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REVIEW PAPER

Review Paper

Understanding digital consumer: A review, synthesis, and future research agenda

Ayşegül Sağkaya Güngör[1] | Tuğçe Ozansoy Çadırcı[2]

[1]Siyasal Bilgiler Fakültesi, İşletme Bölümü, Istanbul Medeniyet University, Istanbul, Turkey

[2]İktisadi ve İdari Bilimler Fakültesi, İşletme Bölümü, Yıldız Technical University, Istanbul, Turkey

Correspondence
Ayşegül S. Güngör, Siyasal Bilgiler Fakültesi, İşletme Bölümü, Istanbul Medeniyet University, Kuzey Kampüsü E226, Ünalan Sk. Bulgurlu Mevkii No:5, 34700 Üsküdar, Istanbul, Turkey.
Email: agngor@yahoo.com

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Abstract

In the last 20 years, the proliferation of digital technologies has significantly impacted both businesses' operations and how consumers get information, engage, and buy. Through the analysis of 74 marketing journals, this article identifies the current situation and possible gaps within digital consumer behavior research. By combining bibliometric analysis and machine learning algorithms, the authors have identified key topics in 5-year intervals and their evolution over time. The study results show that digitalization has overreached its original subsistence and has become an essential aspect of mainstream consumption patterns. The study reveals three domains within digital consumer behavior: (1) the use of classical consumption theories and their application to digital context; (2) transactional subjects within consumers' digitalization; and (3) digital marketing's impact on the consumption of specific product groups. Regression-based time series applied to 42 topics discovered by text mining to define possible future research directions. Within 42 topics, significant growth is expected in mobile channel use, sustainable consumption, user-generated content, and social media engagement. In general, the results exhibit a shift from a transactional point of view to a more theoretical and strategic perspective. Possible research gaps are expected to emerge from: (1) the impact of interactive and immersive technologies on consumption practices; (2) the possible outcomes of the pandemic on digital consumption patterns; (3) enhancing brand engagement through consumer-to-consumer interactions; (4) enhancing the understanding on issues like consumer collaboration, consumer trust, and service satisfaction.

KEYWORDS
digital consumers, longitudinal study, machine learning, online consumers, topic modeling

1 | INTRODUCTION

As part of our daily lives, the Internet has become the most influential innovation since the late 1990s. It fundamentally transformed how we communicate, search for information, and buy services and products (Darley et al., 2010). As digitization has altered how consumers behave, digital marketers try to understand the variables influencing the new connected consumer's marketplace behaviors.

As a dynamic and relatively young domain, online consumer behavior draws considerable attention from consumer researchers. Despite the considerable accumulation of research on online consumer behavior, there is limited research that tries to integrate the findings of these studies to provide a more comprehensive understanding of digital consumers. Previous literature reviews had focused on a variety of subjects like influencer marketing and social media (Gatautis & Kazakevičiūtė, 2012; Vrontis et al., 2020; Zhang & Benyoucef, 2016), flow theory (Bölen et al., 2021); online reviews

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(Atchariyakarn & Zhang, 2021; Zheng, 2021), online retailing (Mishra et al.,2021; Nguyen et al., 2018; Wagner et al., 2020), the impact of psychology on online consumer behavior (Liao & Chung, 2011), new technologies (Ferreira et al.,2021; Taufik et al.,2021; Xi & Hamari, 2021); mobile channel (Cavalinhos et al., 2021; Jebarajakirthy et al., 2021); electronic business (Ozansoy Çadırcı & Sağkaya Güngör, 2021), and electronic word-of-mouth (Verma & Yadav, 2021). Consumer behavior has always been a multi-facet research domain; as a result, the digitalization of consumption is also expected to create a similar picture. While these studies mentioned above provide substantial contributions to a single facet of digital consumer behavior, there is a need for research that supplies a more comprehensive understanding. As a result, the underlying motivation of this research is to identify the evolution of digital consumer research in all aspects for the first time in the literature.

In a nutshell, the objectives of the current study are: (1) to provide a full-scale review of digital consumer behavior research; (2) to identify the main conceptual, theoretical, and methodological approaches addressed by previous research; (3) to propose an integrative framework of digital consumer research; and (4) to present possible future research directions.

By reviewing a significant number of studies, the study aims to enhance existing knowledge on digital consumers and provide more well-rounded future research directions. To that end, the current study investigates the 21 years (2000–2020) of digital consumer behavior literature. 2000 was taken as the base year for our study for mainly two reasons. First, from the early years of the Internet, the mid-1990s, researchers have tried to understand the meaning of the Internet mainly for businesses. A mass body of literature on consumer studies was started with the introduction of the journals such as the *Journal of Interactive Marketing* (1998), with a change of name from *Journal of Direct Marketing*. Second, 2000 was the year of the peak of the "burst of the.com bubble." Moreover, it turned out that online retailing was handled on a purely practical level, not on a conceptual level. Experience told people that the correct strategies for digital tools should have been based on not only data and research, but also recommendations (Lohse et al., 2000). The chaos underlined the importance of scientific studies on the online consumer phenomenon and called for conclusions drawn with rigorous scientific approaches from the collected data. Accordingly, there has been a rapid rise in research on consumer behavior in the virtual environment, which calls for a deeper analysis of accumulated research on the domain of digital consumer behavior.

The current study makes several contributions. First, using topic modeling as the unit of analysis, this study presented a review of digital consumer studies. Going beyond a single publication with a specific focus, the current study includes all outlets publishing articles on the digital consumer. In line with this aim, the study aggregates all the research on the subject to consolidate and analyze bibliometric knowledge. Thereby, we aim to take the approaches and understanding of the studies as mentioned earlier one step forward. Second, the current study presents the prevailing theories, methodologies, and the methods applied with their frequencies. The presentation provides promising areas for development and contributions. Third, as Webster and Watson (2002: p. 13) put it, "an effective review facilitates theory development, closes areas where a plethora of research exists and uncovers areas where research is needed." Therefore, our study highlights not only what has been analyzed but also provides an agenda for future researchers of the domain by pointing out the gaps. The research agenda is to depict the salient starting points for new research streams. It may open new venues and articulate a road map for the future. There is no integrative study in the literature to reveal future subjects related to digital consumers. Therefore, the current study aims to assist practitioners and researchers in comprehensively understanding the present state of digital consumer research and filling the existing gap.

2 | STUDY BACKGROUND

Although systematic reviews can be conducted with different methods, a particular stream of research has focused on topic modeling algorithms to define possible research streams and their change over time. Unlike classical content analysis, topic modeling uses computational linguistics and text-mining techniques to analyze textual data. With the correct processing procedures and interpretation processes, textual data can provide insightful information for marketers and practitioners to act on and scholars and theoreticians to improve the theory. Improvements in text mining and machine learning algorithms can help researchers define past and present focus areas and derive predictions of future research streams.

There are two strands of reviews employing topic modeling in the literature. One strand acknowledges the consumer behavior reviews in specific areas to explain what has been studied in the past and the future, retrieving the data from many different journals (e.g., Barari et al., 2021; Mishra et al., 2021; Vanhala et al., 2020; Zheng, 2021). They reflect the researchers' effort to predict the evolution of digital marketing, marketing theory, social media, mobile marketing, online consumer behavior, etc., in general. To give an example within recently published ones, Barari et al. (2021) studied a corpus of 146,380 papers in 184 publications to provide a comprehensive picture of customer engagement behavior. Zheng (2021) studied online consumer reviews with a total of 234 articles and ended up with a framework that related five categories (channel-based, reviewer-related, review level, response-based, recipient-based). Mishra et al. (2021) studied consumer decision making with 131 research papers in omnichannel retailing. They linked omnichannel retailing with consumer decision making. Vanhala et al. (2020) examined 495 articles that benefited from big data analytics to analyze online consumers' behaviors. Their analysis revealed the emerging research trends as online behavior patterns, customer privacy, social networks, and customer experience quality. In their interdisciplinary systematic review, Di Domenico et al. (2021) focused on the fake news disseminated through social media. Their analysis of 117 articles identified the dissemination process, fabricated legitimacy, attitudes,

outcomes, and spreading channel as the themes that explain the fabricated news phenomenon. Another systematic review study by Ferreira et al. (2021) aimed to identify prevailing themes and trends in consumer interaction with wearable technologies. The review identified the themes as decision making, well-being, consumer behavior, utility, and big data analytics.

Another stream focused on retrieving and analyzing articles' through text mining for a specific publication. (e.g., Cho et al., 2017; Huber et al., 2014; Mela et al., 2013; Wang et al., 2015; Wang et al., 2015). Concerning consumer behavior, Wang, Malthouse, et al., 2015; Wang, Bendle, et al., 2015 published a paper that examined the 40 years of the *Journal of Consumer Research*. The algorithm ended up in 16 topics by reviewing 2,031 articles. The results showed a decreasing interest in specific topics such as family decision-making processes and research methodologies, while areas such as social identity, emotional decision making, and consumer culture theory were on the rise. Leveraging the topic modeling method, Huber et al. (2014) studied 2,531 papers to examine the past 50 years of the *Journal of Marketing Research*. They observed the rising popularity of information processing while a falling interest in the choice model, measurement, and advertising. Analyzing the most popular keywords and the most frequent words, rather than directly applying topic modeling, Mela et al. (2013) analyzed the journal of *Marketing Science* between the years 1982–2011. They analyzed 1,085 papers and discovered that marketing science evolved from youth to maturity.

Longitudinal studies draw the past and present picture of the theoretical field, thus, moving it forward. We aim to summarize the existing contributions while paving the way for methodological, contextual, and theoretical developments. It would be beneficial for the scholars as they will be aware of the existing methodological domains and theoretical underpinnings of digital consumer literature. Highlighting the gaps in the field, we enable them to contribute to the extant literature. Moreover, we are making forecasts about the future by analyzing the topic trends to prepare the ground for the following researchers.

The paper is structured as follows: The first section gives information about the review design, data structure, and topic modeling. We then elaborate on the sample profile with the preliminary and descriptive information. The scientific evolution of digital consumer behavior across the ages is discussed in the following section, with each chapter broken down into themes based on topic trends. The following section provides conceptual, theoretical, and methodological directions for future research. The last section is devoted to theoretical and practical contributions before closing the paper with conclusions and limitations.

3 | METHODOLOGY

A comprehensive review of literature enables researchers to map the research domain in focus and helps to propose future research directions that strengthen the knowledge (Paul & Dhiman, 2021; Tranfield et al., 2003). Systematic reviews can be approached in a variety of ways (Paul & Criado, 2020; Paul et al., 2021). Blei et al. (2003) topic modeling algorithm and Fahimnia et al. (2015) bibliometric analysis approach were applied to textual data in the current study. Using machine learning algorithms sets the current paper apart from classical systematic literature reviews. It exceeds the procedures of a classical bibliometric review (e.g., Ruggeri et al., 2019) as we used topic modeling to define the topics that fall under digital consumer behavior and their evolution over time. When different approaches were examined the current review can be defined most similar to Paul et al.'s (2021) *scientific procedures and rationels for systematic reviews* (SPAR-4-SLR) method. Similar to previous research (e.g., Gilal et al., 2021), we applied certain steps starting with the identification of sources (journals), acquisition of relevant articles from the WOS database, purification of articles (application of exclusion and inclusion criteria to raw data), analysis and evaluation of articles, and reporting findings. The following section provides in-depth information on data retrieval and processing.

Data were retrieved with a detailed search with a carefully applied screening process in August 2021. An elaborate strategy was conducted based on the guidelines of Paul and Criado (2020) and Paul and Bhukya (2021) to identify the relevant studies on the evolution of digital consumer. Since research on digital consumer studies started in the early 2000s, the study aims to retrieve all the relevant research on digital consumers within 2000–2021. We conducted the literature review to find out the synonyms of "digital consumer" in title, abstract, and keywords. It resulted in the keywords online consumer, digital customer, online customer, and digitally connected customer. Boolean operators "OR" were applied during the search process in the Web of Science™. A total of 18,210 documents were retrieved.

The initial data set was screened with the inclusion and exclusion criteria to find the most relevant articles for the review. Given the research goal, which is to identify the evolution of digital consumer research in academia, press releases, editorials, conference papers, commentaries, erratum, book chapters were all excluded from the results to end up only with the published articles and articles in the press. After this process, the remaining number of articles was 8,210. The last exclusion criterion was the field of search. Articles were limited to the field of business and management. Finally, a detailed manual examination (by assessing the relevancy of keywords and abstract with a quick screening by the authors) was performed to assess the relatedness of the articles for the subject. The final corpus consisted of 5,621 articles.

Figure 1 depicts the workflow of the analysis, including exclusion processes and R software packages used.

3.1 | Data structure and preprocessing

Data were retrieved from the *Web of Science*™ database, covering all articles published between 2000 and 2021. The data retrieved included document type, titles, author names, keywords, publication

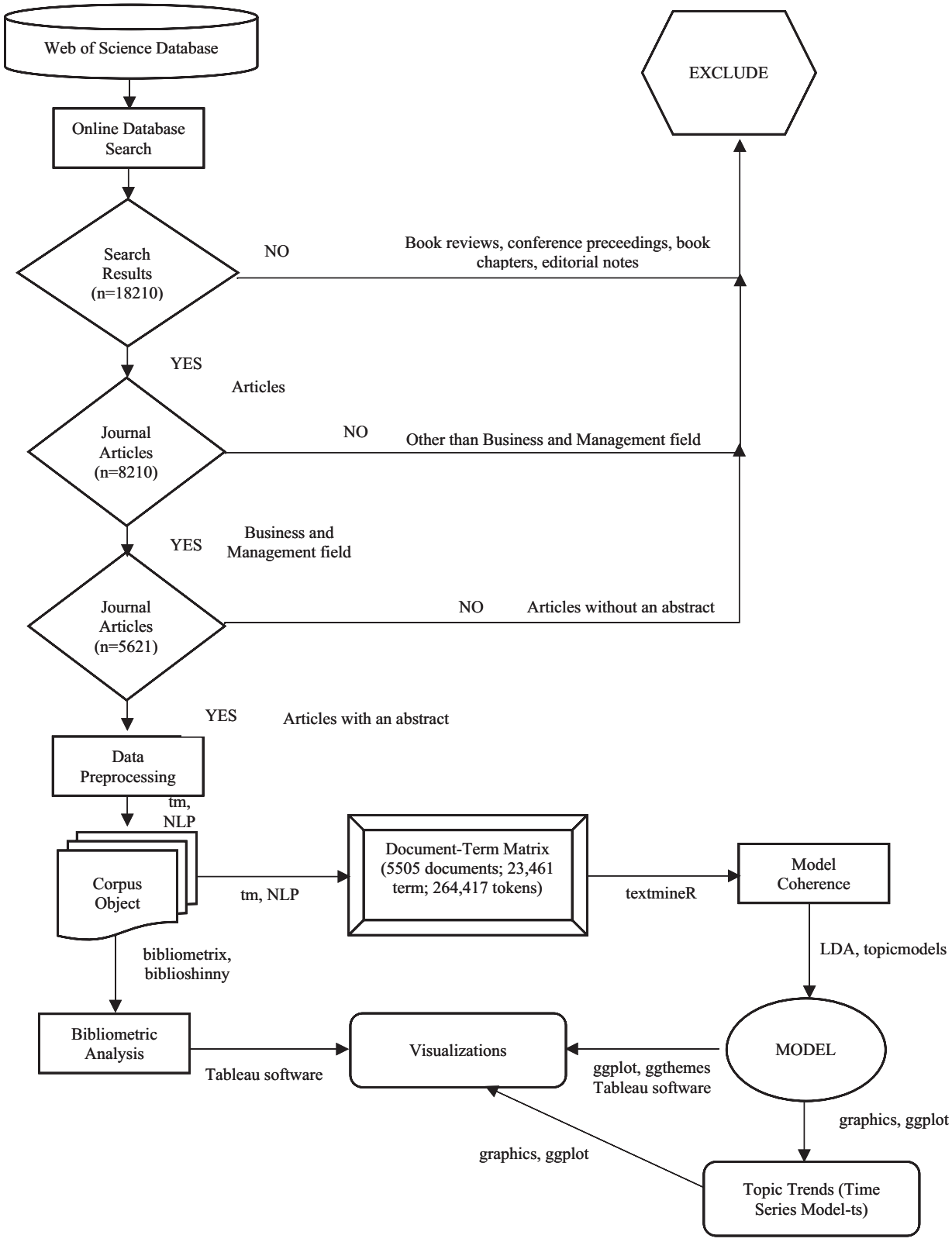


FIGURE 1 Research workflow

title, publication year, author countries, citations, and references as data points. Before data preprocessing, abstracts of the 5,621 were extracted, and the articles without an abstract were eliminated from the raw data. Following this process, 5,505 articles from 66 journals were initially identified. Table 1 summarizes the descriptive information on the corpus object.

The extracted data were preprocessed with R's "tm" package to be ready for topic modeling. First, data were broken into a bag

TABLE 1 Information on corpus object

Description	Results
Timespan	2001–2021
No. of journals	66
No. of documents	5,505
Average citations per document	28.88
Average citations per year per document	4.75
Keywords plus[a]	5,523
Author keywords	11,172
No. of authors	8,910
Single-authored documents	665
Author per document	1.69
Collaboration Index	1.81
Average TC per document	45.59

[a]Keywords assigned by Web of Science™.

of words (tokenization). This process was followed by stop word removal. The stop removal process was carried out in three steps. Common words in the English language (e.g., the, a, etc.) were removed at the first step. At the second step, words (e.g., paper, analysis, study, etc.) that are repetitive and unrelated to the study and disruptive to topic modeling were eliminated. At the last step, words with an exorbitant frequency (e.g., consumer, consumption, etc.) were removed from the corpus object. Lastly, with the help of the stemming process (or lemmatization), duplicates (e.g., purchase and purchases) were removed from the data. The final corpus was composed of 5,505 documents, 23,461 terms, and 264,417 tokens, which were used to build the document-term matrix (DTM).

3.2 | Topic modeling

The idea behind text mining by topic modeling is to understand the "hidden semantic structures in the body of the texts of document collections" (Blei & Lafferty, 2000, p. 71) based on a probabilistic approach. It is based on discovering the latent topics within the documents and their distributions over terms (Blei et al., 2003). The point is to discover the themes included in the original texts, their connections and uncover the movements over time (Blei, 2012). Basically, topic modeling techniques are useful for understanding and summarizing textual data. As the main aim of the topic model is to uncover hidden structures within text data, it will generate more meaningful insights close to the actual structure (Wang, Bendle, et al., 2015).

In the current study, text mining was conducted using the Latent Dirichlet Allocation (LDA). LDA is a practical algorithm if the corpus is relatively large (Humphreys & Wang, 2018), and researchers have widely used it to find hidden structures within scientific data (Cho et al., 2017; Wang, Bendle, et al., 2015). LDA works better than other topic modeling algorithms since it does not fix the document probabilities, and as a result, it can be generalized to new documents easily (Krawtler, 2017). To locate the hidden structures in our corpus, we analyzed the data set to come up with the topics, and each was described with a frequently co-occurring set of words. The prevalence (probabilities) of each word per topic was calculated, and each topic was summarized by the most prevalent words (Vanhala et al., 2020). The model utilized Dirichlet distribution to approximate each topic's probability and specify words that define each topic.

4 | RESULTS

As stated in the preceding section bibliometric and LDA-topic modeling were used as the unit of analysis in the study. The first step prior to topic modeling is defining the number of topics to work with. Finding the exact number of topics in a corpus is a significant problem. In our model, the number of topics was assessed with the use of normalized pointwise mutual information (NPMI), which provides both a higher level of statistical significance and a better fit with human judgment (Lau et al., 2014; Newman et al., 2010, 2011; Röder et al., 2015). NPMI using words' probability in documents and the co-occurrence of the word pairs extracts a coherence measure that can define the number of topics, where a higher level of coherence reflects a better model fit. Our model achieved the highest level of coherence with 42 topics (see Figure 2 for details). The extracted topics and their corresponding terms are summarized in Table 2.

4.1 | Profile of the sample

This section provides detailed information on bibliometric analysis conducted. All the information provided in this section was derived with the use of R's bibliometrix (Aria & Cuccurullo, 2021) package.

4.1.1 | Preliminary information on digital consumer behavior literature

With the emergence of digital technologies, researchers were better positioned to get a broad and detailed understanding of any

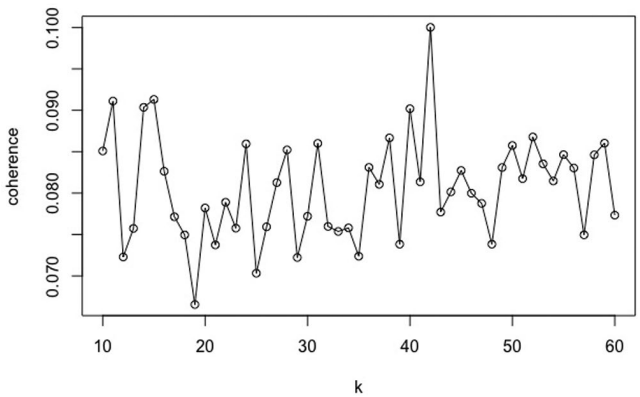


FIGURE 2 Model coherence

TABLE 2 Topic structure and topic naming

No	Topic ID	Top keywords
1	Digital Music Consumption	Digital, music, piracy, live, children
2	Web Usage	User, use, Internet, usage, access
3	Web User Demographics	Differences, gender, age, generation, demographic
4	E-mail Marketing	Communication, platform, offer, effective, e-mail
5	Shopping Value	Purchase, shopping, shoppers, hedonic, utilitarian
6	e-WOM	Information, e-WOM, electronic, sources, word
7	Sustainable Consumption	Personality, environmental, need, sustainable, green
8	Virtual Experiences	Experience, environment, cognitive, virtual, design
9	Privacy	Privacy, concern, policy, personal, ethical
10	Online Browsing	Site, web, visit, browsing, duration
11	Online Retailing	Retailer, retailing, store, showrooming, multichannel
12	Consumer Behavior in Tourism	Tourism, offer, travel, destination, family
13	Consumer Motivation	Benefit, motivation, involvement, drivers, motive
14	Service Recovery	Service, provider, expectation, recovery, delivery
15	Omnichannel Marketing	Channel, offline, omnichannel, traditional, segmentation
16	Mental Processing	Evaluation, processing, mental, contextual, imagery
17	Attitude-Behavior Models	Intention, attitude, purchase, behavioral, norms
18	Consumer-Brand Relationships	Brand, image, equity, identification, branding
19	Consumer Choice	Decision, choice, preference, attribute, decision making
20	Mobile Technology Adoption	Technology, mobile, app, use, adoption
21	Advertising Effectiveness	Advertising, effectiveness, game, video, content
22	Search Engine Marketing	Search, engine, paid, keywords, click
23	Source Credibility	Credibility, sources, influencer, celebrity, authenticity
24	Customer Satisfaction and Loyalty	Customer, satisfaction, loyalty, switching, retention
25	Online Offers	Sale, promotion, return, offer, free
26	Online Communities	Community, identity, members, group, netnography
27	Social Media Engagement	Social, media, engagement, content, Facebook
28	Food Consumption	Food, health, organic, label, safety
29	Value Co-creation	Value, co-creation, role, create, feedback
30	Psychological Ownership	Individual, psychological, ownership, status, beliefs
31	Collaborative Consumption	Network, activities, collaborative, innovation, peer-to-peer
32	Consumer Awareness	Need, awareness, potential, market, external
33	Price Associations	Price, seller, cost, auction, buyer
34	e-Service Quality	Quality, dimensions, e-service, characteristics, importance
35	Emotional Response	Response, positive, negative, message, emotional
36	Recommendation Systems	System, recommendation, learning, pattern, personalized
37	Cultural Influence	Perception, influence, cultural, cues, culture
38	Luxury Goods	Product, category, luxury, purchase, goods
39	Financial Wellbeing	Financial, wellbeing, credit, payment, household
40	Risk Perception	Risk, antecedents, influence, consequences, commitment
41	Marketplace Knowledge	Marketplace, knowledge, intelligence, trends, analytics
42	Online Reviews	Reviews, ratings, content, valence, sentiment

research domain. With the resources at hand, we performed a longitudinal analysis to observe the development of the scientific production of the digital consumer field. Figure 3 presents the number of articles published and the average total citations per year (AveTCpY) between 2000 and 2020.

We observed the field develop slowly between 2000 and 2005; the growth is accelerated between 2006 and 2014. Starting from 2014, the trend rose steeply to reach its top in 2020. The accelerating growth is due to studies on social media, mobile channels, and other new venues of digital consumption. As 2021 is ongoing, the number of articles in our sample that fall under the current year is relatively lower. AveTCpY provides evidence of the popularity of the field (Verma & Yadav, 2021). AveTCpY started at great numbers and decreased as the field developed and the years went by. As observed in Figure 3, the field proves its productivity as a research domain, and its evolution demonstrates the relevance for new paradigms for future research.

4.1.2 | Performance analysis

Performance of research papers

Qualitative total citations (TC), a relative measure, and average citations per year (AveTCpY), a more concrete measure, are used to

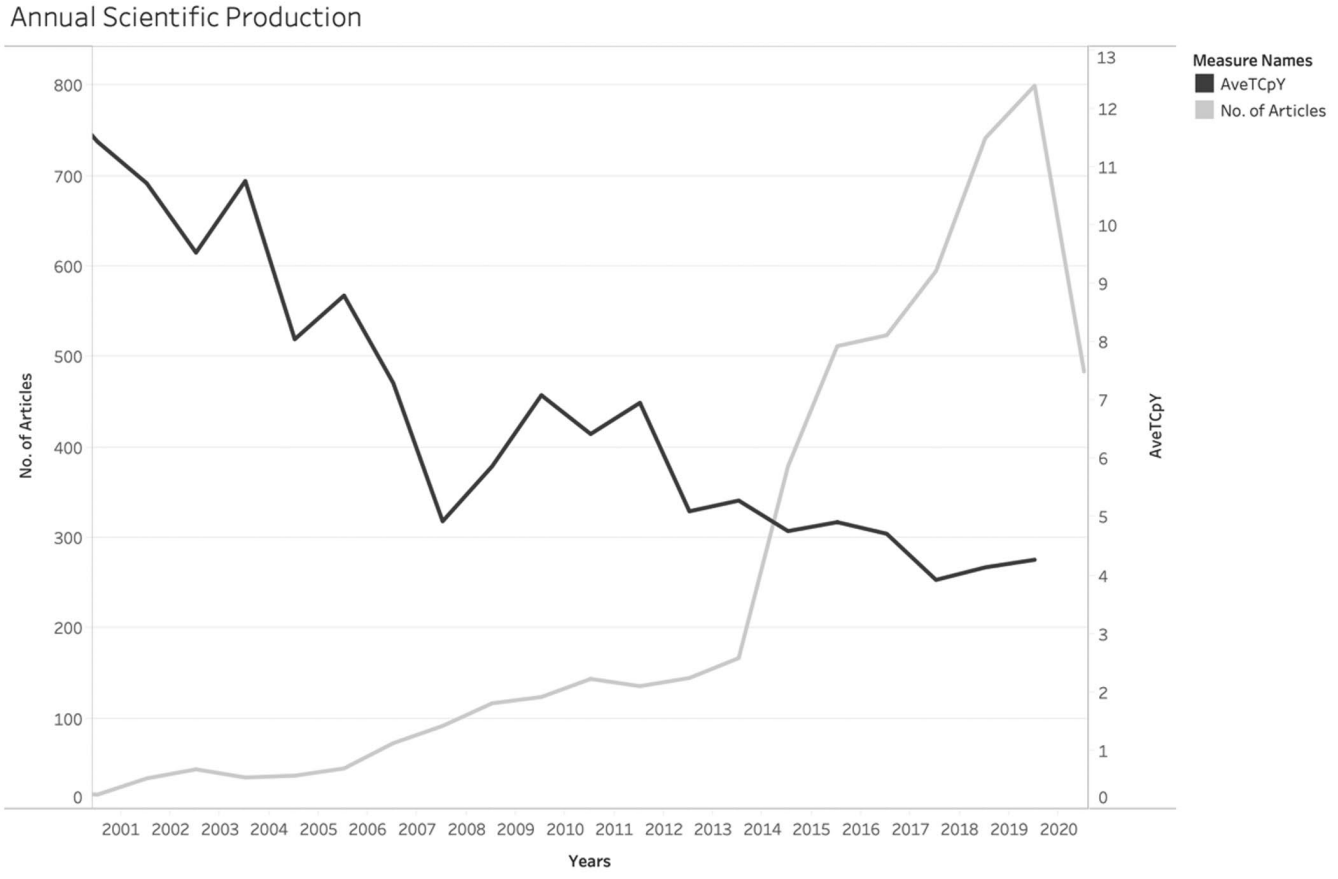


FIGURE 3 Annual scientific production

TABLE 3 The most influential research papers

AveTCpY (Top 10)			TC (Top 10)		
Paper	**AveTCpY**	**TC**	**Paper**	**TC**	**AveTCpY**
Chevalier JA, 2006, J Mark Res	151.06	2,417 (1)	Chevalier Ja, 2006, J Mark Res	2,417	151.06 (1)
Berger J, 2012, J Mark Res	92.7	927 (7)	Kozinets RV, 2002, J Mark Res	1,481	74.05 (4)
Verhoef PC, 2015, J Retail	91.28	639 (11)	Childers TL, 2001, J Retail	1,341	63.85 (5)
Zhu F, 2010, J Mark	84.33	1,012 (6)	Novak TP, 2000, Mark Sci	1,304	59.27 (7)
Kozinets RV, 2002, J Mark Res	74.05	1,481 (2)	Godes D, 2004, Mark Sci	1,135	63.05 (6)
De Vries L, 2012, J Interact Mark	72.1	721 (9)	Zeithaml VA, 2002, J Acad Mark Sci	1,020	51 (9)
Kozinets RV, 2010, J Mark	67.42	809 (8)	Zhu F, 2010, J Mark	1,012	84.33 (3)
Chu SC, 2011, INT J Advert	64.55	710 (10)	Wolfinbarger M, 2003, J retail	971	51.10 (8)
Childers TL, 2001, J Retail	63.86	1,341 (3)	Srinivasan SS, 2002, J Retail	958	47.9 (10)
Godes D, 2004, Mark Sci	63.06	1,135 (5)	Berger J, 2012, J Mark Res	927	92.7 (2)
Novak TP, 2000, Mark Sci	59.27	1,304 (4)	Yang ZL, 2004, Psychol Mark	855	47.5 (11)

Note: Figures in the parentheses indicate the order.
Abbreviatons: AveTCpY, average citations per year; TC, total citations.

identify the most influential papers. Table 3 lists the top ten articles based on both their TC and AveTCpY. Chevalier and Mayzlin (2006), Kozinets (2002), and Childers et al. (2001) are the top three papers according to the TC ranking. Chevalier and Mayzlin (2006), Berger and Milkman (2012), and Verhoef et al. (2015) are the most cited ones based on the TCpY measure.

Chevalier and Mayzlin (2006) are the authors of the most influential research paper that drives the digital consumer research field. In their seminal work, they examined the online book reviews' effect on sales of books and discovered the increase in sales with the improvements in a book's review and pointed out the importance of one-star review, whose impact is more critical than a five-star

review. Kozinets (2002) is the author of the second popular research article that propounded netnography as a research technique for online marketing research to provide consumer insight. Another noticeable study was by Childers et al. (2001). In their study, they researched the utilitarian and hedonic dimensions to engage digital consumers. In the early years of digital consumer studies, they introduced "webmosphere" to the research field.

Performance of sources (journals)

Table 4 shows the top five journals with the highest number of significant publications in the digital consumer behavior domain. According to the table, the *Journal of Retailing and Consumer Services* has published the highest number of articles (466). It indicates the widespread research and application of online consumer studies in the retailing sector. The impact of retailing studies also demonstrates itself in h-index and TC rankings, as the *Journal of Retailing* is in the top three sources in both lists. As expected, the *Journal of Interactive Marketing* is at the top for all three measures.

Country-Based performance (country productivity)

Country productivity can also shed light on the performance of any research domain. By using bibliometrics, we analyzed the contribution of countries to the digital consumer behavior literature. Table 5 and Web Appendix A presents the top countries that contribute to online consumer studies. According to the table, the most significant contribution is from the United States, with 1,855 publications (35.6%), far higher than the other countries. It is followed by the United Kingdom (405 articles—7.7%) and Australia (367 articles—7%). In terms of single-country publications (SCP) and multiple-country collaborations (MCP). Again, the United States takes the lead in terms of both SCP and MCP. When comparing SCP with MCP, it is correct to say that there are relatively few country collaborations in the online consumer research domain, consistent with the modesty of cross-cultural research in digital consumer behavior (see Figure 4 for details on the "Cultural Influence" topic).

TABLE 4 The most influential sources

Author	NP (rank)	H_index (rank)	TC (rank)
Journal of Retailing and Consumer Services	466 (1)	39	6,919
European Journal of Marketing	241 (2)	39	5,102
Journal of Interactive Marketing	238 (2)	59 (1)	13,952 (2)
Psychology&Marketing	224 (3)	44	7,434
Marketing Science	215 (4)	56 (2)	13,415 (3)
Journal of Advertising Research	168 (5)	36	4,604
Journal of Marketing Research	153 (6)	51	13,398
International Journal of Retail & Distribution Management	145 (7)	22	1,819
International Journal of Market Research	135 (7)	24	2,616
Journal of Retailing	135 (7)	53 (3)	15,083 (1)

Abbreviations: NP, number of papers published; TC, total citations.

TABLE 5 Country productivity

Country	NP	Freq.	SCP	MCP
USA	1855	0.356	1473	382
UK	405	0.077	249	156
Australia	367	0.070	242	125
China	333	0.063	197	136
Germany	227	0.043	148	79
India	223	0.042	199	24
Canada	171	0.032	85	86
France	152	0.029	82	70
Korea	149	0.028	77	72
Netherlands	140	0.026	71	69
Spain	124	0.023	83	41
Italy	82	0.016	45	37
Finland	70	0.013	47	23
Sweden	70	0.013	46	24
Portugal	65	0.012	51	14

Abbreviations: MCP, multi-country articles; NP, number of papers published; SCP, single-country articles.

Topic-based performance

The last performance measure that we analyzed is topic productivity. Figure 4 presents the number of documents (NoD) on each topic of online consumer research. The quantitative measure, NoD, shows that the highest number of publications are on *Advertising Effectiveness* (323), followed by *Social Media Engagement* (282) and *Online Reviews* (228). The growing concern in these topics indicates the interest in coupling advertising, social media, and online reviews.

The most cited topics give us an idea about the structure of the subjects that have most studied and contributed to the development of the field. According to Figure 5, eWOM, social media engagement, and online reviews (along with omnichannel marketing) are the most cited, thus researched, topics. The fact that the first three subjects are highly related suggests academia's interest in social media studies. These three subjects are very convenient to be connected, even intertwined. One of the most cited, omnichannel marketing, indicates the scholars' interest in the studies on integrating the channels to interact with customers.

5 | TOPIC TRENDS AND SCIENTIFIC EVOLUTION OF DIGITAL CONSUMER BEHAVIOR

While the systematic review sheds light on the online consumer research domain broadly, it does not give us an idea about how the discovered topics evolved. Moreover, it requires further analysis to understand what the newer studies should build on to advance our understanding of the subject. To address these issues, we turned our

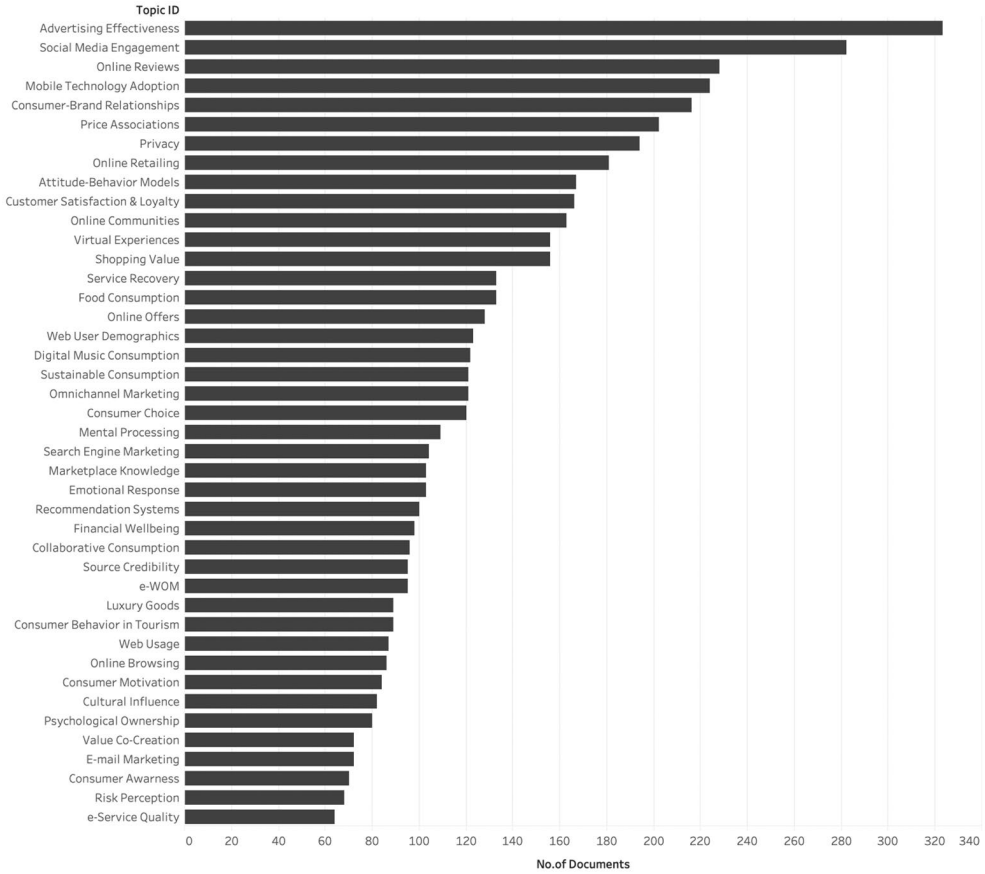


FIGURE 4 Topic-based annual scientific production

attention to trends in the topics (Figure 6). Lamberton and Stephen (2016) suggested that there are movements in every 5 years. We also observed a shift in the movements of the topics in 5-year intervals in digital consumer behavior research.

5.1 | Era 1 (2000–2004): internet shapes and changes consumer behavior

5.1.1 | Theme 1: defining the characteristics of connected consumers

Early in this period, understanding how consumers use the web and their demographics were essential to the marketers. This necessity led to the studies on web user demographics (e.g., Burnett, 2000; Rodgers & Harris, 2003), web usage (e.g., Dou, 2004; Park & Jun, 2003), and relatedly, recommendation systems (the seed articles were by Ansari et al., 2000; Senecal & Nantel, 2004) (Figure 6). Researchers pointed out that connected consumers could get the best from the Internet only if the systems recognized them. The most prominent and the easiest to collect user data was/is gender. Thus, this period was marked by gender-oriented studies (e.g., Burnett, 2000; Dholakia & Chiang, 2003). For example, as an early article of the era, Rodgers and Harris (2003) compared men and women for the satisfaction they got from online shopping and offered a conceptual framework cited by many others (with an AveTCpY score of 10.11).

In 2002, Kozinets examined online communities qualitatively and paved the way for netnographic studies to understand web community behavior better. Kozinets showed academia how the online communities—precursors of the social networks—are the reliable sources of data for the ones seeking to have an insight into the digital consumer. Meanwhile, Lohse et al. (2000) presented panel data to understand consumer web usage and collect demographic data in the early years of the studies.

5.1.2 | Theme 2: internet as a new means for disseminating information

During this era, a new form of data source was recognized, which was search engines. While consumers identified search engines as informative settings, scholars were exploring the attributes of user characteristics. Augmenting the two themes—search engines and user behavior—led to search engine marketing-related studies (as an early example, Dou et al., 2001). It was one of the fundamental topics that emerged in the early years.

While studies on search engine marketing provided a new perspective on digital marketing, another area of research was discovered as consumers' potential as information sources. This new realization also

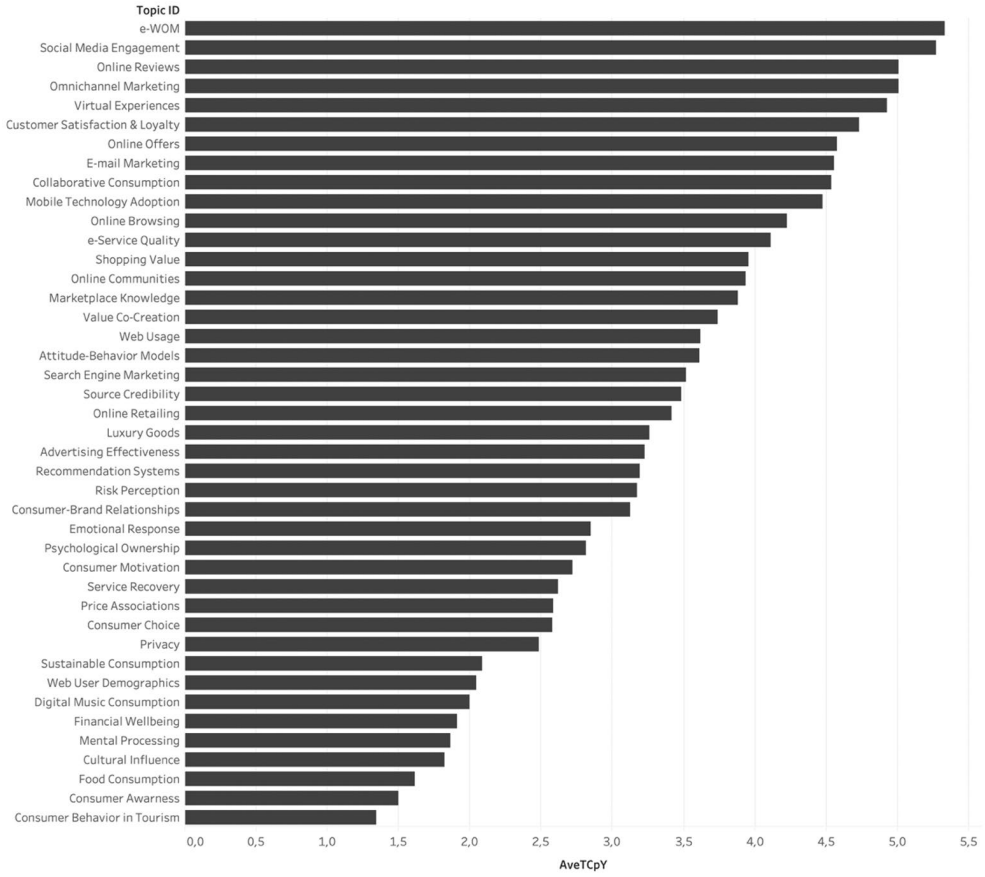


FIGURE 5 Topic-based AveTCpY

accelerated growth in another topic, "e-WOM," between 2000 and 2004. Two important articles on this topic were written by Godes and Mayzlin (2004) and Dellarocas (2003). By analyzing newsgroup data Godes and Mayzlin (2004) investigated e-WOM activities on TV show preference. The importance of this study mainly lies in its findings. By discovering the interaction between offline and online environments, this study paves the way for next decade's popular concepts like zero-moment-of-truth—ZMOT (Lecinski, 2011), webrooming (Flavián et al., 2016), and omnichannel retailing (Blom et al., 2017). They were able to identify the interaction of two environments, which becomes an important issue that will attract attention from both academia and practice. By defining e-WOM as a feedback mechanism, Dellarocas (2003) highlighted the challenges and opportunities created by word-of-mouth networks.

5.1.3 | Theme 3: consumer behavior in new shopping venues

The third theme was characterized by online retailing, consumer choice, consumer awareness, recommendation systems, and price associations. Using the Internet as a sales channel was a revolutionary turn in the history of retailing, which benefitted both parties in e-commerce, the consumers and the companies. Researchers heavily studied these topics during the early years of online consumer studies; however, the interest gradually decreased in the following eras (see Figure 6). Despite the decline of these topics by the end of this era, academia kept examining them in different contexts as they evolved in the marketplace.

Between 2000 and 2004, Internet was viewed as a utility by the commercial entities in creating awareness and navigating consumer choices. While companies conceivably benefit from the Internet, consumers could receive goods that better fit their preferences, along with information. Thus, a recognized benefit of the Internet is assisting consumers in their searches and making better choices. For considering fine-tuned choice-making, recommendation systems were there to help. A study by Häubl and Trifts (2000) built the bridge between recommendation agents and consumer decision making. Pursuing goal-directed behavior theory, they discovered that interactive recommendation agents facilitate and enhance consumer decision making. Another study investigating the impact of recommendation systems in a world of product and preference heterogeneity was written by Ansari et al. (2000). They compared the content and collaborative filtering methods by focusing on how recommendation systems work and using a large data set.

Consumer choice and awareness studies were rooted back to the early ages and built on theories like consideration set theory. Pioneering research by Mandel and Johnson (2002) anticipated visuals of web pages' influence on choice. Using experimental research, they investigated interrelationships between priming type and consumer expertise. Their study revealed that as consumers' expertise increases, contextual cues do not apply in their decision making.

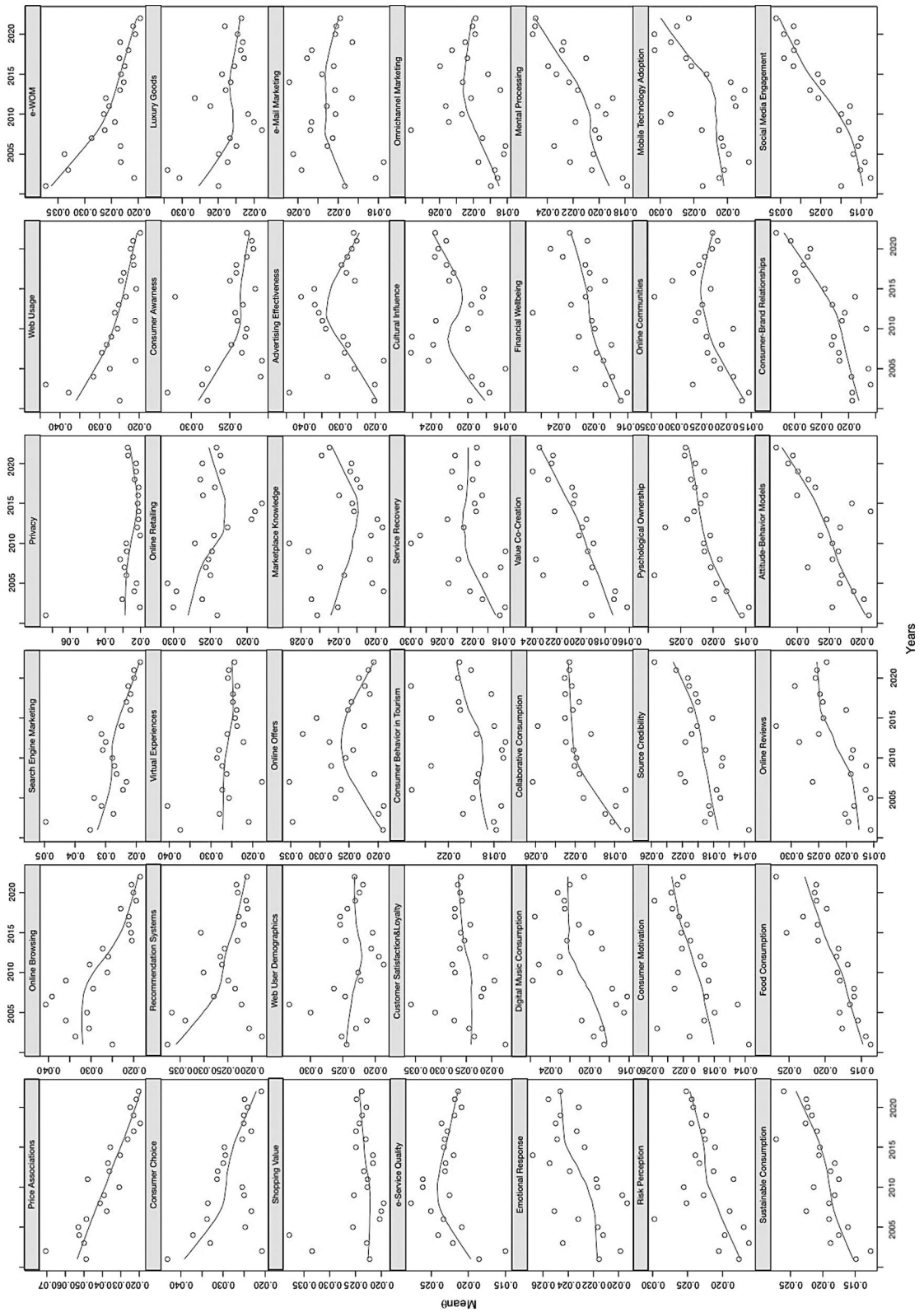


FIGURE 6 Topic trends

As consumers were seeking information, they valued price-related information as the most important. Pricing also created a dilemma for retailers in the early 2000s, as they were adjusting themselves to the new transparent pricing strategies and more intensified competition. Thus, it became essential to understand the price sensitivity of the consumers through research. Lynch and Ariely (2000), taking the lead, scholars of the period began to work on price associations, like online auction pricing (e.g., Ariely & Simonson, 2003; Jap, 2002, 2003).

5.2 | Era 2 (2005–2009): the new boundaries of online experiences

Between 2000 and 2004, academia's main interest was in the individual consumer characteristics and their response to the transactional side of e-commerce. As consumers' engagement with online retailing formats has progressed, academia moved its interest toward online experiences and the value and costs they create.

5.2.1 | Theme 1: understanding the new rules of one-to-one communications

E-mail marketing was one of the very early tools used as a means of customized communication. As a convenient tool, it was extensively used by companies to form one-to-one communications with their customers. As e-mail was one of the prominent tools of online commerce, e-mail marketing attracted the interest of academia (for some early studies refer to Bonfrer & Drèze, 2009; Chiu et al., 2007; Drèze & Bonfrer, 2008; Moustakas et al., 2006).

As the starting point, Trusov et al. (2009) focused on the "refer to your friend" type of e-mails which they considered a form of eWOM. Once again, consumers are turned into information disseminators working for the companies. With this realization, amass of literature emerged to explain the drivers of e-mail disseminating behaviors, led by researchers like Chiu et al. (2007). In their article Chiu et al. (2007) described the characteristics of recipients who disseminate the e-mails with the help of the classical persuasive communication model. Working with a sample from Taiwan, they discovered that as the sender becomes a close interpersonal source, the receivers' tendency to forward the message increases. Their work was able to capture approximately 10 citations per year since its publication.

5.2.2 | Theme 2: seeing beyond the product

As the research in the previous era dug into the web usage behavior of the consumers, consumer awareness, and choice, it became salient to create a stimulating environment for the cyber consumers (Novak et al., 2000). By that time, researchers argued that there should be more focus on the customer experience resulting from the customer—e-retailer interactions. Meanwhile, as the digital resources (e.g., panel data, data to be used for netnographic studies, online community data) provided new data types to the researchers, the prevailing approach in online consumer research headed to develop an understanding of how to create the best virtual experience with the tremendous respect for consumers' privacy (for some examples, refer to LaRose & Rifon, 2007; Lwin et al., 2007; Norberg et al., 2007). A significant study in this context investigated antecedents and consequences of the viral experience (Novak et al., 2000). Drawing from flow theory and using structural equation modeling (SEM) as the unit of analysis, they were able to identify strong relationships with flow experience and web usage duration. As academia tried to discover the web usage behavior, studies as Jepsen (2007) emerged. In his study, he described the factors affecting the information search.

The most critical dimension of virtual experience stems from e-services. Augmenting the virtual experience quality with the e-services brought the concept of e-service quality to the attention of the researchers. With the topic is in its initial stages, there are studies investigating the customer side (Yi & Gong, 2008), the system side (Bronner & Kuijlen, 2007), and the retailer side (Venkatesan et al., 2007). By 2005 the studies on the e-service quality were accelerated (see Figure 6), and the most influential studies were published in the 2010s.

The best e-service experiences and personalized recommendations occurred at the dispense of consumer data. With the new technologies that facilitated the collection, storage, and distribution of consumer data, consumer privacy became one of the topics that deserved great attention. While the consumers sought to maximize the benefits from the online environments with the minimum personal data they supply, commercial entities sought to get the most data. This situation found its ground in a study by Norberg et al. (2007), in which they refer to this dilemma as the "privacy paradox."

5.3 | Era 3 (2010–2014): creating value for the cyber consumers

As Era 2 was concerned with augmented attributes of the virtual experiences like e-service quality and consumer privacy, it brought value delivery to facilitate persuasion, satisfaction, and loyalty to the attention of the researchers. Thus, the concept of value forms the base topic of Era 3.

5.3.1 | Theme 1: persuading the online consumer

One of the most substantive topics in online consumer research is digital advertising. By the mid-2010s, academia's common interest was to discover the effectiveness of this new channel. The interactive nature of online ads and the clickstream data provided a more realistic approach to measuring advertising effectiveness. Although traditional advertising was also assessed based on effectiveness, compared with its digital alternatives, the results of those studies stayed rather vague. As clickstream data was a precious asset in measuring advertising effectiveness, during this Era, a group of studies was using it to understand the interaction between consumer browsing patterns

and advertising effectiveness (Goldfarb & Tucker, 2011; Lambrecht & Tucker, 2013; Terlutter & Capella, 2013; Tucker, 2014).

The rapid improvements in digital advertising led to new techniques like retargeting within the concept of online offers, a topic that found ground in Era 3 (Berger & Milkman, 2012; Bower & Maxham, 2012; Onishi & Manchanda, 2012). E-mail marketing in the previous era was the processor of online offers. As the topics intertwined, other subjects like user-generated content, online reviews (e.g., Floyd et al., 2014; Moon et al., 2014; Zhu & Zhang, 2010), online offers, word-of-mouth marketing (e.g., Berger and Milkman, 2013; Chen et al., 2011; King et al., 2014; Kozinets et al., 2010), and their effectiveness became essential in this era. As proof, in their effort to examine the moderating effect of the product and consumer characteristics on the influence of online consumer reviews on product sales, Zhu and Zhang (2010) remarkably captured an average of 84.3 citations per year. Once again, the potential of the Internet as a marketing tool was perceived.

5.3.2 | Theme 2: improving online value delivery and extending the channels of digital marketing

One of the marketing theory fundamentals is the concept of value, which is essential to understanding consumer behavior (Gallarza et al., 2011; Hirschman & Holbrook, 1982). The value as a construct explains different sides of consumer behavior before (e.g., purchase intention), during, and after purchase (e.g., patronage). While scientists researching the digital environment are working on the meaning of value for the connected consumer, studies on the utilitarian and hedonic values of shopping, which are the components of value, gained momentum. Empowered with utilitarian and hedonic values, many researchers discussed online shopping value. Childers et al. (2001), the seed article in the online context, persuasively concluded that there are hedonic and traditional utilitarian dimensions of engaging in the new immersive retail setting.

Moreover, the roots of the concept of relationship marketing were based on the value construct (Lin & Wang, 2006). Many others followed, investigating the effect of shopping value on e-consumer satisfaction and loyalty (e.g., Manthiou et al., 2014; Punj, 2011; Shankar et al., 2011; Yim et al., 2014).

The value created for and delivered to the consumers is inextricably tied to major marketing constructs like e-service quality, trust, customer satisfaction, and, mainly, perceived price. In light of the leading studies by Holbrook and Corfman (1985) and Parasuraman and Grewal (2000), the direct relationship between value and these constructs opened the door for many others (e.g., Klaus, 2013; Marbach et al., 2016; Sweeney et al., 2014; Tirunillai & Tellis, 2014). The early-discovered connection was taken to the online scene by Yang and Peterson (2004). They argued that companies striving for loyalty should focus on customer satisfaction and perceived value in very competitive environments like the Internet. This article was one of the most impactful research, linking satisfaction, loyalty, and value, and cited by many others.

Through 2014, emerging topics as multichannel and mobile remained unexplored for research (Lamberton & Stephen, 2016). E-commerce firms integrate all the channels/customer touchpoints used to interact with consumers to provide a better customer experience, so-called omnichannel marketing. In their groundbreaking article, Verhoef et al. (2015) stated, "Whereas multichannel was in vogue in the last decade in retailing, we now observe a move to so-called omnichannel retailing" (p. 174). The article was so impactful that it captured an average citation score of 92 articles per year. Researchers and practitioners should have understood the omnichannel world deeply since it helped consumers interact with brands and communicate with each other to share their experiences. With the apparent need, by 2015, there was a growing interest in studies on omnichannel marketing (with the early examples like Dinner et al., 2014; Yoo & Lee, 2011), which later became relatively steady with a slight decrease (see Figure 6). In that Era, mobile was at the very early stages with very few studies yet; the most remarkable one being Atkinson (2013)'s study in which he investigated the use of QR codes in shopping.

5.4 | Era 4 (2015–2019): consumers create and share content

Between 2015 and 2019, 2,752 published articles focused on diverse topics. During this era, consumers' interaction with technology and digital media has created significant growth in consumer empowerment. The digital consumers moved from simple decision-making agents to more productive and proactive agents that freely create and share content via many digital channels. At the same time, as their savviness with digital technologies improved, they started to interact with digital channels in different ways. Academia has moved beyond considering them as simple decision makers and started investigating their emotional responses to the marketing offerings. This era was all about consumer engagement with digital channels and digital media.

5.4.1 | Theme 1: understanding consumer engagement with digital media

In the previous years, marketers were using digital channels for advertising and selling purposes. In the previous era, academia's interest was in measuring advertising effectiveness in digital channels. Companies initiated these advertising efforts, and consumers were simply receivers. During Era 4, consumers' willingness to create and share content has generated a new tool for marketers, "user-generated content (UGC)," an extension of eWOM, which was one of the topics discovered in Era 1. Studies on UGC was diversified to include many topics, as online reviews (Bilro et al., 2019; Humphreys & Wang, 2018; Van Laer et al., 2019), eWOM (Babić Rosario et al., 2016; Chu & Kim, 2018), and the content generated on online brand communities (Arvidsson & Caliandro, 2016; Fernandes & Remelhe, 2016; Hollebeek et al., 2017).

Consumers were using different means to share their experiences via digital channels and engaging in online brand communities. During this Era, academia investigated the impact of online reviews, whose seeds were sown in the early 2000s, on consumers' decision making with sophisticated analysis. For example, Berezina et al. (2016) used text mining to understand customer satisfaction's impact on review valence and recommended service category. Likewise, de Langhe et al. (2016) analyzed online ratings of 1,272 products to document consumer reliance on reviews before making purchase decisions. A significant number of papers used novel approaches like text-mining to analyze customer reviews and understand their interaction with marketplace success. An essential article by Humphreys and Wang (2018), during this period, explained the use of automated text analysis and computational linguistics in consumer research.

To share their thoughts and feelings on products, consumers were using third-party venues and forming online communities. The most impactful study on brand communities has been by Kozinets (2002), who introduces netnography methodology to investigate online communities in the first Era of digital consumer studies. Using netnography, Hollebeek et al. (2017) analyzed 20 luxury handbag community members' entries to develop a virtual community engagement process model. Besides qualitative inquiry, online communities have also been investigated with a quantitative approach. Drawing from social identity theory, in online brand communities, Prentice et al. (2019) studied the relationships between social identification, consumer engagement, and purchase intentions. In another study pursuing a similar approach, Mousavi et al. (2017) found that consumers' commitment to a brand creates resistance to negative WOM. Their research also suggests that different levels of brand commitment in online communities can create differing cognitive, affective, and conative responses between community members. Consumer researchers have tried different ways to understand brand-related communications and their marketplace outcomes over the years using different contexts. This point of view has also accelerated the growth in different topics like social media engagement, value co-creation in the upcoming years.

Consumer engagement with digital media goes beyond UGC. Consumers use digital media not only to create content but also to share. As years passed by, consumers embraced the power of sharing over ownership. Since the 2010s, collaborative consumption and social sharing have been in the scope of consumer behavior theory, but the topic has reached its true potential during this Era. Collaborative consumption activities, primarily associated with sharing economy, include renting, lending, and swapping different items using digital media platforms. Some seminal studies on the subject include papers by Ter Huurne et al. (2017), Hwang and Griffiths (2017), and Dellaert (2019). In his highly cited article, Möhlmann (2015) surveyed the users of car2go and Airbnb and applied PLS-SEM modelling to show that consumers' satisfaction with the process is mainly explained by the benefits they receive. This paper has triggered a significant production on this topic, with nearly 59 average citations per year.

5.4.2 | Theme 2: understanding consumer engagement with digital possessions

As new digital venues emerged, a new form of goods, which are purely digital in nature, was created. These goods were also an element of consumption. Digital consumers were engaging with the possessions like social media accounts, games, music, videos, and avatars. Especially digital music consumption behavior and consumers' phycological ownership of digital possessions were examined largely under this context (e.g., Butcher et al., 2017; Datta et al., 2018; Iqani & Schroeder, 2016; Mahmood & Sismeiro, 2017; Mu et al., 2018). This theme is an extension of virtual experiences in Era 2. Bardhi and Eckhardt's (2017) seminal article on liquid consumption is a seed article under this theme. In their article, they described liquid consumption as an access-based and dematerialized phenomenon. They stated that this identification is needed to explain consumer behavior within digital environments, and it can be studied with relation to different issues like consumer identity, presumption, value associations, and consumer–brand relationships. The article's success also lies in its impact, as it was able to generate almost 20 citations each year since it was published in 2017.

5.4.3 | Theme 3: experiential and emotional dimensions of decision making

With the growth of omnichannel retailing, academia moved its focus from operational issues and started investigating different aspects like online value delivery since the early years of the 2010s. Consumer responses to value delivery went far beyond decision making. As an extension of brand communities, brand attachment, love and hate, and consumers' different emotional responses to marketing stimuli were also the focal point during this Era. Academia tested different responses to store atmospherics (Eroglu et al., 2003), UGC (Bilro et al., 2019; Tang et al., 2014), online reviews (Van Laer et al., 2019; Wang & Chaudhry, 2018; Yin et al., 2017), eWOM (Babić Rosario et al., 2016; Bhandari & Rodgers, 2018; Wilson et al., 2017), cross-channel marketing (Curina et al., 2020), online consumer experience via new technologies (Bleier et al., 2019; Javornik, 2016; Petit et al., 2019) in different contexts like service environment and social media. Among these studies, a great deal of effort was dedicated to investigating consumer self-efficacy (van Esch et al., 2021; Han et al., 2016; Son & Lee, 2021; Tsarenko & Strizhakova, 2013). As these new environments were new and novel to consumers, academia was also trying to exert the actual emotional outcomes they created.

Another domain that exhibited significant growth was pursuing a cross-cultural perspective. Digitalization is a global phenomenon, and digital companies can sell and deliver goods without geographical boundaries. This realization has created an interest in defining cross-cultural consumption patterns. A seed article written in this context empirically examined the relationships between consumers' evaluation of online retailers' reputation, e-satisfaction, and e-loyalty cross-culturally (Jin et al., 2008). The cross-cultural

examination of consumers exceeded retailing formats and venues as well. In their study, Alsaleh et al. (2019) investigated the cross-cultural differences in social media adoption. Using a student sample of university students from Kuwait and the United States, they measured cultural differences in Instagram adoption. Although the cross-cultural examination of digital consumers has found a ground in digital consumption research, its impact has not been very significant between 2000 and 2021 (for details, see Figures 4 and 5).

5.5 | The present era (2020–future): what is waiting ahead

In 2020 and early 2021, 1,284 articles were published in marketing journals that investigate digital consumer behavior. The rapidity in the growth shows that digitalization has become a significant subject in consumption theory. By looking at these articles and investigating topic trends (see Figure 6 for details), we can estimate the focal themes expected to grow in the future.

5.5.1 | Theme 1: understanding digital consumption with existing theories

Although there has been substantive growth in new domains, this Era has witnessed a significant interest in classical consumer behavior subjects. Previously visited models and theories were being used to investigate digital consumption. Topics like mental processing, consumer motivation, attitude-behavior models, and consumer-brand relationships were among the ones that exhibited significant growth. A significant example from these studies is Park and Yoo (2020), who report on the relationship between interactivity created by augmented reality and consumer responses. They identified the relationship between perceived interactivity and consumer attitudes and behavioral intentions by pursuing a mental imagery perspective and using an all-female sample. Especially the studies that fall under the topic of mental imagery mostly try to identify the possible outcomes of interactivity in retailing and gaming environments.

Digital marketing and consumption were also asking for an adaptive theoretical framework. In this sense, academia's interest was turned to Ajzen and Fishbein's attitude-behavior model (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). As a result, we witnessed an increase in studies that empirically test such models during the new Era.

5.5.2 | Theme 2: consumers take care of themselves and others

As people constantly face crises in their daily lives, certain subjects gained momentum in digital consumption studies. The environmental issues and people's increased awareness of them and the recent COVID-19 health crisis have sparked an interest in topics like sustainability, well-being, and value creation. These topics are expected to grow in the upcoming years.

Especially the studies that fall under sustainable consumption mostly deal with collaborative consumption and renting activities (e.g., Lee & Chow, 2020; Lee & Huang, 2020; Luo et al., 2020). The topic of collaborative consumption, which reached its peak in the previous period, was further examined with the viewpoint of sustainability. For example, Lee and Chow (2020) investigated consumer attitudes and behavioral intentions to online renting. Their research has shown that consumers' attitudes and behaviors were highly related to the offering of ecological value. In another study the impact of green advertising skepticism on consumers' purchase intentions was examined in the context of social media (Luo et al., 2020). As stated earlier within the topic of sustainable consumption a group of studies also investigate this topic in conjunction with consumers' renting activities. In their study Lee and Huang (2020) explores consumers' perceptions online fashion renting behaviors based on ecological importance and cultural compatibility by using a sample from United States and China.

5.5.3 | Theme 3: mobile is internet

Mobile technology adoption is another topic that has grown significantly in the last 2 years. Indeed, in the early 2000s, mobile research was on the horizon (see Figure 6). Due to the proliferation of smartphones in the 2000s, consumers have become constantly connected. Thus, understanding the effects of mobile technologies on digital consumer life has become a necessity for effective marketing. However, as an emerging topic, the mobile adaptation of the digital consumer and mobile marketing remained a minor topic for researchers through 2014 (Lamberton & Stephen, 2016).

A considerable number of studies were investigating issues related to mobile channel adoption (see Figure 4). Following this trend, one of the most influentials, Vahdat et al. (2021) surveyed mobile app users. They applied the technology acceptance model (TAM), which has widespread use considering its applicability to many subjects and extended the model with social factors as peer influence to determine the possible impact on consumers' behavioral intentions. Augmenting UGC with mobile, Ghose and Han (2011) discovered an inverse relationship between individuals' consumption and production of the content. After understanding the basics of the topic, most of the current studies examined mobile adoption in the context of services marketing and advertising.

5.5.4 | Theme 4: social media is here to stay

The topics of value co-creation, eWOM, mobile technology, collaborative consumption, and online communities revealed the importance of social media engagement in determining the effectiveness of media engagement and source credibility studies in consumer responses. As one can observe in Figure 6, social media studies have exhibited significant growth in the last decade, capturing

many citations (see Figure 5). Studies on social media investigate a broad number of subjects, including eWOM (Bu et al., 2021; Park et al., 2021), consumer engagement (García-de-Frutos & Estrella-Ramón, 2021; de Oliveira Santini et al., 2020), and branding (Dabbous & Barakat, 2020; McClure & Seock, 2020; Schivinski et al., 2021). Another article by Appel et al. (2020) described the possible future of social media according to marketing-related issues. They identified nine themes for different stakeholders, including individuals, firms, and public policy, using academic research in the field.

Another subject that is highly associated with social media studies is source credibility. Source credibility as a topic was used to investigate the impact of social media influencers and celebrities' impact on companies branding activities. Sokolova and Kefi (2020) examined the relationships between source credibility and purchase intentions. By collecting survey-based data on beauty and fashion bloggers and applying the PLS-SEM method to test their model, they were able to identify strong relationships between source credibility and consumers' purchase intentions.

6 | PROPOSITIONS AND FUTURE RESEARCH AGENDA

The purpose of this paper is to present information on evolution of digital consumer studies in marketing journals to provide a useful resource for future research. By looking at two decades of research on digital consumers and analyzing article impact over the years with topic modeling and bibliometric analysis, we identified a list of concepts associated with the future of this research domain. Based on the trends and evolution of the topics, first, we identified the gaps in the research and outlined future research directions. We organized the directions into four aspects: contextual, thematic, methodological, and theoretical (for details, see Table 6). After explaining each direction, we have propositions and suggested future studies (Table 6) that may develop an interest in the scholars of the subject.

6.1 | Contextual agenda

Understanding digital consumption requires analyzing the environments it takes place in. Consumer-to-consumer interactions and multichannel retailing environments have dominated the current conceptual landscape of digital consumption research. In the context of the consumer-to-consumer interactions, academia's interest was on issues like social media engagement (Chu & Kim, 2011; De Vries et al., 2012; Muntinga et al., 2011), online reviews (Chevalier & Mayzlin, 2006; Ludwig et al., 2013; Moe & Trusov, 2011), and online communities (Adjei et al., 2010; Kozinets, 2002). Within the context of multichannel retailing, researchers have investigated a significant number of issues like multichannel retailing environments (Ofek et al., 2011; Zhang et al., 2010), mobile technology adoption

TABLE 6 Conceptual, theoretical and methodological future research agenda for digital consumer behavior

Themes
What is the direction that digital consumption research evolves in the future? What are the relevant subjects and topics that will be investigated?
Theme 1: technology
What are the impacts of immersive technologies on digital consumers' decision making?
Consumers' motivations to accept AR and VR
Effects of AI, AR, and VR on the consumer journey
The ways that interactive technologies be used in managing stronger customer relationships
The ways interactive technologies enhance value to the company and customers
The perceived risks with new technologies
The ways to build trust towards new technologies
Theme 2: the pandemic consumer
Uncertainties associated with the pandemic regarding digital consumers
Financially distressed consumer's behavior during Covid−19 in digital channels
The factors that affect the permanency of the digital pandemic consumer behavior
Theme 3: consumer experience
The effect of self-service applications on service delivery
The impact of information overload on consumer engagement
The enhanced relationship between brand disengagement and UGC
Issues that are relevant to consumer experience in terms of building consumer trust toward new technologies
The variables of immersive technologies that will accelerate interactivity in digital settings
The effect of culture on the acceptance of new technologies
The impact of service robots and chatbots on consumer experience in virtual environment
Theory
Which theories will be dominant and be used to explore digital consumer behavior? Is there a need for new theories?
Development of the new theoretical behavioral models to measure digital consumption
Assessment of existing theories on their ability to measure digital consumer behavior in different aspects
Improvement of the existing behavioral models with new variables
Measuring beyond the decision making and intention (e.g., actual behavior)
Incorporating digital consumers' characteristics, psychological and social situations in existing theoretical models
Development of the new theoretical behavioral models to measure digital consumer experience
Development of new theories to explain downstream marketing outcomes

TABLE 6 (Continued)

Methodology
How can we significantly measure digital consumer behavior? What kind of methodologies will be applicable, and emerging? What kind of novel approaches will be pursued?
The ways to measure different aspects of digital consumption
Development of new measures and methodologies required to investigate new technologies that affected consumer behavior on digital environments
The application of field experiments to understand consumer behavior on digital environments
Application of the new behavioral models to measure digital consumer experience
Application of the existing behavioral models to understand digital consumer behavior
Use of data collected from social network to identify consumer behavior under predefined situations/circumstances
Exploring new methods that could be used to identify the digitally connected consumer decision process
Investigating emerging quantitative and qualitative methods to analyze big data to understand the connected consumer
Use of existing methodologies to measure the effect created by sensory marketing in online environments
Big data as a source to be incorporated into research design to define innovation gaps, product-service enhancements, and consumer satisfaction levels
Exploring the opportunities for non-participative qualitative inquiry

(Shankar et al., 2010; Wang, Bendle, et al., 2015), price associations (Diehl et al., 2003; Lynch & Ariely, 2000), customer satisfaction and loyalty (Shankar et al., 2003; Wolfinbarger & Gilly, 2003), shopping value (Childers et al., 2001; Hansen, 2008) and service recovery (Fassnacht & Köse, 2007; Montoya-Weiss et al., 2003). Most of the subsequent studies involve multiple product categories and industries.

First of all, using multiple product categories and industries in a single study can increase the possibility of wrong assumptions and raises questions of coherence between these product categories and industries, as they do not particularly provide insights into the differences between different product categories and industries. Future research should address this in the context of UGC and retail settings.

Second, although there is a dominance of consumer studies in social media and retailing environments, online consumption happens in multiple environments. Digital innovations create new interfaces and environments that are used for consumer interactions and electronic retailing. The virtual consumer experiences in multiple environments besides retailing and social media should be addressed by future research.

Regarding the context of sampling units, the majority (59%) of the empirical studies preferred to use digital channel users (including social media, mobile users, and online shoppers) as the sampling unit. There was not a significant difference in terms of platforms used to reach the sampling units. Academia has benefited from both offline and online platforms to collect data.

Finally, as described before (see Table 5 for details), the majority of papers (66.7%) on digital consumer behavior were derived from North America (36.8%) and European countries (29.9%). Such a strong emphasis on western countries can create a challenge for the complete portrayal of digital consumers. Future research should pursue a more multi-cultural approach to define country-specific differences in terms of online channel use, technology adoption, and digital channel engagement to understand digital consumption fully.

6.2 | Thematic agenda

6.2.1 | Technology

The first theme that shows a possible growth is related to immersive technologies like augmented reality (AR), virtual reality (VR), and interactive technologies like artificial intelligence (AI). These technologies are somewhat new to consumers. Besides devices, they are also used within online storefronts. There is a significant increase in studies that focus on technology-enabled in-store applications (van Esch et al., 2021; Jäger & Weber, 2020) and checkouts (Cui et al., 2021).

As the research on AR and VR technologies in retailing is still insufficient (Parekh et al., 2020), further research is needed to understand how it can enhance the consumer experience. First, most previous work in this field is conducted using laboratory experiments, not field experiments. As a result, actual consumer responses to AR and VR environments have not been fully understood yet. Second, the present body of research mainly focuses on the acceptance and adoption of these technologies and technology-enabled shopping environments. However, their ability to enhance the efficiency and effectiveness of the customer experience also asks for further examination. Such an approach can only be pursued if further research examines the outputs of immersive technologies in the context of customer value creation. Third, most of the current research investigating these technologies focuses on mental processing and consumer decision making but undervalue consumer characteristics like motivations, expertise, and familiarity. As these attributes would change consumers' perceptions of actual value, risks, and benefits, we need more detailed research models that include consumer characteristics.

AI technology can help consumers to surpass their cognitive limits while making purchase decisions. Field research that tries to investigate the customer journey facilitated by AI technology can help academia gain insights on the benefits of AI technology. AI technology's impact on facilitating customer relationships is another research frontier that can be explored. AI is pretty new compared to AR and VR technologies. As a result, its impact on digital consumer behavior is a very opulent subject to study.

6.2.2 | The pandemic consumer

The global pandemic has been one of the most influential aspects that shapes e-commerce. Digital purchasing has extensively grown

in the last 2 years, making baby boomers a segment that exhibited the highest growth (Jílková & Králová, 2021). Understanding the new rules of e-commerce and consumers' behavior during the pandemic has been in the scope of academia since mid-2010.

As a special phenomenon, COVID-19 has drastically shifted consumers' expectations, feelings, and attitudes towards the brands in line with a shift in consumer behavior (Ozansoy Çadırcı et al., 2022). The future research stream certainly will examine the online shopping habits of the post-pandemic consumer. While there are studies investigating during covid practices (e.g. Gordon-Wilson, 2021; Kursan Milaković, 2021; Rayburn et al., 2021; Yap et al., 2021), with the covid crisis slowly starting to come to an end, et least perceptually, academia should focus on the post-pandemic consumer; for example, digital consumer's purchase behavior under uncertainties, crisis-induced behavior (Rayburn et al., 2021), changing habits, etc. What this study reveals will guide in determining and shaping the subjects of future studies.

COVID-19 will be explored with different dimensions in the upcoming years. The first dimension probably is the consumer decision making with lack of complete knowledge. The pandemic has created significant volatility in many markets (Loxton et al., 2020; Yap et al., 2021), which has intensified the level of consumer uncertainty and insecurity, reflecting itself in digital purchase behavior. Consumer vulnerability, resilience (Kursan Milaković, 2021), safety, and financial distress are other issues that ask for a further explanation during the pandemic. There is also a need for studies that analyze purchase experience in the context of values, benefits, and possible costs. Although there has been a growth in research on e-services and deliveries during the pandemic, more research is expected to be conducted. Researchers will further investigate the real impact of COVID-19 on consumers' behavioral habits. These studies will exert if the changes in online retailing are transient or permanent.

6.2.3 | Consumer experience in social media

Branding and social media are two research domains that have attracted extensive attention. Especially social media studies that investigate brand and consumer engagement, brand trust, brand love and hate, and branding crisis are the focal points of attention. The relationship between social media and branding strategies is a very prolific subject. Most of the studies on branding try to reflect the positive outcomes of social media content but ignore negative issues like brand hate and disengagement. Research on brand hate can be investigated based on viral marketing, eWOM, and anti-brand communities. Disengagement can be related to consumer distress and information overload that is created by social media fatigue. As consumers' engagement with social media increases the amount of information they receive, it can create dissatisfaction with social media and result in consumers' ignorance of social media content. As a result, understanding social media's impact on disengagement is another subject that requires attention.

Considering AR-enabled technologies, VR simulations, voice-activated devices, and like, technology-enabled marketing has become essential for marketing research (Wang, 2021). Augmenting immersive technologies with social media engagement, research on interactivity becomes another issue to be researched.

6.2.4 | Other issues and possible research topics

Consumer trust toward new technologies, digital possessions, brands, digital content, and communications are other issues that stand out in the last era. Consumers' perceptions and attitudes toward new technologies like AI, the Internet of Things (IoT), cryptocurrencies, mobile payments are needed to be explored to understand their potential in the marketplace. Especially consumer trust toward AI-enabled customer relationships is a popular research subject (Ameen et al., 2021; Chi et al., 2021; Kushwaha et al., 2021). By analyzing consumer perceptions and attitudes toward these applications, possible implications can be derived for both companies and consumers.

Research on collaborative consumption and consumer sharing are also slightly increasing (Arrigo, 2021; Nguyen & Llosa, 2018; Wei et al., 2021). These subjects will be examined in the context of sustainability. Second-hand shopping behaviors, renting, and sharing activities can empirically be tested together with consumer environmentalism. Future research is also expected to shed light on different motivations relevant to crowdsourcing and sharing activities. These studies could adopt consumer motivation theories to analyze the antecedents of collaboration.

Lastly, "self-service applications" is another emerging subject that will find its ground in the future of digital consumer studies. Self-service technology in the context of service delivery, satisfaction, and failure is another subject that needs further exploration.

The above discussion leads to the following proposition. Some research questions are suggested in Table 6.

Proposition 1 *Digital consumer behavior that is mainly studied in social media and retailing environments is enriched by the introduction of new technologies. Consumer experience with the new technologies will be different in online settings/environments, and vary based on the consumer culture.*

6.3 | Theoretical agenda

Table 7 summarizes theories that are used in digital consumer behavior research. A typical research approach has been to examine consumers' acceptance and adoption of technology. As a result, most of the authors used the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) as a basis for their research. Although digital technological enhancements change substantially, and there is a likely need to analyze consumers' adoption and acceptance, there is also a need for other dimensions. Consumers' engagement with technology should be discovered with a certain number of social and psychological dimensions. Especially perceived risks should also be incorporated into existing research models.

TABLE 7 Theories used digital consumer behavior research

Theories	Sample references
Adaptive Interpersonal Influence	Hochstein et al. (2019)
Assemblage Theory	Schöps et al. (2020)
Attitude Theory	Majid et al. (2019)
Branding Theory	Kissel and Büttgen (2015)
Cognitive Appraisal Theory	Claffey and Brady (2019)
Community Engagement	Helal et al. (2018)
Consumption Value	Andrews et al. (2007), Drummond et al. (2020), Stewart Loane et al. (2015)
Diffusion of Innovations	Kaabachi et al. (2019), Kaur et al. (2020), Natarajan et al. (2017), Pantano and Vannucci (2019)
Elaboration Likelihood	Hughes et al. (2019), Mahapatra and Mishra (2017), Mehmet and Clarke (2016), Shankar et al. (2020)
Expectancy Value	Van-Tien Dao et al. (2014)
Mental Accounting	Park et al. (2019)
Model of Goal-Directed Behavior	Chiu et al. (2018)
Parasocial Interaction	Fu et al. (2019), Labrecque (2014)
Persuasion Knowledge Model	Hinsch and Sheldon (2013)
Pleasure-Arousal-Dominance	Yang et al. (2020)
Relational Signaling	Oghazi et al. (2018)
Self-Presentation	Helal et al. (2018)
Signaling	Oghazi et al. (2018)
Similarity Extrapolation	Fu et al. (2019)
Social Support	Mehmet and Clarke (2016)
Social Comparison	Prendergast et al. (2010)
Social Exchange	Ham et al. (2019), Hayes et al. (2016), Kingshott et al. (2018), Simon et al. (2016), Wisker (2020)
Social Identity	Simon et al. (2016)
Social Impact	Heinrichs et al. (2011), Kwon et al. (2016)
Social Influence	Okazaki (2009)
Social Support	Stewart Loane et al. (2015)
Stimulus-Organism-Response (S-O-R)	Akram et al. (2020), Ashraf et al. (2014), Chen et al. (2018), Chi (2018), Giovanis et al. (2019), Groß (2015), Hajli (2014), Kaushik and Rahman (2015), Ko et al. (2009), Liu et al. (2019), Luo et al. (2020), Moriuchi (2019), Natarajan et al. (2017), Zhu et al. (2019)
Technology Acceptance	Hampshire (2017), Ghazali et al. (2018), Giovanis et al. (2019), Im and Hancer (2017), Liang and Liu (2019), Mathew and Soliman (2021), Oh et al. (2009), Patel and Patel (2018), Plotkina and Saurel (2019), Rese et al. (2020), Sahli and Legohérel (2016), Sheng and Zolfagharian (2014), Sohn (2017), Stern et al. (2008), Vahdat et al. (2021), Yadav et al. (2015), Zhang and Mao (2008)
Theories of Processing Fluency	Reich and Pittman (2020)
Theory of Planned Behavior	Cheah et al. (2015), Ghazali et al. (2018), Giovanis et al. (2019), Khoi et al. (2018), Yadav et al. (2015)
Theory of Reasoned Action	Ham et al. (2019), Lim and Dubinsky (2005), Mehmet and Clarke (2016), Prendergast et al. (2010), Raman (2019), Zadeh et al. (2019)
Theory of Temporal Distance	Jin et al. (2014)
Theory of Trying	Chaouali et al. (2017)
Trust Transfer	Fu et al. (2019)
Unified Technology Acceptance and Use of Technology	Slade et al. (2015), Alalwan et al. (2018), Assaker et al. (2020), Chawla and Joshi (2019), Farah et al. (2018), Rahi et al. (2019), Ramírez-Correa et al. (2019), Sánchez-Torres et al. (2018), Wang et al. (2017), Yahia et al. (2018)
Uses and Gratifications	Azar et al. (2016), Choi et al. (2016), Dolan et al. (2016), Miltgen et al. (2019), Muntinga et al. (2011), Pasternak et al. (2017), Qin (2020), Rese et al. (2020), Tran (2021)

At the same time, it will not be wrong to acknowledge that most of the papers in the sample did not have a robust theoretical foundation. As consumer behavior is a subject that demonstrates a high level of complexity, current research on digital consumers does not point out a subtle disclosure of consumer characteristics and their impact on consumers' decision making. Besides adoption and acceptance, the current literature mostly investigates digital consumption from a decision-making perspective. Although this was a very reasonable approach in the early years of digitalization, new approaches are needed as consumers' interaction with technology grows. Therefore, we posit:

Proposition 2 *As the consumer meets with new digital environments and technologies, the current persistent theoretical models, the ones mainly focusing on benefits, falls short regarding costs (e.g., risks). New theoretical models with new dimensions will help to scrutinize the domain throughly.*

6.4 | Methodological agenda

Table 8 indicates that uniform research approaches are applied by academia in digital consumption studies. Quantitative methods mainly dominate the existing research on digital consumption. Consistent with the mainstream research on consumption, survey design is the most widely used method in digital consumption. Method diversity within a research domain can lead to more insightful results; therefore, new methodological approaches are needed.

TABLE 8 Methodological approaches in digital consumer behavior research

Methodology	Freq.	Methods applied
Case study	83	Content analysis
Clickstream data	34	Regression
Commercial texts	44	Content analysis, computational linguistics
Conceptual paper	341	-
Customer reviews	53	Content analysis, computational linguistics, regression, thematic discovery
Digital media content	73	Content analysis, game theory, computational linguistics, regression
Experimental research	981	ANOVA, MANOVA, SEM, *t* tests, Non-parametric methods
focus groups	44	Content analysis
Interview	160	Content analysis, thematic discovery
Multi-method	66	SEM, MANOVA, fsQCA
Narrative research	15	Content analysis, thematic discovery
Netnography	102	Content analysis, thematic discovery
Online survey	1165	SEM, regression, cluster analysis, PLS-SEM, non-parametric methods, discriminant analysis, choice modeling, conjoint analysis
Social media postings	233	Regression, content analysis, topic modeling, computational linguistics, data mining techniques
Survey research	1813	SEM, PLS-SEM, Bayesian estimation techniques, cluster analysis, ANOVA, MANOVA, regression, choice modeling, econometric methods
Systematic literature review	126	Content analysis, topic modeling
Transaction data	172	Econometric methods, regression, SEM, Bayesian estimation techniques, data mining techniques, PLS-SEM, metrics, and measurement

Most experimental studies prefer to use laboratory experiments with students as the participants. Especially when digital consumption is questioned, researchers easily justify using student samples as almost all of them are digital consumers, which is not the actual case anymore. The penetration in online channels and the demographics of digital consumers have considerably evolved in the last 2 years. Even though surveys and lab experiments are taking the lead in digital consumption, there are other methods that can provide more accurate insights into the behaviors of online consumers. Digital purchasing and marketplace behavior can be measured more effectively with field experiments or transaction data that provide information on the actual buyers in the online marketplace.

The main question in methodological orientation lies between big and small data use. Working with larger data sets can provide information on a larger scale and shed light on the longitudinal change in the online marketplace. The developing methodologies like natural language processing, text analytics, and deep learning algorithms provide an essential opportunity to researchers. By applying these novel methodologies to customer reviews, researchers can create valuable information on innovation gaps, product and service enhancement opportunities, customer satisfaction levels, and so on. They will also help generate a more profound understanding of actual marketplace attitudes and intentions. Using data mining and predictive algorithms requires working with different sets of data, other than data gathered using self-reported measures.

Although big data is viewed as valuable and useful for academic and practical research, its representativeness may be limited based on the context (including the sampling frames and media being used) that the data is captured. Qualitative inquiry—small data—becomes more valuable for a deeper understanding of consumers' behavior, motivations, and perspectives in the digital marketplace. Large data sets can provide information on mainstream transactional information but cannot provide a deeper understanding on the personal level. Although qualitative researchers apply techniques like netnography, videography, and narrative research, their contribution to digital consumer literature is relatively lower. Like transaction data, qualitative data is non-participative and supplies a complete picture of consumer behavior as it is mainly collected under natural conditions like observation. Another practical approach can be the application of mixed methodologies. Such an approach provides the opportunity of combining the strengths of big and small methodologies. Nevertheless, their application in digital consumption has been limited, and the methodological context of digital consumer behavior is mainly dominated by more conventional methods like surveys, focus groups, and interviews. The above discussion leads to the proposition pertaining to methods adopted for digital consumers like:

Proposition 3 *The understanding of digital consumers and the marketplace that the consumer operates require more precise methodologies than the current ones. The application of the new type of methodologies like computational linguistics, text mining, and machine learning, or a mixture of them will be the solutions for a deeper understanding of the digital consumer.*

7 | IMPLICATIONS OF THE STUDY

7.1 | Theoretical implications

There are some theoretical implications of the study. First, the study sheds light for the researchers of the subject by reviewing digital consumer studies, including all Business and Management venues indexed on the Web of Science on the digital consumer for the first time.

Second, the reviewed articles are broken into topics for a detailed analysis. The current study provides insights into the field and displays the trends of the uncovered topics via topic modeling. Therefore, this study consolidates the research on the subject, displays bibliometric knowledge, and uncovers the trend of each topic. As an example, the analysis has shown that the most papers were published on the topics of advertising effectiveness and social media engagement, and the highest average citation were on the e-WOM, closely followed by articles on social media engagement. Thus, it would be correct to recommend the scholars to study the social media engagement, considering its popularity in academia and the subject being a highly cited one. Furthermore, the review indicates that, based on the trend analysis, research on social media engagement, consumer–brand relationships, and sustainable consumption are emerging. Keeping this in mind, the study provides an essential contribution to the literature since it provides a sound research base upon which theoreticians can further advance studies on digital consumer domain.

Third, by reviewing the literature on digital consumer, we summarize the past and present contributions while aiming for further developments on methodology, context, and theory of the field. As the study enhances the understanding of each era of the field, the agenda for future research, along with the trend graphics of the topics, presents promising areas to follow for future researchers. While doing so, we identified the main study areas (under the headings of context, themes, theory, and methodology), presented the propositions for each and develop the research questions. The agenda, propositions and the trends could be used as the starting point for the next stream of researchers as they highlighted the gaps. We believe that this section of the study will be the source of inspiration for the scholars of the subject in their efforts to test the proposed research questions and come up with new solutions.

Fourth, in section 5, the theories used with their references and the most used methodologies with the frequencies are presented. This information will help next-generation scholars to introduce new methodologies or apply theories to the sub-concepts of the field to contribute to the existing digital consumer knowledge. The study identifies the research gaps, in addition to methodologies and theories, that provide venues for future studies. In particular, we revealed promising areas of research regarding consumer experience with new technologies, cultural differences in technology adoption, application of different methodologies in measurement, and such. These propositions may provide a foundation on which future studies can make substantial contributions to extend and enrich this venue. Studies like the current one provide insights to steer future research as they synthesize the existing knowledge (Paul & Dhiman, 2021).

7.2 | Practical implications

For practitioners, the study acts as a guide to comprehend the future. By synthesizing the current literature, the field of digital marketing has been examined in depth so that practitioners can understand the past, present, and future subjects. Furthermore, the provided research questions highlight the future directions to move on.

The integrative approach helps digital marketing practitioners to have a more holistic view while utilizing, specifically, thematic and methodological agenda for their benefit. It also guides digital marketing practitioners in their formulation of strategies as they know, for example, consumer culture strongly interacts with digital consumer's acceptation of new technologies. Besides, they provide information about what is not known, thus the areas requiring further field analysis. They imply areas for experimentation in practice and the new and creative strategies to try.

The results highlight that there are certain focal themes that are still at the growth stage. The marketer is responsible not only to undertake the right strategies today but also should predict the future and be ready for what is coming. Having an insight on the future with the related empirical/theoretical studies, like collaborative consumption (Lee & Huang, 2020; Tanrikulu, 2021), ecological value and sustainability (Lee & Chow, 2020; Rana & Paul, 2017, 2019), mobile channel adoption (Jebarajakirthy et al., 2021; Vahdat et al., 2021), and social media engagement (Barari et al., 2021; Pansari & Kumar, 2017) will be of great benefit of the practitioners.

By synthesizing and analyzing the digital consumer literature, we provide quick information to digital marketing practitioners so that they can identify the applicable theories and methodologies. It will help them to take the theories as the guide in their practices related to digital consumers.

The digital consumer domain in marketing has evolved exponentially. The COVID-19 pandemic has further accelerated the speed at which consumers are turning to digital. And, it is for sure that the future consumer is digital. For digital marketing practitioners, it is vital to know who they are, what they like, how they behave. We hope this theoretical attempt to review the digital consumer literature will help digital marketers understand major concerns from past, present, and future to do their best in the stiff competition.

8 | CONCLUSION

This paper examines 5505 articles on the digital consumer in 66 marketing journals. Forty-two topics were derived from extant studies, applied theories, and methodologies. The study fills the need to consolidate bibliometric knowledge on digital consumer research. Using a longitudinal perspective, the topics were furtherly examined in terms of their popularity over the years. Our analysis has revealed a growth potential on topics like social media engagement, mobile technology adoption, sustainability, consumer-brand relationships, value co-creation, and risk perceptions. It takes the understanding of the domain one step further by presenting the existing and used theories, methodologies, and the methods applied and presenting the promising areas for development and contributions. Thus, it fills a research gap in the subject. By analyzing the trends and impact of popular research topics, we identified a research agenda for future studies. In that section, we proposed the possible concepts for

future studies to uncover new streams to open new venues for the researchers and the domain itself. In this study's lead, the notions mentioned can be elaborated, the domain can be better understood, and the new streams can be disclosed.

In the attempts to improve the findings of the current study another study could consider including Scopus, EBSCO, and other relevant databases for a broader picture while including not only academic articles but also possible relevant work such as book chapters and reputable conference proceedings.

Manually conducted literature reviews mostly result in working with smaller data sets, and topic modeling and text mining algorithms help out that issue. Although the researchers get the opportunity to work with relatively larger data sets, they also call for a certain level of expertise in both theoretical and analytical skills. There are no standard procedures that guide researchers through the process during the model selection and especially topic naming steps. These processes should be carried out with domain knowledge and analytical background.

CONFLICT OF INTEREST

There is no conflict of interest regarding the study.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ORCID

Ayşegül Sağkaya Güngör https://orcid.org/0000-0003-3740-7456
Tuğçe Ozansoy Çadırcı https://orcid.org/0000-0002-7370-7504

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AUTHOR BIOGRAPHIES

Ayşegül S. Güngör has a PhD degree in marketing. She works as an associate professor of marketing at İstanbul Medeniyet University (IMU). Her main research area is digital marketing and its impact on consumer behavior. Other research areas in her interest include consumer acceptance of technology and gamification applications in digital marketing. Currently, she is lecturing on digital marketing, marketing management, and strategic marketing at IMU.

Tuğçe O. Çadırcı has a PhD degree in marketing. She works as an assistant professor of marketing at Yıldız Technical University (YTU), Turkey. Her main research areas include consumer behavior, digital consumption, and fashion marketing. Currently, she is lecturing on the subjects of consumption theory, e-commerce, digital marketing, consumer behavior, and marketing research at YTU.

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