

A Historical Review on Omni Channel Retailing Consumer Research

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ABSTRACT

Consumer research is crucial in omnichannel retailing and is considered a primary focus in distribution management. This article presents an objective, systematic, and comprehensive review of the current literature on omnichannel consumers. We aim to systematically map the knowledge of omnichannel consumer research's thematic structure, theory, and methodology. We employed an integrated approach to analyze 152 journal articles, using bibliometric methods, including country and citation analysis, co-citation networks, literature coupling, thematic mapping, and historical citation networks. We conducted an exploratory analysis of selected studies to examine the features of countries, journals, authors, highly cited literature, and trends in this field. Additionally, the study underwent bibliometric analyses of keyword co-occurrence, bibliographic coupling, historical citations, and co-citation analysis. The keyword co-occurrence analysis was based on the frequency and importance of keywords, identifying four distinct clusters. The findings reveal that omnichannel research is a growing field. Scholars have examined omnichannel consumers from multiple perspectives, utilizing different research methods and theoretical foundations. However, further research is needed to explore omnichannel consumers in more countries and address factors such as regional and cultural differences. This research employs advanced tools for the first time to review the literature on omnichannel consumers and provides a comprehensive view of the topics of importance discussed in the literature on omnichannel consumer management. This study will provide insights for practitioners and academic researchers to improve decision-making and develop strategies.

Keywords: *bibliometric analysis, consumer research, historical review, omnichannel retailing*

1. INTRODUCTION

With the end of the pandemic and the surge in consumer demand, retailers and consumer brands face significant macroeconomic challenges, including inflation, labor

shortages, and disruptions in the supply chain (WEF, 2022; Queiroz *et al.*, 2022). These uncertainties have left retailers needing to evaluate their future profitability. While some forward-thinking retailers have already embraced omnichannel commerce models (e.g., Amazon, Walmart, and Starbucks), the speed at which consumer demand changes is increasing (Adivar *et al.*, 2019). Companies must embrace the evolving landscape, where customers expect a seamless shopping experience (Verhoef *et al.*, 2018; Liu *et al.*, 2022) and have the ability to shop, access information, share ideas, and seek assistance through various channels (Jindal *et al.*, 2021).

Emerging technologies drive customers' demand for integrated shopping experiences (Bae and Deborah, 2020) and raise customer expectations (Ghatak, 2023). Consequently, companies are increasingly adopting an omnichannel approach to cater to the evolving needs of their customers. Omnichannel systems encompass many channels, including physical stores, online platforms, social media, and mobile apps, to provide a seamless and unified customer experience (Beck and Rygl, 2015; Verhoef *et al.*, 2015). This approach entails meeting customer needs at every touchpoint and ensuring consistent functionality and experience across all channels.

Furthermore, customer loyalty and satisfaction are enhanced when retailers consistently and seamlessly provide a superior customer experience across all channels (Tyrväinen *et al.*, 2020). Loyal customers tend to make repeat visits to the retailer, resulting in higher customer retention rates and more opportunities for retailers and brands to generate profit (Mainardes *et al.*, 2020). Retailers can cultivate a loyal customer base that drives repeat business and serves as brand advocates by prioritizing integration and consistency across various channels in their omnichannel strategy (Neslin *et al.*, 2006). This underscores the crucial role of delivering a unified and seamless customer experience across all channels to leverage the potential for

increased profitability in today's highly competitive retail environment (Kumar *et al.*, 2018).

The omnichannel distribution model provides retailers with more opportunities and challenges, including firm performance (Adivar *et al.*, 2019; Niranjan *et al.*, 2019), sales growth (Bae and Deborah, 2020; Cao and Li, 2015), customer experience improvement (Tyrväinen *et al.*, 2020; Mainardes *et al.*, 2020; Verhoef *et al.*, 2009; 2015; Cook, 2014; Quach *et al.*, 2022), channel synergies (Fornari *et al.*, 2016), data integration and analysis (Grewal *et al.*, 2017), omnichannel logistics models (Simangunsong and Subagyo 2021), and supply chain management challenges (Saghiri *et al.*, 2018; Rai *et al.*, 2019). In addition, some researchers have been reviewing and discussing the existing literature on omnichannel (Mounaim *et al.*, 2021; Mishra *et al.*, 2021).

To sum up, Omnichannel consumer research is critical in helping companies adapt and successfully respond to the ever-evolving multichannel marketing environment. Understanding consumer behavior and needs enables companies to optimize their supply chains, enhance customer experience, and develop effective marketing strategies. However, despite its importance, a comprehensive review or review paper on omnichannel consumer research is yet to be published.

Our approach involves several key components. Firstly, we will summarize and analyze existing research to gain a comprehensive understanding of the field's current state. This will include examining changes in thematic trends that have emerged in previous studies. Furthermore, we will identify emerging trends and innovations within the research

landscape. By staying up to date with the latest developments, we can provide valuable insights into the most recent advancements in the field. Additionally, our analysis will encompass an exploration of features and factors that have been cited in previous studies. This will allow us to identify commonalities, differences, and gaps among researchers' findings and perspectives. Building on this analysis, we will propose an agenda for future research, highlighting areas that require further investigation and providing suggestions for filling in the existing research gaps. This will contribute to advancing knowledge in the field and help shape future research endeavors. Overall, our approach combines a comprehensive literature review, trend analysis, identification of research gaps, and proposing an agenda for future research. By employing these methods, we aim to contribute to the existing body of knowledge and promote further advancements in the field.

To achieve these objectives, we conducted a comprehensive literature review of 152 papers published until February 2023. The aim was to systematically map the existing knowledge on omnichannel consumer research's thematic structure, theory, and methodology. We used bibliometric methods, including analyzing the relationship between top-producing countries and citations, literature sources, countries and keywords, co-citation networks, literature coupling, Thematic Map, and Historical direct citation network, to gain insights and facilitate future research in this field within the realm of business management.

Table 1 Comparison with previous studies

Differences	This paper	Mishra <i>et al.</i> , 2021	Mounaim <i>et al.</i> , 2021	Furquim <i>et al.</i> , 2023
Data Base	WoS	○	○	○
Software	VOSviewer, Bibliometrix Gephi	○		○
Source		○		○
Country		○		○
Research methodology		○	○	○
Theory		○		○
Trend analysis		○		
Citation Analysis		○		○
Thematic Map		○		
Historical direct citation network		○		

2. METHODOLOGY

2.1 Materials and Methods

Bibliometrics, as defined by Pritchard (1969), refers to applying mathematical and statistical methods to books and other forms of communication media. Bibliometric analysis plays a crucial role in evaluating the status of a particular topic, as well as the quality and impact of authors and sources (Van Raan, 2014). By aggregating a large volume of bibliographic data, bibliometric analysis minimizes the potential for judgmental bias and reviewer idiosyncrasies that may be present in qualitative evaluations (Bretas and Alon, 2021). Bibliometrics can quantify scholarly

communication through various stages, such as study design, data collection, data analysis, data visualization, and interpretation. Information scientists and practitioners often utilize automated software tools to extract descriptive and web-based data from bibliographic literature for bibliometric analysis (Derviş, 2019).

Before conducting the literature analysis, the Web of Science (WoS) database was utilized in the initial phase, employing the keywords "Omni channel" and "Omni channel consumer." The search was restricted to articles published in reputable journals indexed by the Social Science Citation Index (SSCI). As a result, a total of 673 papers were retrieved. After removing duplicates, conference papers, and articles irrelevant to consumers, 152 studies were selected

for review. All the records obtained from the literature search contained comprehensive information, including author names, publication year, source journal, title, keywords, affiliations, references, abstracts, and citations. The data collected in this phase were effectively employed in the subsequent phase of bibliometric analysis and information visualization (Guleria and Kaur, 2021).

Scientometrics refers to the use of various software tools to analyze Bibliometric data. In the second phase of our research, we developed the Bibliometrix package within the R environment to collect and record quantitative data from selected articles. We then used Bibliometrix functions to quantify the output of publications by year, source, and country and manually analyzed the use of methodologies, theories, and other aspects in the literature. Through Bibliometrics, we identified relationships between countries, publications (through trend analysis), thematic mapping, and citation analysis, ultimately allowing us to explore the structure and evolution of research themes. Citation analysis can reveal scientific developments in a field at three levels: micro, macro, and meso (Deriş, 2019). Standard methods used in citation analysis include bibliographic coupling, co-citation, and co-occurrence. For citation analysis, we used Vosviewer and Gephi for keyword clustering analysis, Bibliographic coupling analysis, and co-occurrence analysis to create visualizations. Finally, we provided a comprehensive discussion of the results of our research to

summarize the development process of the research field over the years and its future trends. **Figure 1** illustrates the research phases of our article.

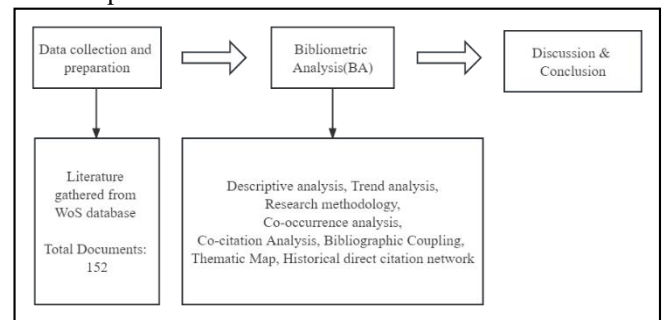


Figure 1 Stages of Bibliometric Analysis

3. RESULTS AND ANALYSIS

3.1 Descriptive Analysis of Articles

This study uses bibliometric analysis to extract relevant research papers from the WoS (Web of Science) database in omnichannel consumer research. Bibliometric is based on data analysis, providing a comprehensive overview of the scientific research landscape (Thomas *et al.*, 2021). **Table 2** presents the essential details of the literature extracted from WoS for the bibliometric analysis.

Table 2 Key Details of Extracted Documents

Description	Results
Timespan	2016.1:2023.2
Sources	78
Documents	152
Annual Growth Rate %	29.17
Document Average Age	2.36
Average citations per doc	17.72
References	7150
DOCUMENT TYPES	
article	141
article; early access	9
article; proceedings paper	2
Software used for analysis	VOSviewer, Bibliometrix R-Package, Gephi

This section presents a descriptive analysis of a sample of bibliographic data. The preliminary data assessment includes the number of papers published yearly, major journals, national co-authorship, word clouds, research methods, and research theories for subsequent analysis. This analysis provides a comprehensive overview of the literature's trends, patterns, and characteristics on the topic of interest, serving as a foundation for further investigation and exploration of the research gaps and opportunities in the field.

3.1.1 Annual Progression of Publications

Omnichannel consumer research is a relatively new and rapidly growing field of interest. **Figure 2** shows the annual evolution of publications on this topic, which have increased dramatically since 2016. In the early years, there was only one publication on this subject, but by the end of 2022, the

number had risen to 50, and it is expected to keep growing in 2023.

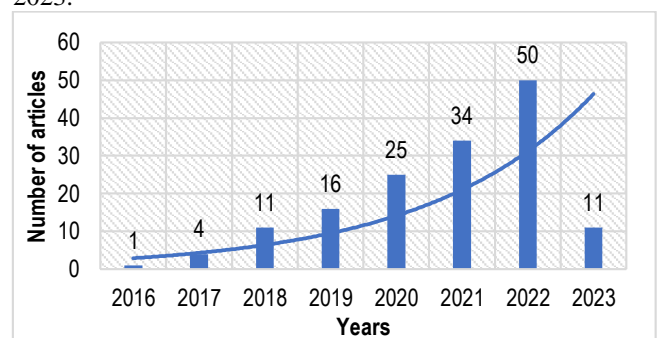


Figure 2 Annual publication trend of 152 papers between period 2016–2023 retrieved from WOS

3.1.2 Relevant Journals

This review covers 152 research articles on omnichannel consumer behavior published in 78 journals. **Table 3** summarizes the distribution of these articles and journals. Among them, 19 (24%) journals published 93 (61%) articles, while the remaining 59 (76%) journals published 59 (39%) articles. This indicates a relatively high concentration of omnichannel consumer research in a few journals. The Journal of Retailing and Consumer Services

(JRCS) (26 articles) and the International Journal of Retail & Distribution Management (IJRDM) (13 articles) were the most prominent journals for omnichannel consumer research, as well as the top two journals with the highest h_index. Based on the total citations of each article, the most influential journals for omnichannel consumer research were JRCS, Decision Support Systems and Frontiers in Psychology.

Table 3 Ranking of 20 Most Relevant Journals (sorted by publication)

Rank	Sources	Articles	h_index	Total Citation
1	Journal of Retailing and Consumer Services	26	15	550
2	International Journal of Retail & Distribution Management	13	6	159
3	Frontiers in Psychology	7	4	181
4	Journal of Research in Interactive Marketing	5	2	12
5	Sustainability	5	3	26
6	Journal of Business Research	4	2	11
7	Journal of Strategic Marketing	4	3	28
8	Electronic Commerce Research and Applications	3	2	161
9	International Journal of Information Management	3	3	172
10	Journal of Fashion Marketing and Management	3	3	52
11	Journal of Interactive Marketing	3	2	117
12	Journal of Theoretical and Applied Electronic Commerce Research	3	2	22
13	Asia Pacific Journal of Marketing and Logistics	2	1	16
14	British Food Journal	2	2	14
15	Computers in Human Behavior	2	2	74
16	Decision Support Systems	2	2	268
17	International Review of Retail Distribution and Consumer Research	2	1	32
18	Journal of Global Fashion Marketing	2	2	10
19	Journal of Services Marketing	2	2	21

3.1.3 International Collaboration and Keyword Analysis

This section analyzes the international collaboration and keyword distribution of omnichannel consumer research. **Table 4** presents a comprehensive overview of research productivity across countries worldwide, where single country publication (SCP) denotes an article published by researchers from the same country, while a multi country publication (MCP) refers to articles published by researchers from different countries (Thomas *et al.*, 2022; Wang *et al.*, 2022). China, the USA, and Spain emerged as the top three

productive countries. China recorded the highest number of publications and citations with 45 and 1,011 respectively, followed by the USA with 18 articles and a total citation count of 344. However, China also had the low MCP rate (0.2), implying that most of its research was conducted within the country. In contrast, Italy, Finland, and Vietnam had an MCP ratio of 0, indicating that their research was based on the same country, while Greece, Malaysia, and Sweden had an MCP ratio of 1, indicating that their research involved collaborations with other countries.

Table 4 Most productive countries and total citation per country

Most productive countries						Total citation per country		
Country	Articles	SCP	MCP	Freq	MCP Ratio	Country	TC	Average Article Citations
China	45	36	9	0.30	0.20	China	1011	22.50
USA	18	13	5	0.12	0.28	USA	344	19.10
Spain	13	11	2	0.09	0.15	Spain	292	22.50
Korea	8	4	4	0.05	0.50	United Kingdom	287	35.90
United Kingdom	8	4	4	0.05	0.50	Switzerland	99	33.00
France	7	4	3	0.05	0.43	Finland	87	43.50

Table 4 Most productive countries and total citation per country (Con't)

Brazil	6	3	3	0.04	0.50	Italy	77	25.70
Australia	5	4	1	0.03	0.20	Australia	74	14.80
India	4	2	2	0.03	0.50	Korea	65	8.10
Italy	3	3	0	0.02	0.00	Sweden	55	27.50
Switzerland	3	1	2	0.02	0.67	France	52	7.40
Thailand	3	2	1	0.02	0.33	Egypt	33	33.00
Finland	2	2	0	0.01	0.00	Vietnam	33	16.50
Germany	2	1	1	0.01	0.50	India	32	8.00
Greece	2	0	2	0.01	1.00	Brazil	30	5.00
Malaysia	2	0	2	0.01	1.00	Malaysia	30	15.00
Sweden	2	0	2	0.01	1.00	Japan	20	20.00
Vietnam	2	2	0	0.01	0.00	Germany	18	9.00

Notes: SCP = Single country publication; MCP = Multiple country publication; TC=Total citations

Finally, **Figure 3** illustrates the word cloud of the most frequently used keywords in the research, with keyword size representing word frequency. The main keywords include 'online', 'impact', 'satisfaction', 'channel integration', and others. These keywords reflect the main themes and topics of omnichannel consumer research, such as online-offline integration, consumer behavior and preferences, channel choice and switching, and omnichannel service quality.



Figure 3 Word cloud of omnichannel consumer research

3.1.4 Main Research Trends and Contributions

We use a Sankey diagram to analyze the main research trends and contributions of omnichannel consumer research, which helps identify the most important contributions to the research flows. The diagram (**Figure 4**) shows the relationship between the source (center), author country (left), and keyword (right), with the width of the nodes representing publication frequency and the lines illustrating the connections between them.

The graph shows that the Journal of Retailing and Consumer Service is the most influential node, with almost all countries linked to it. China has the highest link frequency, followed by the US and the UK, implying that these countries have contributed the most to the Retailing and Consumer Service journal. It is also worth noting that despite their modest output, Malaysia, Finland, and Greece focus their contributions almost exclusively on the Journal of Retailing and Consumer Service. Finally, this journal is also associated with more keyword terms such as ‘‘omni-channel’’, ‘‘consumer experience’’, ‘‘showrooming’’,

‘‘webrooming’’ etc., suggesting that this node covers a wider range of topics or features.

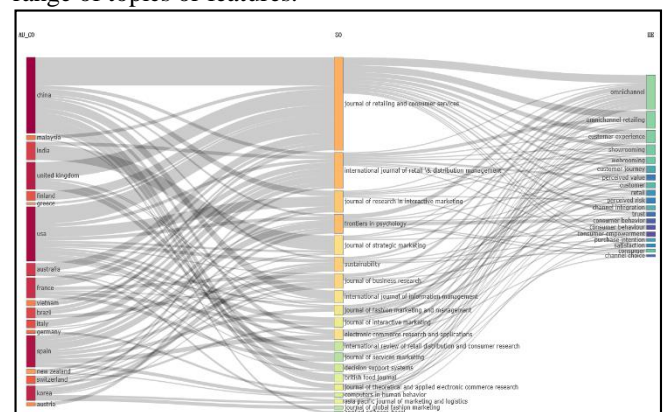


Figure 4 Three-fields plot of author country, sources, and keywords

Overall, the Sankey diagram provides valuable insights into the trends and patterns of omni-channel consumer research. The dominance of the Journal of Retailing and Consumer Service suggests that it is the leading outlet for this type of research. Moreover, the wide range of keywords associated with this node indicates that it covers diverse aspects of omni-channel retailing. By contrast, the relatively low publication output from some countries, such as Finland, Greece, and Malaysia, suggests that there is scope for further research in these regions. The Sankey diagram thus provides a useful tool for identifying research gaps and opportunities in omni-channel consumer research.

3.1.5 Research Methods Used in Omnichannel Consumer Research

We have classified the 152 pieces of literature collected based on the methods used in omnichannel consumer research. The analysis revealed that questionnaire studies were the most frequently utilized research method, comprising 72 articles, which accounted for 59.9% of the total. Following this, experimental design studies constituted 19 articles, representing 12.5% of the total. Additionally, 17 studies relied on secondary data, amounting to 11.2%, and 6 studies, 3.9% relied on Semi-structured interviews (**Table**

5). It is worth noting that more than one research method can be present in a single study, for example, Nguyen *et al.* (2022) used a combination of focus groups and in-depth interviews.

Table 5 Classification of research methodology

Research design	Number	%
Conceptual qualitative	0	0
Literature review	0	0
Other	0	0
Conceptual Quantitative	32	21.1
Modeling, secondary data	17	11.2
Modeling, no secondary data	10	6.6
Content analysis	5	3.3
Empirical qualitative	20	13.2
Case study	4	2.6
Semi-structured interviews	6	3.9
In-depth interviews	5	3.3
Focus groups	4	2.6
Observation	1	0.7
Empirical quantitative	91	59.9
survey	72	47.4
Experiment	19	12.5
Meta-analysis	0	0

In summary, the most used method in omnichannel consumer research is questionnaire studies, followed by experimental design studies and secondary data analysis. However, more diverse research methods, such as ethnographic research, big data analytics, and longitudinal studies, can provide a more comprehensive understanding of omnichannel consumer behavior. By employing these methods, researchers can gain deeper insights into how consumers use different channels, make channel decisions, and evolve their channel preferences over time. Therefore, future research in this field can attempt to employ various methods to provide a more comprehensive understanding of omnichannel consumer behavior.

3.1.6 Theoretical Basis of Omnichannel Consumer Research

This systematic literature review encompassed several studies on omnichannel consumers based on various theoretical frameworks, as illustrated in **Figure 5**. The data indicates that 39 theories were identified, with only 12 being utilized more than twice, accounting for 30.8% of the studies. The theories employed more than twice include Trust Transfer Theory, UTAUT2, Engel-Kollat-Blackwell Model, UTAUT, Commitment Trust Theory, Flow Theory, Goal-Means Association Theory, Grounded Theory, and Elaboration Likelihood Model. Evidently, it is worth noting that some articles incorporated multiple theories.

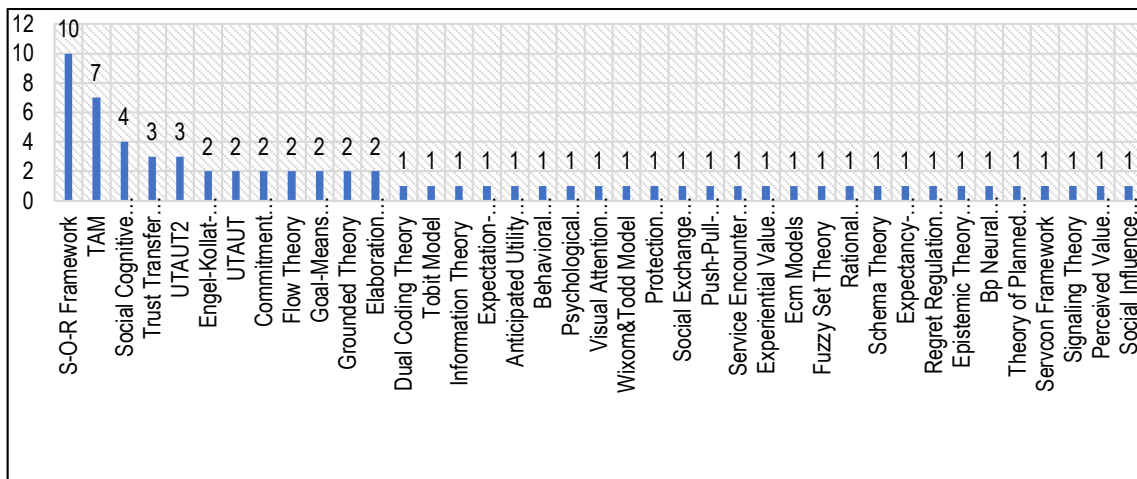


Figure 5 Major theories applied in omnichannel consumer research

3.2 Results of Keyword Co-occurrence

In this section, we aim to explore the thematic structure of a field by analyzing the co-occurrence of author keywords using VOS viewer software. In bibliometric maps, the size of clusters is determined by different factors such as the frequency of occurrence and the weight of keywords within the clusters. To perform the co-occurrence analysis, we pre-processed the bibliographic data. We merged similar keywords to avoid duplication, such as ‘satisfaction’ and

‘customer satisfaction’, ‘purchase’ and ‘purchase intention’, and ‘experience’, ‘customer experience’, and ‘customer journey’. We also excluded keywords involving methodological aspects such as ‘survey’, ‘case study’, and ‘structural equation modeling’ as they were not relevant to the scope of the research topic clustering (Ahsan and Rahman, 2022). Finally, we excluded ‘omnichannel’, ‘omni-channel’, ‘consumer’ and ‘customer’ from the cluster analysis as they were the main search terms for article retrieval.

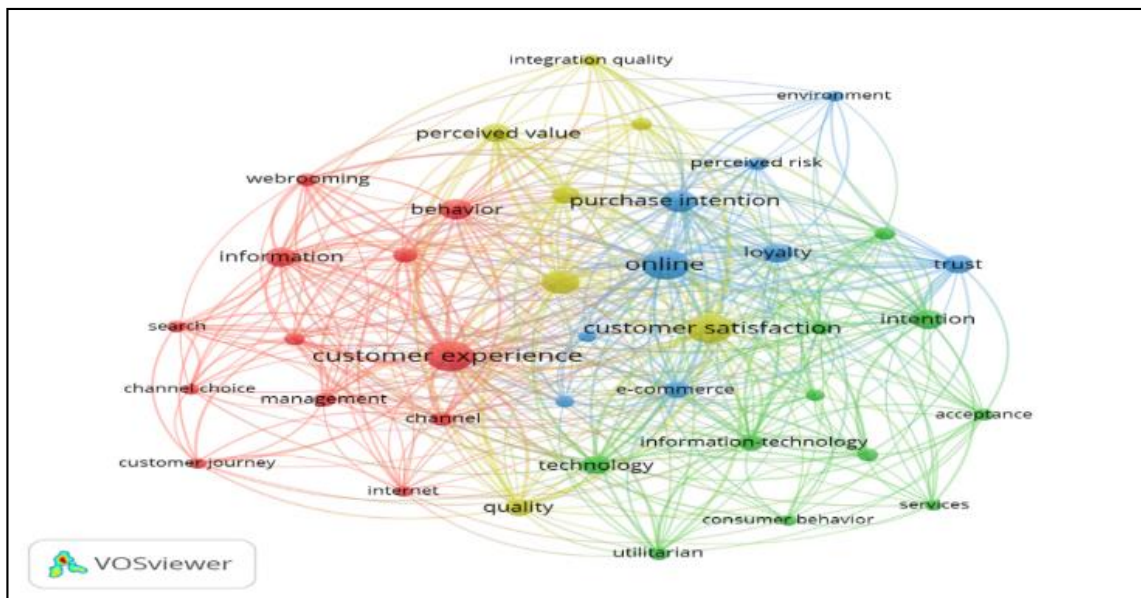


Figure 6 Co-occurrence Network

Table 6 Co-occurrence Network Cluster Analysis

Cluster	Themes	Keywords (derived from VOS viewer clusters)
Cluster 1(red)	Channel Choice and Customer Experience	Behavior, Channel, Channel Choice, Customer Experience, Customer Journey, Information, Internet, Management, Multichannel, Search, Showrooming, Webrooming
Cluster 2(green)	Consumer Acceptance Behavior and Technology	Acceptance, Adoption, Commerce, Consumer Behavior, Information-Technology, Intention, Perceived Usefulness, Services, Technology, User Acceptance, Utilitarian
Cluster 3(blue)	E-Commerce and Purchase Intention	E-Commerce, Environment, Loyalty, Online, Perceived Risk, Purchase Intention, Repurchase Intention, Trust, Word-Of-Mouth
Cluster 4(yellow)	Channel Integration and Customer Satisfaction	Channel Integration, Customer Engagement, Customer Satisfaction, Integration Quality, Perceived Value, Quality, Service Quality

The results of the co-word analysis are presented in the figure, and we identified four thematic clusters. The table

shows these clusters and their respective topics and keywords. These clusters are not mutually exclusive as the articles tend to overlap different domains (Ahsan and Rahman, 2022). The first cluster (red) is the largest, comprising 12 terms, and we labeled its research topic as Channel Choice and Customer Experience based on the common characteristics of the keywords. The second cluster (green) is the second-largest cluster with 11 terms, and its research topic is Consumer Acceptance Behavior and Technology. The third cluster (blue, 9 terms) has the theme E-Commerce and Purchase Intention, and the fourth cluster (yellow, 7 terms) has the theme Channel Integration and Customer Satisfaction.

3.3 Results of Bibliographic Coupling

Bibliographic coupling is a method that uses the number of references common to two documents to analyze their similarities (Raza and Govindaluri, 2021). The higher the number of common references, the stronger the link between them, indicating that these articles have relevant convergence on the topic and can provide insights for future research on the most prominent topics (Zhao and Strotmann, 2008; Furquim *et al.*, 2023). Figure 7 shows the bibliographic coupling network for omnichannel consumer research. In this network, nodes represent documents, the node size indicates the document's citation score, and the thickness of an edge indicates the strength of bibliographic coupling.

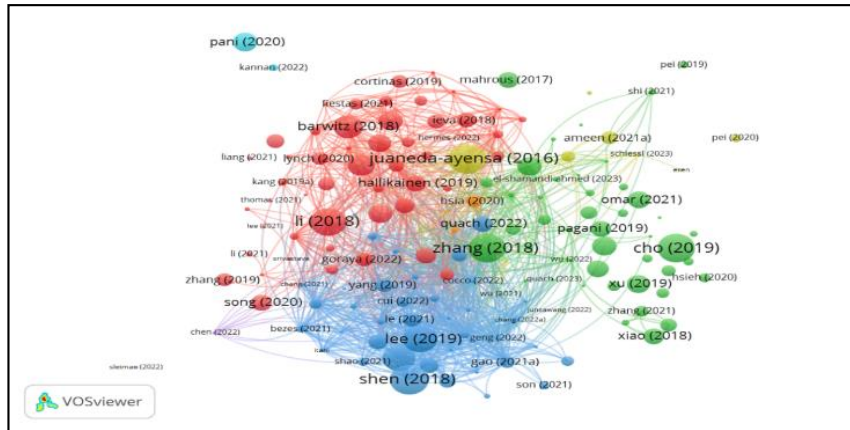


Figure 7 Bibliographic coupling analysis (a)

In terms of the number of citations (**Figure 7a**), the Juaneda-Ayensa (2016) article in the yellow group has the highest citation score of 150 and is linked together with Shen *et al.* (2018), Shi (2020), and Barwitz and Maas (2018), with a total link strength of 597. The green group Zhang *et al.* (2018) has a citation score of 140 and is linked to Li (2018), Shen *et al.* (2018), and Barwitz and Maas (2018), with a total link strength of 594, indicating their relevance and theoretical proximity to other articles in the cluster (Furquim

et al., 2023). The size of the circles in the figure represents the number of citations, with larger circles indicating a greater number of citations. The density visualization in **Figure 7b** confirms that Juaneda-Ayensa (2016), Barwitz and Maas (2018), Li (2018), Shen *et al.* (2018), Zhang *et al.* (2018), Lee *et al.* (2019), and Cho (2019) are the most cited, have more connections to other documents, and form a strong cluster.

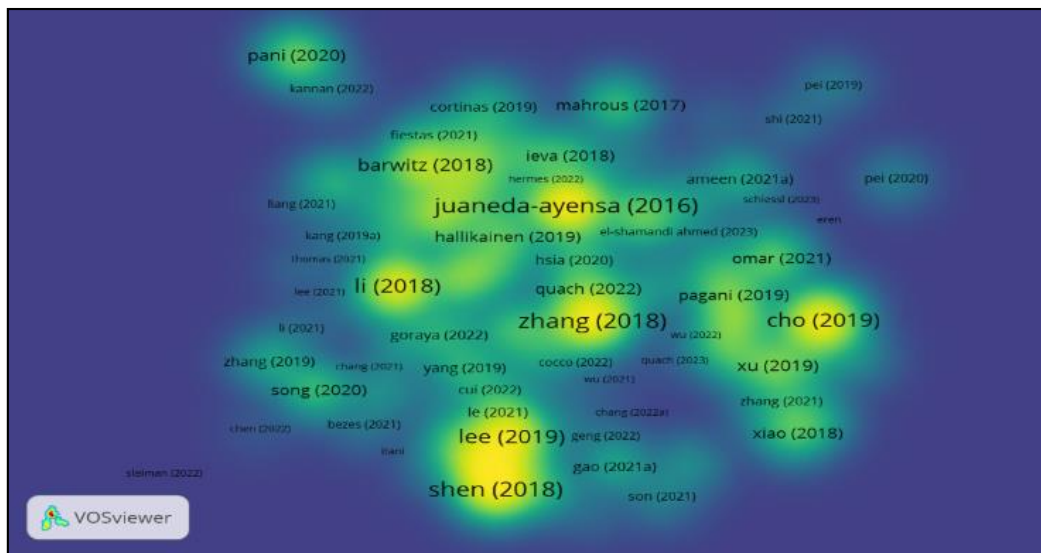


Figure 7 Bibliographic coupling analysis (b)

3.4 Results of Co-citation Analysis

This subsection performs Co-citation analysis using Gephi, which classifies documents into different modularity classes. Modularity is a measure of community structure that measures the density of links within communities relative to those between communities (Blondel *et al.*, 2008). **Figure 8** shows 87 nodes and citations using the ForceAtlas2 layout. In the case of co-citation networks, these communities or modular classes are called clusters for bibliometric analysis (Raza *et al.*, 2021).

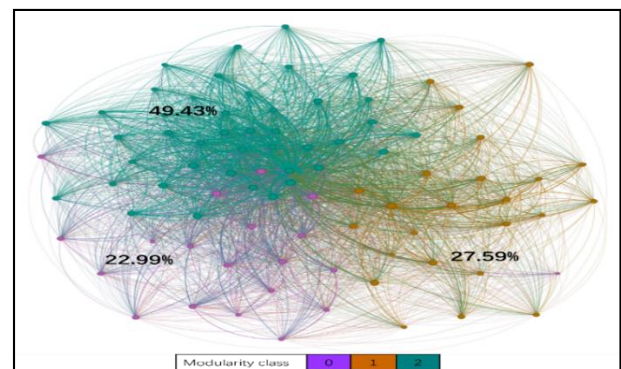


Figure 8 Modularity-based co-citation network

As shown in **Table 7**, three modularity classes or clusters 0, 1, and 2 were identified, with the ratios shown in the figure being the percentage in the cluster. We selected each cluster's top 10 cited documents based on the highest PageRank. The three papers with the highest PageRank in cluster 0 were: Lemon and Verhoef (2016), Podsakoff *et al.* (2003), and Fornell and Larcker (1981). Similarly, cluster 1

includes the papers: Verhoef *et al.* (2007), Rapp *et al.* (2015), and Melis *et al.* (2015). Finally, cluster 2 has influential papers Juaneda-Ayensa *et al.* (2016), Rigby (2011), Verhoef *et al.* (2015), and the main themes of each of the three clusters are shown in **Table 7**.

Table 7 Classification using modularity classes

References	modularity class	Theme(s)	Page rank
Lemon and Verhoef (2016)	0	Customer Management	0.013119
Podsakoff <i>et al.</i> (2003)	0		0.013118
Fornell and Larcke (1981)	0	Customer Experience	0.013116
Neslin <i>et al.</i> (2006)	0		0.012304
Babin <i>et al.</i> (1994)	0	Structural Equation Modeling (SEM)	0.012299
Brakus <i>et al.</i> (2009)	0		0.012153
Verhoef <i>et al.</i> (2009)	0		0.011895
Mehrabian and Russell (1974)	0		0.011747
Rose <i>et al.</i> (2012)	0		0.011358
Hu and Bentler (1999)	0		0.011216
Verhoef <i>et al.</i> (2007).	1	Channel Choice Behavior	0.013119
Rapp <i>et al.</i> (2015)	1	(Multichannel	0.01271
Melis <i>et al.</i> (2015)	1	Webrooming And Showrooming)	0.012427
Konuş <i>et al.</i> (2008)	1		0.01231
Flavián <i>et al.</i> (2020)	1		0.0123
Neslin and Shankar (2009)	1		0.012024
Pantano and Viassone (2015)	1		0.011893
Gensler <i>et al.</i> (2017)	1		0.011765
Schramm-Klein <i>et al.</i> (2011)	1		0.011753
Venkatesh <i>et al.</i> (2012)	1		0.011485
Juaneda-Ayensa <i>et al.</i> (2016)	2	Omni-Channel Shopping Value	0.013255
Rigby (2011)	2	Categorization of Multiple Channel	0.013255
Verhoef <i>et al.</i> (2015)	2	Retailing	0.013255
Brynjolfsson <i>et al.</i> (2013)	2		0.013118
Huré <i>et al.</i> (2017)	2	Distribution Management	0.012983
Beck and Rygl (2015)	2	Channel Integration	0.012982
Piotrowicz and Cuthbertson (2014)	2		0.012982
Ailawadi <i>et al.</i> (2017)	2		0.012981
Cao and Li (2015)	2		0.012975
Shen <i>et al.</i> (2018)	2		0.012973

3.5 Thematic Map

According to Caparrós-Martínez *et al.*'s (2021) keyword-based thematic map (see **Figure 9**), we can categorize research themes into four regions based on two variables: centrality and density. Centrality refers to a theme's level of interaction with other themes, while density measures the cohesiveness within a theme. A higher centrality indicates a more critical theme, while a higher density suggests a more developed one (Caparrós-Martínez *et al.*, 2021).

In the upper-left quadrant of the map, there are several highly specialized and peripheral themes, such as the theoretical model, technology acceptance model, trust transfer, website, equity, and innovation. In the lower-left

quadrant, the themes of user satisfaction and usage intention are decreasing, which may indicate a shift in research focus on recent years. The upper-right quadrant features a dominant theme in this research area, with "consumer responses," "multichannel integration quality," "perceived risk," "innovation," "channel integration," and other related terms proving their crucial importance in omnichannel consumer research. Meanwhile, questions related to "purchase intentions," "behavioral intentions," and "satisfaction" are situated in the lower-right quadrant, implying that they are fundamental cross-cutting and general topics for research in this area (Caparrós-Martínez *et al.*, 2021).

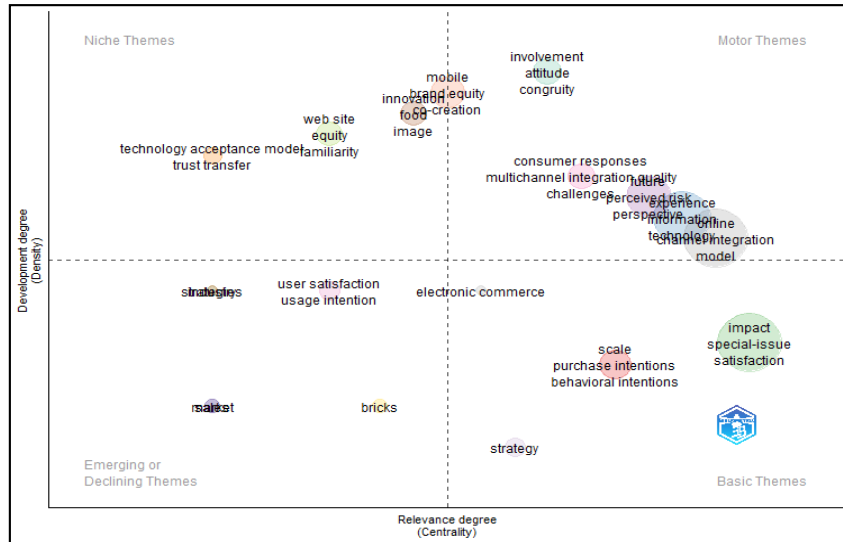


Figure 9 Conceptual thematic map by keywords plus

3.6 Historical Direct Citation Network

To illustrate the progression of significant citations over time, we performed a historiographic citation analysis using the Bibliometrix package. Figure 10 depicts a chronological citation network, representing a timeline of the most relevant citations derived from the bibliographic dataset (Della Corte et al., 2019). The historical direct citation reveals that the most influential articles were published between 2016 and 2022.

Juaneda-Ayensa et al.'s (2016) article is vital as a trailblazer in initiating this research area, being the first to explore the primary factors driving omnichannel technology acceptance and usage and its impact on consumer purchasing intentions. This pioneering work laid the foundation for studying omnichannel consumer behavior and inspired subsequent academic research. Blom et al. (2017), Rodríguez-Torrico et al. (2017), and Chatterjee and Kumar (2017) expanded on the initial research, further examining the factors influencing consumer purchasing behavior. Barwitz and Maas (2018), Li et al. (2018), Shen et al. (2018), and Kang (2018) delved deeper into the factors affecting consumer journeys and channel integration. Pagani et al. (2019) and Kang (2019) investigated brand trust, product reviews, and sharing. Tyrväinen et al. (2020) and Mainardes et al. (2020) shifted their focus to customer experience and loyalty. Gao et al. (2021), Ameen et al. (2021), and Fiestas and Tuzovic (2021) studied customer retention and characteristics. Lastly, the influence of channel integration on customer experience was examined by Cheah et al. (2022), Goraya et al. (2022), and Quach et al. (2022).

In general, the research stream follows a progression from "purchase behavior" to "channel integration" to "brand trust" to "customer experience" to "customer retention and characteristics" to "the relationship between channel integration and customer experience," gradually delving deeper into the subject matter.

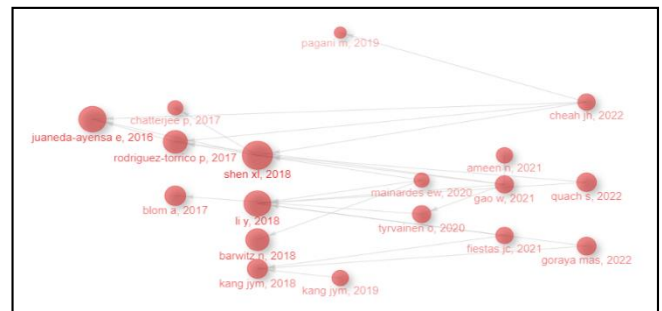


Figure 10 Historical direct citation network

4. RESULTS

The Web of Science (WoS) database was searched four times Consumer research is crucial in omnichannel retailing and is considered a primary focus in distribution management. The significant increase in research publications demonstrates the growing importance of omnichannel consumer research.

In this study, we employed bibliometrics using cutting-edge bibliometric tools. We conducted an exploratory analysis of 152 selected studies to examine the features of countries, journals, authors, highly cited literature, and trends in this field.

Additionally, the study underwent bibliometric analyses of keyword co-occurrence, bibliographic coupling, historical citations, and co-citation analysis. The keyword co-occurrence analysis was based on the frequency and importance of keywords, identifying four distinct clusters. The bibliographic coupling analysis pinpointed the most cited authors, who were strongly connected to other documents and formed robust clusters. The co-citation analysis grouped documents into clusters based on centrality and modularity, followed by identifying themes for each cluster, considering the characteristics of influential publications in the modular clusters.

Lastly, the historical direct citation network unveils the chronological development of the most significant citations.

4.1 Research Gaps and Future Research Agenda

In the rest of this section, we pinpoint research gaps and issues across various dimensions and categories. We also suggest a potential research agenda to address these gaps.

4.1.1 Contextual Dimensions

The literature indicates that omnichannel consumer research began in 2016 and is an emerging field still in its early stages compared to other aspects of omnichannel retailing. The analysis also reveals that over a third of the research has been published in only five specialized journals. Additionally, articles on omnichannel consumer research have seen researchers from only three countries contribute more than half of the total, suggesting that current findings are limited and do not adequately represent the global consumer market, this bias may lead to the neglect of regional and cultural differences, thus affecting a comprehensive understanding of global consumer behavior. Therefore, more active research is needed to focus on consumer behavior, services, and other aspects across cultural and national contexts. Future studies could explore the impact of cultural differences on consumer behavior in omnichannel retailing, providing valuable insights for businesses operating in diverse markets.

4.1.2 Methodological Approaches

The literature review reveals that quantitative research is dominant, with questionnaires being the primary approach. Generally, it is challenging in social sciences to rely solely on a single research method to ensure the findings' appropriateness and reliability. Different reviews and survey methods must be implemented to broaden the knowledge base. (Liao and Widowati, 2021). Further studies should test the propositions with qualitative, quantitative method or mixed methods to have a multi-perspective assessment and refine the theoretical model (Truong *et al.*, 2020). Future scholars may consider exploring alternative research methods, such as longitudinal studies or cross-sectional comparisons, and research hypotheses need not be limited to linear relationships. Furthermore, case study is a valuable method. Researchers can gain a better understanding of consumer behavior by delving into successful and unsatisfied cases of omni-channel retail in different regions. This approach provides real-world examples and data that can assist both scholars and the industry in making more informed strategies and decisions.

4.1.3 Themes

The current themes in omnichannel consumer research are relatively underdeveloped compared to other areas of omnichannel research. The analysis of themes reveals that most papers concentrate on consumer channel choice, buying behavior, channel integration, and consumer experience. However, the Thematic Map indicates that some themes have declined, and the research themes are evolving. One theme worth exploring is supply chain management. The supply chain, a critical component in the ecosystem, plays a pivotal role in catering to consumer demands, providing

seamless product services, and nurturing enduring customer relationships. To comprehensively grasp the dynamics at play, we can delve into the correlation between consumer experiences and supply chain efficiency. An insightful analysis can shed light on the supply chain's impact on the consumer journey, its sway over consumer decision-making processes, and the cultivation of brand loyalty.

Furthermore, as new technologies emerge and evolve, there is a need to voice additional explanations for omnichannel consumer behavior. This includes the role of artificial intelligence, block chain technology, Corporate Social Responsibility (CSR), digital marketing, virtual reality, and the Internet of Things in shaping consumer experiences and decision-making processes.

4.2 Limitation

Although a systematic literature review of omnichannel consumer research has been conducted, there are several limitations to the research process. Firstly, the composition of the corpus is limited to articles found in the WoS database, disregarding relevant literature from other databases such as Scopus and conference proceedings. This restricted database selection may introduce bias and result in an incomplete literature representation. Secondly, the study's scope only included articles published in English, excluding valuable literature in other languages. Consequently, the conclusions drawn may need to be more comprehensive due to excluding relevant non-English publications.

Additionally, the choice of keywords used during the paper collection stage may have required a more exhaustive approach to capture all the available relevant literature. Future studies could explore alternative or additional keywords to ensure a more comprehensive literature review. Despite these limitations, this study's suggested future research directions will contribute to further advancements in omnichannel consumer research.

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