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Toward a comprehensive understanding of multichannel e-commerce behavior: A systematic literature review

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Abstract

This objective of this study is to synthesize studies on consumer usage behavior in multichannel e-commerce through a systematic literature review (SLR). A total of thirteen Scopus-indexed articles published between 2013 and 2025 were analyzed to answer three research questions: (RQ1) how is multichannel usage behavior conceptualized? (RQ2) how are theories used to explain this behavior, and (RQ3) what factors support multichannel e-commerce usage behavior? The review results indicate that multichannel behavior is generally understood as the integrated use of cross-channel technologies, with a theoretical basis dominated by theories of adoption, decision-making, and post-adoption evaluation. For RQ3, focusing on Structural Equation Modeling (SEM)-based studies, satisfaction, perceived value, trust, and perceived usefulness have consistently been demonstrated to influence usage behavior. This review reveals a gap in the use of theory in multichannel systems dominated by causal explanations at the individual level and provides directions for further research.

Keywords: Multichannel e-commerce; usage behavior; consumer behavior; customer experience; literature review

1. Introduction

The presence of e-commerce in Indonesia offers the convenience of online shopping through platforms that are accessible via smartphones and other devices. E-commerce transactions have been observed to increase on annual basis, with documented annual growth of 15%. By 2024, it is projected that the Gross Merchandise Value of e-commerce in Indonesia will reach USD 65 billion, the highest in the ASEAN region (Nailul et al., 2024). It is revealed that 67% of e-commerce users in Indonesia utilize smartphones to access e-commerce, while 33% utilize desktops (PCMI, 2024). Furthermore, many smartphone users access e-commerce through marketplace applications, social media, browsers, and applications belonging to certain brands or retailers (Tan, 2023). This finding indicates that e-commerce users in Indonesia have adapted to various e-commerce channels, also referred to as multichannel e-commerce.

The term 'multichannel shopper' is defined as someone who engages in purchasing activities across multiple channel (Kushwaha & Shankar, 2013). Meanwhile, an omnichannel shopper is defined as an individual who utilizes all channels alternation during a single shopping activity (Lazaris, 2014). Multichannel e-commerce allows users to go through the customer journey across multiple e-channels (e.g.desktop devices, smartphones) and e-channel touchpoints (e.g.e-commerce apps, browsers). E-channels represent the hardware component used, while e-channel touchpoints represent the software used by service providers to access e-commerce. The integration of e-channels and e-channel touchpoints has been demonstrated to yield a diverse user experience in e-commerce (Wagner et al., 2020).

Various studies have been conducted to understand the characteristics of e-commerce adoption and its relationship to multiple devices or channels. Froehle (2006) developed a model regarding the relationship between the Customer Service Representative (CSR) construct on customer satisfaction through several types of devices with a different richness of information, including telephone, e-mail, and chat. Loiacono et al. (2007) developed a model for the evaluation of consumer behavior regarding purchase intentions influenced by website performance characteristics. Heinze & Matt, (2018) conducted experiments on the factors determining consumer purchase intentions by moderating the different types of consumer interactions with information system technology. The interactions included Technology-Mediated Service (TMS), Technology Generated Service (TGS), and Comprehensive Technological Service (CTS). In their study, Maity & Dass (2014) conducted experiments on the effect of media richness in information seeking on customer satisfaction. The moderating effect between product type and task complexity was observed in three distinct contexts: in-store (high media richness), e-commerce (medium media richness), and m-commerce (low media richness). (Hubert et al., 2017) examined the effect of different mobile devices, personal benefits, consumer characteristics, and risk factors on the acceptance of mobile

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shopping. Furthermore, Wang et al. (2021) modeled consumer intentions to use mobile shopping to investigate the effect of visual and technical stimulation on online shopping intentions.

However, previous research has not comprehensively discussed the various types of multichannel e-commerce and user behavior towards it. A number of recent review studies have addressed the issue of retail channel strategies from different perspectives employing a systematic review of literature. The present study focuses on the strategic evolution towards optichannel retailing at the firm level (Faria & Carvalho, 2025), while (Cicea et al., 2023) global research trends are mapped using a text mining and bibliometric approach. In addition, (Tahirov & Glock, 2022) reviewed channel conflicts from a supply chain and operational perspective. However, these reviews have not yet provided an integrated synthesis of consumer behavioral mechanisms underlying multichannel usage behavior, particularly regarding the roles of shopper typologies and device or platform-based channel typologies as behavioral determinants. Most studies tend to focus on partial aspects, such as technological adoption, channel integration, or customer experience, without providing a holistic understanding of how these elements interact within a unified framework. Therefore, this systematic literature review (SLR) aims to provide a comprehensive synthesis of existing studies to map the dimensions, perspectives, and influencing factors within multichannel e-commerce. The study specifically aims to address the following research questions: (1) What types of multichannel e-commerce and products are discussed in literature? (2) What theories and research methods are employed in multichannel e-commerce research? and (3) What factors support usage behavior in this context?

2. Methodology

The Methods section of this research employs a Systematic Literature Review (SLR) approach that adheres the protocol of Kitchenham & Charters (2007) and is adapted to the conceptual framework proposed by Carrera-Rivera et al., (2022). The selection process was carried out in three primary stages to ensure the quality and relevance of the articles analyzed: (1) a data initiative to filter articles based on Scopus database with the keywords strategy TITLE-ABS-KEY "usage OR behavior AND multichannel AND e-commerce" and publication timeframe (2010–2025), (2) title and abstract screening to ensure that the topic matches usage behavior in the context of multichannel e-commerce, and (3) full-text selection to ensure that the availability of complete manuscripts. Inclusion and exclusion criteria (see Table 1) were applied systematically to ensure the selection of relevant English-language scientific articles published in academic journals are included, while works such as conference papers or book chapters were excluded. The inclusion and exclusion criteria are listed in Table 1.

The search was conducted through the Scopus database with the keyword strategy TITLE-ABS-KEY "usage OR behavior AND multichannel AND e-commerce" (Table 2), resulting in 52 initial articles before further filtration. Instead, the search strategy and study selection process were directly structured based on the three research questions (RQ1–RQ3) to ensure alignment between the search scope, screening criteria, and the objectives of this systematic literature review. The population was focused on studies discussing multichannel e-commerce, with the intervention being usage behavior, and the anticipated outcome being the identification of factors influencing that behavior.

Table 1. Inclusion and exclusion criteria

Selection stages	Inclusion criteria	Exclusion criteria
1. Initiative data	keywords	Not matching the keywords
	2010-2025	not in between 2010-2025
	Article journal	Literature review article, Conference Paper, In Press, Book, and Book Chapters
	English	Non-English
2. Title and Abstract	Factors of usage behavior in multichannel e-commerce	Other than factors of usage behavior in multichannel e-commerce
3. Full text	Available	Unavailable

Table 2. Search strategy

Database	Keywords	Initiative
Scopus	TITLE-ABS-KEY (usage OR behavior AND multichannel AND e-commerce)	52

To ensure the quality of each submitted article, a quality assessment was carried out using seven questions (Q1–Q7), covering aspects of completeness, including background, research objectives, methodology, results, and proposed further research. Each article was assessed based on its compliance with these indicators to ensure the validity of the synthesis's findings. The checklist questions for quality assessment are listed in Table 3.

Table 3. Checklist questions for quality assessment

List	Questions
Q1	Does the article have a problem statement or background?
Q2	Does the article have a clear objective or research context?
Q3	Does the article present relevant findings from earlier studies or the state of the art?
Q4	Does the article describe the methodology used in their research?
Q5	Does the article have a result/finding/discussion?
Q6	Does the article show a conclusion based on its research purpose?
Q7	Does the article propose future work/improvement?

As illustrated in Table 3, the final stage, i.e. data extraction and synthesis was conducted using thematic analysis. The findings of each selected article were then categorized

according to broad themes representing theoretical, methodological, and empirical aspects of behavioral factors in multichannel e-commerce. This approach enables researchers to obtain a comprehensive overview of research trends, variable patterns, and the direction of theory and practice development in this field. The mapping and categorization results in RQ1 were in accordance with the research findings of Barann et al. (2022), which divides multichannel e-commerce into three aspects: channel, medium, and touchpoint. In addressing RQ2, this review followed Gregor (2006) which categorizes the nature and purpose of theory

To address RQ3, this review intentionally focused on empirical studies employing Structural Equation Modeling (SEM). This methodological scope was selected to ensure comparability of the identification and synthesis of causal relationships among variables supporting usage behavior in multichannel e-commerce. Consequently, studies using alternative approaches (e.g., qualitative analysis, data mining, or descriptive analytics) were therefore excluded from the RQ3 synthesis, as they do not explicitly test causal paths between constructs. The findings of RQ3, therefore, should be interpreted within this methodological boundary. The overall procedure is visualized in Figure 1, which depicts a systematic flow from identification to synthesis of research results.

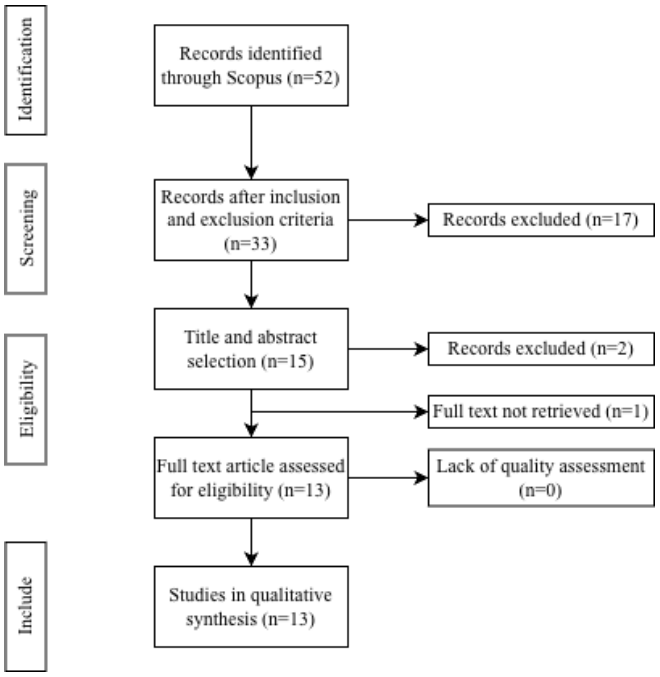

Fig. 1. Protocol for systematic literature review

3. Results and Discussion

The extracted articles were analyzed as follows. The result demonstrated the development of research related to usage behavior in multichannel e-commerce, spanning the period between 2013 and 2025, with a total of 13 articles from various geographical and methodological contexts. Most of the studies were published in highly reputable journals including Information Systems Research, Journal of Business Research, and Journal of Retailing and Consumer Services, indicating that this topic has gained significant recognition in the international scientific community (see Appendix 1).

The country distribution demonstrated a diversity of contexts, ranging from the United States and Europe (Kumar et al., 2019; Wagner et al., 2013, 2020) to East and South Asia (Kim et al., 2021; Park & Kim, 2018; Singh & Srivastava, 2019), indicating that multichannel consumer behavior is becoming a global, cross-cultural issue. In terms of scientific impact, the articles with the highest number of citations are those of Wagner et al. (2020) in Appendix 1, in the Journal of Business Research (349 citations) and Kumar et al. (2019) in Information Systems Research (170 citations), demonstrating the dominance of empirical data-based research and quantitative methodologies examining channel synergy and omnichannel effectiveness.

Meanwhile, recent studies including Purcărea et al. (2025) have begun to adopt a novel conceptual approach that integrates the dimensions of *phygital* retail and adaptive systems. An emerging theme within a subset of recent literature involves the utilization of intelligent technologies and cross-platform user experiences beyond mere channel integration. Our analysis of selected illustrative papers suggests a potential growing interest in examining how consumer behavior in multichannel e-commerce is shaped by interactions between technology, user psychology, and digital–physical systems. The details of the articles' information are provided in Appendix 1.

3.1. RQ 1: What kind of multichannel e-commerce and products are listed in the articles?

As posited by Barann et al. (2022) there are three distinct perspectives employed to conceptualize customer–firm interactions, namely channel, medium, and interface, which form the basis for the perspective categorization as presented in Table 4. The term *channel* refers to the interaction environment in which interactions between customers and firms occur, emphasizing the overall context of interaction rather than a specific technology, such as online or physical settings. This perspective highlights the location and modalities of the interactions from a standpoint of the customer journey.

In contrast, the term *medium* denotes the technology or device through which a channel is accessed, for example desktop or laptop computers, smartphones, and other digital devices. Meanwhile, an *interface* represents the interaction system that enables customers to access stimuli and engage with the firm. This engagement may be mediated by humans, analog objects, or digital technologies operating within either physical or digital environments, such as a mobile in-store application. Collectively, these distinctions facilitate the clarification of conceptual overlaps in multichannel research and provide a more precise framework for the analysis of customer interaction mechanisms.

Table 4 depicts a classification of multichannel e-commerce types based on three main categories: channel, device, and interface. Most studies highlight the integration between online and offline channels (Kumar et al., 2019; Park & Kim, 2018; Patten et al., 2020), emphasizing the significance of the multichannel shopping experience. Studies

such as Park & Kim, (2018) and Kumar et al., (2019) emphasize that the boundaries between physical and digital channels are increasingly unclear, with the omnichannel concept becoming central to organizational strategies.

Table 4. Multichannel e-commerce types listed in articles

Multichannel e-commerce types	Category	References
Channel	Online	(Kumar et al., 2019; Park & Kim, 2018; Patten et al., 2020; Ratchford et al., 2023; Yang et al., 2021); (Park & Kim, 2018)
	Offline	(Kumar et al., 2019; Park & Kim, 2018; Patten et al., 2020; Ratchford et al., 2023; Yang et al., 2021); (Park & Kim, 2018)
Device	Desktop/Laptop	(Kim et al., 2021; Luo et al., 2022; Singh & Srivastava, 2019; Wagner et al., 2013, 2020)
	Smartphone	(Al-Nabhani et al., 2022; Kim et al., 2021; Luo et al., 2022; Singh & Srivastava, 2019; Wagner et al., 2013, 2020)
	Tablet	*(Al-Nabhani et al., 2022; Kim et al., 2021; Wagner et al., 2013, 2020)*
	Complementary devices	*(Wagner et al., 2020)*
Interface	Website	*(Al-Nabhani et al., 2022; Purcărea et al., 2025)*
	Apps	*(Al-Nabhani et al., 2022)*
	Social media	*(Purcărea et al., 2025)*

Table 5. Product listed in articles

Category	References
Fashion	(Al-Nabhani et al., 2022 ; Kumar et al., 2019; Patten et2020 ; 2020; Ratchford et al., 2023; Singh & Srivastava, 2019)
Electronics	(Singh & Srivastava, 2019)
Accessories	(Kumar et al., 2019)
Home product	(Kumar et al., 2019)
Online retailer	(Wagner et al., 2020)
Pharmaceutical and medical	(Luo et al., 2022)
Equipment products	(Luo et al., 2022)
Apparel	(Rong et al., 2023)
Groceries	(Ratchford et al., 2023)
Catering service	(Yang et al., 2021)

Table 5 depicts the variety of industry categories that serve as the context for multichannel e-commerce research. The fashion sector dominates (Al-Nabhani et al., 2022; Kumar et al., 2019; Patten et al., 2020; Ratchford et al., 2023; Singh & Srivastava, 2019) due to its characteristics that heavily rely on cross-channel customer experiences. Furthermore, research also extends to electronics (Singh & Srivastava, 2019), accessories and household products (Kumar et al., 2019), and general online retail (Wagner et al. 2020). Some studies focus on specific sectors such as pharmaceuticals and medical and industrial equipment (Luo et al., 2022), apparel (Rong et al., 2023), groceries (Purcărea et al., 2025), and catering services (Yang et al., 2021), demonstrating the widespread application of multichannel e-commerce across various industries with different consumer characteristics.

3.2. RQ 2: What theories and research methods are employed in multichannel e-commerce research?

Several studies have adopted theories from the technology adoption theory group, such as the Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), and the Expectation–Confirmation Model in Information Technology (ECM-IT), to discuss usage intention, adoption, and continued use of various e-commerce channels (Al-Nabhani et al., 2022; Kumar et al., 2019; Singh & Srivastava, 2019; Wagner et al., 2020). The utilization of these theories situates multichannel e-commerce within the consumer decision-making framework pertaining to the acceptance and evaluation of technology-based channels.

In addition to adoption theory, several studies utilize an information processing perspective to explain differences in consumer behavior across channels. Luo et al. (2022) employed heuristic–systematic information processing theory to differentiate between heuristic and systematic information search patterns across different channels, with a particular focus on pre-purchase search behavior. This approach permits a more detailed analysis of how channel characteristics influence consumers process information.

Theories addressing comparison and switching between channels are also employed in multichannel e-commerce research. Wagner et al. (2013) adopted diffusion theory to explain different channel choices during the search and purchase stages, particularly when consumers use one channel to search for information and another to make a transaction. Kumar et al. (2019) employed prospect theory to analyze consumers' tendency to compare online and offline channels in situations involving potential financial losses. Furthermore, Wagner et al. (2020) applied the theory of uses and gratifications to explain the motivation of consumers in selecting and alternating between e-channels as alternatives for fulfilling needs.

Several studies have employed theories at the integration and value creation levels in the context of multichannel e-commerce. These theories do not address adoption behavior; rather, they are employed to provide a framework for multichannel e-commerce at the system, organizational, or service ecosystem level. Purcărea et al. (2025) utilized service-dominant logic (SDL) to explain the phenomenon of value co-creation behavior that emerges from the integration of online and offline channels. Wagner et al. (2013) also adopted resource-based theory to discuss the potential of new channels to enhance value and functionality when used in conjunction with existing channels. Furthermore, Patten et al. (2020) utilized a service quality model to explain how multichannel integration can influence perceptions of overall

service quality.

From the perspective of service provider, Rong et al. (2023) adopted customer asset management theory to discuss the relationship between multichannel e-commerce strategy and customer perceptions of the firm, such as customer familiarity and other customer relationship characteristics, including the duration, intricacy, and extent of the relationship. This perspective positions multichannel e-commerce not solely as a consumer behavior phenomenon but also as part of a customer relationship management strategy.

Table 6. Summary of theories applied in multichannel e-commerce research

Theory	Core Proposition	Application in Reviewed Studies
Diffusion Theory	Adoption of innovations depends on perceived characteristics of the technology.	Understanding consumer behavior when choosing channels for searching and purchasing, as well as understanding channel switching behavior.
Technology Acceptance Model (TAM)	Technology usage is driven by perceived usefulness and ease of use.	Examining the acceptance of online and mobile commerce channels.
Theory of Planned Behavior (TPB)	Behavioral intention is shaped by attitudes, subjective norms, and perceived behavioral control.	Analyzing purchase intention and channel choice in multichannel contexts.
Expectation Confirmation Model (ECM-IT)	Continued use depends on satisfaction formed through expectation confirmation.	Explaining post-adoption satisfaction and continuance of e-channels.
Prospect Theory	Decisions under uncertainty are influenced by perceived gains and losses.	Explaining channel switching under risk and information imperfection.
Service Quality Model	Service quality arises from gaps between expectations and perceived performance.	Evaluating perceived service quality across integrated channels.
Service Dominant Logic (SDL)	Value is co-created through interactions among actors and resources.	Conceptually framing value co-creation via online–offline integration.
Uses and Gratifications Theory (U&G)	Media use is driven by users' motivations and desired gratifications.	Explaining consumer motivations for choosing specific channels.
Heuristic–Systematic Information Processing Theory	Individuals process information either heuristically or systematically.	Analyzing information processing differences across channels.
Resource-Based Theory	Competitive advantage stems from valuable and unique resources.	Explaining channel capability complementarities and synergies.
Customer Asset Management Theory	Firm strategies affect customer assets and relationships.	Examining multichannel strategies' effects on customer–firm relationships.

Table 6 depicts the summary of the theories employed in the studies reviewed to explain the phenomenon of multichannel e-commerce. These theories were summarized based on their focus of application, particularly in explaining adoption, usage intention, and post-adoption evaluation of channels at the individual level. These frameworks were not included in the aggregate table because their function was more descriptive and contextual, rather than as primary theories to be explicitly tested. The concept of information integration was employed to elucidate the way consumers combine information from various channels to form comprehensive evaluations and create cross-channel synergies (Wagner et al., 2013). The Consumer Decision Making Model or Purchasing Process Model (Kotler et al., 2022) is utilized to describe the phases of the consumer journey and channel switching patterns throughout the purchasing process (Park & Kim, 2018). Meanwhile, social influence theory is generally employed as a supporting mechanism to explain the impact of information and social norms on consumer perceptions, rather than as a standalone theory to be tested (Patten et al., 2020). Cultural and cognitive interaction models offer a high-level perspective for understanding how cultural factors and cognitive processes shape consumer behavior in a multichannel context (Purcărea et al., 2025).

The classification as depicted in Table 7 follows Gregor (2006) distinction regarding the nature and purpose of theory. It distinguished between studies that explicitly employ formal theories, studies that rely on integrative conceptual frameworks, and studies that primarily aim at empirical phenomenon exploration. Based on the theory mapping in the reviewed studies presented in Table 7, multichannel e-commerce research largely utilizes theories with a focus on consumer behavior, particularly in the context of the adoption and evaluation of technology-based channels. Models such as the Technology Acceptance Model (TAM), the Theory of Planned Behavior (TPB), and the Expectation–Confirmation Model in Information Technology (ECM-IT) are employed to discuss usage intentions and continued utilization of various e-commerce channels (Al-Nabhani et al., 2022; Kumar et al., 2019; Singh & Srivastava, 2019; Wagner et al., 2020). Several studies have also used information processing theory and theories of comparing alternative channels, including heuristic-systematic information processing theory, diffusion theory, prospect theory, and uses and gratifications theory, to explain information search behavior and the switching between channels during shopping journeys (Kumar et al., 2019; Luo et al., 2022; Wagner et al., 2013, 2020).

On the other hand, perspectives that address channel integration and value creation at the system and organizational levels are comparatively limited. Theories such as service-dominant logic, resource-based theory, and the service quality model are employed to discuss multichannel integration and its implications for service value and perceptions (Patten et al., 2020; Purcărea et al., 2025; Wagner et al., 2013).

In the reviewed studies, several studies did not explicitly adopt conceptual theories but instead focused on exploring empirical phenomena in the context of multichannel e-commerce. The classification of these studies as phenomenon-driven signifies their primary objective to identify, describe, or predict specific behavioral patterns, such as channel stickiness, user experience in cross-channel consumption, and long-tail effects. It should be noted that these studies do not reference to a formal theoretical framework. The exclusion of descriptive or phenomenon-driven frameworks from the aggregate theory table does not

imply their lesser importance. Instead, it reflects differences in analytical function. These frameworks primarily support the development of explanation in contextual manner and the development of measure, whereas the aggregated theories explicitly guide the development of causal or explanatory modeling. The recognition of this distinction facilitates the clarification of the way theory is mobilized differently across methodological approaches within the domain of multichannel e-commerce research.

Table 7. Mapping of theories applied in multichannel e-commerce research

Category	Description	Theories / Approaches	References
Theory-driven	Studies employing established formal theories to explain behavior or adoption	TAM, TPB, ECM-IT, Prospect Theory, Service Quality Model, U&G, HST, Resource-Based Theory, Customer Asset Management Theory	(Al-Nabhani et al., 2022; Kumar et al., 2019; Luo et al., 2022; Park & Kim, 2018; Patten et al., 2020; Rong et al., 2023; Singh & Srivastava, 2019; Wagner et al., 2013, 2020)
Framework-driven	Studies adopting conceptual or integrative perspectives rather than testing formal theories	Service-Dominant Logic (SDL), general technology adoption perspective	(Purcărea et al., 2025)
Phenomenon-driven	Studies focusing on empirical phenomena without explicitly articulated theories	Channel stickiness, user experience, long tail effects	(Kim et al., 2021 ; Ratchford et al., 2023 ; Yang et al., 2021)

Table 8 depicts that multichannel e-commerce research in the reviewed studies predominantly employs quantitative approaches, both survey-based and secondary data (transactional or log data). The data are then analyzed through data mining and econometric techniques. Data mining is separated to emphasize differences in data sources and analysis techniques.

Survey-based studies utilize various analysis techniques, including SEM and PLS-SEM, cluster analysis, ANOVA, and exploratory methods such as association rule mining and multidimensional scaling (Al-Nabhani et al., 2022; Kim et al., 2021; Park & Kim, 2018; Purcărea et al., 2025; Singh & Srivastava, 2019; Wagner et al., 2020). These methods are utilized to analyze the relationships between variables related to consumer behavior and e-commerce channel usage, as also found in previous research (Kumar et al., 2019; Singh & Srivastava, 2019; Wagner et al., 2020). In addition, several quantitative studies employ data mining approaches utilizing transaction data or user logs, analyzed by means of fixed effect estimators, inverse propensity scores, VARX, Pareto/NBD models, and OLS estimation(Kumar et al., 2019; Luo et al., 2022; Ratchford et al., 2023; Rong et al., 2023). These approaches are used for the identification of cross-channel behavioral patterns based upon empirical data (Luo et al., 2022; Rong et al., 2023).

Qualitative and mixed methods approaches are found in a more limited number. In general, qualitative research employs interviews and focus group discussions with thematic analysis to describe consumer experiences and perceptions in a multichannel context (Patten et al., 2020). Meanwhile, mixed methods research employs a combination of interviews and surveys, utilizing grounded theory as an exploratory approach in developing initial categories or indices, which are then analyzed using quantitative methods such as neural networks (Yang et al., 2021). Overall, these methodological variations indicate differences in analytical focus, ranging from testing variable relationships to the exploration of consumer patterns and experiences in multichannel e-commerce environments (Gregor, 2006; Purcărea et al., 2025).

Table 8. Summary of research methodology on reviewed studies multichannel e-commerce

Research Methodology	Data Collection	Data Analysis	References
Quantitative	Survey	- PLS SEM - SEM - Cluster analysis - Association rule mining (ARM) - Network visualization for rules - multidimensional scaling (MDS) and hierarchical cluster analysis - ANOVA - Model free evidence	(Al-Nabhani et al., 2022; Kim et al., 2021; Park & Kim, 2018; Purcărea et al., 2025; Singh & Srivastava, 2019; Wagner et al., 2013, 2020)
	Data mining	- Fixed effect estimator - Inverse propensity score - VARX - Pareto/NBD Model - OLS Estimation	(Kumar et al., 2019; Luo et al., 2022; Ratchford et al., 2023; Rong et al., 2023)
Qualitative	Interview and focus group discussion	Thematic analytical approach	(Patten et al., 2020)
Mixed (Quantitative - Qualitative)	Interview and survey	- Grounded theory - BP Neural Network	(Yang et al., 2021)

Overall, the synthesis suggests that multichannel e-commerce research remains predominantly grounded in adoption and intention-based theories, indicating a continued emphasis on explaining initial usage and continued use of individual channels. While this theoretical dominance has generated robust insights into consumer acceptance and satisfaction, it also suggests that fewer studies conceptualize multichannel behavior as a dynamic, system-level phenomenon in which channels interact, complement, and substitute for one another over time.

3.3. RQ 3: What factors support usage behavior in multichannel e-commerce?

To respond to RQ3, this present review focuses on studies explicitly examining the causal relationships between construct variables and usage behavior in multichannel e-commerce, with particular attention to the direction and

strength of these relationships. Therefore, the study incorporated exclusively papers utilizing Structural Equation Modeling (SEM), a method facilitating the simultaneous testing of multiple constructs, their relationships, and their statistical significance within a causal framework. The extracted factors were systematically categorized based on their roles, such as independent, mediating, moderating, and dependent that were consistently found to be significant across journals, as summarized in Table 9.

In this discussion, three categories of factors/variables are distinguished based on their frequency of use in the reviewed studies: factors that consistently support usage, factors that are well-researched, and factors that are under-researched but conceptually promising. This organization facilitates a clearer understanding of which factors influence usage behavior, as well as the extent to which these factors have been researched in the existing literature.

The first category consists of factors that consistently support usage behavior across multichannel e-commerce studies. Perceived value and satisfaction emerged as the most powerful drivers and were frequently used to link multichannel characteristics to behavioral outcomes (Wagner et al., 2013). Additional factors such as channel complementarity, ease of use, enjoyment, and trust also suggest that usage behavior is determined by the interaction of utilitarian efficiency, experiential involvement, and relational trust (Wagner et al., 2013). These consistently significant factors constitute the core foundation for users to adopt, continue, and increase their engagement with multichannel e-commerce platforms.

The second category comprises factors classified as dominant or common, such as perceived usefulness, attitude, subjective norm, and purchase intention (Al-Nabhani et al., 2022; Singh & Srivastava, 2019). Despite the persistent demonstration of notable correlation with usage intention, these constructs have reached a state of saturation due to repeated examination within technology acceptance-based theory. Consequently, further explanation of these factors in isolation does not yield theoretical advancement unless integrated into more complex models involving mediation, moderation, or new contextual settings.

The third category comprises factors that remain understudied but offer opportunities for further exploration. These constructs include the dynamics of phygital retail, the impact of disruptive technology, escapism, platform type, retail feature assessment, and the role of data analytics in retail (Purcărea et al., 2025; Singh & Srivastava, 2019). Based on reviewed studies, these factors rarely serve as direct predictors of usage behavior. Rather, they exert their influence on the motivators of behavior by acting as contextual or moderating conditions. The present study's limited scope allows for future research to address this gap, particularly in the areas of omnichannel and phygital. The results of this factor mapping are consistent with RQ2, where the reviewed studies are still dominated by conceptual theories that discuss technology adoption at the individual level, though several studies have employed new variables reflecting the concept of integration between channels.

Table 9. Factors that support usage behavior in multichannel e-commerce

Variable Role	Factor	Evidence Across Journals	Reference
Independent	Complementarity of e-Channels	Direct effect via perceived value, satisfaction, e-Channel Synergies	(Wagner et al., 2013)
	E-Channel Synergies	Direct effect via satisfaction, and perceived value	
	Ease of Use	Direct effect via satisfaction	(Al-Nabhani et al., 2022)
	Personalization	Direct effect via satisfaction	
	Enjoyment	Direct effect via satisfaction and continuous intention to use App	
	Online Shopper Impact	Direct effect on retail features valued by omnichannel shoppers	(Purcărea et al., 2025)
	Phygital Retail Dynamics		
	Product Selection Features		
	Disruptive Technology Impact	Direct effect on the perceived impact of disruptive technologies	
	Attitudes	Direct effect on purchase intention	(Singh & Srivastava, 2019)
	Subjective Norms		
	Perceived Usefulness		
	Perceived Self Efficacy		
	Trust		
	Perceived Risk		
	Usefulness	Direct effect on Satisfaction and Continuous Intention to Use App	(Al-Nabhani et al., 2022)
	Escapism		
Mediator	Perceived Value	Mediator to satisfaction and Usage Intention	(Wagner et al., 2013)
	Satisfaction	Mediator to usage intention	
	Purchase Intention	Direct predictor of usage actual purchase behavior	(Singh & Srivastava, 2019)
	Continuous Intention to Use App	Indirect effect on frequency of use	(Al-Nabhani et al., 2022)
		Indirect effect on purchase frequency	
	Retail Features and Shopper Valuation	Direct effect on the perceived role of disruptive technologies	(Purcărea et al., 2025)
Moderator	Platform Type	Moderating effect on purchase intention relationships	(Singh & Srivastava, 2019)
Dependent	Loyalty Intention	Final usage outcome	(Al-Nabhani et al., 2022)
	Use Frequency		
	Purchase Frequency		
	Actual Purchase Behavior		(Singh & Srivastava, 2019)
	Data Analytics Role in Retail		(Purcărea et al., 2025)
	Usage intention		(Wagner et al., 2013)

4. Conclusion

This present study systematically reviews the multichannel e-commerce literature by integrating three research questions to understand how the multichannel phenomenon is studied, explained, and empirically supported. The synthesis reveals that multichannel research increasingly highlights consumer behavior involving multiple channels, devices, and interaction points throughout the shopping journey. Nonetheless, the complexity of this phenomenon has not been fully addressed by the extant literature. Despite the evolvement of Although empirical studies have towards an integrated channel context, the prevailing conceptual frameworks continue to perceive multichannel behavior as an extension of the adoption and utilization of individual technologies, rather than as a dynamic system of channel interactions.

From a theoretical perspective, this review demonstrates that theories of adoption, decision-making, and post adoption evaluation remain the primary foundations for explaining multichannel behavior. Supporting theories related to channel integration, cross channel service quality, and value creation have been utilized. However, their roles are largely complementary and infrequently operationalized as a central framework. This present study proposes a novel approach to the aggregation of theories based on their functions and roles. This methodological innovation provides clarification on how theories are used in the multichannel e-commerce literature. This study also reveals an imbalance between the complexity of the phenomenon studied and the depth of the theoretical perspectives applied.

Furthermore, the analysis of factors supporting usage behavior in this study is specifically based on studies by means of Structural Equation Modeling (SEM), in line with the objective of RQ3 to identify causal relationships between variables. Within this framework, factors such as satisfaction, perceived value, trust, and perceived usefulness consistently emerged as determinants of usage behavior at the individual level. However, within the SEM-based studies reviewed, variables representing interactions between channels, system capabilities, or organizational strategies were relatively rarely explicitly modeled as causal constructs. This finding suggests that the currently available causal evidence is still dominated by an individual perspective, while multichannel mechanisms as an integrated system have not been extensively tested using comparable causal approaches.

Based on the results of this review, future studies may be directed at the development of a theoretical framework that integrates individual adoption theory with systems and value perspectives to explain multichannel e-commerce usage behavior as a dynamic process. Furthermore, further research can develop concepts to explain integration between channels, particularly in the context of data-driven personalization and AI-enabled retail. Finally, it is also possible to develop theories on the basis of the results of phenomenon-driven studies to gain more comprehensive understanding of the bahavior of multichannel e-commerce user.

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Appendix 1

Table 1. Extracted articles information

Kode	Author	Tittle	Year	Journal	Country/ sample (if stated)	Citations (approx.)
1A	Wagner et al.	Effects of cross-channel synergies and complementarity in a multichannel e-commerce system – an investigation of the interrelation of e-commerce, m-commerce and IETV-commerce	2013	International Review of Retail, Distribution & Consumer Research	Authors based on Germany / European context; paper empirical overview	82
2A	Park and Kim	A new approach to segmenting multichannel shoppers in Korea and the U.S.	2018	Journal of Retailing and Consumer Services	Korea & USA; data from Korean and US samples).	46
3A	Singh and Srivastava	Engaging consumers in multichannel online retail environment: A moderation study of platform type on interaction of e-commerce and m-commerce	2019	Journal of Modelling in Management	Indian context in some analyses	75
4A	Kumar et al.	Why Do Stores Drive Online Sales? Evidence of Underlying Mechanisms from a Multichannel Retailer	2019	Information Systems Research (INFORMS)	USA (multichannel retailer transaction data; store openings study).	170
5A	Patten et al.	Service quality in multichannel fashion retailing: an exploratory study	2020	Information Technology & People	Noted multichannel fashion context (qualitative).	42
6A	Wagner et al.	Online retailing across e-channels and e-channel touchpoints: Empirical studies of consumer behavior in the multichannel e-commerce environment	2020	Journal of Business Research	multi-country literature synthesis and empirical	349
7A	Kim et al.	Channel stickiness in the shopping journey for electronics: Evidence from China and South Korea	2021	Journal of Business Research	China & South Korea comparative samples.	26
8A	Al-Nabhani et al.	Examining consumers' continuous usage of multichannel retailers' mobile applications	2022	Psychology and Marketing	Multi-country / cross-section survey	76
9A	Luo et al.	Effects of visit behavior on online store sales performance: personal computer (PC) versus mobile channels	2022	Internet Research	(Website visit behavior, Hong Kong / platform data referenced)	13
10A	Rong et al.	Effects of cross-platform multichannel shopping on online customer–firm relationship length, depth, and breadth: An empirical investigation	2023	Information Processing & Management (IPM)	Empirical investigation (data and CPMS analyses reported).	18
11A	Ratchford et al.	Multichannel customer purchase behavior and long tail effects in the fashion goods market	2023	Journal of Retailing	Fashion goods market (empirical retail data).	32
12A	Purcarea et al.	The Tech-Enabled Shopper Impacting a Phygital Retail Complex System Stimulated by Adaptive Retailers' Valorization of an Increasingly Complex E-Commerce	2025	Systems	international scope	1
13A	Yang et al.	User Experience Evaluation of Cross-Channel Consumption: Based on Grounded Theory and Neural Network	2021	Wireless Communications and Mobile Computing	China sample / qualitative	8