

The impact of enhanced omnichannel integration on consumer responses in an omnichannel context

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Abstract

Purpose: This research aims to analyze how omnichannel integration enhances customer experience and increases customer satisfaction, ultimately fostering customer loyalty in omnichannel retail.

Design/methodology/approach: Built upon the S-O-R (Stimulus-Organism-Response) framework, this quantitative research gathered data through an online questionnaire from 283 Chinese consumers with omnichannel purchasing experience. Structural equation modeling (SEM) was utilized to analyze the data.

Findings: The research findings indicate that omnichannel integration positively affects both customer experience and customer satisfaction. Specifically, omnichannel integration can significantly enhance the customer experience. Furthermore, in the omnichannel environment, the positive influence of omnichannel customer experience and customer satisfaction on omnichannel customer loyalty has also been confirmed. The improvement in omnichannel customer experience directly contributes to enhancing customer loyalty.

Research limitations/implications: This study was carried out in China, and caution should be exercised when extrapolating the findings to different cultures or retail formats. Additionally, this study employed cross-sectional data to test research hypotheses. Subsequent research could improve the credibility of results by employing longitudinal study designs.

Practical implications: Enhancing the competitiveness of omnichannel retailers.

Originality/value: These findings offer theoretical and managerial implications for formulating marketing strategies for omnichannel retailers.

Keywords: Omnichannel integration, Customer experience, Customer loyalty

1. Introduction

With the increasing use of internet communication, and smartphones, consumers can access product information, compare prices, make payments, and request after-sales services at any time (Gawor & Hoberg, 2019). Social media platforms like Weibo and WeChat have become new touchpoints, allowing consumers to learn about products through multiple sensory experiences and express their opinions (Son et al., 2021). This has changed the way consumers shop, making them more focused on service-oriented consumption. The emerging generation of post-90s and post-95s tends to prefer personalized and convenient shopping experiences (Benfratello & Shiqian, 2021). There is a growing number of consumers who engage in cross-channel shopping, moving between physical stores, PC online stores, social commerce

platforms, and mobile stores, and they pursue a consistent and fluent purchase experience (Shen et al., 2018). Therefore, retail companies need to integrate channel functions offer a fluent and uniform cross-channel customer experience (Cocco & Demoulin, 2022).

At the same time, traditional brick-and-mortar retail businesses have faced substantial losses attributed to the repercussions of the COVID-19 pandemic (Verhoef, 2021). However, some companies have successfully mitigated the negative impacts of the pandemic by leveraging the advantages of channel integration, maintaining profitability, and even increasing sales (Ahmed et al., 2023). Therefore, retail businesses are witnessing a rapid increase in the penetration and fusion of online and offline channels, leading to the rapid formation of the omnichannel retail model (Akte et al., 2021). The concept of "omnichannel" was initially proposed by Rigby (2011) and refers to a strategy employed by retailers to efficiently manage multiple channels and customer touchpoints within a brand's ecosystem, in order to create a high-quality overall omnichannel shopping experience and enhance business performance (Verhoef et al., 2015). For example, Starbucks offers a consistent consumer experience across various channels through the Starbucks Rewards app. Whether shopping through a smartphone, the Starbucks website, or brick-and-mortar stores, consumers can view and reload their rewards card balance and update their user profiles in real time (Lee, 2020). However, as dual-channel and multi-channel models are widely adopted in the retail industry, many businesses have discovered the existence of channel conflicts and showrooming phenomena. Consumers may search for products through one channel but purchase them through another channel at a lower price, and this has become a common path in their purchase decision-making process (Wang et al., 2020). Therefore, effective omnichannel management, focusing on the consumer, involves integrating and coordinating available channels (both offline and online) to optimize the overall customer experience, enhance customer satisfaction, and foster customer loyalty, and this is still difficult for most retailers to achieve (Yin et al., 2022).

In previous literature, customer loyalty has been extensively studied. With the continuous development of retail channels, some scholars have focused on the factors influencing multichannel customer loyalty. Frassetto and Miquel (2017) discovered that integration of multiple channels directly positively impacts both offline and online loyalty, or customer satisfaction mediates the relationship between multichannel integration and loyalty in both online and offline contexts. Yong-zhi (2014) demonstrated through empirical research that retailers should coordinate the quality of in-store service and electronic service to enhance multichannel integration service quality, which in turn increases customer loyalty. However, within the framework of omnichannel integration, comprehensive literature on the specific factors influencing customer loyalty is limited. Although attracting customers across channels has always been a topic of interest, there is still relatively limited literature on attracting customers through omnichannel retail. Moreover, other scholars have pointed out that integrating different channels to collaborative shopping experiences and enhance customer loyalty should be a focus of research, but there is still limited research on the mechanisms by which channel integration affects customer loyalty in the omnichannel environment (Pookulangara et al., 2011).

Prior research has identified three research gaps. Firstly, although the substantial studies carried out by many academics on the elements impacting customer loyalty in multichannel and cross-channel contexts, there is a deficiency in research concerning the factors that affect customer loyalty through omnichannel marketing. Secondly, researchers have been continuously studying the impact of channel integration on customer purchasing behavior. However, research in this regard remains limited within the omnichannel environment. Therefore, current research is still short of a thorough investigation into the influence of omnichannel integration on customer experience and customer satisfaction. Thirdly, while customer experience is

frequently discussed in research on omnichannel marketing (Gao et al., 2021), there is limited attention given to its role in enhancing customer satisfaction and customer loyalty.

This paper is divided into six pieces. The backdrop of omnichannel retailing research is presented in the first section, the introduction. The literature review, which is the second component, examines the current state of variables that are pertinent to this investigation. The study framework is built and research hypotheses based on existing literature are presented in the third section. Subsequently, the research methodology and design, which describes the research paradigm, sample selection, data collection, scale development, pretesting, and statistical data analysis. The fifth section presents the research findings, determining the outcomes of both the measurement model and the structural model. Finally, the paper culminates with a summary of the research findings, an explanation of their limitations and relevance, and recommendations for further research.

2. Literature Review

2.1. Customer Loyalty

Companies generally seek to achieve competitive advantage and maintain market position by fostering customer loyalty. Hallowell (1996) emphasizes that loyalty serves as a key element in enhancing a company's sustainability through the maintenance and fortification of relationships with its current customer base. At present, research on customer loyalty can be classified into three main perspectives: the attitudinal school, the behavioral school, and the composite loyalty school (Khan et al., 2015). In the omnichannel context, scholars more widely accept the concept of loyalty, which is the perspective of the composite school of thought, encompassing both behavioral and attitudinal elements. Among them, the behavioral element is the behavior of customers who repeatedly making purchases from a particular company or brand without seeking alternatives (Newman & Werbel, 1973). The attitudinal element is the positive promotion of the company, which encourages family and friends to use the product and creates a positive word-of-mouth effect (Khan et al., 2015). Lee and Leonas (2018) argue that omnichannel customer loyalty is the behavior of omnichannel customers who repurchase, recommend and prioritize the retailer's omnichannel system. This study draws on the research of Oliver (1999) in defining customer loyalty as a depth of commitment to preferred products that leads to consistent repeat purchase behavior for the same brand, without changing behavior due to changes in market environment and competitive forces.

Many studies have indicated that the factors influencing customer loyalty are multifaceted. Scholars from various industry backgrounds and research objectives have extensively discussed key influencing factors, including customer perceived value, customer satisfaction, customer trust and customer satisfaction (Asare et al., 2022; El-Manstrly, 2016; Iglesias et al., 2020; Kanwal et al., 2022). However, in the omnichannel context, there has not been an extensive study of the mechanisms behind the cultivation of customer loyalty. While the industry has emphasized the significance of attracting customers across channels, the literature on attracting customers through omnichannel retailing remains relatively limited. Furthermore, Pookulangara et al. (2011) suggest that exploring the enhancement of customer loyalty through the integration of various channel types and the provision of a collaborative shopping experience is worthwhile. Therefore, this study aims to delve into whether customer experience becomes a significant factor influencing customer loyalty in the omnichannel context.

2.2. Omnichannel integration

As retailers manage more and more channels, they must seek ways to concurrently operate these channels and provide competitive services to their customers. Channel integration refers

to the measures taken by a company to facilitate seamless cooperation among its various channels, enabling synchronized operations (Hamouda, 2019). Omnichannel retail aims to collaborate and integrate all available channels, ensuring a consistent customer experience throughout all channels and at any stage of purchase process (Cummins et al., 2016). Therefore, Lee et al. (2019) consider channel integration as a key element of omnichannel retail. This study argues that channel integration aims to leverage the benefits of each utilized channel for optimizing the customer experience, fostering customer loyalty, and eliminate the phenomenon of cannibalization by creating synergies between channels, thus improving company performance (Shen et al., 2018). Currently, omnichannel integration is showing an increasing diversity of content. Abrudan et al. (2020) emphasize that achieving seamlessness and consistency is crucial for the integration of omnichannel retail channels. Consistency mainly means content consistency, i.e., the degree of similarity in information about products, prices, services, and transactions that consumers perceive when shopping across channels in an omnichannel retailer, while seamlessness refers to how easily customers can move between channels during the shopping process. To achieve the goal of enabling consumers to freely switch between various stages and channels of their purchases, various integrated services need to be provided, covering the entire purchasing process.

Previous research findings suggest that channel integration has positively impacted many aspects, including engagement and word-of-mouth (Lee et al., 2019), empowerment (Zhang et al., 2018) switching costs (Li et al., 2018), perceived fluency (Shen et al., 2018), cross-purchase intentions (Hossain et al., 2020), and perceived value (Hamouda, 2019). However, limited research has been done on the impact of channel integration on customer experience and satisfaction within omnichannel environments. Furthermore, Chen et al. (2022) propose that applying channel integration to offer a collaborative customer experience to enhance customer loyalty should be a vital research direction. Consequently, this research seeks to further explore how omnichannel integration improves customer experience and satisfaction, thereby enhancing customer loyalty.

2.3. Customer experience

Tyrväinen et al. (2020) propose that customer experience is the subjective and internal responses of buyers upon interacting with a business (Godovykh & Tasci, 2020). Thus, it reflects the overall evaluation of customers towards the retailer's services, brand, and products (Homburg et al., 2017; Lemon & Verhoef, 2016). Mahrous and Hassan (2016) suggest that the concepts of perceived risk, shopping enjoyment, consumer innovation and convenience pursuit are key components of multichannel retail customer experience. However, the research on omnichannel customer experience is in its early stages (Piotrowicz & Cuthbertson, 2014). For consumers, a true omnichannel experience implies the freedom to move between available channels throughout the entire purchase process according to their needs or preferences (Zhang et al., 2019). This study regards omnichannel customer experience as the overall perceptions and responses of customers to the channel integration services offered by omnichannel retailers, which stem from the interactions with the various channel touchpoints (Verhoef et al., 2015).

Many of the early scholars focused primarily on customer experience in brick-and-mortar retail environments. Typically, customer experience is affected by factors that include service interface, retail atmosphere, pricing and store brand (Verhoef et al., 2009). However, the advent of e-commerce and mobile commerce has introduced new influencing factors, including convenience/utility, ease of use, customization/personalization, and website aesthetics (Bleier et al., 2018; Faiola et al., 2013; Klaus, 2013; Loiacono et al., 2007; Magrath & McCormick, 2013). In a multichannel environment, while some research have indicated that channel

integration influences customer experience (Homburg et al., 2017; Lemon & Verhoef, 2016), research examining the influence of omnichannel integration on customer experience within the omnichannel environment remains relatively limited. Therefore, this study will focus on "how omnichannel integration affects customer experience development within an omnichannel setting."

2.4. Customer satisfaction

Torres and Kline (2006) argue that customer satisfaction is "a person's evaluation of how well a product or service has fulfilled their anticipations". Satisfaction is likely to occur when a shopper's experience meets or exceeds their expectations (Oliver, 2014). A study by Seck and Philippe (2013) in a multichannel context concluded that satisfaction is "the result of a continuous experience through all channels". Many studies have explored the impact of customer satisfaction on purchase intention (Hsu et al., 2012). In addition, enhancing customer satisfaction not only increases the company's sales, profits, but also enhances the market share (Ghotbabadi et al., 2016). Therefore, customer satisfaction is a key factor in improving customer loyalty (Hamouda, 2019).

In the environment of omnichannel, Ghotbabadi et al. (2016) suggested that information consistency enhances customer satisfaction. Furthermore, within the sphere of omnichannel banking, Hamouda (2019) highlighted a positive correlation between the quality of omnichannel integration and customer satisfaction. However, within the domain of omnichannel retailing, there is still a dearth of corresponding research regarding whether comprehensive omnichannel integration is a factor that affects customer satisfaction.

3. Theoretical framework and Hypothesis Development

3.1. Theoretical framework

With the emergence of the omnichannel retailing model, omnichannel retail enterprises are continuously expanding more diversified consumer scenarios. Therefore, consumers are facing more external and internal perceived stimuli. The integrated services offered by omnichannel retailers across various shopping channels may potentially impact consumers' perceptions of their shopping experiences and satisfaction, consequently influencing their attitudes and shopping behaviors. Hence, the aim of this study is to explore the mechanisms of how channel integration stimuli affect consumer behaviors in the omnichannel environments. The SOR framework is known to have been used extensively to examine customer behavior in online and traditional retail environments. It is assumed that external stimuli (S) such as environmental cues can influence consumers' internal states (O), encompassing personal assessments, experiences, and feelings, which then drive the consumers' responses (R). Upon reviewing existing research literature, it is observed that many scholars have validated relationships grounded in the S-O-R theory model, such as the connection between channel integration and customer experience (Chung et al., 2022; Gao et al., 2021; Quach et al., 2022), the relationship between customer experience and customer loyalty (Makudza, 2021; Manyanga et al., 2022). Nonetheless, there remains a research gap concerning how channel integration in omnichannel settings can effectively enhance customer loyalty. Thus, this study, grounded in the S-O-R model, constructs a research framework with channel integration in omnichannel environments as the stimulus variable (S), customer experience and customer satisfaction as the organismic variables (O), and customer loyalty as the response variable (R). The goal is to investigate how customers assess the customer experiences and satisfaction when perceiving a retailer's channel integration services, ultimately influencing omnichannel customer loyalty (as illustrated in Fig. 1).

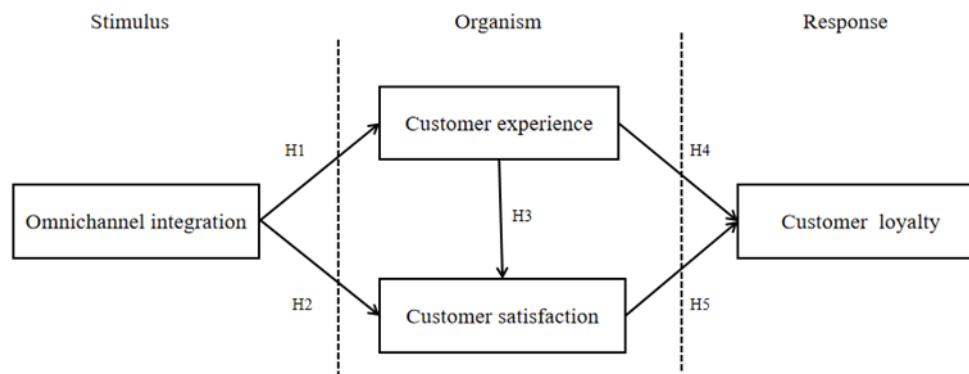


Figure 1. Research framework.

3.2. Research hypothesis

3.2.1. The impact of Omnichannel integration on Customer experience

Omnichannel retailers enhance the competitiveness of their firms by synergistically integrating all channels to deliver a seamless customer experience (Gavinelli et al., 2017). For example, Omnichannel integrated promotions ensure that promotional information remains synchronized across all customer touchpoints (Gao et al., 2021). This reduces costs for customers, helping them save on their purchase expenses (Wu & Chang, 2016), thus enhancing customer shopping efficiency and practical value. Online and offline stores provide uniform product and price details across all channels eliminates the need for customers to expend additional effort in cross-channel product and price comparisons, thereby reducing evaluation costs and assisting customers in making more convenient and efficient shopping decisions (Gao et al., 2021). Integrated transactional information enables every customer to be regarded consistently across various touchpoints within the omnichannel system (Zhang et al., 2018). Leveraging comprehensive transaction data, such as customers' personal preferences, purchase patterns, and shopping history, enables companies to offer personalized recommendations (Li et al., 2023), thereby creating an outstanding customer experience. Finally, Integrated customer service provided by omnichannel retailers enables to enjoy consistent service across any channels (Gao et al., 2021). Customers have the option to repair and return products purchased online by visiting physical stores (Jin et al., 2020), which improves service convenience and further enhances the customer experience. Based on previous research, we have put forth the hypothesis.

Hypothesis 1: Omnichannel integration positively affect customer experience.

3.2.2. Impact of Omnichannel integration on Customer satisfaction

Customer satisfaction is defined as the evaluation provided by a customer regarding whether the product or service meets their requirements and expectations (Jaiswal, 2008). In an omnichannel system where information is highly integrated, customers have the ability to browse products and check stock status at offline stores online, while accessing information from the online store via an Internet kiosk in the company's offline store (Cattapan & Pongsakornrunsilp, 2022). This flexibility in information access allows customers to seamlessly switch between channels, thereby enhancing customer satisfaction (Lee, 2020). Integration order fulfillment in an omnichannel system allows customers the opportunity to physically assess products at offline stores before picking up an online order (Ishfaq et al., 2016). This empowerment reduces customers' transaction risks, enhances their trust and satisfaction with the retailer (Zhang et al., 2018). Furthermore, customers can complete the

entire order process (ordering, payment, returns, or product exchanges) through any preferred channel, significantly enhancing the convenience and personalization of shopping, thereby increasing customer satisfaction (Cattapan & Pongsakornrunsilp, 2022). Therefore, the research hypotheses are as follows.

Hypotheses 2: Omnichannel integration positively affect customer satisfaction.

3.2.3. Impact of Customer experience on Customer satisfaction

Within the omnichannel context, omnichannel integration strives to provide customers with a consistent, seamless, and smooth purchase experience (Ryu et al., 2023). Chen et al. (2022) found that the consistency of products and promotional strategies can reduce their perception of confusion and uncertainty and lower customers' search costs, channel-switching costs, and learning costs (Chang & Li, 2020), thereby increasing customer trust and satisfaction with the retailer. Omnichannel integration makes it easier for retailers to obtain customer data and utilize this data to personalize the customer experience. By understanding customers' shopping habits, preferences, and history, retailers can provide them with more relevant and customized recommendations and offers (Carnein et al., 2019), thereby significantly enhancing customer satisfaction. When omnichannel retailers provide customers with a seamless integration of channels for an exceptional customer experience, customers can interact with the company through more touchpoints (Shen et al., 2018). This diversity enhances customers' convenience experience, enabling them to shop in the way that suits them best (Mosquera et al., 2017), ultimately leading to increased customer satisfaction. Finally, under the excellent omnichannel integration strategy, customers gather experiences from each channel and form evaluations. The holistic omnichannel experience offered by retailers (Chang & Li, 2020) leads to the phenomenon of cumulative experience. When this experience is positive, customers tend to give higher evaluations of the retailer (Chen et al., 2022), leading to higher customer satisfaction. Therefore, this study formulates the following hypotheses:

Hypotheses 3: customer experience positively affect customer satisfaction.

3.2.4. Impact of Customer experience on Customer loyalty

Omnichannel customer experience refers to the overall assessment of purchasing products through all channels provided by a company. It is the subjective perception resulting from the interaction between customers and various touchpoints offered by businesses (Lazaris et al., 2021). This experience has been proven to be an essential element in enhancing customer retention, stimulating repeat purchases, and building customer loyalty (He & Yan, 2018). Wei et al. (2019) considers that if consumers have an improved omnichannel shopping experience, they are likely to express higher satisfaction with the company's services and products, making them more inclined to remain loyal to that retailer. Furthermore, existing research has explicitly indicated that offering consistent online and offline experiences contributes to customers enjoying pleasant shopping experiences and encourages them to transition from functional consumption to a more experience-oriented consumption approach (Chen et al., 2022). Consequently, customers are more inclined to speak positively about the company's products and become loyal repeat customers (Gao & Fan, 2021). Therefore, the research hypotheses are as follows:

Hypotheses 4: Customer experience positively affect customer loyalty.

3.2.5. Impact of Customer satisfaction on Customer loyalty

The integration of omnichannel, encompassing both offline and online business models, has brought favorable synergistic effects to retail enterprises. This collaborative mechanism also yields loyalty-related outcomes (Lazaris et al., 2021). With an increasing array of channels at

their disposal, consumers have more choices to assess and enjoy the services and features offered by retail stores (Li et al., 2017). When customers are free to select their preferred channels, it reduces their perceived uncertainty, enhances customer satisfaction, and simultaneously bolsters the brand attractiveness (Li et al., 2018; Wadhwa & Zhang, 2015) and customer retention rates of retailer (Lazaris et al., 2021). Lazaris et al. (2021) also point out that an integrated omnichannel shopping environment further heightens consumer satisfaction with the available service suites, thereby influencing their decision to remain loyal to the retailer. Furthermore, according to Wijaithammarit and Taechamaneestit (2012), customer loyalty stems from various behaviors associated with customer satisfaction, including purchases, sharing, repurchases, and recommendations. Moreover, many multichannel and omnichannel studies have corroborated that customer satisfaction is an important predictive factor for loyalty (Cotarelo et al., 2021; Murfield et al., 2017). Herhausen et al. (2019) studied different consumer groups and found that customer loyalty can be explained by analysing their usage levels of touchpoints and their satisfaction with products and journeys. Therefore, the research hypotheses are as follows:

Hypotheses 5: Customer satisfaction positively affect customer loyalty.

4. Methods

4.1. Sample selection and data collection

To validate the research framework and hypotheses, this study employed a quantitative approach with survey data collected between June 23, 2023, and August 11, 2023, to measure the degree of customers' perceptions of omnichannel integration, customer experience, customer satisfaction and customer loyalty. According to McKinsey's 2019 survey of consumer omnichannel purchasing behavior in China, 49% of consumers have actively chosen and experienced omnichannel retail purchasing methods (Bu et al., 2019). As a result, this study utilized the purposive sampling method, relying on researchers' judgment when selecting units for investigation, such as individuals, cases/organizations, events, or data segments. Researchers followed various criteria and guiding principles from referenced literature to guarantee the representativeness and reliability of the study (Rai & Thapa, 2015). Based on this approach, the study selected a group of customers with omnichannel shopping experience as the validation sample, specifically consumers who have shopped across different channels of an omnichannel retailer. To ensure that survey participants indeed had practical omnichannel shopping experience, they were queried at the beginning of the survey about whether they had made purchases from various channels of a particular omnichannel retailer within the past six months. Only those who confirmed having such omnichannel purchasing experiences were allowed to proceed with the remaining survey. This survey was conducted through the use of the largest online survey platform in China, "Wenjuanxing" (<https://www.wjx.cn/>) (Xin et al., 2022). On this platform, researchers accessed the system by logging into their Wenjuanxing accounts and initiating the survey design process by clicking the "Create Survey" button. Once the survey design was completed, the system automatically generated a questionnaire link, enabling the convenient sharing of the questionnaire across various platforms, including social media and email. Respondents could easily access and complete the survey by clicking on the provided questionnaire link. Therefore, the sample size for this survey includes a diverse population with a range of different characteristics across mainland China. In the end, the study collected 283 valid responses. The purpose of this research method was to ensure that our sample is representative, enabling us to provide more accurate answers to our research questions and validate our hypotheses. Table 1 provides an overview of the demographic information of the sample.

Table 1
Demographic information.

| | Number | Percentage (%) |
|-----------------------------|--------|----------------|
| Gender | | |
| Male | 130 | 45.9 |
| Female | 153 | 54.1 |
| Age(year) | | |
| ≤20 | 6 | 2.1 |
| 21-25 | 62 | 21.9 |
| 26-30 | 78 | 27.6 |
| 31-35 | 69 | 24.4 |
| 36-40 | 46 | 16.3 |
| ≥41 | 22 | 7.8 |
| Monthly income (USD) | | |
| ≤414.5 | 43 | 15.2 |
| 414.7-829 | 97 | 34.3 |
| 829.2-1243.5 | 68 | 24 |
| 1243.7-1658.4 | 42 | 14.8 |
| ≥1658.5 | 33 | 11.7 |
| Education | | |
| High school or below | 18 | 6.4 |
| Junior college | 66 | 23.3 |
| Undergraduate | 152 | 53.7 |
| Postgraduate | 47 | 16.6 |

4.2. Items Generation

This research model comprises four variables: omnichannel integration, customer experience, customer satisfaction and customer loyalty. This study modified items that were previously validated in order to make them appropriate for the study's setting. Specifically, seven items for measuring omnichannel integration were adapted from Zhang et al. (2018). Three items related to customer experience were derived from Gao et al. (2021). Three items used to assess omnichannel customer satisfaction were modified from the Cattapan and Pongsakornrunsilp (2022). Lastly, four items related to omnichannel customer loyalty were adapted from Chen et al. (2022).

The questionnaire comprised five sections. Part A was used to measure the degree of omnichannel integration (OI). Part B consisted of nine items aimed at gathering information about customer experience (CE). Part C included three items related to customer satisfaction (CS). Part D was used to measure customer satisfaction (CS). Finally, Part E consisted of six

items related to respondent demographics. There were 17 questions in the survey overall, and each measurement item was scored on a 5-point Likert scale.

4.3. Translation and Pre-testing

Since this study was carried out in mainland China, we translated the questionnaire from English to Chinese to make it more convenient for Chinese respondents to respond. To guarantee the accuracy of the translation, we employed the back-to-back translation technique (Brislin, 1970).

During the pilot testing phase, we formed an expert panel consisting of two marketing experts and two corporate executives from the omnichannel company. The experts were asked to assess these questionnaire items and provide feedback to determine if these items were suitable for measuring the research variables. Based on the feedback from these four experts, the research team made modifications to the measurement items. Additionally, before commencing actual data collection, we conducted a small-scale test involving 20 individual consumers who had made purchases through various channels of an omnichannel retailer. Based on the questions and feedback raised by these participants regarding the questionnaire's content, format, and answers, the researchers made minor refinements and adjustments to the questionnaire. Eventually, the revised questionnaire was used for formal data collection.

5. Findings

In this research, we employed the partial least squares structural equation modeling (PLS-SEM) approach to assess the measurement and structural models through the use of SmartPLS3 (Ringle et al., 2015). SmartPLS3 is a specialized statistical software capable of conducting various PLS-SEM analyses, encompassing the bootstrapping routines that will be performed in subsequent analyses (Hair et al., 2019). PLS-SEM permits the inclusion of reflective and formative variables within the model and is adaptable to data with both normal and non-normal distributions (Hair et al., 2021). Therefore, PLS-SEM is appropriate for this study.

5.1. Common method bias

When multiple variables in a study are collected using the same measurement method, such as self-report surveys, it may result in the emergence of Common Method Bias (CMB) (Podsakoff et al., 2003). CMB is a systematic measurement error stemming from the use of the same measurement method, and it can potentially lead to misleading conclusions regarding the relationships observed in the data. Therefore, in research, measures should be taken to detect and correct for CMB to ensure the attainment of accurate and reliable research outcomes. Diamantopoulos and Siguaw (2006) concluded that when the Variance Inflation Factor (VIF) exceeds 3.3, it serves as an indicator of pathological collinearity and may imply the existence of common method bias in the model. In contrast, if all VIFs generated by the full collinearity test are at or below 3.3, it can be inferred that the model is devoid of common method bias. All of the VIF values in Table 2 are less than 3.3, demonstrating the absence of common technique bias in our findings.

Table 2

Variance inflation factor (VIF).

| variable | VIF |
|-------------------------|-------|
| Omnichannel integration | 1.434 |
| Customer experience | 1.521 |

| | |
|-----------------------|-------|
| Customer satisfaction | 1.728 |
| Customer loyalty | 1.772 |

5.2. Measurement model

Evaluating the measurement model entails two crucial aspects: reliability and validity. In this study, convergent validity and discriminant validity were employed to assess the reliability and validity of the measurement model. According to Hair Jr et al. (2021), higher factor loadings indicate that the items in a measurement model are more closely related to the construct they are intended to measure, which is a positive sign of convergent validity. Typically, PLS-SEM accepts a factor loading of 0.7 or higher. Additionally, the average variance extracted (AVE) can also be used to assess the effectiveness of convergence, with values of 0.5 or higher typically considered acceptable. According to Table 3, all reflective variables have factor loadings larger than 0.7 and AVE values more than 0.5, meeting the respective assessment criteria. This study employed composite reliability (CR) to evaluate internal consistency reliability, following the recommendation of Gefen et al. (2000). According to Hair et al. (2016), in exploratory research, composite reliability (CR) values ranging from 0.7 to 0.9 are deemed satisfactory, while values exceeding 0.9 indicate an exceptionally high level of reliability. The CR values presented in Table 3 precisely meet this criterion.

Table 3
Convergent validity.

| variable | Item | Loading | CR | AVE |
|------------------------------|------|---------|-------|-------|
| Omnichannel integration (OI) | OI1 | 0.908 | 0.928 | 0.650 |
| | OI2 | 0.780 | | |
| | OI3 | 0.793 | | |
| | OI4 | 0.778 | | |
| | OI5 | 0.816 | | |
| | OI6 | 0.778 | | |
| | OI7 | 0.784 | | |
| Customer experience (CE) | CE1 | 0.839 | 0.873 | 0.697 |
| | CE2 | 0.837 | | |
| | CE3 | 0.828 | | |
| Customer satisfaction (CS) | CS1 | 0.870 | 0.892 | 0.733 |
| | CS2 | 0.841 | | |
| | CS3 | 0.857 | | |
| Customer loyalty (CL) | CL1 | 0.888 | 0.904 | 0.702 |
| | CL2 | 0.842 | | |
| | CL3 | 0.823 | | |
| | CL4 | 0.797 | | |

The assessment of discriminant validity can be conducted using various methods. However, according to Henseler et al. (2015), the Heterotrait-Monotrait (HTMT) method is considered to offer higher specificity and sensitivity when evaluating discriminant validity. Therefore, this study chose to employ the HTMT method to assess the discriminant validity of the measurement model. Following the recommendations of Hair Jr et al. (2021), a threshold of 0.90 is typically employed for the HTMT when there is a high degree of similarity between latent constructs, whereas a threshold of 0.85 is often used when the similarity is moderate. As depicted in Table 4, all HTMT ratio values are below 0.85, demonstrating good discriminant validity among different concepts or attributes in the measurement model.

Table 4
Discriminant validity: HTMT.

| variable | OI | CE | CS | CL |
|----------|-------|-------|-------|----|
| OI | | | | |
| CE | 0.472 | | | |
| CS | 0.522 | 0.642 | | |
| CL | 0.552 | 0.613 | 0.684 | |

5.3. Structural model

Coefficient of determination (R^2) is an important indicator utilized to assess the accuracy of structural model predictions. The value of R^2 is considered moderate at 0.33 and substantial at 0.67 (Chin, 1998). Hence, the overall variance was explained by R^2 , which is 0.412 for CE, 0.339 for CS, and 0.391 for CL, all exceeding 0.33. This suggests that our model possesses a moderate level of explanatory capability.

Path coefficient are numerical values that represent the strength and directions of relationships between variables in a structural model. The magnitude of the coefficient signifies the strength of the relationship, with larger coefficients indicating a stronger influence and smaller coefficients indicating a weaker influence (Hair et al., 2016). To assess the significance of relationships or effects in statistical analysis, researchers typically examine the relevant p-values. If the p-value corresponding to the path coefficient is less than 0.01, it can be concluded that the relationship represented by that path coefficient is statistically significant and is unlikely to be attributed to chance factors. The findings show that omnichannel integration had a positive effect on customer experience ($\beta = 0.404$, $p < 0.001$), supporting H1, while it positively influenced customer satisfaction ($\beta = 0.298$, $p < 0.01$), confirming H2. Furthermore, customer experience directly affected customer satisfaction ($\beta = 0.394$, $p = 0.001$), which supported H3. Finally, customer experience positively influenced customer loyalty ($\beta = 0.284$, $p < 0.01$), while customer satisfaction significantly positively influenced customer loyalty ($\beta = 0.346$, $p < 0.001$). Thus, H4 and H5 were confirmed (See Table 5).

Table 5
Hypothesis testing.

| Hypotheses | Relationship | Std Beta | Std Error | t- value | p- value | BCI LL | BCI UL | f ² |
|------------|--------------|-------------|--------------|-------------|-------------|-----------|-----------|----------------|
| H1 | OI → CE | 0.404 | 0.094 | 4.310 | <.001 | 0.247 | 0.554 | 0.195 |

| | | | | | | | | |
|----|---------|-------|-------|-------|-------|-------|-------|-------|
| H2 | OI → CS | 0.298 | 0.118 | 2.519 | 0.006 | 0.109 | 0.498 | 0.113 |
| H3 | CE → CS | 0.394 | 0.123 | 3.199 | 0.001 | 0.173 | 0.580 | 0.197 |
| H4 | CE → CL | 0.284 | 0.114 | 2.486 | 0.006 | 0.086 | 0.465 | 0.097 |
| H5 | CS → CL | 0.430 | 0.115 | 3.747 | <.001 | 0.230 | 0.608 | 0.224 |

Shmueli et al. (2016) argued that assessing statistical models' predictive power is essential to every research project. This is because marketing researchers usually place more emphasis on prediction rather than explanatory modeling, seeking to assess or quantify the potential causal relationship that can be generalized from a sample to other target populations. Therefore, the study conducted by Shmueli et al. (2016) presents a series of methods for predicting PLS path models and evaluating their predictive ability. Researchers can use various prediction statistics to assess the predictive ability of their models. Shmueli et al. (2019) stated that researchers mainly employ RMSE except when the distribution of prediction errors exhibits significant non-symmetric. The assessment of predictive power depends on the variance between the items (PLS-LM). When there is low variance among all items, it indicates strong predictive power. Conversely, if all variances are high, the predictive relevance is not proven. If most items differences are low, it suggests moderate predictive power, while if only a few items differences are low, it indicates lower predictive power. As can be seen from Table 6, a few errors of PLS models that were lower than those of the LM model. Therefore, the predictive power of our model is not very high.

Table 6
Pls-predict.

| Item | PLS RMSE | LM RMSE | PLS-LM |
|------|----------|---------|--------|
| CL1 | 1.217 | 1.193 | 0.024 |
| CL2 | 1.045 | 1.045 | 0 |
| CL3 | 1.047 | 1.046 | 0.001 |
| CL4 | 1.058 | 1.065 | -0.007 |

6. Discussion and Conclusion

During the COVID-19 pandemic, notable shifts have transpired in consumer purchasing patterns. Consumers are increasingly seeking product information through both offline and online channels (Cattapan & Pongsakornrungrsilp, 2022). Furthermore, consumers are progressively utilizing multiple channels throughout the entire shopping process (Jocovski et al., 2019). This trend is driving the widespread adoption of omnichannel integration. In order to stand out in the competitive landscape and enable consumers to shop effortlessly across channels, omnichannel retailers are actively seeking the optimal cross-channel integrated retail mix. This research utilizes the S-O-R model to validate the positive impact of omnichannel integration on customer experience and satisfaction, thereby enhancing customer loyalty toward omnichannel retail enterprises.

This study employed an empirical approach using structural equation modeling to analyze survey data from 283 customers with experience in omnichannel purchases. The research findings confirmed all the hypothesized relationships between OI, CE, CS, and customer loyalty in omnichannel retail. Firstly, it was discovered that omnichannel integration

significantly positively affect customer experience (see H1). This discovery is consistent with previously validated perspectives in the literature, indicating that in an omnichannel environment, channel integration significantly contributes to shaping customer experience (Gao et al., 2021). Secondly, the research results strongly support the positive influence of omnichannel customer experience on customer satisfaction (see H3). This suggests that when customers have a positive experience during their shopping journey, they are more likely to feel satisfied, thereby enhancing their loyalty to the enterprise (Cotarelo et al., 2021). Furthermore, the research results also indicate that increasing customer satisfaction during omnichannel purchases significantly enhances customer loyalty (see H5). Customer loyalty is strongly influenced by customer satisfaction, supported by previous research findings, whether in a single-channel, multi-channel, or omnichannel context (Cotarelo et al., 2021; Hamouda, 2019). Additionally, the findings from the study also demonstrate that omnichannel integration positively influences customer satisfaction (see H2), thus filling a knowledge gap in previous research. Finally, the hypothesis concerning the direct relationship between omnichannel customer experience and customer loyalty was also confirmed (see H4), with the findings indicating that the better the shopping experience for customers, the higher their loyalty to omnichannel retail. Therefore, this also underscores the significance of creating an optimal customer experience for customers and gain a competitive advantage.

6.1. Theoretical Implications

This research has made contributions to the current literature in the following ways. Firstly, building upon existing research, this study has provided a clear definition of omnichannel integration and employed seven specific survey items to examine how omnichannel integration affected customer behavior across six dimensions. Consequently, this contributes to a clearer understanding of the essence and scope of omnichannel integration for both scholars and practitioners. Empirical findings demonstrated that by enhancing the integrated services offered by omnichannel retailers in these six aspects, customer experience and satisfaction can be effectively improved, thereby strengthening customer loyalty. This provides a more comprehensive perspective for a more profound comprehension of the ways in which channel integration affects customer behavior.

Furthermore, this research broadens the utilization of the SOR model from traditional retail and online selling to omnichannel retailing. In the traditional SOR model, environmental attributes are typically regarded as external stimuli. However, our research distinguishes itself by treating omnichannel integration, a distinctive feature of omnichannel retail, as a stimulus to delve into its impact on consumer behavior. Hence, we formulated a conceptual model grounded in the SOR theory to examine whether consumers' perceptions of channel integration affect their experiences and satisfaction, and whether these factors positively influence customer loyalty in omnichannel retail. Based on the results from our validated model, there is potential for further refinement and optimization of operational strategies in omnichannel retail. Third, through hypothesis testing, we found that omnichannel integration significantly enhances customer experience (see Table 5). This result highlights the importance of strengthening channel integration in improving customer experience, further confirming that in the omnichannel retail environment, coordinating multiple sales channels to provide consistent and synergistic omnichannel integrated services effectively enhances customer experience. Therefore, this finding provides important theoretical support to the field of customer experience.

Finally, the research results further underscore the importance of customer loyalty. The research indicates that omnichannel customer experience directly contributes to the augmentation of customer loyalty. Furthermore, it has been established that enhancing customer satisfaction

throughout the entire omnichannel purchasing journey significantly elevates customer loyalty. This, in turn, suggests that through the implementation of omnichannel integration aimed at improving customer experience and satisfaction, businesses can effectively fortify their customer loyalty base. This crucial finding serves as a valuable guide for enterprises seeking to gain insights into strategies for attracting and retaining loyal customers.

6.2. Practical and Social Implications

Today, retailers are experimenting with a range of omnichannel initiatives to serve customers, with some achieving success while others face challenges. Evidently, managers require substantial empirical understanding to formulate their strategies within an omnichannel retailing context (Tyrväinen et al., 2020).

Firstly, in the omnichannel retail environment, one of the most important elements in a successful business is customer loyalty. This study addresses some gaps in understanding the mechanisms behind customer loyalty formation found in previous research, offering deeper insights for businesses. It guides them in better tackling challenges in the omnichannel retail environment and enhancing their competitiveness. By strengthening omnichannel integration and improving customer experience and satisfaction, businesses can better meet customer needs and expectations, fostering stronger customer relationships and ultimately increasing customer loyalty. This not only contributes to higher customer satisfaction but also helps to boost customer loyalty, promoting long-term sustainable success for businesses.

Secondly, the evolution of consumer behavior has made omnichannel retail increasingly vital. The research findings underscore the importance of integrating channels to establish a positive customer experience. A deeper understanding and reinforcement of channel integration can assist retailers in better meeting customer needs and providing a consistent shopping experience, consequently enhancing customer satisfaction. This is crucial for attracting and retaining customers, as satisfied customers are prone to making repeat purchases and fostering loyalty. In a fiercely competitive market, this contributes to retail businesses maintaining a competitive edge.

Thirdly, the rise of omnichannel retail has not only transformed the retail business model but has also created more employment opportunities, fostering economic growth. Therefore, this study holds significant importance in enhancing the competitiveness of retailers and driving the entire distribution industry towards the upgrade and transformation of the omnichannel business model.

Finally, this study underscores the pivotal role of channel integration in the realm of omnichannel retail, providing valuable insights for this field. In a rapidly evolving market environment, omnichannel retailers must continuously refine their channel integration strategies to align with emerging consumer demands and trends. By doing so, businesses are more likely to stand out in the market, attract a larger customer base, and expand their market share. Consequently, this research offers crucial guidance to these retailers, identifying the key elements for enhancing customer experience, satisfaction, and loyalty. This, in turn, aids retailers in more effectively shaping their omnichannel strategies and achieving business success.

6.3. Limitations and Suggestions for Future Research

This study has yielded some thrilling and groundbreaking findings. However, it is also necessary to recognize certain limitations. Firstly, the data for this research were gathered exclusively in China, thus care should be taken when generalizing the research findings to other cultures or retail formats. To address this limitation, we strongly recommend conducting cross-national studies using data collected from different countries in the future. Secondly, this study

utilized cross-sectional data to test research hypotheses. Future research can benefit from longitudinal study designs to better capture relationships between variables and enhance the credibility of research results. Thirdly, the validation results indicate that our model's predictive capability is not very high (see Table 6). This may lead to an increased decision-making risk in practical applications. Therefore, risk management measures should be taken, such as establishing fallback options for decisions. Alternatively, before applying the model, further validation and testing should be carried out to assess the stability and accuracy of the model. Fourthly, this study did not discuss the applicability of the theoretical model in different industry domains. Various industries may have distinct characteristics and influencing factors, making it inappropriate to simply apply the same model to a specific industry. Researchers can consider customizing the model based on industry-specific features and requirements through market research or by seeking input from domain experts.

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