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Research paper

Understanding Omnichannel Consumer Behavior in FMCG: A Mediation-Based Analysis of Perceived Value

Ms. Sharmila R [1], Dr. Janis Bibiyana D. [2] *

[1] *Full-Time Research Scholar, Department of Commerce, Faculty of Science and Humanities, SRM Institute of Science and Technology, Ramapuram, Chennai, Tamil Nadu, India*
[2] *Associate Professor and Research Supervisor, Department of Commerce, Faculty of Science and Humanities, SRM Institute of Science and Technology, Ramapuram, Chennai, Tamil Nadu, India*
**Corresponding author E-mail: janisbid@srmist.edu.in*

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Abstract

Purpose: This research paper investigates the relationship between the quality of omnichannel integration and perceived value and continuance of omnichannel behavior for fast-moving consumer goods (FMCG). The research is based on the Stimulus-Organism-Response (S-O-R) framework and Expectancy Confirmation Theory (ECT) and identifies four primary dimensions of omnichannel integration.
Methodology: An empirical quantitative research approach was used using survey data collected from 390 FMCG consumers in Chennai city to perform statistical analysis using survey data and PLS-SEM analysis. The structural equation model was used to identify the relationship between the four integration dimensions and perceived value . Additionally, mediation and predictive relevance analysis were also conducted.
Findings: The findings suggest that three of the four dimensions of omnichannel integration significantly affect perceived value on information consistency, promotion/price consistency, and seamless channel transitions. While product availability alignment did not have a significant impact, perceived value was found to strongly predict continuance behavior and mediate the relationship between the three significant dimensions of omnichannel integration and continuance behavior. The results of the study show that the model has adequate explanatory power and predictive relevance.
Practical Implications: To enhance perceived value and foster continued use of their omnichannel capabilities, FMCG retailers should focus on providing consistent information, transparent pricing, and seamless channel integration.
Originality Value: The research contributes to the existing body of knowledge around omnichannel by providing empirical support for the premise that perceived value is a key mechanism that links the quality of multiple dimensions of integration with consumers' behavior in continuing to access the retailer's offerings through multiple channels.

Keywords: *Continuance Behavior; FMCG; Integration Quality; Omnichannel Retailing; Perceived Value.*

1. Introduction

In terms of modern retail, omnichannel marketing has become a necessity for retailers, as more customers than ever before want to have a more seamless and integrated shopping experience, both online and in physical stores (Massi et al., 2023). This trend is even more pronounced among shoppers in the fast-moving consumer goods industry, where consumers want to have access to constant convenience and dependability, because they make so many purchases throughout their daily lives, and their decision-making process doesn't involve a lot of time or thought. Omnichannel retailing is growing rapidly: by combining all the different channels, including websites, mobile apps, brick-and-mortar locations, and other retailers, one can create an immersive retail experience for consumers that meet their expectations for product availability, consistent product-related pricing and product promotion through multiple channels (Luo et al., 2023; Rizk et al., 2024; Vahid & Soroosh 2020).
Multiple studies conducted by scientists and researchers in the field have confirmed that an integrated approach to omnichannel retailing can increase the frequency with which consumers purchase products, the value of the orders that they place, and increase retention and shared loyalty to a retailer (Min Zhang et al., 2018; Lemon & Verhoef, 2016). In terms of FMCG products, studies show that consumers' intention to purchase a product is also positively influenced when they have multiple channels (in-store, online, and mobile) to purchase the product from. As the use of technology continues to evolve, this trend will only continue to grow even more (Aisha & Sonia, 2023; Al - Adamat et al., 2024). Furthermore, the only way to meet this growing demand among consumers for greater convenience and access to products is through the development and implementation of a well-developed omnichannel strategy that successfully integrates multiple channels with a retailer's existing operations. This is particularly true in the FMCG sector, where the way that products and people are connected through multiple channels is constantly changing, and retailers must adapt to that shifting consumer mindset (Rizk et al., 2024; Thaichon et al., 2023).

Although there is a growing interest in the topic, there are still significant gaps and unanswered questions around this area of research. First, while retailers have generally treated omnichannel integration as a broad, uni-dimensional concept, very little empirical work has been done that distinguishes different dimensions of omnichannel integration, such as information consistency, promotional consistency, seamless channel transitions and alignments of product availability and assesses the influence of these individual dimensions on the overall experience (Thaichon et al., 2023; Hagberg et al., 2016). Secondly, very few studies have specifically studied the FMCG sector, which is different from durable goods or higher involvement retail in terms of frequency of purchase, consumer engagement, decision-making heuristics, and switching behaviors (Thaichon et al., 2023). Thirdly, many studies link omnichannel integration with general outcomes; however, comparatively little research exists examining how a consumer's perception of the value of an item will mediate the relationship between integration quality and continuance behaviour (Rizk et al., 2024). Lastly, previous studies have adopted a customer experience/satisfaction model as their primary theoretical lens; however, only a few studies have employed a contemporary integrative framework using both psychological and behavioral mechanisms that are specific to omnichannel shopping experiences in the FMCG sector (Sharma et al., 2024).

Given these gaps, the current study aims to contribute by investigating how omnichannel integration quality (OIQ), which has been defined explicitly in terms of information consistency, price/promotion consistency, seamless transition across channels, and alignment of product availability with consumer expectations, affects perceived value and subsequently omnichannel continuance behaviour, particularly within the scope of FMCG retailing. The study adopts an integrated theoretical perspective comprising the S-O-R (Stimulus - Organism - Response) model and the expectancy-confirmation model, as well as value-based decision-making models within consumer behaviour literature.

1.1. Research objectives

1) To determine the relationship between Omnichannel Integration Quality (across its dimensions) and perceived value for FMCG consumers.
2) To assess whether perceived value mediates the relationship between omnichannel integration quality and continuance behaviour.
3) To provide empirical data based on a study of the FMCG environment that furthers our knowledge and provides retailers with managerial insights.

Only consumers who use both physical and online channels to buy goods from the FMCG sector are included in this study. FMCG consumers are included in this study based on their perceptions, attitudes, and intentions regarding purchasing behaviors, as opposed to other studies that have collected actual purchasing behavior records or longitudinal purchasing records of FMCG consumer behaviors. The study did not examine supply-chain integration, logistics constraints imposed by retailers, or profitability for retailers, but rather the evaluation and behavioral intention of consumers; this study used a cross-sectional research design.

Focusing only on the FMCG category provides a more detailed perspective of the behaviors of omni-channel consumers than could otherwise be attained by examining the behaviors of consumers shopping in traditional durable-good retail outlets. Therefore, the findings of this study will help reveal which components of omni-channel integration will have the greatest influence on the perceptions of value of FMCG consumers and their continuance behaviors as a result of using multiple channels for shopping. These findings are of theoretical importance to the advancement of the conceptualisation and measurement of OIQ and value mediators within omni-channel research and have managerial implications for the capital allocation decisions of FMCG retailers when evaluating the potential benefits of investing in channel-integration initiatives to encourage continued long-term usage and loyalty to the omni-channel shopping experience.

Omnichannel retailing refers to retail strategies that engage customers through multiple channels seamlessly. While the growth of this area is becoming exponential, recent scholarship shows several gaps in our theoretical understanding of how this occurs. One primary gap is that many studies treat omnichannel as a single construct, examining its various components without disentangling these variables and understanding how they impact consumer perceptions in unique ways. The second major gap in omnichannel scholarship is the lack of empirical studies in the fast-moving consumer goods segment, although the FMCG segment represents a strategically significant area for retailers and has also shown to have different consumption patterns than general length retail. The third gap is that there are limited studies that have examined the relationship between the perceived value of the quality of omnichannel integration and the likelihood of continuance behavior in omnichannel settings. Although customer satisfaction and experience have been studied extensively, much of the research exploring the relationship of perceived value in FMCG omnichannel settings has been minimal. A fourth gap is the lack of reliable measurement instruments for omnichannel retail settings; some recent efforts have developed validated scales for omnichannel customer experience, but applying such scales to research in FMCG continuance behaviour using and S - O - R framework, thus the application of this framework to FMCG retail needs further research.

This study aims to address these gaps within the existing literature to provide insights into how high-quality omnichannel integration results in consumers forming value perceptions for an extended period within the FMCG retail context and therefore continues to engage with that retailer for the long term. Accordingly, this study adopts an empirical, hypothesis-testing research design to examine the relationships between omnichannel integration quality, perceived value, and consumer continuance behavior in the FMCG context.

2. Literature Review and Theoretical Background

2.1. Conceptual background on key variables

The use of multiple means of interacting with consumers has led retailers to create and implement many different methods of reaching out to their customers. Omnichannel retailing provides customers with the ability to interact with a retailer through both traditional brick-and-mortar stores and through various forms of digital media (Dennis et al., 2015). Retailers that develop and implement an integrated omnichannel strategy will be able to create a consistent and coordinated experience for their customers, regardless of which channel they are using to interact with the retailer. Recent studies have demonstrated that retailers that have developed and implemented an integrated omnichannel strategy are more likely to improve convenience for their customers, increase customer satisfaction and loyalty, and ultimately enhance their customers' long-term relationships with the retailer (Qingyi Liu et al., 2024; Natarajan and Veera, 2024; Manuel et al., 2020). However, there is still a significant gap in the current understanding of how consumers perceive the quality of the integration between channels and this gap is reflected in the varied nature of existing research on this topic: many of the current studies treating omnichannel as a generic concept without examining the specific dimensions of the quality of the integration; using terms such as logistics, service quality or technical capability as the primary focus for their studies rather than examining the inter-relationships between multiple channels (Norbert Beck & David Rygl 2015; Natarajan and Veera 2024). As a result of these gaps in understanding, it has become necessary to

clearly define and operationalise individual dimensions of integration quality and to examine their impact on consumer perceptions of value and continued behavior for a range of products and service including high-frequency, low involvement categories such as FMCG.

2.1.1. Omnichannel integration quality

Omnichannel Integration Quality refers to the degree to which retailers synchronize multiple customer interaction channels and provide a seamless experience to shoppers throughout their entire journey. Examples of this include having the same product information available on all interaction channels, consistently providing the same promotions/pricing, being able to transition smoothly between interaction channels, and allowing customers to check real-time inventory of all products via any channel (Manuel et al., 2020; Natarajan and Veera, 2024; Min Zhang, 2018). The impact of Omnichannel Integration Quality on positive consumer outcomes is supported by empirical research. For example, in the consumer electronics retail sector, data gathered by Charles Asare, Mohammed Majeed, and Nana Arko Cole (2022) using structural equation modelling indicated that Omnichannel Integration Quality positively affected customers' perceptions of value, thereby building brand loyalty (Asare et al., 2022). Recent research by Qingyi Liu et al. (2024) indicated that Omnichannel Integration Quality positively affects customers' cross-channel retention behaviors and can be mediated by their satisfaction with the service provided. Most of the research listed above employs adequate methodology; they utilise validated measurement scales and suitable sample sizes; and they demonstrate reliability and validity. Thus, Omnichannel Integration Quality has strong theoretical support as an important predictor of consumer behavior across various sectors. While the majority of these studies are focused on customer experiences with consumer electronics, banking, and fashion retailers, very few studies have investigated the influence of Omnichannel Integration Quality in the fast-moving consumer goods (FMCG) sector (Vahid & Soroosh, 2020; Elodie et al., 2017).

2.1.2. Information consistency across channels

The uniformity of product descriptions, images, features, service terms, and additional relevant product or service information across all channels of communication, such as online, offline, and application-based, is referred to as information consistency across any channel (Manuel et al., 2020; Lie & Yulika, 2025). Having different or inconsistent information available at a retailer across various channels creates confusion among consumers and may therefore decrease the consumers' level of trust and reliability towards that retailer. In the field of omnichannel research, the concept of consistency of information is a key piece of "integration of all channels". This concept provides ease of use and alleviates cognitive overload for consumers. A few studies from the Information Systems or Service Quality frameworks have indicated that providing consistent and accurate information on all channels has increased consumers' perceived value of a product or increased consumer satisfaction. Nonetheless, empirical studies typically do not use the construct of information consistency as an independent variable. Because of this, there is little clarity about the degree to which information consistency influences perceived value or continuation behaviors, particularly with regard to contexts that involve frequent purchases, such as fast-moving consumer goods. The research reported in this paper addresses this gap in the literature by treating information consistency as a unique dimension of integration quality, permitting a more accurate empirical estimation of its influence on perceived value and continuation behaviors.

2.1.3. Promotion and price consistency

Price and Promotion consistency means consistent price, discount, offer, promotion terms, and benefits across all channels. If an omnichannel shopper sees different promotions or price patterns for the same price/offer from different retailers, they may feel that they are being charged an unfair price or given an unfair offer, which then diminishes their feeling of value and trust (Dhruv Grewal et al., 2017; Janssen Joseph 2025; Lie & Yulika 2025). Studies about omnichannel consumers indicate that maintaining promotional consistency and price transparency across both channels strengthens trust and perception of value, leading to purchase intentions and loyalty (Sharma & Panda, 2025; Xia et al., 2004). Last year, a new comprehensive review of omnichannel retailing showed that economic value is still one of the most significant factors driving a retail consumer's decision outcomes. Most studies use the term integrate quality and service quality, rather than specifically referring to promotion and price consistency. This lack of definition and specificity limits our ability to understand fully the influence of promotion and price consistency, particularly in factors such as frequent purchases and price sensitivity, as in the case of fast-moving consumer goods. This paper will examine promotion and price consistency as an independent dimension of integration quality and measure its influence on customers' perceived value and continuation in FMCG.

2.1.4. Seamless transition between channels

Smooth integration across channels, called seamless integration, describes how easily and fluidly customers can navigate between different retail channels. An example of this might be looking at a product in a mobile app, checking to see if it is available to buy online, and then purchasing it from a physical store without having to enter their information again or duplicate their efforts (Manuel et al., 2020). In their literature on the omnichannel experience, the authors of several studies have referred to seamlessness or channel fluidity as being one of the most important elements for customers' convenience, customers' sense of control, and customers' positive emotional response, all of which contribute to satisfaction and intent to shop again. The findings from a study by J wang et al. (2022) demonstrated that several psychological mechanisms act as mediators of the relationship between the omnichannel shopping experience, including seamlessness, and customers' intent to continue shopping. Many of the studies conducted to date have considered seamless transition as part of other constructs related to integration and service quality and do not assess this construct separately. In the case of traditional retailers in the FMCG sector, seamlessness might be an even greater influencer of customers' behavior due to the need for customers to be able to quickly and conveniently fulfill their shopping needs. The research proposed here fills their shopping needs. The research proposed here fills the gap left by previous studies by explicitly measuring and operationalizing seamless channel transition and its impact on perceived value and intention to continue shopping.

2.1.5. Product availability alignment

Product Availability alignment refers to aligning what customers see when browsing via multiple online channels against what is physically available either at a brick-and-mortar store or via shipping (Santiago & Antonio, 2014). Although logistics and operational challenges associated with omnichannel have received a considerable amount of attention in academic literature, very little research has specifically examined the concept of product availability alignment as an actual construct within the customer-facing integration quality framework. This is particularly true within the context of FMCG retailers due to their high frequency of purchase and the immediacy of customer needs

for a specific product. Product availability alignment across channels represents a foundational operational requirement rather than a differentiating value driver in omnichannel retailing. Drawing on the concept of hygiene factors, availability consistency ensures minimum functional performance but may not independently enhance perceived value once baseline expectations are met. In high-frequency FMCG contexts, consumers often assume product availability as a given, reducing its salience in shaping value perceptions. Therefore, while misalignment may cause dissatisfaction, alignment alone may not generate incremental perceived value.

2.1.6. Perceived value in an omnichannel context

Through a trade-off process, consumers assess perceived value as an overall evaluation of how much they have gained from perceived benefits versus what they have given up in terms of costs. Although the physical characteristics of products and the prices of products play a role in the overall PV, in omnichannel retailing (Zeithaml 1998). PV is also influenced by channel interactions, integration quality, channel convenience, and the experiences of customers with channels. Research over the past few years has shown that PV plays an important role as a mediator between the quality and the integration of omnichannel services provided by retailers and their respective behavioral outcomes. For example, a systematic review update of 2024 found PV as a significant driver of consumer behavior when it comes to the use of omnichannel; where habitual shopping and efficiency are critical, PV has the most substantial effect. Currently, more studies used validated scales to quantify PV, confirmed its factor structure using confirmatory factor analysis, and verified, through structural equation modelling, that PV serves as a mediator. Most evidence regarding PV has come from either the general retail or services sectors; there has been limited application in grocery or fast-moving consumer goods sectors, where consumers weigh the trade-offs differently between the economic benefit and convenience of shopping. The present study will use PV as a mediator for the relationship between integration quality with explicit dimensions and continuance behavior in the FMCG omnichannel environment; thus, extending the conceptualisation of PV and addressing a gap in current literature.

2.1.7. Omnichannel continuance behavior

Omnichannel Continuance Behavior is defined as representing the intention of consumers to continue using omnichannel offerings in the future for their purchase behavior and to eventually discontinue using single-channel shopping behavior and therefore demonstrates long-term commitment to omnichannel shopping rather than to a one-off adoption (Bhattacherjee 2001; Song & Jo 2023; Qingyi Liu et al., 2024. Empirical research indicates that perceived integration of different channels, the level of service, and perceived quality of an integrated service offering, perceived value, and experience of using multiple channels; has a significant positive impact on consumers' intention to continue to use omnichannel offerings (Sundjaja et al., 2024; Lie & Yulika, 2025). A study in (Song & Jo 2023) showed that an individual's perception of how much better they think they will do with using multiple channels as opposed to single-channel shopping, the individual's attitude towards multiple channels versus single-channel shopping, and how easy they perceive they can use multiple channels all influence that individual's intention to continue using multiple channels. Another study from 2024 looked at how integrated service quality influences the behavior of an individual's behavior to retain cross-channel-based purchases, which was mediated by the customer satisfaction with the integrated service. As for the methodology of these studies, these studies have generally employed robust quantitative methodologies; for example, validated scales, confirmatory analysis of factor structures, structural equation modelling, and adequate sample sizes testing for mediation effects. However, the majority of these studies were in sectors such as Banking, Fashion, Electronics, General Retail etc., however only a few of these studies were conducted in the FMCG context which has a very different purchase frequency and expectations compared to the other sectors therefore there are limitations in the empirically based knowledge of how the integration driven value of a product impacts the continuation of an individual's purchase behavior within the context of FMCG.

Table 1: Summary of Key Omnichannel Retailing Studies

Author(s)	Year	Context	Theory / Framework	Key Variables	Key Findings
Peter C. Verhoef et al.,	2015	Multichannel retailing	Omnichannel framework	Channel integration, customer experience	Seamless channel integration enhances customer experience and firm performance.
Juaneda Ayensa et al.,	2016	Omnichannel consumers	Technology acceptance	Channel integration, ease of use, and purchase intention	Integrated channels positively influence purchase intention
Dennis Herhausen et al.,	2015	Online-offline retail	Channel integration theory	Integration quality, customer responses	Channel consistency improves customer engagement and loyalty
Min Zhang et al., 2018	2018	Omnichannel retailing	Consumer empowerment theory	Integration quality, empowerment, perceived value	Integration quality enhances perceived value through empowerment
Tasnim M. T. Hossain et al.,	2020	Omnichannel marketing	Integration quality framework	Information consistency, price consistency	Integration quality improves customer evaluations and trust
Angelica Blom et al.,	2017	Retail promotions	Price fairness theory	Promotion consistency, brand image	Promotional consistency strengthens trust and brand perception
Manuel Trenz et al.,	2020	Integrated sales channels	Consumer behavior theory	Channel integration, continuance intention	Integration quality positively influences continuance behavior
Qingyi Liu et al.,	2024	Omnichannel retail	Integration quality model	Integration quality, perceived value, retention	Perceived value mediates integration quality and retention
Aisha Muthaffar & Vilches Montero	2023	Omnichannel Journey	Bounded rationally	Channel seamlessness, satisfaction	Seamless transitions enhance journey satisfaction
Present Study	2025	FMCG omnichannel retail (India)	S-O-R + ECT	Integration quality dimensions, perceived value, continuance behavior	Perceived value mediates the effect of integration quality on continuance behavior; availability acts as a hygiene factor

2.1.8. S-O-R model and expectation confirmation theory: synthesis and positioning of the study

The S-O-R model explains how environmental stimuli in the environment affect the psychological states of consumers that result in consumer behavior (Pereira et al., 2023; Amjad et al., 2024). In omnichannel retailing, the characteristics of the channels act as the stimuli that create the cognitive evaluation of consumers through factors such as value, satisfaction, and result in loyalty and continuance intention (Mehrabian & Russell, 1974).

Currently researcher are applying the S-O-R framework to explain consumer responses to integrated retail environments through omnichannel research. For instance, multiple studies show that the quality of channel integration positively impacts the consumer experience, value perceptions, satisfaction, and loyalty through internal evaluation processes (Ziad et al., 2022; Xingwen et al., 2022). Thus, these findings indicate that omnichannel integration is a vital external stimulus that shapes internal value perceptions of consumers, which subsequently influences their behavioral responses.

Although the S-O-R model provides an excellent understanding of how consumers evaluate their purchase decisions after making a purchase, the Expectation Confirmation Theory (Oliver 1980) provides an equally powerful theoretical framework to explain repeat and continue behavior towards a purchase. The ECT is based on how consumers assess a product or service against the expected performance, which then leads to the value that is perceived in the product, service, and satisfaction with ultimately the intention to keep using the product and service (Bhattacherjee 2001; Viswanath et al., 2012). Recent studies have expanded ECT by focusing on value perceived as a post-confirmation evaluation, especially in the context of omnichannel shopping (Raghavendra & Yashwini, 2025).

By integrating the two models, S-O-R and ECT, we create a comprehensive and cohesive understanding of the influences on how consumers make their decisions about their behavior when using multiple channels and ultimately purchase FMCGs. In this study, we define the qualities of omnichannel integration as the stimulus (S) to consumers and include four key attributes: information consistency, promotion/price consistency, seamless transition, and product availability alignment.

While omnichannel retail has become more popular, much of the previous academic work on omnichannel retail has several limitations. The first limitation is that many researchers conceptualize omnichannel integration quality as a single dimension and do not consider how the various attributes of integration might each produce their unique impact on omnichannel behavior. The second limitation is that most of these academic research studies have measured satisfaction or customer experience as a mediator; the concept of perceived value as a mediator is still not well understood, particularly within the fast-moving consumer goods environment, where many purchases occur frequently and are of low involvement. The third limitation is that empirical evidence linking the stimulus-organism-response model with the expectation confirmation theory on FMCG omni-channel behavior is limited.

Thus, the study builds on these limitations by proposing an integrated S-O-R and ECT framework, where omnichannel integration quality will have indirect effects on continuance behavior via perceived value. Through its focus on FMCG omni-channel shopping behavior, the study contributes to the existing body of literature relating to omni-channel retail by increasing the scope of analysis to involve a high-frequency consumption context, whilst providing a more granular view of how integrated omni-channel behavior can lead to sustainable behaviors.

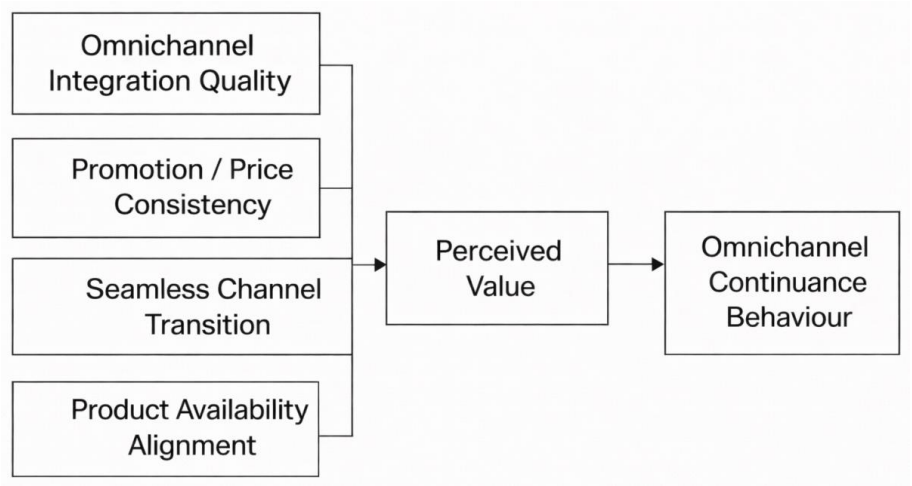

Fig. 1: Theoretical Framework Based on the S-O-R Model.

Source: Own Research.

2.2. Hypothesis development

2.2.1. Theoretical foundation of the conceptual framework

This conceptual framework is supported by the Stimulus-Organism-Response (S-O-R) model. In this model, omnichannel integration quality is treated as an external stimulus that has an impact on the cognitive evaluation process that consumers engage in as part of the omnichannel shopping experience for fast-moving consumer goods (Mengjia & Lin, 2021; Balbin & Marquina, 2024). Researchers have found that well-integrated omnichannel environments create a higher perception of convenience, reliability, and efficiency, which ultimately leads to higher perceived value for consumers (Kowatthanakul et al., 2020).

Also, in accordance with Expectation Confirmation Theory, consumers evaluate the performance of an omnichannel by comparing their experience to their expectations regarding information accuracy, fair pricing, seamless usage of multiple channels, and availability of a product (Raghavendra & Yashwini, 2025). When these expectations are met through experience, consumers will perceive a much greater value placed upon the omnichannel system they are using and will therefore be more likely to access the system in the future.

Combining the S-O-R model with expectation confirmation theory allows the conceptual framework to propose that qualitative integration is a motivator of perceived value, which in turn drives continued usage (Sundjaja et al., 2024; Khalid, 2024). There is a large amount of support from previous research on omnichannels and digital continuance to suggest that perceived value is a precursor to continued usage (Xingwen et al., 2022; Lin & Jen, 2024; Bangaly Kaba, 2021).

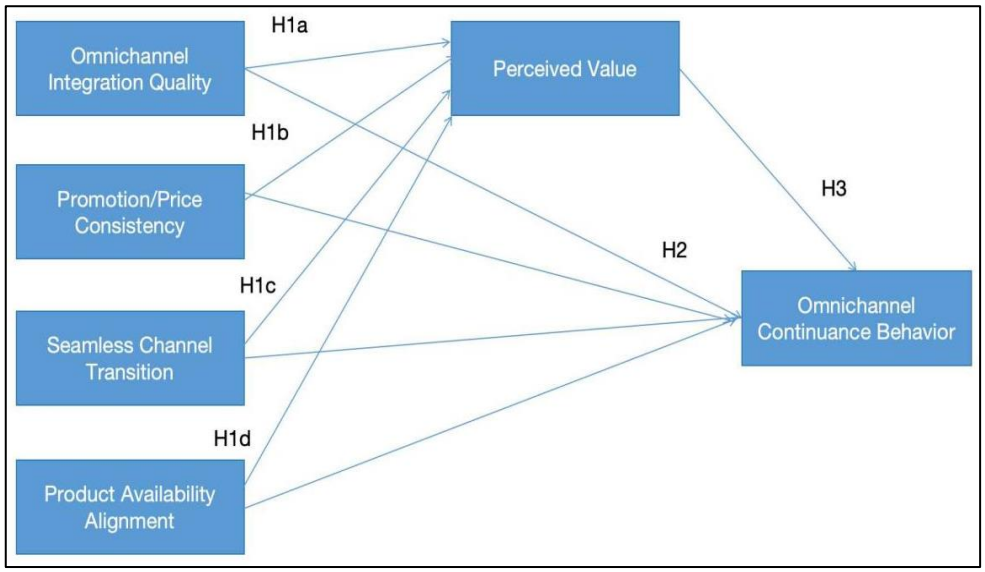

Fig. 2: Conceptual Framework of the Study.

Source: Own Research.

Omnichannel Integration Quality and Perceived Value

Several past research studies have found that the higher the omnichannel integration quality, the more value consumers perceive because they experience less effort, greater convenience, and more efficient shopping overall (Herhausen et al., 2015; Zhu et al., 2020; Xingwen et al., 2022). Information consistency among channels creates trust and reduces uncertainty, which results in increased perceived consumer value (Kiljae & Jungsil, 2019; Mengjia & Lin, 2021; Sharma and Panda, 2025). The consistency of prices and promotions creates a feeling of economic equity and fairness to the consumer, which is essential in a high-frequency purchase category (Zhu et al., 2020). The seamlessness of the transitions between channels creates flow and increases the ease and efficiency of using more than one channel. Furthermore, accurate alignment of product availability across the various channels eliminates frustrations and saves time, both of which lead to an increase in the overall perceived consumer value (Balbin & Marquina, 2024; Khalid, 2024; Sundjaja et al., 2024; Gao et al., 2021).

Based on the previous studies, it is proposed that:

H1a. Information consistency among channels will have a positive effect on the perceived value of omnichannel shopping for FMCGs.

H1b. Promotion consistency and pricing consistency among channels will have a positive effect on the perceived value of omnichannel shopping for FMCGs.

H1c. A seamless transition between channels will have a positive effect on the perceived value of omnichannel shopping for FMCGs.

H1d. The alignment of product availability among channels will have a positive effect on the perceived value of omnichannel shopping for FMCGs.

Perceived Value and Omnichannel Continuance Behavior

Perceived value has been identified as one of the key determinants of continuance intention for both digital and omnichannel retailing settings (Nguyen 2024; Song & Jo 2023). Research shows that the greater overall value consumers perceive from shopping using an omnichannel strategy means a greater probability that they will continue to use that integrated channel in the future (Bhattacherjee 2001; Neeru & Johra 2024). Particularly within the context of fast-moving consumer goods retailing, where a lot of shopping is routine and convenience-driven, perceived value plays an extremely important role in determining whether or not shoppers continue to utilise omnichannel (Chang and Geng 2022; Khalid 2024; Sundjaja et al., 2024).

Based on the previous studies, it is proposed that:

H2. The perceived value of the FMCG omnichannel shopping experience has a positive impact on the behavior associated with continued use of that shopping experience.

Mediating Role of Perceived Value

Previous research in the area of omnichannel shopping has demonstrated that omnichannel integration quality affects both behaviors and outcomes through internal evaluations and perceptions, such as perceived value and satisfaction (Bhattacherjee, 2001; Sundjaja et al., 2024; Neeru & Johra, 2024). Research employing either the Stimulus-Organism-Response model or the Expectation Confirmation Theory has shown consistently that perceived value mediates the relationship between either system or service quality and behavioral intentions to continue (Asare et al., 2022; Chang and Geng, 2022; Mengjia & Lin, 2021).

Based on the previous studies, it is proposed that:

H3. Perceived value mediates the relationship between omnichannel integration quality and omnichannel continuance behavior.

3. Research Methodology

The research uses a quantitative explanatory research design type focusing on testing the influence of omnichannel integration quality on both perceived value and omnichannel continuance behavior for FMCG consumers located in Chennai. Quantitative explanatory research designs are commonly used for omnichannel and retail studies because of their ability to support the empirical testing of theory-based models. A structured questionnaire is used for data collection and to conduct multivariate analysis using SEM. A recent study supports using quantitative methods to explore consumer reactions to omnichannel integration and technology-enabled retail solutions (Creswell & Creswell, 2018; Hair et al., 2022).

The consumer will be the unit of analysis. This study will include consumers who purchase FMCG products using multiple channels. The study also uses a cross-sectional time frame, meaning that data collection at a single moment in time is required, consistent with previous studies that use survey-based SEM techniques to study omnichannel consumers.

3.2. Sampling technique

This study's target population includes consumers who purchase FMCGs and live in Chennai city and have accessed at least two retail channels for purchases. A random list of all omnichannel FMCG shoppers is unavailable; thus, this study used non-probability sampling methods to guarantee involvement only from eligible consumers, combined with convenience sampling methods at retail establishments accessible to consumers and on the internet (Etikan & Alkassim, 2016; Hair et al., 2022).

3.3. Sample size and justification

A total of 390 respondents participated in this study, which allows for conducting the descriptive analysis using SPSS and predicting the relationship between variables using Smart PLS-SEM. Given the nature of PLS-SEM, researchers regularly use (a) the rule of ten and (b) as a general rule, researchers must gather a sample size of 300+ cases where multiple dimensions of omnichannel integration quality predict perceived value, which in turn predicts continuance behavior. Based on recent literature, there is evidence that an optimal fit of predictive models using both mediation models and multi-construct reflective measures for omnichannel research (Cohen, 1992; Hair et al., 2022). Thus, the collection of 390 respondents ensures enhanced statistical power of SmartPLS model estimation and improved model fit indices, as well as improves the reliability and predictive consistency regarding the mediating relationships among constructs.

3.4. Research instrument and measurement

Data were collected through the use of a structured self-administered survey that was divided into the following two sections:
Section A: Demographics and Screening
This includes age, gender, education level, frequency of purchasing FMCG, channel preferences, and a screening question to identify whether a participant had experience with Omnichannel shopping in Chennai.
Section B: Measurement of Constructs

- Omnichannel Integration Quality (Information Consistency, Promotion/Price Consistency, Seamless transition, and Product availability alignment)
- Perceived Value
- Omnichannel Continuance Behavior

All constructs have been measured using five-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree), as it is consistent with previous studies examining Omnichannel Integration Effects on Continuance Behavior (Hair et al., 2022).
The measurement items used in this research were derived from established Omnichannel Integration, Perceived Value, and Continuance Scales, as recommended in order to validate scales in SEM studies.

3.5. Data collection procedure and ethical considerations

Data were collected from participants in Chennai City through an offline and online approach.

- In-person surveys were conducted with customers visiting large FMCG stores, supermarkets, and convenience stores.
- Online surveys were distributed to Chennai consumers using various digital platforms.

Participants were informed of the purpose of the research, voluntary participation, anonymity and confidentiality, and that they were giving informed consent to participate. Participants did not provide any personally identifiable information, and were able to withdraw from the study at any time during the study. Standard guidelines on the ethical development of research relating to consumers and to digital retail practices incorporate principles of privacy and consent.

3.6. Data analysis procedure

SmartPLS 4 used an expanded sample of 390 to improve estimations of the structural model as follows:

- Error estimates from bootstrapping tests
- Model for measures
- predictive thresholds
- Convergent and discriminant validity stability

The revised structural model was evaluated using the following metrics:

- Measurement model: Loading Indicators, CR, AVE, HTMT, Fornell-Larcker
- Structural model: Direct paths and mediation analysis for
- Omnichannel Integration Quality Perceived Value Continuance Behavior.
- Model fit through SRMR and NFI using the expanded 390 sample size.

Large sample runs and predictive modelling of reflective constructs fall squarely into the domain of SmartPLS and are highly recommended in the context of omnichannel shopping (Hair et al., 2022; Henseler et al., 2015; Stone, 1974).

4. Results

4.1. Sample characterization

Table 2 outlines the demographics of the respondents. There were 390 respondents within our sample represented a gender neutral distribution (M=1.64). The majority of participants are considered "young or middle-aged" (M=2.84). Consumers are primarily characterized by being in the economically active age range and having an increased propensity to exhibit omnichannel behavior. The average income of the participant population was reasonable (M=3.07) and an appropriate economic level for understanding FMCG omnichannel consumer behavior. Similarly, relatively high levels of education (M=2.66) and recurrent purchases of FMCG products (M=1.97) are indicative of the regularity with which a consumer engages in a variety of retail channels. The channel preference results (M=2.29) further demonstrate

that consumers engage in a mosaic of both online and offline purchasing activities. This further validates the study's relevance in investigating omnichannel behavior.

Table 2: Descriptive Statistics of Respondents

	N	Minimum	Maximum	Mean	Std. Deviation
GENDER	390	1	3	1.64	0.645
AGE	390	1	5	2.84	1.14
INCOME	390	1	5	3.07	1.244
EDUCATION	390	1	4	2.66	0.973
FMCG_FREQUENCY	390	1	3	1.97	0.624
ChannelPref	390	1	4	2.29	1.114
Valid N (listwise)	390				

Source: Own elaboration - SPSS data.

4.2. Assessment of measurement model

4.2.1. Indicator reliability

The measurement items' outer loadings are illustrated in Table 3. There are strong influence from all of the indicator variables on their associated latent constructs, with loadings between 0.758 and 0.835. Since all of the loading values are greater than the 0.70 threshold for minimum indicator reliability, the outer loading for each indicator demonstrates adequate reliability (Hair et al., 2022). As the minimum loading among these items is 0.758, all the outer loadings are above the acceptable threshold, which means that none of these indicators should be deleted. Overall, these results demonstrate that all of these measurement items adequately represent their corresponding latent construct and provide evidence of support for the reliability of the reflective measurement model, as indicated by the results (Hair et al., 2022).

Table 3: Outer Loadings for Measurement Model

	CB	IQ_Avail	IQ_Info	IQ_Price	IQ_Seam	PV
CB1	0.829					
CB2	0.835					
CB3	0.817					
CB4	0.805					
IQ_Avail_1		0.789				
IQ_Avail_2		0.805				
IQ_Avail_3		0.803				
IQ_Info_1			0.829			
IQ_Info_2			0.804			
IQ_Info_3			0.809			
IQ_Price_1				0.822		
IQ_Price_2				0.824		
IQ_Price_3				0.789		
IQ_Seam_1					0.812	
IQ_Seam_2					0.758	
IQ_Seam_3					0.833	
PV1						0.769
PV2						0.822
PV3						0.812
PV4						0.828

Source: PLS-SEM.

4.2.2. Internal consistency, reliability, and convergent validity

Table 4 presents information on the internal and external validity of the measurement model of all constructs through the use of two measures: Cronbach's Alpha and Composite Reliability. Regarding internal construct validity, all values from Cronbach's Alpha are acceptable (highest value = .840, lowest value = .717), being greater than the minimum recommended level (0.70). Hence, we conclude that there are satisfactory internal construct validities (Hair et al., 2022). Additionally, composite reliabilities for all constructs were also found to support the reliability of all constructs, with values ranging from 0.841 to 0.893. As well, average variance extracted values were also found to support convergent validity with AVE values higher than .50 for all related constructs. Overall, these results indicate that the measurement model is very reliable, the indicator variables of each constructs sufficient capture the variance of their corresponding latent constructs as would be expected for an acceptable standard of construct validity.

Table 4: Internal Consistency, Reliability, and Convergent Validity Results

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CB	0.840	0.841	0.893	0.675
IQ_Avail	0.717	0.717	0.841	0.639
IQ_Info_	0.746	0.748	0.855	0.663
IQ_Price_	0.742	0.745	0.853	0.659
IQ_Seam_	0.723	0.731	0.843	0.643
PV	0.823	0.824	0.883	0.653

Source: PLS-SEM.

4.2.3. Discriminant validity

Discriminant validity was assessed with the use of the heterotrait-monotrait ratio (HTMT) as illustrated in Table 5. The HTMT values (Henseler et al., 2015) meet the conservative thresholds of 0.90 and range from 0.411 to 0.896. The HTMT values confirm that all constructs

are distinct from one another and that multicollinearity does not exist among the latent variables. The highest HTMT value (IQ_Seam_ <-> IQ_Price = 0.896) is still within acceptable limits; there is evidence of adequate discriminant validity for the measurement model.

Table 5: Heterotrait-Monotrait Ratio

	Heterotrait-monotrait ratio (HTMT)
IQ_Avail_ <-> CB	0.411
IQ_Info_ <-> CB	0.566
IQ_Info_ <-> IQ_Avail_	0.847
IQ_Price_ <-> CB	0.436
IQ_Price_ <-> IQ_Avail_	0.802
IQ_Price_ <-> IQ_Info_	0.800
IQ_Seam_ <-> CB	0.470
IQ_Seam_ <-> IQ_Avail_	0.862
IQ_Seam_ <-> IQ_Info_	0.831
IQ_Seam_ <-> IQ_Price_	0.896
PV <-> CB	0.728
PV <-> IQ_Avail_	0.576
PV <-> IQ_Info_	0.662
PV <-> IQ_Price_	0.665
PV <-> IQ_Seam_	0.630

Source: PLS-SEM.

The discriminant validity of the constructs was also assessed using the Fornell-Larcker criterion (Fornell & Larcker, 1981). From Table 6, the average variance extracted (AVE) for each construct was used as the basis for comparison, and it can be observed that the square root is greater than the correlation values of that construct with all other constructs. The results also support, along with the HTMT results, strong evidence of adequate discriminant validity for the constructs in the measurement model.

Table 6: Fornell-Larcker Criterion

	CB	IQ_Avail_	IQ_Info	IQ_Price_	IQ_Seam_	PV
CB	0.822					
IQ_Avail_	0.321	0.799				
IQ_Info_	0.449	0.619	0.814			
IQ_Price_	0.345	0.586	0.594	0.812		
IQ_Seam_	0.365	0.622	0.608	0.656	0.802	
PV	0.606	0.443	0.519	0.521	0.489	0.808

Source: PLS-SEM.

4.2.4. Collinearity assessment

Collinearity between the indicators is measured by means of the variance inflation factor (VIF), which can be found in Table 7. All of the VIF values, which are between 1.336 and 1.961, are significantly less than the conservative VIF threshold of 3.3 and below the standard threshold of 5.0. The conclusion of the VIF analysis supports that multicollinearity does not exist within this measurement model, thus allowing each of the constructs to provide unique information regarding its construct (Diamantopoulos & Siguaw, 2006).

Table 7: Collinearity Assessment

	VIF
CB1	1.828
CB2	1.961
CB3	1.853
CB4	1.734
IQ_Avail_1	1.336
IQ_Avail_2	1.448
IQ_Avail_3	1.457
IQ_Info_1	1.498
IQ_Info_2	1.467
IQ_Info_3	1.497
IQ_Price_1	1.463
IQ_Price_2	1.518
IQ_Price_3	1.448
IQ_Seam_1	1.406
IQ_Seam_2	1.378
IQ_Seam_3	1.498
PV1	1.552
PV2	1.815
PV3	1.739
PV4	1.845

Source: PLS-SEM.

4.3. Structural model assessment and hypothesis testing

The Coefficient of determination (R^2) for endogenous constructs is displayed in Table 8. The results show that the dimension of omnichannel integration quality accounts for a moderate explanatory power of perceived value (R^2=0.353). Additionally, perceived value accounted for a greater explanatory power of omnichannel continuance behavior (R^2=0.367) than did omnichannel integration quality. These R^2 values reflect moderate levels of explanatory power according to widely accepted standards for PLS-SEM therefore considered satisfactory regarding understanding consumer behavior in the context of consumer behavior (Hair et al., 2022; Henseler et al., 2015). In summary, the

results provide a positive description of how the proposed model could be used to better understand perceived value and continuance behavior among consumers who participate in the omnichannel FMCG shopping experience.

Table 8: Coefficient of Determination (R^2)

	R-square	R-square adjusted	Interpretation
CB	0.367	0.365	Moderate Explanatory Power
PV	0.353	0.346	Moderate Explanatory Power

Source: PLS-SEM.

To determine the predictive relevance of the model, Q^2predict was calculated. Both endogenous constructs produced a positive Q^2predict, which indicates that both constructs have adequate out-of-sample predictive relevance. The predictive relevance of perceived value was high (Q^2predict=0.335) while the predictive relevance of omnichannel continuance behavior was moderate (Q^2predict=0.187). The additional evidence from the RMSE and MAE values indicates that the model produces lower prediction errors for perceived value than for continuance behavior. Therefore, it can be concluded that the proposed model has good predictive relevance in the omnichannel FMCG context.

Table 9: Predictive Relevance (Q^2) and Model Fit Indices

	Q^2predict	RMSE	MAE	Support
CB	0.187	0.906	0.73	Moderate Predictive Relevance
PV	0.335	0.82	0.654	Strong Predictive Relevance

Source: PLS-SEM.

Table 10 indicates the relationships of the structural equation modelling analysis (SEM) and hypothesis testing. The results support three of the four hypotheses tested. Hypothesis H1b, H1c, and H1d, which find that three constructs (Information consistency $\beta = 0.255$; Promotion/Price consistency $\beta = 0.246$, and seamless channel transition $\beta = 0.139$) have significant positive effects on "perceived value." Conversely, the fourth hypothesis (H1a), which examines the relationship between product availability alignment and perceived value, was not supported by the analysis, as the relationship between these two constructs was not statistically significant ($\beta = 0.055$) due to the p-value of 0.374. Therefore, while product availability alignment is an important element for operational effectiveness for FMCG omnichannel shopping, it did not provide a clear direct increase in "perceived value."

The result also confirmed hypothesis H2 by showing that "perceived value" is a strong and very statistically significant predictor of an individual's intention to continue using the omnichannel for their future FMCG purchases ($\beta = 0.606$). As a result, this study has shown that "perceived value" plays a key role in forming consumers' intentions to continue using "omnichannel" consumer goods buy-in. Overall, the hypothesised theoretical framework was supported by the structural equation modelling results and therefore provides evidence of the critical influence of both "omnichannel" integration quality and "perceived value" on creating an individual's intention to continue using "omnichannel" retail consumer goods.

Table 10: Path Coefficients and Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Supported
IQ_Avail_ -> PV	0.055	0.056	0.062	0.889	0.374	Not Supported
IQ_Info_ -> PV	0.255	0.255	0.060	4.211	0.000	Supported
IQ_Price_ -> PV	0.246	0.248	0.062	3.981	0.000	Supported
IQ_Seam_ -> PV	0.139	0.138	0.064	2.168	0.030	Supported
PV -> CB	0.606	0.608	0.033	18.140	0.000	Supported

Source: PLS-SEM.

As shown in Table 11, mediating analysis confirms the indirect effect between each dimension of omnichannel integration quality and continuance behavior, enhancing perceived value. Each of the three dimensions (Information consistency: $\beta = 0.154$, $p < 0.001$; promotion/price consistency: $\beta = 0.149$, $p < 0.001$; seamless channel transition: $\beta = 0.084$, $p < 0.001$) positively affects omnichannel continuance behavior through enhanced perceived value. Therefore, the primary mechanism affecting continuing usage is the enhancement of perceived value.

In contrast, the relationship between product availability alignment and continuing usage through perceived value does not show a statistically significant effect ($\beta = 0.033$, $p = 0.376$) as per Table 11. These findings suggest that product availability did not have a statistically significant direct effect on perceived value and thus, this construct does not act as a mediating agent between these two dimensions of omnichannel integration quality and continuance behavior in the context of fast-moving consumer goods (FMCGs). As such, it is believed that there may be other elements within the FMCG environment that may also serve as mediators, along with perceived value.

Table 12: Mediation Analysis

Mediation	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Supportd
IQ_Avail_ -> PV -> CB	0.033	0.034	0.038	0.886	0.376	Not Supported
IQ_Info_ -> PV -> CB	0.154	0.155	0.039	3.950	0.000	Supported
IQ_Price_ -> PV -> CB	0.149	0.151	0.038	3.932	0.000	Supported
IQ_Seam_ -> PV -> CB	0.084	0.084	0.040	2.123	0.034	Supported

Source: PLS-SEM.

The PLS-SEM structural model, shown in Figure 3, demonstrates how different aspects of omnichannel integrated quality impact the perception of a customer's value and the perceived value's impact on how often that customer uses an omnichannel integrated quality service, in this case, the use of an omnichannel integrated quality service for the purchase of fast-moving consumer goods.

The path coefficients reveal that information consistency (β = 0.255), promotion/price consistency (β = 0.246), and seamless channel transition (β = 0.139) impacted the consumer's perception of the value of an omnichannel integrated quality service positively. However, the product availability alignment impacted the consumer's perception of the value of an omnichannel integrated quality service negatively, and the impact was not statistically significant (β = 0.055).
In addition, the results indicate that the perceived value has a very strong positive impact (β = 0.606) on a consumer's intention to continue using an omnichannel integrated quality service. The structural model indicates that the S-O-R and Expectation Confirmation theory framework has empirical evidence supporting the proposed relationship.

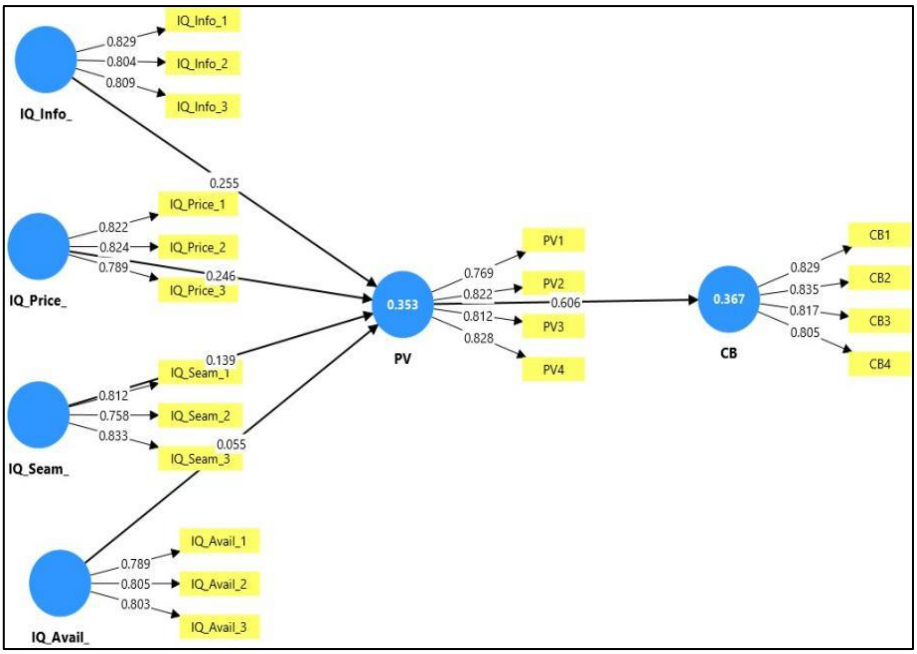

Fig. 3: PLS-SEM.

Source: PLS-SEM.

Using a variety of fitting statistics generated by SmartPLS to determine how well the model fits the data As shown in Table 12, the standardized root mean square residual (SRMR) for both the saturated (0.057) and estimated (0.062) models is within the acceptable SRMR levels of 0.08 or lower. This means it's reasonable to say that the overall model fits. Even though other statistics are also included, SRMR is considered the best-fitting index.
The Normal Fit Index (NFI) values of both models are close to 0.80 for variance-based SEM, this value is acceptable, but it's especially true for models that include several latent constructs with complex definitions and substantial numbers of connections among the constructs. In addition, both endogenous constructs' BIC values are negative. Therefore, these two BICs lend additional credibility and justification for the estimated model as being both adequate and parsimonious. To summarize, the various models' fitting statistics indicate that the proposed structural model fits the observed data reasonably well.

Table 12: Model Fit Summary

	Saturated model	Estimated model	Interpretation
SRMR	0.057	0.062	Acceptable Model Fit
d_ULS	0.671	0.811	Within Acceptable Range
d_G	0.286	0.293	Acceptable
Chi-square	652.938	665.122	Reported for Completeness
NFI	0.804	0.801	Acceptable for PLS-SEM

Model Selection Criteria

	BIC (Bayesian information criterion)	Interpretation
CB	-167.440	Good Model Parsimony
PV	-140.835	Good Model Parsimony

5. Discussion

5.1. Integration of findings

The research analyzed how the quality of omnichannel integration affects consumers' perception of value and subsequently their intention to continue using an omnichannel in a fast-moving consumer goods (FMCG) industry context. Ideas from the Stimulus-Organism-Response (S-O-R) Model and Expectancy Confirmation Theory developed a clear understanding of consumer cognitive and affective responses when using an omnichannel system. The evaluation of results showed that although omnichannel integration is only one type of stimulus to the consumer, it has a critical role in creating an evaluation of value, which then determines whether they will continue to engage with an omnichannel system.
Omnichannel Integration Quality and Perceived Value

The study demonstrates that three dimensions of omnichannel integration quality significantly contribute to how consumers perceive value: consistency in communication, promotion/price consistency, and a seamless transition between channels. The results of this study reinforce previous findings from studies related to omnichannel integration and retailing that consistency across all channels reduces the amount of effort and cognitive load the consumer has to make, which creates an increased perception of value (Verhoef et al., 2015; Juaneda-Ayensa et al., 2016).

In relation to perceived value, promotion and pricing consistency was a predictor that was significantly more predictive than all other constructs, highlighting the price-based value perception of FMCG consumption. The findings are consistent with past research on the relationship between price transparency and promotional consistency across both online and offline channels (Blom et al., 2017; Hossain et al., 2020). Additionally, the ability to move between channels without friction was significantly more advantageous when it provided greater convenience and shopping efficiency than any other type of value proposition within the context of omnichannel retail (Herhausen et al., 2015).

On the other hand, the relationship between product availability and perceived value was not significant. Therefore, in the case of everyday FMCG purchases, consumers may view product availability as a basic or hygiene factor rather than as an attribute that can potentially add to the overall value proposition. The previous discussion suggests that some dimensions of omnichannel integration are more valuable than others when it comes to influencing consumers' perceptions of value, especially for low-impact and frequently purchased products.

Perceived Value and Omnichannel Continuance Behavior

Perceived value as a critical psychological factor within both SO-R and ECT theory has also been shown to have a significant influence on customers' intention to continue using the omnichannel model. The presence of a strong relationship between perceived value and customers' intention to continue using the omnichannel model highlights the importance of perceived value as a psychological factor that converts stimuli from the omnichannel model into an action-oriented response from the customer (McLean et al., 2020). Previous research has also shown that perceived value is a strong predictor of customers' intention to continue using an omnichannel model. This study's results, with their high path coefficient, provide evidence that customers will be much more likely to continue using the omnichannel model when they perceive the value they receive through an omnichannel experience to be greater than the value they would have received through a traditional single-channel experience (Shane et al., 2015).

Mediation Effects of Perceived Value

Mediation analysis has further expanded our understanding of the processes underlying the relationship between omnichannel quality and consumers' continuing to use the omnichannel model, by showing that perceived value significantly mediates the relationship between information consistency, promotion/price consistency, seamless transition, and the intention to continue using the omnichannel model. These findings support the view that omnichannel quality does not act independently to cause consumers to continue using the omnichannel model. Rather, it supports the consumer's evaluation of the value they perceive to receive as a function of their experiences with an omnichannel model. This finding supports previous consumer behavior research showing that cognitive and emotional evaluations are essential links between service attributes and behaviors (Zhao et al., 2010).

Similarly, the lack of a noteworthy indirect association between product availability alignment and value perception further supports the previous conclusion that product availability alignment does not significantly affect value perceptions in this study's context. When combined, these findings demonstrate that value perception acts as a selective mediator and adds additional explanatory strength to the S-O-R framework for research into omnichannel FMCG products.

Explanatory and Predictive Power of the Model

The degree to which the proposed antecedents accounted for the variance in perceived value and continuance behavior based on R^2 values is indicative of how significantly and meaningfully this model relates to the explanatory and predictive capabilities of PLS-SEM. Additional evidence supporting the preliminary evidence of exploratory and predictive potential exists. Therefore, there are several other reasons why we feel confident in interpreting the results of our study.

5.2. Theoretical implications

The findings of the present study provide several important theoretical contributions to the literature on the behavior of omnichannel consumers and the quality of integration of services. First, the findings contribute to the theoretical advancement of the S-O-R framework by providing empirical support for how the various dimensions of the quality of integration of omnichannel resources function as external stimuli, the perceived value is considered the evaluation of the organism, and continuance behavior occurs as the resulting response. While many previous studies of omnichannel behavior have primarily concentrated on behavioral outcomes, the results of this study enhance the theoretical understanding of how the perceptions of consumers regarding the design of omnichannel resources influence their continuing behaviors through the psychological mechanism of the S-O-R framework (Mehrabian & Russell, 1974; Verhoef et al., 2015).

Second, the study provides an extension of the post-adoption and continuance literature by integrating Expectancy Confirmation Theory (ECT) with the concept of omnichannel retailing. ECT has primarily focused on the post-adoption and continuing usage behavior of digital services; however, this study provides empirical evidence that the major factors influencing the perceived value of consumers are the expectations that consumers have concerning the consistency and convenience of the various channels they utilize when they engage in retail activities. This builds upon and expands ECT by demonstrating that customers' perceived value of omnichannel expectations is significantly higher when their expectations are confirmed, which drives their continued use of that channel (Bhattacherjee 2001; Hossain et al., 2020).

Third, the study offers a multidimensional, disaggregated perspective on the quality of omnichannel integration, adding to prior literature in this area. The lack of significance of the product availability alignment results, which were expected to be significant, indicates that not all dimensions of integration exert the same influence on consumer evaluations of quality and value. The results suggest that some dimensions of integration may act as "hygiene factors" for consumers when purchasing fast-moving consumer goods with high frequency. The findings, therefore, refine the existing theories about the creation of value and service quality (Herhausen et al., 2015; Blut et al., 2018).

Finally, the result of mediation analysis supports the notion that perceived value serves as a selective explanatory mechanism for the outcomes of omnichannel integration. The empirical evidence provided in this study regarding the existence of both partial and no mediation strengthens the notion that perceived value is a key construct in omnichannel theory. This study meets the need for more theory-based mediation studies in marketing and consumer behavior research (Zhao et al., 2010; Hair et al., 2022).

5.3. Managerial (practical) implications

The results of the study provide new directions for retailers of fast-moving consumer goods (FMCG) and those in omni-channel management. First, retailers should strive to maintain consistency of information across all channels with respect to the product description, availability of products, and how to use them. The consistency in information will create less uncertainty for consumers regarding the product and will subsequently enhance consumer perceptions of value and encourage repeat use.
Secondly, promotional pricing and pricing consistency across all channels are one of the most important factors driving consumer perceived value. Price sensitivity is very prevalent among FMCG consumers, and price/promotional inconsistencies can negatively affect the perceived fairness of retailers and trust. Therefore, retailers need to develop structured promotional and pricing systems that are designed to ensure real-time pricing/promotional congruency between physical stores, mobile application and e-commerce platforms (Blom et al., 2017).
Third, the ability to transfer seamlessly between channels highlights the need for retail companies to invest in technology that facilitates the ease of transfer between various channels; click and collect services, loyalty programs that connect consumers across all channels, and integrated payment systems. By reducing barriers to smooth channel movement, convenience is enhanced, perception of value is strengthened, and behavior continuity is enhanced.
Conversely, product availability alignment had no significant impact; therefore, management should not consider product availability as a major driver of value when running an FMCG business, but rather should treat availability as an operational baseline requirement and a prerequisite for success. Stock-outs are detrimental to FMCG businesses and should be prevented; however, investments designed to create more value may result in a greater return on investment when directed toward enhancing the customers' experience and the ease with which they obtain information about products, rather than just ensuring the synchronization of inventory.
Overall, the findings reinforce that successful omnichannel operations in FMCG retailing will not only depend upon the existence of channels, but will also be determined by how integrated the channels are and what type of value customers receive from consistent and seamless experiences across channels.

5.4. Integration summary

The present research integrates the construct of omnichannel integration quality with consumer-perceived value and continuance behavior within a global theoretical framework drawn from the S-O-R model and Expectancy Confirmation Theory. The findings illustrate that the various dimensions of omnichannel integration do not all have the same impact on consumer evaluations of omnichannel retail environments. Rather, the attributes that generate added value, which include a consistent flow of information, price differences between the channels, and smooth transitions between the channels, disproportionately influence consumers' perceptions of omnichannel retail environments. The key link between omnichannel retail design and sustained consumer engagement appears to be perceived value. The results of this research provide both a strong empirical basis for and an extensive framework for understanding how to develop successful omnichannel operations within the FMCG retail sector.

6. Conclusion

The objective of the research was to explore how the quality of omnichannel integration impacts perception of value and, therefore, omnichannel continuation behavior in a fast-moving consumer goods setting. This study used a model of value-driven behavior to test empirically the form of an omnichannel integration model using PLS-SEM through the use of concepts from the Stimulus-Organism-Response (S-O-R) framework and Expectancy Confirmation Theory (ECT). The findings offer evidence for the hypothesis that not all dimensions of integration have equal impact on consumer evaluations. Therefore, it was determined that, while information consistency, promotional/price consistency, and seamless transition between channels significantly improved perceived value, which in turn drives continuation behavior, product availability alignment has no direct or indirect significant effect, suggesting that its influence is more operational than experiential during routine FMCG purchases.
In summary, the findings illustrate that perceived value is the primary psychological mechanism connecting the design of omnichannel systems to ongoing consumer engagement. The robustness of the model's explanatory power, predictive relevance, and fit confirms that the proposed framework accurately represents the relationship between omnichannel integration and continued consumer engagement. Both the significant and non-significant relationships that were identified in this research provide an empirical foundation for understanding omnichannel consumer behavior based on proven theoretical models and can be beneficial to both academia and practitioners.

6.1. Limitations

While there are significant contributions made by this study, there are also several limitations. One of the limitations of the research design was that the cross-sectional design does not permit the observation of changes in consumers' omnichannel perceptions and behaviors over time. Because omnichannel retailing is dynamic, longitudinal studies could offer much greater insight into value formation and continuance processes.
Second, all the data of this research were obtained from FMCG consumers in a single metropolitan city (Chennai). This study is limited by its single-city focus, as data were collected from FMCG consumers in Chennai. While this context provides valuable insights into an emerging omnichannel retail market, caution should be exercised when generalizing the findings to other regions or cultural settings. Future research may employ multi-city or cross-country samples to enhance external validity.
Third, the research used self-reported survey data, which is at risk of common method bias. While the relevant procedural and statistical controls were in place to address this limitation, it would be beneficial for future research to include transactional or behavioral data to provide additional support.
Finally, this research focused primarily on continuance behavior as the primary dependent variable. However, other relevant outcomes, such as loyalty, advocacy, or share of wallet, were not included in the analysis.

6.2. Future research directions

There are several potential directions for future research. A longitudinal or experimental design could be employed to establish causal links or a temporal relationship between omnichannel perceived value and changes over time.
In addition to establishing a casual relationship, it would be beneficial to develop the existing model further by including moderating variables so that researchers can investigate potential differences in perceptions of omnichannel value among various consumer segments. Another way to enhance the external validity of this research is to apply it to a different retail environment or conduct a cross-country analysis within the same retailer category. This would allow researchers to determine if the results of this study are specific to the FMCG industry.
Finally, the inclusion of additional mediators such as trust, satisfaction, and perceived risk within the model or the use of predictive analytics methodology would also provide an opportunity to enhance both theoretical and managerial insights gained from the research study.

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Appendix 1: Constructs vs Items

Construct	Items (5-point Likert scale: 1 = Strongly Disagree, 5 = Strongly Agree)	Source / Authors
Omnichannel Integration Quality - Product Availability	IQ_Avail_1 Products I want are consistently available across online and offline channels.	Hossain et al., 2020; Herhausen et al., 2015

	IQ_Avail_2 I can find the same FMCG products regardless of the channel I use. IQ_Avail_3 Product availability information is accurate across channels.	
Omnichannel Integration Quality - Information Consistency	IQ_Info_1 Product information is consistent across all shopping channels. IQ_Info_2 I receive the same product details online and in physical stores. IQ_Info_3 Information provided across channels is reliable and trustworthy.	Hossain et al., 2020; Verhoef et al., 2015
Omnichannel Integration Quality - Promotion/Price Consistency	IQ_Price_1 Prices are consistent across online and offline channels. IQ_Price_2 Promotions and discounts are the same across channels. IQ_Price_3 I feel pricing across channels is fair and transparent	Hossain et al., 2020; Blom et al., 2017
Omnichannel Integration Quality - Seamless Channel Transition	IQ_Seam_1 I can easily switch between channels during my shopping journey. IQ_Seam_2 My shopping process continues smoothly across channels. IQ_Seam_3 I experience no disruption when moving between channels.	Herhausen et al., 2015; Juaneda-Ayensa et al., 2016
Perceived Value (PV)	PV1 Shopping through multiple channels provides good value for money. PV2 The overall benefits of omnichannel shopping outweigh the costs. PV3 Omnichannel Shopping is worthwhile for FMCG purchases. PV4 I gain value from using integrated online and offline channels.	Sweeney & Soutar 2001
Omnichannel Continuance Behavior (CB)	CB1 I intend to continue using multiple channels for FMCG shopping. CB2 I will frequently use omnichannel options in the future. CB3 I prefer retailers that offer integrated shopping channels. CB4 I plan to keep using omnichannel services for FMCG products.	Bhattacherjee 2001; McLean et al., 2018