4-SLR protokol

JEL Sınıflaması: M10, M30, M31

1. Introduction

Creating an enjoyable customer experience in service interactions is crucial, and a vital aspect of this is ensuring consumer comfort. Consumer comfort is a feeling of well-being that cultivates calm and worry-free emotions (Ainsworth and Foster, 2017: 27). Consumer comfort comprises physical, psychospiritual, social, and environmental comfort (Becker et al., 2023: 140). Since consumer comfort is theoretically important in the field of consumer behavior, it is also a critical issue for businesses in terms of customer satisfaction, trust, commitment (Spake et al., 2003), service quality (Dabholkar et al., 2000), word of mouth, consumer engagement, enjoyable consumer experience, willingness to pay (Becker et al., 2023), loyalty, interaction quality (Gaur et al., 2009), customer retention (Radia et al., 2022), and perceived product quality (Ardelet et al., 2022). Therefore, it is crucial to understand what is currently happening in the research areas and where the future of the field is going. In this regard, the primary purpose of this research is to determine how consumer comfort has evolved over the years in academic research, what are the important publications and authors that have contributed to consumer comfort research, what are the most popular and prominent consumer comfort themes among scholars, and what are the current and future research areas in the field of consumer comfort.

In this context, the research aims to analyze the studies on consumer comfort in the Web of Science (WOS) database using the bibliometric analysis method. Bibliometric analysis scrutinizes bibliographic materials using quantitative methods (Pritchard, 1969). Bibliometric research enables scholars to progress and establish significant and innovative approaches. Briefly explained, scholars gain an introduction to the subject matter, recognize knowledge gaps, devise new ideas for research, and clarify and strengthen their intended contribution to the field. (Donthu et al., 2021: 285). Bibliometric analyses include science mapping and performance analyses. Science mapping analysis provides information on the subject, networks, and structure of the area, while performance analysis

provides insights into authors, institutions, countries, journals, and citation analysis (Donthu et al., 2021: 294). In addition, this research employs the SPAR-4-SLR (Scientific Procedures and Rationales for Systematic Literature Reviews) protocol for conducting a bibliometric analysis (Paul et al., 2021).

In the literature, there are many bibliometric studies on consumer behavior and satisfaction in different contexts such as sustainability and consumer behavior in e-commerce (Rita and Ramos, 2022), consumer behavior, technology, and society (Cruz-Cardenez et al., 2021), consumer behavior in the food science (Kasemodel et al., 2016), service quality and customer satisfaction (Khudhair et al., 2020), consumer psychology (Jia et al., 2018), consumer behavior and corporate social responsibility (Raza et al., 2021), consumer brand relationships (Fetscherin and Heinrich, 2015) and consumer neuroscience techniques in advertising (Sanchez-Fernandez et al., 2021). However, when the literature was searched in the scope of bibliometric analysis and systematic literature review a research gap has been detected in this context. There are several empirical studies on consumer comfort (Gaur et al., 2009; Radia et al., 2022; Ardelet et al., 2022; Ainsworth and Foster, 2017; Becker et al., 2023; Miller et al., 2014; Zoupos and Spais; Kolcaba et al., 2006; Spake et al., 2003; Khan and Aravinthan, 2016). All these studies demonstrate that in various fields of research, consumer comfort has been used in many empirical studies. Therefore, the research is considered to be a contribution to the literature with the providing precious guidelines, insights and predictions for future researchers, managers, and entrepreneurs. Because this research identifies an overview of the prominent scholars, publications, journals, countries, keywords, and theories, as well as the connection between them, in the literature on consumer comfort.

2. Theoretical Background

2.1. Consumer Comfort

The search for comfort is a fundamental human behavior, and people seek comfort throughout their lives (Dunn, 1977; Slater, 1985). This quest is not passive; instead, individuals make decisions, act, and attempt to shape their environment to increase or maintain their sense of comfort (Spake et al., 2003). Initial research in the literature indicated that comfort is a multi-faceted construct composed of physical, physiological, and psychological comfort (Spake et al., 2003; Slater, 1985). Kolcaba et al., (2006) investigated consumer comfort in the health and care sector and formulated the comfort theory. According to this theory, customer comfort consists of physical, psychospiritual, social, and environmental comfort (Becker et al., 2023: 140). In short, consumer comfort can be defined as physical and physiological sensations and psychological and social emotions (Pearson, 2009: 301; Haynes, 2009:39).

Physiological and physical comfort are critical to service quality and consumer satisfaction but influenced by the service environment itself and external factors (Spake et al., 2003; Haynes, 2009:39). These include room temperature, illuminance levels, relative humidity (Chua et al., 2016), music (Ainsworth and Foster, 2017), light, noise, air quality, color, store layout, etc. (Oseland, 1999; Haynes, 2009:39; Kolcaba et al., 2006).

On the other hand, psychological comfort pertains to the consumer's contentment and sense of well-being (Radia et al., 2022: 1). According to Scitovsky, 1992, psychological comfort includes feelings of security, reassurance, habit, and alleviation of mental distress. This aspect of comfort is particularly prominent in service provision (Spake et al., 2003: 317) and has a significant impact on consumer experience, relationship quality, and consumer satisfaction (Radia et al., 2022: 1).

In the literature, consumer comfort has been considered in physiological, physical, and psychological contexts. Therefore, it is likely that different studies have different definitions of consumer comfort. However, especially in business, economics, management, and marketing, the definition of consumer comfort is generally discussed in the context of psychological comfort (Spake et al., 2003; Radia et al., 2022). Therefore, the following definition of consumer comfort has been used in this research.

Consumer comfort, defined as a sense of well-being that promotes calm and worry-free emotions, is essential for creating an enjoyable customer experience in service interactions (Ainsworth and Foster, 2017: 27). Service providers aim to ensure consumer comfort by interacting directly with customers, especially in sales and service interactions (Ardelet et al., 2022: 265). Consumer comfort positively influences consumer trust, satisfaction, active voice, commitment (Spake et al., 2003), perceived product quality (Ardelet et al., 2022), service quality (Dabholkar et al., 2000), consumer engagement, word of mouth, willingness to pay, enjoyable consumer experience (Becker et al., 2023), interaction quality, loyalty (Gaur et al., 2009), customer retention (Radia et al., 2022), hedonic value and utilitarian value (Ainsworth and Foster, 2017). In addition, consumer comfort is influenced by several variables such as ambient scent (Ardelet et al., 2022), customer experience, environment, product offering, moment of truth, frontline staff, relationship duration (Radia et al., 2022), human likeness, rapport, social presence (Becker et al., 2023), atmospheric cues (color, music, layout), familiarity (Ainsworth and Foster, 2017), service agent orientation type (self, interactive, task) and perceived control (Li and Ma, 2022).

Consumer comfort has been studied in many disciplines, including business and economics (Ardelet et al., 2022, Radia et al., 2022), marketing (Ainsworth and Foster, 2017; Becker et al., 2023; Zoupos and Spais, 2023; Radia et al., 2022), computer science (Nawaz et al., 2022), engineering (Khan and Aravinthan, 2016), energy (Yang et al., 2019), materials science (Unal et al., 2023), architecture (Bedon and Mattei, 2021), transportation (Miller et al., 2014), health science and nursing (Kolcaba et al., 2006; Halcomb et al., 2015), psychology, sociology and communication (Spake et al., 2003).

As mentioned above, consumer comfort is a topic that has been studied in different disciplines and contexts. Therefore, examining consumer comfort studies in the literature will provide insight into the field. In this regard, bibliometric analysis was used in the research to provide insights and predictions about consumer comfort. Bibliometric analysis minimizes researcher-related errors while allowing the evaluation of many scientific dynamics in the research area (Wang et al., 2020: 865; Donthu et al., 2021: 285).

3. Methodology and Research Design

3.1. Bibliometric Analysis

Advancements in information technology have made access to information easier and less costly. At the same time, the volume of information available has increased significantly. Discerning valuable insights from the acquired data within this context is essential, preventing it from becoming an amorphous pile of inconsequential details. Therefore, classifying and analyzing useless data is crucial to get reliable and sufficient information. One of the commonly used methods for this is bibliometric analysis (Zeren and Kaya, 2020: 37). Bibliometrics; is used to obtain measurable, reproducible, and objective information (Guo et al., 2020: 2) and is a research area that examines bibliographic materials through the lens of quantitative methods (Pritchard, 1969; Zeren and Kaya, 2020: 38; Bonilla et al., 2015: 1240). As a popular method, bibliometric analysis is frequently used to explore and analyze extensive volumes of scientific data (Wang et al., 2020: 865; Donthu et al., 2021: 285). It is used for various reasons, such as identifying trends in articles and journals, emerging research areas, measuring journal performance, and exploring the structure of existing literature (Donthu et al., 2021: 285). In addition, bibliometric analysis imparts to researchers and related stakeholders a profound and illuminating comprehension of the field (Guo et al., 2020: 2).

In the literature, bibliometric analysis is utilized in many disciplines, including economics, econometrics, management, leadership, innovation, entrepreneurship, finance, sustainability, human resources management, ethics, accounting, supply chain, tourism, consumer behavior, and marketing (Martinez-Lopez et al., 2017:441; Wang et al., 2020: 866; Bonilla et al., 2015: 1241; Schwert, 2021; Zhu et al., 2019; Wang et al., 2015; Vallaster et al., 2019; Shakil et al., 2020). Bibliometric studies offer the fundamentals for researchers to advance a field and provide meaningful and novel approaches. Briefly, researchers obtain an overview of the topic, detect gaps in knowledge, generate new ideas, and clarify and strengthen their intended contribution to the field. (Donthu et al., 2021: 285).

Bibliometric research affords crucial prospects for advancing theory and practice. This is because bibliometric analysis reveals the interconnectedness, interrelationships, and contexts of the concepts and factors considered in the research fields. Bibliometric analysis also reveals knowledge clusters and social patterns. Evolutionary nuances are tracked to explore where the research area is going, the efficiency and effectiveness of the research area are determined through performance analysis, and essential knowledge gaps are identified to position future research directions (Mukherjee et al., 2022). In bibliometrics, studies in the literature under review can be dissected through various lenses, including citation analysis, authorship patterns, geographical distribution, document typologies, publication years, keyword analysis, research area, and more (Zeren and Kaya, 2020: 38).

Several protocols are used in bibliometric analyses, systematic literature reviews, and meta-analyses. The SPAR-4-SLR protocol is often used in bibliometric studies (Paul et al., 2021), while the PRISMA protocol is mainly used in meta-analyses and systematic literature reviews (Moher et al., 2009; Paul et al., 2021). The PRISMA protocol provides a 27-point checklist, guidelines, and roadmap. This list consists mainly of a title, abstract, introduction, methods (search strategies, selection and data collection process, data items, evaluation of risk of bias), results, discussion, other information, and support. (Moher et al., 2009; Page et al., 2021). The PRISMA protocol enables researchers to

report their views in a rigorous, orderly, and transparent way. However, this protocol provided little justification that researchers could use to explain their review decisions (Paul et al., 2021: 6).

Therefore, this research employs the SPAR-4-SLR protocol which was developed to overcome the limitations of other protocols. SPAR-4-SLR protocol provides the basis for systematic literature review studies and assures accurate planning, coherence in implementation, and transparency to allow replication. In short, the SPAR-4-SLR protocol enables researchers to anticipate problems and maintain research integrity (Paul et al., 2021: 5; Das et al., 2022).

In this article, studies on consumer comfort in the literature were analyzed by bibliometric analysis method based on the SPAR-4-SLR protocol. The procedural steps of this research methodology and stages of SPAR-4-SLR protocol (Sharma et al., 2023; Das et al., 2022; Paul et al., 2021: 5-6) are briefly depicted in Table 1.

Table 1: Research Methodology

	Identification
Assembling	**Domain:** Consumer Comfort **Research Questions:** RQ1: How has consumer comfort evolved in academic research? RQ2: What are the significant publications and authors that have contributed to consumer comfort research? RQ3: Which consumer comfort themes are the most popular and emerging among scholars? RQ4: What are the current and future research areas in consumer comfort? **Source Type:** Journal articles **Source Quality:** Web of Science (WOS)
	Acquisition
	Database: Web of Science (WOS) **Search Period:** 1980-2023 (Until October) **Search Keywords**: "consumer comfort", "customer comfort", "physical comfort", "comfort theory", "social comfort", physiological comfort", "environmental comfort", "psychological comfort", **Total Number of Articles Returned from the research:** 155
Arranging	**Organization**
	Organizing Codes: Authors, journals, countries, institutions, theories, variables, keywords, citation, coupling, networks
	Purification
	Article Type Excluded: Proceeding paper, early access, book chapter, and irrelevant articles duplicate = 60 **Article Type Included:** 95 journal articles
Assessing	**Evaluation**
	Analysis Method: Bibliometric analysis **Agenda Proposal Method:** Current research areas, keyword analysis, theories, and future research direction
	Reporting
	Reporting Conventions: Tables, figures, keyword cluster, science mapping **Findings and Conclusion:** Theoretical and managerial implications **Limitation:** Database (WOS), VOSviewer software, bibliometric analysis method

Sources: (adapted from Paul et al., 2021: Sharma et al., 2023)

Bibliometric studies consist of science mapping and performance analysis (Donthu et al., 2021: 294). Science mapping analysis provides information on the subject, networks, and structure of the field, whereas performance analysis provides information on institutions, authors, journals, countries, and citation analysis. Science mapping analysis includes citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, co-authorship analysis, keyword clustering, and visualization (Donthu et al., 2021: 294; Van Raan, 2014; Mukherjee et al., 2022:106).

Different software such as CRexplorer, Publish or Perish, ScientoPyUI are used for performance analysis; Bibexcel, Biblioshiny, BiblioMaps, CiteSpace, CitNetExplorer, SciMAT and Sci2Tool are used for science mapping analysis (Moral-Munoz et al., 2020). However, in this research, performance analysis and science mapping analysis were carried out using Microsoft Excel and VOSviewer. VOSviewer is a valuable tool for visualization and clustering, providing for straightforward interpretation of the results. Its effectiveness makes it particularly suitable for academic analysis (Van Eck and Waltman, 2010: 536).

A Boolean search string in the WOS database using the TITLE-ABSTRACT-KEYWORD-KEYWORDPLUS was applied (Aliyu, 2017: 216) by eight keywords ("consumer comfort" OR "customer comfort" OR "comfort theory" OR "physical comfort" OR "psychological comfort" OR "social comfort" OR "physiological comfort" OR "environmental comfort"). WOS database was selected because it provides higher quality, robust, valid, and functional data and is more reliable. On the other hand, the low quality of the data obtained from databases such as Google Scholar causes doubts about the conformity of the bibliometric analysis (Cobelli and Blasioli, 2023: 302). The WOS database has been widely used in bibliometric research in various scientific areas in recent years. In this regard, WOS database was adopted in this research, considering the characteristics of the database, its reputation, and its suitability for the research (Sanchez et al., 2017; Cobelli and Blasioli, 2023; Farooq, 2023). Also, the Web of Science (WOS) database indexes over 3,400 journals across 58 disciplines in the social sciences (Khare and Jain, 2022).

The research covered 43 years, from 1980-2023 (until October), since the first article on consumer comfort was published in the WOS database in 1980 (Panksepp et al., 1980). A total of 2177 studies were identified by searching for ("consumer comfort" OR "customer comfort" OR "comfort theory" OR "physical comfort" OR "psychological comfort" OR "social comfort" OR "physiological comfort" OR "environmental comfort") in all fields. Then, the research areas of business, behavioral sciences, and social sciences were selected from the studies, and as a result, 155 documents were identified. After that, proceeding papers, book chapters, early access, and irrelevant articles in terms of subject were excluded from the analyses. Because in the literature, proceeding papers and book chapters were generally excluded, and only journal articles were analyzed. This is because journal articles contribute the most to the literature (Paul et al., 2021; Sharma et al., 2023). Also, the abstracts and introductions of obtained studies were read one by one. Studies in the fields of animal behavior, health sciences, medicine, engineering, etc. were excluded from the analyses. Consequently, 95 journal articles were used for bibliometric analysis.

Before the analysis, it would be beneficial to address research questions and identify research objectives as follows;

Research Questions:

RQ1: How has consumer comfort evolved in academic research over the years?

RQ2: What are the significant publications and authors that have contributed to consumer comfort research?

RQ3: Which consumer comfort themes are the most popular and emerging among scholars?

RQ4: What are the current and future research areas in consumer comfort?

To answer research questions, performance and science mapping analysis was carried out, commonly used in bibliometric analysis (Donthu et al., 2021: 294). As part of a performance analysis, this research aims to determine the distribution of consumer comfort studies by year, country, and journal. In addition, the research areas of the studies, the most cited studies, and the distribution of citations by authors, journals, and countries were analyzed. Co-authorship analysis, co-occurrence analysis, citation analysis, co-citation analysis, bibliographic coupling, co-word analysis, and keyword analysis were executed as part of the science mapping analysis, and the analysis results are presented below.

4. Analysis And Findings

4.1. Descriptive Information

Before applying the inclusion and exclusion criteria and bibliometric analysis, general descriptive information about consumer comfort studies in the literature is presented in the following tables and figures (Table 2, Figure 1, Figure 2, and Figure 3).

The distribution of consumer comfort studies in Web of Science by document type is shown in Table 2.

Table 2: Document Types

Types of Paper	Number of Paper	%
Article	1,605	73,7
Proceeding Paper	412	18,9
Review Article	80	3,7
Book Chapter	31	1,4
Early Access	22	1
Editorial Material	12	0,5
Book	2	0,1
Other	13	0,6
Total	**2,177**	**100**

There are 2177 studies in the WOS, according to Table 2. These studies include 1605 journal articles (73,7%), 412 proceeding papers (18,9%), 80 review articles (3,7%), 31 book chapters (1,4%), 22 early access (1%), 12 editorial materials (0,5%), 2 books (0,1) and 12 other (0,6%) such as meeting abstract, letter, book review, correction, retraction, and retracted publication.

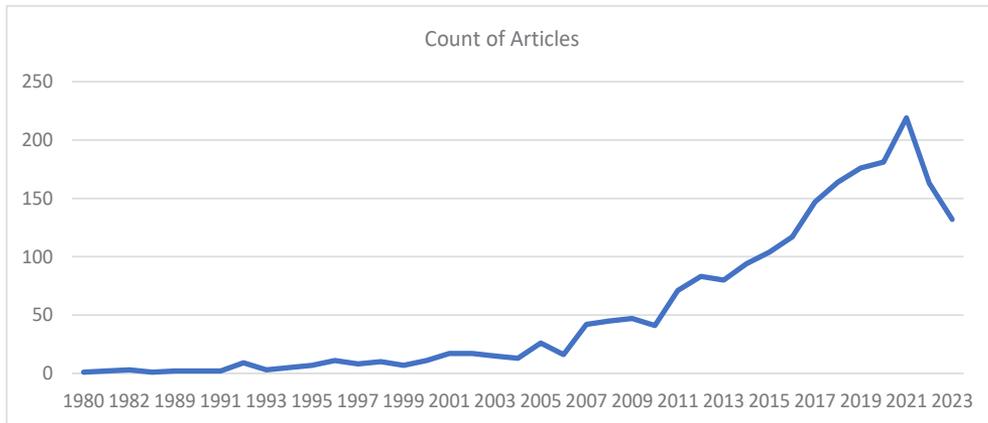Figure 1 shows the distribution of consumer comfort studies in Web of Science by year of publication.

Figure 1: Distribution of Studies by Year of Publication

Figure 1 shows consumer comfort studies have increased over the years. The first article on consumer comfort in WOS was published in 1980 (Panksepp et al., 1980). This was in the field of behavioral science. The number of articles published on an annual basis until 2010 is low. However, since 2011 studies on this topic seem to have become more popular, and the number of published articles has increased. The primary research period commenced in 2010.

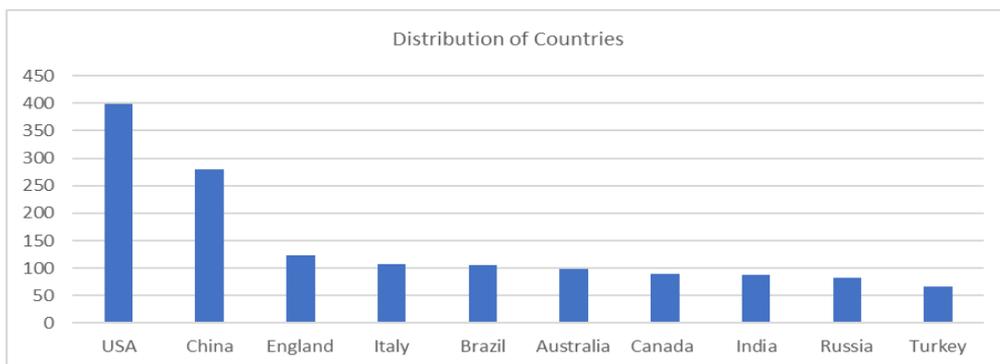The distribution of consumer comfort studies in Web of Science by country is shown in Figure 2.

Figure 2: Distribution of Studies by Countries

Figure 2 shows the top 10 countries with the highest number of articles. There are studies on consumer comfort from 101 countries in Web of Science. However, there are few studies from countries outside the top 10. Looking at this figure, that most studies are published in the USA (398), followed by China (280), England (123), Italy (107) and Brazil (106).

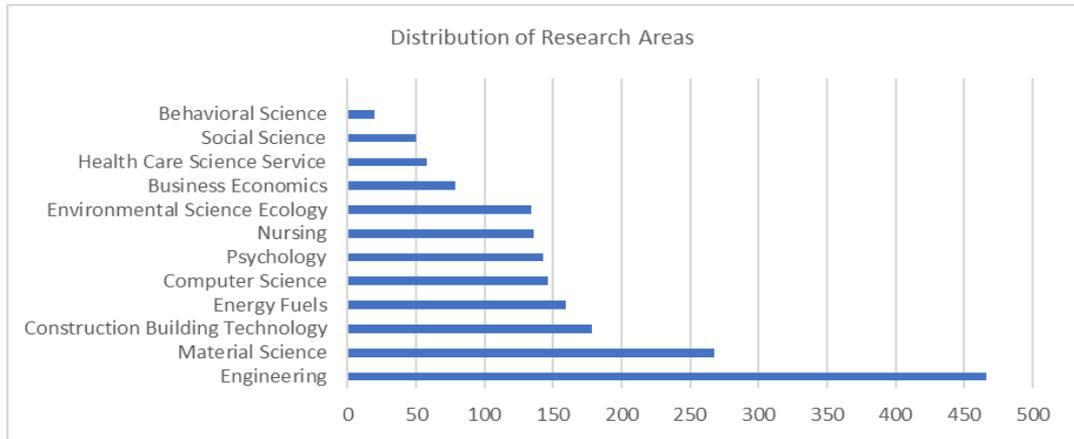Figure 3 shows the distribution of consumer comfort studies in Web of Science by research areas of publication.

Figure 3: Distribution of Studies by Research Areas

The research areas with the highest number of articles on consumer comfort are shown in Figure 3. Most studies on this topic were published in the field of engineering (466), followed by material science (268), construction building technology (178), energy fuels (159), psychology (143), nursing (136), environmental science ecology (134), business (79), health care service (58), social science (50) and behavioral science (20). There are studies on consumer comfort from 125 different areas, such as public environment, occupational health, robotics, architecture, transportation, sports science, and mechanics, etc., but due to the insufficient number of studies in these fields, they are not shown in Figure 3.

After providing general descriptive knowledge about consumer comfort studies in the Web of Science, inclusion and exclusion criteria were applied before conducting bibliometric analyses. Firstly, since there are many studies on the subject from many different fields, the research areas are restricted. As this research aims to address consumer comfort from a social perspective, such as business, marketing, and consumer behavior, only documents in the categories of business, social sciences, and behavioral sciences were included. In addition, proceedings papers, book chapters, and irrelevant articles in terms of subject were excluded from the analyses, so 95 journal articles were retained for the bibliometric analysis. The results of the performance and science mapping analyses, part of the bibliometric analysis, are presented in the following tables and figures.

4.2. Performance Analysis

The articles used in this research were analyzed using Microsoft Excel and VOSviewer software. The performance analysis includes the contributions and status of the research components (journal, country, author, citation) in the relevant field. Performance analysis, an important part of bibliometric studies, is found in most studies. This analysis shows which journals, institutions, countries, and authors stand out in the research area (Donthu et al., 2021: 287).

4.2.1. Article Count of Journals

The distribution of journals on consumer comfort studies is shown in Figure 4.
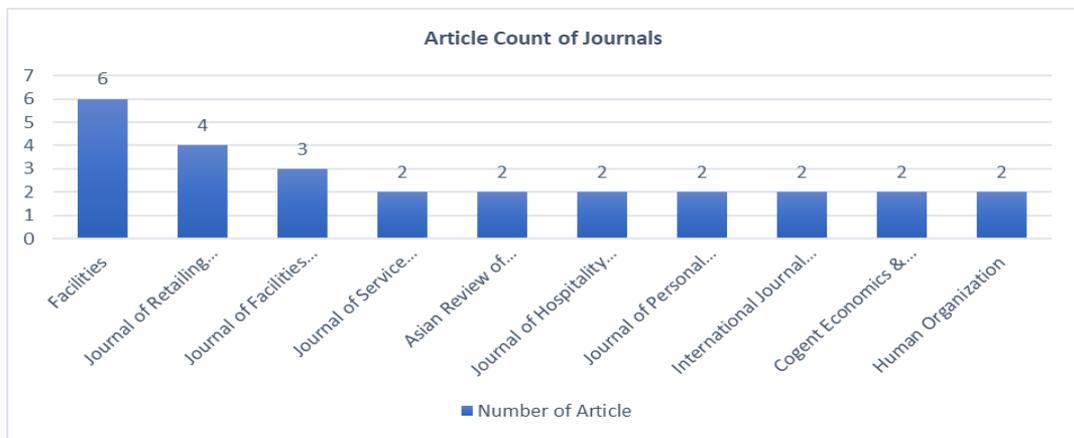

Figure 4: Article Count of Journals

The VOSviewer identified a total of 76 journals. However, not all these journals are included in Figure 4. According to Figure 4, Facilities has the highest number of studies (6), followed by Journal of Retailing and Consumer Service (4), Journal of Facilities Management (3), Journal of Service Marketing (2), Asian Review of Accounting (2), Journal of Hospitality & Tourism Research (2), and Journal of Personal Selling & Sales Management (2), International Journal of Retail & Distribution Management (2), Cogent Economics and Finance (2), Human Organization (2).

4.2.2. Citation Count of Journals

Figure 5 shows the number of citations of journals. Journals with 50 or more citations are shown in the figure.
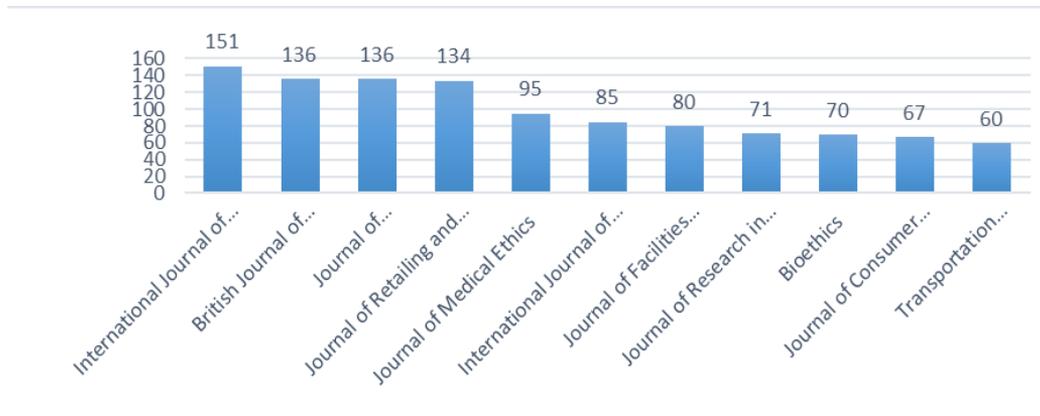
Figure 5: Citation Count of Journals

When analyzing the citation counts of the journals, International Journal of Service Industry Management (151 citations) is the most cited. Even though there is only one article on the subject in the journal, the fact that the most cited article (Butcher et al., 2001) is in this journal makes it stand out. British Journal of Management (136 citations) and Journal of Organizational Behavior (136 citations) are the second most cited journals, followed by the Journal of Retailing, Consumer Service (134 citations and 4 documents) and Journal of Medical Ethics (95 citations).

4.2.3. Citation Count of Countries

Figure 6 shows the number of citations per country. The figure shows the ten countries with the highest number of citations.
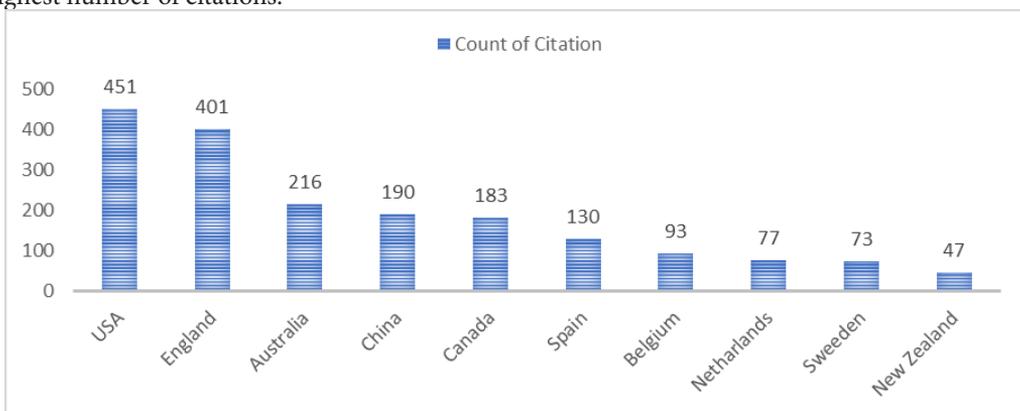

Figure 6: Citation Count of Country

In the WOS, there are studies from 43 countries on consumer comfort in business, behavioral science, and the social sciences. 38 countries have at least one citation. Figure 6 shows that the most

cited country is the USA (451 citations) with 19 documents, followed by England (401 citations) with 13 documents, Australia (216 citations) with 10 documents, China (190 citations) with 9 documents, Canada (183 citations) with 5 documents, Spain (130 citations) with 3 documents, Belgium (93 citations) with 2 documents, Netherlands (77 citations) with 4 documents, Sweden (73 citations) with 3 documents and New Zealand (47 citations) with 4 documents. The citation ranking of countries differs from the number of documents. The USA leads in citations, with 19 studies on the subject. However, Belgium, Spain, Sweden, New Zealand, and Netherlands have fewer studies but relatively higher citations than others.

4.2.4. Citation Count of Studies

The top 10 most cited studies on this topic in the Web of Science are listed in Table III with publication years, authors, journal names, document types, and number of citations.

Table 3: Most Cited Studies

Year	Authors	Journal	Research Areas	Citation Count
2001	Butcher et al.	Industrial Journal of Service Industry Management	Business	151
2000	Riley et al.	British Journal of Management	Business	136
2013	Dobrow	Journal of Organizational Behavior	Business	136
2003	Joffe et al.	Journal of Medical Ethics	Social Science	95
2020	Jacobson et al.	Journal of Retailing and Consumer Services	Business	87
2016	Lyu et al.	International Journal of Contemporary Hospitality Management	Business	85
2021	Payne et al.	Journal of Research in Interactive Marketing	Business	73
1999	Bernheim	Bioethics	Social Science	70
2020	Melumad and Pham	Journal of Consumer Research	Business	67
2008	Haynes	Journal of Facilities Management	Business	66

Table 3 shows: Butcher et al., (2001) is the most cited article, with 151 citations, followed by Riley et al., (2000) (136 citations), Dobrow (2013) (136 citations), Joffe et al., (2003) (95 citations), Jacobson et al., (2020) (87 citations), Lyu et al., (2016) (85 citations).

4.3. Science Mapping Analysis

Science mapping analysis, which complements performance analysis, reveals the interrelationship of the research components and different elements in the literature. The analysis concerns intellectual interactions and structural connections between the research components (Donthu et al., 2021: 288). In this context, the following analyses have been carried out to complete the performance analysis and provide a detailed visualization, and the results are presented in tables and figures.

4.3.1. Citation Analysis

Citation analysis, a fundamental science mapping technique, reflects the intellectual connections between publications. According to this analysis, a publication's impact is measured by the number of citations it receives. Consequently, the most influential studies in the research field are identified (Donthu et al., 2021: 288). The number of citations and the network among documents, authors, journals, and countries can be measured using the VOSviewer software to determine the strength of links among studies in the field (Van Eck and Waltman, 2010: 226).

4.3.1.1. Citation Analysis by Documents

The criterion of at least two citations was applied to a total of 95 studies for citation analysis; this reduced the number of documents to 63. As a result of the citation analysis, 14 studies were linked, and 6 clusters were identified. Figure 7 shows the associated clusters and network relationships. The most cited documents are Butcher et al., (2001) (151 citations), Riley et al., (2000) (136 citations), Dobrow (2013) (136 citations) and Joffe et al., (2003) (95 citations). The documents with the highest number of links are Ainsworth and Foster (2017) (5 Links), Li and Ma (2022) (5 links), Butcher et al., (2001) (4 links), Roongruangsee et al., (2022) (3 links), Patterson (2016) (2 links), Becker et al., (2023) (2 links) and Huang and Liu (2022) (2 links).
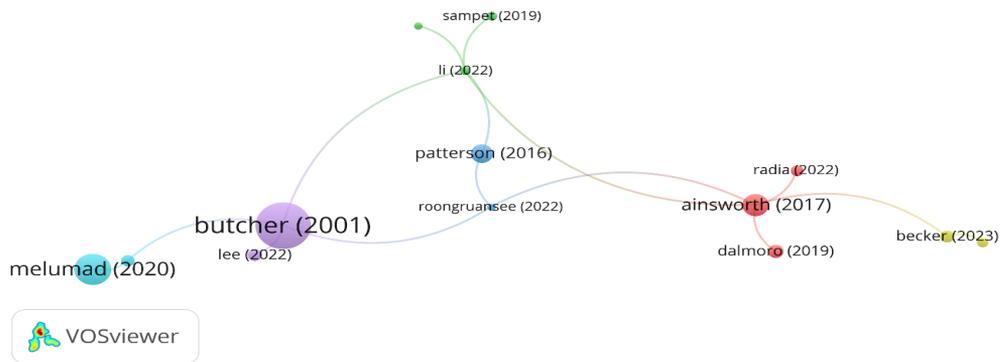

Figure 7: Citation Analysis by Document

4.3.1.2. Citation Analysis by Authors

There are 284 authors with documents in the research area. Before the citation analysis by the author, the criterion of each author having at least 2 citations was applied, and the number of authors was reduced to 181. As a result of the analysis, 33 connected authors, 88 links, and 4 clusters have been identified. Figure 8 shows the clusters and network relationships. The author with the highest total

link strength (35) is Patterson, P. with 6 documents and 36 citations, followed by Sampet, J., and Sarapaivanich, N. (22 total link strength) with 4 documents and 11 citations, Ainsworth, J. and Foster, J. (16 total link strength) with 1 document and 34 citations.

Figure 8: Citation Analysis by Authors

4.3.1.3. Citation Analysis by Sources

There are 76 sources in the research area. Before the citation analysis by source, the criterion of each source having at least 2 citations was applied, and the number of sources was reduced to 51. As a result of the analysis, 14 connected sources, 16 links, and 6 clusters were identified. The clusters and networks are shown in Figure 9. The journal with the highest total link strength (9) is the Journal of Retailing and Consumer Services, with 4 documents and 134 citations, followed by the International Journal of Service Industry Management (4 total link strengths, 1 document, and 151 citations), Journal of Service Marketing (4 total link strengths, 2 documents, and 29 citations), Accounting Research Journal (2 total link strengths, 1 documents and 4 citations) and European Journal of Marketing (2 total link strength, 1 document and 13 citations).

Figure 9: Citation Analysis by Sources

4.3.1.4. Citation Analysis by Country

There are 43 countries in the research area. Before the citation analysis by country, the criteria of each country having at least 2 documents and citations were applied, and the number of countries was reduced to 20. After the analysis, 9 connected countries, 23 links, and 3 clusters were identified. The clusters and networks are shown in Figure 10. The country with the highest total link strength (29) is Australia, with 10 documents and 216 citations, followed by Thailand (24 total link strength, 6 documents, and 15 citations), the USA (15 total link strength, 19 documents, and 451 citations), China (10 total link strength, 9 documents, and 190 citations), New Zealand (9 total link strength, 4 documents and 47 citations) and France (6 total link strength, 3 documents and 2 citations).
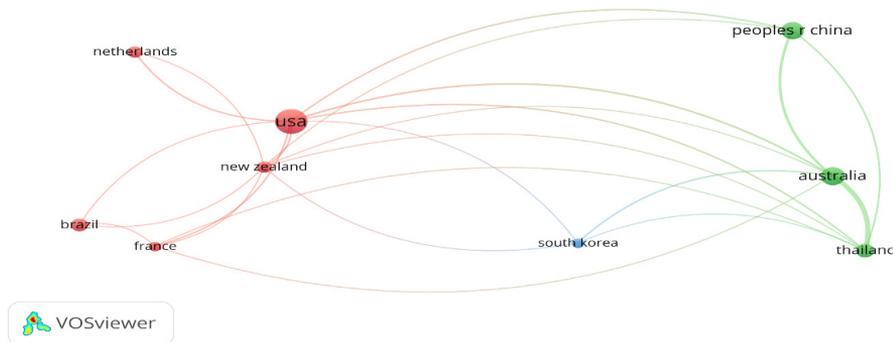

Figure 10: Citation Analysis by Countries

4.3.2. Co-Authorship Analysis

Co-authorship analysis, one of the methods used in science mapping, investigates" the interactions between authors in a research field (Ponomariov and Boardman, 2016). Co-authorship analysis shows the intellectual collaboration between authors and how scholars interact with each other regarding organizations and countries. The analysis allows researchers to monitor the intellectual development of collaborating networks. Co-authorship analysis also provides valuable information for reaching and collaborating with trending researchers (Donthu et al., 2021: 290).

4.3.2.1. Co-authorship Analysis by Authors

In the co-authorship analysis by the author, the criterion of more than 2 publications was used to provide a more meaningful science mapping, and 10 authors were analyzed. As a result of the analysis, 4 connected authors, 6 links, and 1 cluster were identified. The cluster and networks are shown in Figure 11. The author with the highest total link strength (9) is Sampet, J. and Sarapaivanich, N. with 4 followed by Patterson, P. (8 total link strength) with 6 documents and 36

citations, and Ekasing, E. (6 total link strength) with 2 documents and 1 citation). Authors in the identified cluster have co-authored (Sampet et al., 2019; Sarapaivanich et al., 2019; Sampet et al., 2023; Sarapaivanich et al., 2023).
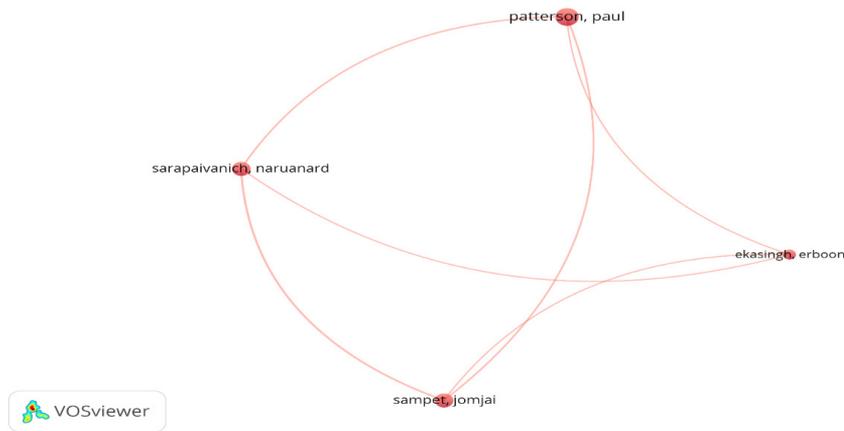

Figure 11: Co-Authorship Analysis by Authors

4.3.2.2. Co-authorship Analysis by Country

There are studies from 43 countries on consumer comfort. For co-authorship analysis by country, the criterion of having at least 2 publications was applied to the studies. In this way, the number of countries included in the analysis was determined to be 22. The analysis of co-authorship by country is important to show the situation of international cooperation and to identify which countries are collaborating. As a result of the analysis, 13 connected countries, 17 links, and 5 clusters were identified. The clusters and networks are shown in Figure 12. The USA, Australia, England, Thailand, China, Canada, South Korea, Spain, France, and New Zealand are the countries with the strongest links.

Figure 12: Co-Authorship Analysis by Country

4.3.3. Co-citation analysis

Co-citation analysis, one of the methods of science mapping, assumes that documents cited together are thematically similar. The analysis reveals the underlying themes and intellectual structure of the research area (Donthu et al., 2021: 288). In a co-citation network, two publications are considered to be linked if they both appear together in the reference list of another publication (Benckendorff and Zehrer, 2013: 127; Leung et al., 2017: 36). Thematic clusters are explored using co-citation analysis. However, only highly cited studies are included in the co-citation analysis, and therefore niche and novel publications may be excluded from thematic clusters (Donthu et al., 2021: 288). Co-citation analysis is conducted in the context of relationships among authors, organizations, and references (Donthu et al., 2021: 288; Leung et al., 2017: 36). In co-citation analysis, VOSviewer searches the reference lists of each article in the sample and conducts the analysis.

4.3.3.1. Co-citation Analysis by Reference

A total of 4736 cited references were identified. The criterion of at least 5 citations was applied to the references, resulting in 19 cited references being analyzed. As a result of the analysis, 19 connected references, 153 links, and 3 clusters were identified. The clusters and networks are shown in Figure 13. According to the analysis, the most important studies are as follows Spake et al., (2003), Fornell and Larcker, (1981), Lloyd and Luck, (2011), Podsakoff et al., (2003), Lindell and Whitney, (2001), and Dabholkar et al., (2000).
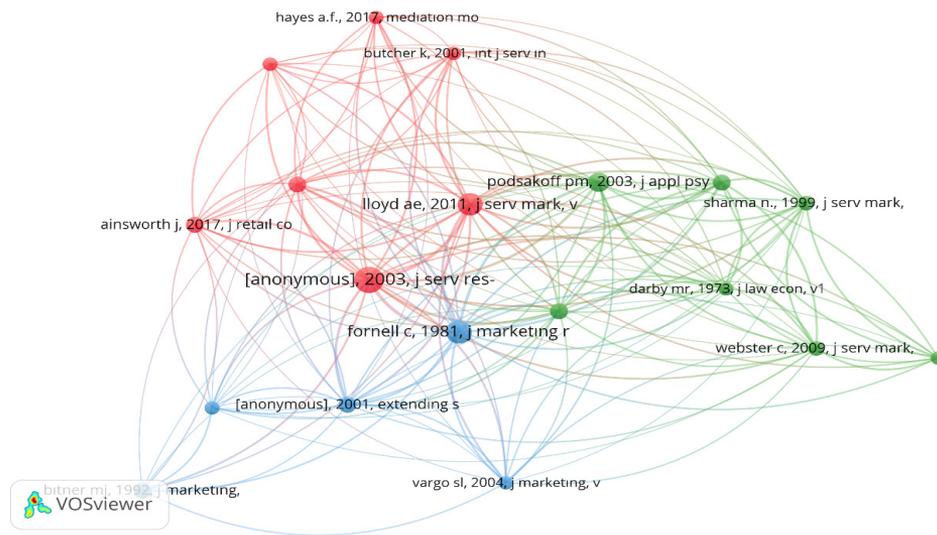

Figure 13: Co-Citation Analysis by Reference

4.3.3.2. Co-citation Analysis by Source

A total of 3014 sources were identified in the co-citation analysis by source. The criterion of a minimum of 20 citations from a source was applied, and 27 sources were analyzed. As a result of the analysis, 27 connected journals, 294 links, and 4 clusters were identified. The clusters and networks are shown in Figure 14. The most influential journals with the highest link strength are the Journal of Marketing, Journal of Business Research, Journal of Service Research, Journal of Retailing and Distribution, Journal of Service Market, Journal of Consumer Research, and Journal of Marketing Research.
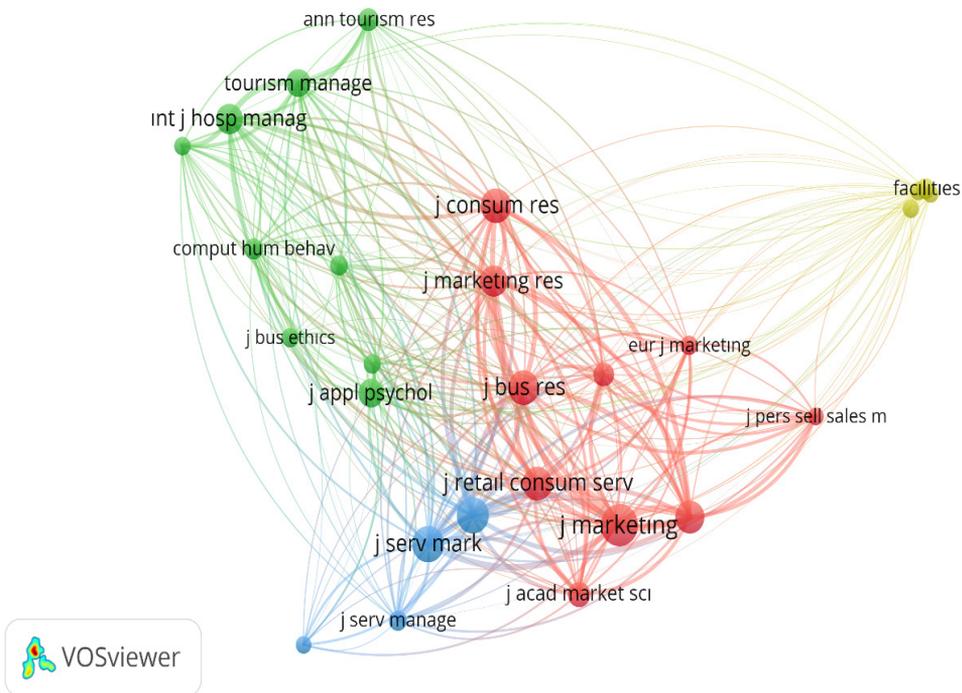

Figure 14: Co-Citation Analysis by Source

4.3.3.3. Co-citation Analysis by Author

A total of 3890 authors were identified in the co-citation analysis by the author. The criterion of a minimum of 5 citations from an author was applied, and 51 authors were analyzed. As a result of the analysis, 49 connected authors, 621 links, and 6 clusters were identified. The clusters and networks are shown in Figure 15. The most cited and influential authors are Fornell, C., Spake, D. F., Hair, J. F., Parasuraman, A., Patterson, P. G., Lloyd, A. E., Vischer, J. C., Dabholkar, P. A., and Bitner, M. J. These authors are important in the field of consumer comfort and influence authors studying in this area.
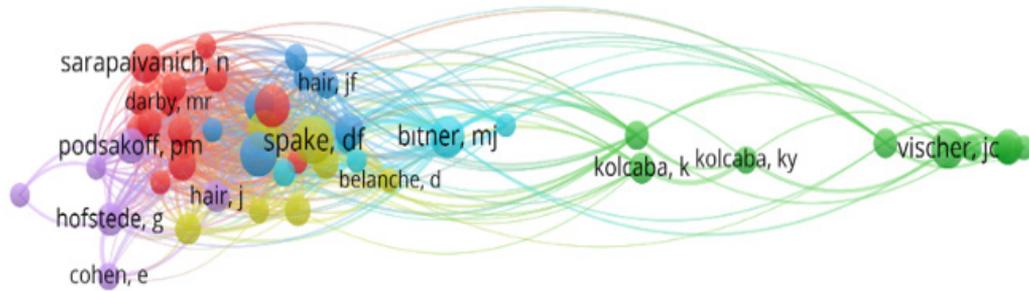
Figure 15: Co-Citation Analysis by Author

4.3.4. Bibliographic Coupling Analysis

Bibliographic coupling, a technique used in science mapping, assumes that the content of two publications shares the same references. The analysis allows publications to be categorized into thematic clusters based on common references (Donthu et al., 2021: 288). In short, the analysis is concerned with the fact that related studies refer to one or more common studies (Kessler, 1963). This indicates that scientific articles are in a meaningful relationship with each other (they are interdependent) (Weinberg, 1974: 189; Kessler, 1963). In contrast to co-citation analysis, thematic clusters are formed according to citing publications so that new and niche publications become visible through bibliographic coupling (Donthu et al., 2021: 288). The analysis of the bibliographic coupling can be carried out in the VOSviewer by documents, sources, authors, organizations, and countries.

4.3.4.1. Bibliographic Coupling Analysis by Documents

For the bibliometric coupling analysis by document, 63 documents were included using the criterion of at least 2 citations. According to the results, 46 connected documents, 206 links, and 8 clusters were identified. The clusters and networks are shown in Figure 16. The studies with the highest level of bibliometric coupling are Radia et al., (2022), Roongruangsee et al., (2018), Sampet et al., (2019), Ainsworth and Foster (2017), Akhtar et al., (2019), Becker et al., (2023), Lee and Yi (2022) and Sarapaivanich et al., (2019).
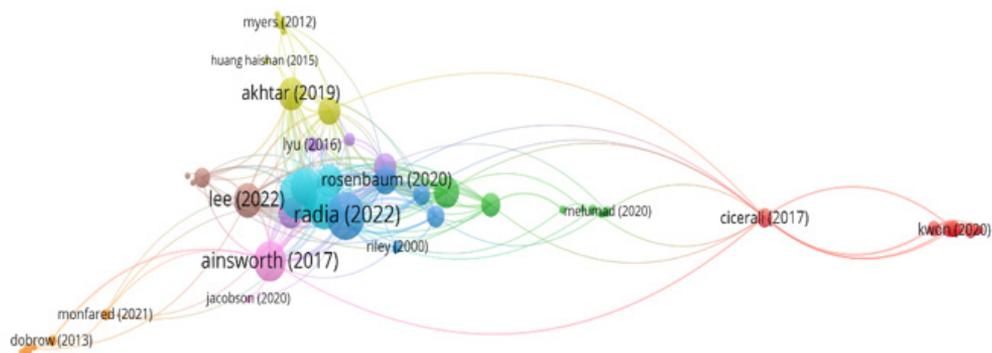

Figure 16: Bibliographic Coupling by Documents

4.3.4.2. Bibliographic Coupling Analysis by Sources

For the bibliometric coupling analysis by source, the number of sources, which was 76 in total, was reduced to 51 by applying the criterion of at least two citations, and the analysis was carried out. As a result of the analysis, 36 connected sources, 162 links, and 7 clusters were identified. The clusters and networks are shown in Figure 17. As shown in the science mapping analysis, the sources with the highest bibliometric coupling are the Journal of Retailing and Consumer Services, Journal of Service Marketing, Journal of Personal Selling & Sales Management, Psychology & Marketing, Asian Review of Accounting, Accounting Research Journal, Journal of Hospitality & Tourism Research, Service Business, and International Journal of Retail & Distribution Management.

Figure 17: Bibliographic Coupling by Sources

4.3.4.3. Bibliographic Coupling Analysis by Author

There are 284 authors with documents in the field. Before the bibliographic coupling analysis by the author, the criterion that each author has at least 10 citations was applied, and the number of authors was reduced to 109. As a result of the analysis, 74 connected authors, 747 links, and 15 clusters have been identified. Figure 18 shows the clusters and networks. The authors with the highest bibliometric coupling are Patterson, P., Sampet, J., Sarapaivanich, N., Huang, H., Ahmad, W., Akhtar, N., Kim, W. G., and Li, W.
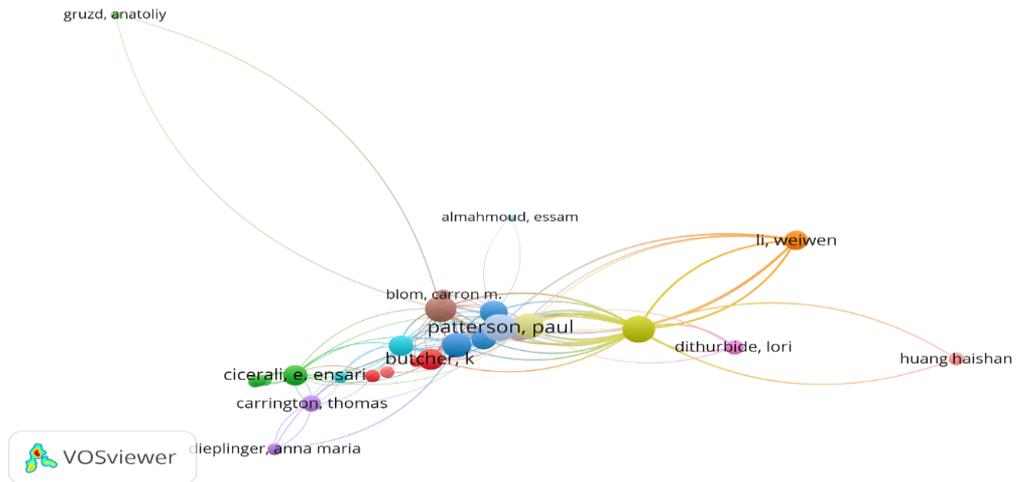
Figure 18: Bibliographic Coupling by Author

4.3.5. Co-occurrence Analysis by Author Keywords

Co-authorship, citation analysis, co-citation analysis, and bibliographic coupling analysis focus on cited or citing publications. However, co-occurrence analysis by author keywords is a technique that analyses the actual content of the publication. Words in the co-occurrence analysis are usually extracted from "author keywords," and in their absence, remarkable words can also be chosen for analysis from "article titles," "abstracts," and "full texts." (Donthu et al., 2021: 289). Co-occurrence analysis by author keywords presumes that words that appear together frequently have a thematic correlation (Zhou et al., 2022). Co-occurrence analysis by author keywords is used as a complement to enhance the comprehension of thematic clusters obtained from co-citation analysis and bibliographic coupling. In addition, Co-occurrence analysis by author keywords is used to predict and infer about future research with notable keywords. Co-occurrence analysis allows researchers to assess the networks between the most frequently used keywords and terms across studies, providing insights into the field (Donthu et al., 2021: 289).

A total of 396 keywords were identified through co-occurrence analysis in consumer comfort. As a result of the analysis, 57 connected keywords, 148 links, and 11 clusters have been identified. Figure 19 shows the clusters and networks. The most common keywords, as shown in figure, are "psychological comfort", "social comfort", "customer comfort", "professional services", "social support", "comfort", "digital marketing", "consumer comfort", "structural equation modeling", "health services" "office design", "mobile marketing", "consumer behavior", "rapport", "customer experience", "restaurant marketing", "artificial intelligence", "client relationships", "perceived control", "interpersonal communication", "customer delight", "client participation", "credit card limits", "audit quality" and "environmental comfort."
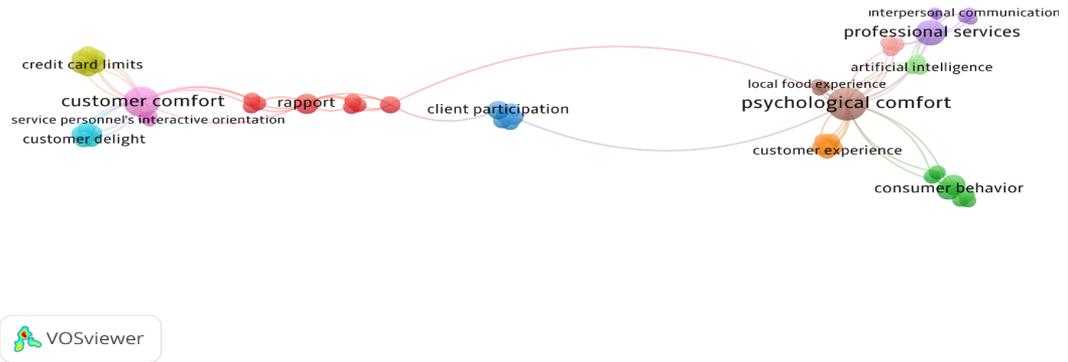
Figure 19: Co-occurrence Analysis by Author Keyword

5. Conclusion and Discussion

This research aims to investigate the current state of consumer comfort studies in business, behavioral science, and social sciences by using bibliometric analysis methods. A total of 2177 studies were identified by searching for ("consumer comfort" OR "customer comfort" OR "comfort theory" OR "physical comfort" OR "psychological comfort" OR "social comfort" OR "physiological comfort" OR "environmental comfort"). The research areas of business, behavioral sciences, and social sciences were selected, and consequently, 155 documents were obtained. Then, proceeding papers, book chapters, early access, and irrelevant articles in terms of subject were excluded from the analyses. After that, the abstracts, and introductions of identified articles were read. Articles were excluded from the analysis if they were not in the context of business, social sciences, behavioral sciences. Finally, 95 journal articles were used for bibliometric analysis. The 95 articles published in the Web of Science between 1980 and 2023 (until October) were analyzed according to year, document type, author, citation, journal, and country. Bibliometric research involves performance analysis and science mapping analysis. Performance analysis and science mapping were conducted using MS Excel and VOSviewer software in this research. Since we did not detect any other research on this topic in the literature during our research, we consider our research to be the first on this topic.

According to the results the number of annual publications was limited up until 2010. Nonetheless, since 2011, the studies regarding this subject matter have gained popularity, resulting in a significant increase in published articles. This research based on the categorization of consumer comfort proposed by Kolcaba's comfort theory (Kolcaba et al., 2006), as analysis of study illustrates the

separation between psychological, social, environmental, and physical comfort. Physical comfort studies included in the analyses are relatively scarce. This reveals that the realm of physical comfort is primarily explored and researched within engineering.

In Web of Science, there are studies from 43 nations regarding consumer comfort in business, behavioral sciences, and social sciences. The United States is the most referenced country, with England, Australia, China, Canada, and Spain following thereafter. The nation with the greatest total link strength is USA, succeeded by Australia, England, Thailand, China, Canada, South Korea. It can be inferred that countries from multiple continents – including Europe, Asia, and America – collaborate with each other.

Through a science mapping analysis, the correlation between specific publications, journals, and their respective authors has been established. It is recommended that those seeking to work in this field familiarize themselves with the works of these authors, publications, and journals to gain a comprehensive understanding of consumer comfort. In this regard, 76 journals were identified that had conducted studies in the restricted areas relevant to the subject. Facilities have the highest number of studies, followed by the Journal of Retailing and Consumer Service, the Journal of Facilities Management, the Journal of Service Marketing, the Asian Review of Accounting, the Journal of Hospitality & Tourism Research, and the Journal of Personal Selling & Sales Management. The Journal of Retailing and Consumer Services has the highest total link strength amongst the listed journals, with the Journal of Service Marketing, International Journal of Service Industry Management, Accounting Research Journals, Asian Review of Accounting, Australian Marketing Journals and European Journal of Marketing.

According to the results of the analysis, Butcher et al., (2001) is the most cited article, followed by Riley et al., (2000), Dobrow (2013), and Joffe et al., (2003). The author with the greatest total link strength is Patterson, P., with Sampet, J., Sarapaivanich, N., Ainsworth, J., and Foster, J. following closely behind. The field of consumer comfort is vastly influenced by several highly cited authors including Fornell, C., Spake, D. F., Hair, J. F., Parasuraman, A., Patterson, P. G., Lloyd, A. E., Vischer, J. C., Dabholkar, P. A., and Bitner, M. J. Their contribution to this field is noteworthy.

The studies exhibiting the highest level of bibliometric coupling include Radia et al., (2022), Roongruangsee et al., (2018), Sampet et al., (2019), Ainsworth and Foster (2017), Akhtar et al., (2019), Becker et al., (2023), Lee and Yi (2022), and Sarapaivanich et al., (2019). Also, these studies are thematically similar. The scholars with the highest bibliometric coupling are Patterson, P., Sampet, J., Sarapaivanich, N., Huang, H., Ahmad, W., Akhtar, N., Kim, W. G., and Li, W. The top sources in terms of bibliometric coupling include Journal of Retailing and Consumer Services, Journal of Service Marketing, Journal of Personal Selling & Sales Management, Psychology & Marketing, Asian Review of Accounting, Accounting Research Journal, Journal of Hospitality & Tourism Research, Service Business, International Journal of Retail & Distribution Management, and Facilities. These journals are focused on business and marketing research.

When the findings are analyzed in terms of keywords with co-occurrence analysis, there has been a noteworthy transformation in keywords throughout history. Previous studies have focused on keywords including client relationships, interpersonal communication, repurchase intention, customer delight, salesperson expertise, and office design. However, more recent studies have focused on areas that reflect cutting-edge technological advancements, such as artificial intelligence, service robots, human likeness, digital marketing, and mobile marketing. In this regard, the field of consumer comfort is adapting to the realm of technology and digitalization, a trend common in various academic disciplines. In the future, this field offers opportunities for researching topics such as artificial intelligence, robots, e-commerce, digital marketing, and mobile marketing. In this research, the notion of "digital/online consumer comfort" have been proposed to facilitate further research. Especially in e-commerce and mobile commerce, future studies may measure customers' comfort on shopping websites or mobile applications through online consumer comfort. Many factors that impact customer comfort in brick-and-mortar stores, including color, lighting, design, and visual aspects (Oseland, 1999; Haynes, 2009:39; Kolcaba et al., 2006, Ainsworth and Foster, 2017), are also present in websites and mobile applications (Floh an Madlberger, 2013: 429-432; Fogli and Guida, 2015: 56). Because website design plays a critical role in consumers' first impressions and experiences. Well-designed websites and mobile applications that are user-friendly and reliable tend to attract consumers, leading to higher satisfaction level and increased purchase behavior. (Ganguly et al., 2010: 305; Liu et al., 2016: 26).

The studies were evaluated based on the utilized theories. The most used theory in studies is the comfort theory (Carrington and Catasus, 2007; Egger-Rainer et al., 2017; Becker et al., 2022; O'Reilly et al., 2023; Shakleina et al., 2020; Cicerali et al., 2017). Other theories that follow the comfort theory and are commonly used include signaling theory (Patterson, 2016; Sampet et al., 2023; Phillips and Vredenburg, 2023), social identity theory (Butcher et al., 2001; Lyu et al., 2016), self-efficacy theory (Myers et al., 2012; Kingstone et al., 2010), social exchange theory (Lee and Yi, 2021; Sampet et al, 2023), relationship theory (Ainsworth and Foster, 2017; Radia et al., 2022), attachment theory (Radia et al., 2022; Melumad and Pham, 2020; Wang et al., 2022), anthropomorphism theory (Becker et al., 2022, Huang and Liu, 2022), social interaction theory (Sarapianevich et al., 2018; Sarapianevich et al., 2023), service encounter theory (Li and Ma, 2022), and uncertainty reduction theory (Roongruangsee et al., 2022).

As with much research, this research also has some limitations. The initial constraint lies in the database employed for the research. The research draws only on articles indexed in the Web of Science. However, numerous studies have been conducted on consumer comfort in databases such as Scopus, Science Direct, ABDC (Australian Business Deans Council), Google Scholar, PUBMED, and EBSCO. Web of Science database was chosen for its superior quality, robustness, validity, functionality, and reliable data for bibliometric analysis (Cobelli and Blasioli, 2023: 302). Conducting a content analysis or systematic literature review of studies in other databases could offer significant insights into a particular topic within the field. A further limitation of this study concerns the use of VOSviewer software, which is effective in visualizing and clustering data, facilitating the interpretation of findings (Van Eck and Waltman, 2010: 536). Various tools such as

CRexplorer, ScientoPyUI, SciMAT, CiteSpace, CitNetExplorer, Biblioshiny, BiblioMaps, Bibexcel, and Sci2Tool can be utilized for science mapping and performance analysis (Moral-Munoz et al., 2020). Another limitation is the search terms. Therefore, to obtain a thorough understanding of consumer comfort, it is essential to carry out an in-depth analysis of this field. Only the "comfort" term can be searched, and the obtained studies can be included in the analysis. However, there is more extensive literature regarding the concept of "comfort." As this research pertains to consumer behavior, marketing, and behavioral sciences, restricted to relevant keywords in the focus. Another limitation of this research is the failure of bibliometric analysis studies to offer a comprehensive insight into the field's content, thus restricting its broader perspective. Additionally, it should be noted that the research only analyzed studies conducted between 1980 and 2023, and as of now, the year 2023 is still ongoing. It is recommended that readers and scholars are aware of these limitations.

Consequently, this research has endeavored to produce a preliminary quantitative overview of consumer comfort studies. Findings demonstrate significant advancements in consumer comfort. Establishing links between authors, studies, journals, and countries, illuminates the theoretical and intellectual framework of the field. In the research, a bibliometric analysis of existing studies was conducted to identify the key themes and clusters related to consumer comfort using a multidimensional approach. By providing recommendations for future research, results highlight potential research areas and intend to contribute to the evolution and progression of consumer comfort research. The results propose the notion of digital/online consumer comfort and advocate its applicability to online settings, including websites and mobile apps, by the advancements in technology, digital transformation, and artificial intelligence. Thus, it is expected that novel research areas will emerge, and contribute to the literature.

Author Contribution

CONTRUBUTION RATE	EXPLANATION	CONTRIBUTORS
Idea or Notion	Form the research idea or hypothesis	Kadir ÖZDEMİR Çağatan TAŞKIN
Literature Review	Review the literature required for the study	Kadir ÖZDEMİR Çağatan TAŞKIN
Research Design	Designing method, scale, and pattern for the study	Kadir ÖZDEMİR Çağatan TAŞKIN
Data Collecting and Processing	Collecting, organizing, and reporting data	Kadir ÖZDEMİR Çağatan TAŞKIN
Discussion and Interpretation	Taking responsibility in evaluating and finalizing the findings	Kadir ÖZDEMİR Çağatan TAŞKIN

Conflict of Interest

No conflict of interest was reported by the authors.

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