

Research on the Impact of Multi-channel Integration Quality on Customers' Engagement Behavior

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Abstract: In the face of increasingly fierce market competition, many new retailers adopt online and offline multi-channel integration to enhance their attractiveness and competitiveness, and customer engagement behavior not only provides a new way of marketing management for new retailers, but also contributes to the increase of actual performance level. To elucidate the mechanism of the multi-channel integration quality of new retail companies on customer engagement behavior, a pioneering model was constructed by introducing product involvement as a mediating variable and regulatory orientation (promotion orientation and defense orientation) as a moderating variable. 510 consumers with shopping experience in the same new retail company were selected for the empirical study. The findings of the study are as follows: the multi-channel integration quality (transparency of service construction, freedom of channel choice, process consistency and information consistency) significantly affects customer engagement behavior; new retail companies should enhance product involvement by improving the attractiveness of the product itself, so that consumers can enhance product involvement and thus influence customer engagement behavior; compared with defense orientation consumers, product involvement has a more significant positive impact on promotion-oriented consumers and is more likely to lead to customer engagement behavior. The above findings imply rich managerial insights that new retailers in different categories can further enhance their competitiveness by improving the multi-channel integration quality and thus influencing customer engagement behavior.

Keywords: Multi-channel integration quality, Customer engagement behavior, Product involvement, Regulatory orientation.

1. Introduction

As one of the basic industries to protect and improve people's livelihood (Hwang et al., 2021), the retail industry not only occupies an important position in the national economy, but also plays an important role in facilitating residents' consumption and stabilizing market prices. According to the research report of China Internet Network Information Center (CNNIC), the total retail sales of social consumer goods in the first three quarters of 2022 reached 32.03 trillion yuan, among which, the total online retail sales accounted for 25.7%, reaching 8.24 trillion yuan, with a year-on-year growth of 6.1% compared with 2021. Therefore, driven by various reasons such as the upgrading of residents' consumption and the change of market competition, many traditional retail companies, considering the significant advantages of online channels, have started to make some transformations such as joining e-commerce platforms and increasing online sales channels to try to change their current development disadvantages (Hübner et al., 2015). Therefore, the new multi-channel retailing with online and offline interoperability has not only started to become the key to meet residents' personal consumption needs, but also the primary method to break through the bottleneck of traditional retail development (Bttcher et al., 2021).

The implementation of high-quality multi-channel integration by retailers can then maximize customer attraction (Cook, 2014), significantly influence consumers' product involvement in the retailer, which in turn leads to engagement behaviors, such as word-of-mouth communication and positive feedback, thus attracting more consumers and contributing to the continuous improvement of business performance levels (Tagashira et al., 2019; Menezes et al., 2021). However, in the practical activities of enterprises,

although the integration and interaction of offline and online channels are currently considered as the norm by retail enterprises, most of them do not have a clear idea about different types of products and how to effectively provide multi-channel services, and simply stacking various retail channels does not necessarily improve the business efficiency of enterprises, and may even damage the original channels of enterprises, thus harming product involvement and engagement behavior. Therefore, the multi-channel integration quality of retailers and has attracted the attention of many scholars and enterprises (Melsted, 2015).

At present, a large number of studies have shown that the implementation of efficient multi-channel integration strategies by firms can have a significant impact on consumer intentions or behaviors, mainly involving customer loyalty (Asare et al., 2022), purchase intentions (Oliver et al., 2015), and cross-channel retention behaviors (Nguyen et al., 2022). While in the social media environment, many new retailers consider customer engagement behavior as a core competency (Blackmon, 2016), there are few studies on the impact of integration quality on it. In the era of high-speed information dissemination, consumers can obtain relevant information about a company or product from multiple channels, and the more information they know, the more likely they are to influence subsequent behavioral tendencies, while existing studies have ignored the mediating effect of product involvement in this context. Regulatory orientation also affects consumers' final intentions or behavioral tendencies, but few studies have addressed this moderating variable in studies of multi-channel

integration quality.

Based on the above research shortcomings, this paper aims to explore the influence mechanism of multi-channel integration quality on customer incorporation behavior, and

use product involvement as a mediating variable and regulatory orientation as a moderating variable to seek how to guide consumers' active communication on the Internet, which is conducive to effectively enhancing the effectiveness of multi-channel retail enterprises, in order to provide theoretical support and practical suggestions for multi-channel integration of new retail enterprises.

2. Literature Review

2.1. Multichannel integration quality

In recent years, many scholars have defined multi-channel integration from different perspectives. From the firm's perspective, Steinfield et al.(2002) defined multi-channel integration quality as a result in which retailers make full use of information technology to rationalize the allocation of resources within the firm. Pentina et al.(2009) argued that multi-channel integration quality consists of two levels: on the one hand, it is integration quality at the marketing level to ensure consistency of product brand image across channels; on the other hand, it is integration quality in operations and information management, integrating channel logistics processes and customer data. From a consumer perspective, Mcgoldrick et al.(2007) claimed that multi-channel integration quality is a "seamless" shopping experience provided by retailers to customers, who can switch between channels freely at any time according to their needs. Teltzrow et al.(2003) found that multi-channel retailers are better able to meet the diverse needs of consumers and cater to their consumption habits than single-channel retailers. In fact, since multi-channel integration quality involves several aspects, some scholars define it by considering both consumer and business perspectives. Cao et al.(2015) pointed out that multi-channel integration quality is the extent to which a company coordinates and integrates different channels according to the actual market conditions, which not only benefits the performance of the company but also facilitates the provision of services to consumers. Therefore, this paper considers multichannel integrated quality as a way for consumers to experience a consistent consumer experience across multiple channels, both online and offline, by experiencing the same seamless service provided by the same new retailer.

Sousa(2006) considered multi-channel integration quality as the most critical aspect in determining service quality, and took the lead in developing criteria to measure multi-channel integration quality, which were divided into transparency of service quality, freedom of channel choice, process consistency, content consistency. Hyun-Hwa et al.(2010) classified the quality of multichannel integration as freedom of channel choice, message consistency, email marketing capability, channel interactivity, customer service evaluation of the store. Oh et al.(2010) defined multi-channel integration from the perspectives of both service experience and information quality, specifically into the following six dimensions, which includes order fulfillment integration, customer service integration, product and pricing information integration, promotional information strategy integration, information access integration, and transaction information integration.

Therefore, in terms of dimensions, this paper mainly adopts the views of scholars such as Sousa(2006), who classified the multi-channel integration quality into transparency of service quality, freedom of channel choice, information consistency,

and process consistency. Among them, information consistency, i.e., consumers can obtain the same product or service information through several different channels; process consistency, i.e., different channels have the same process attributes among them, such as service format, waiting time, and service quality; transparency of service quality, i.e., consumers' perceptions formed by the specific characteristics of different channels offered by companies, which can have a direct impact; freedom of channel choice, i.e., the freedom of consumers to choose different channels according to their needs.

2.2. Customer engagement behavior

Customer engagement behavior involves various disciplines such as management, marketing, and organizational behavior, and many scholars have defined it from different perspectives. Van et al. (2010) were the first to define customer incorporation behavior in 2010 as a behavior driven by some motivation that makes customers make purchases other than those related to the company or brand. Verleye et al. (2014) argued that it refers to the personal involvement of consumers or potential consumers in corporate activities or product improvement. Kumar et al. (2010) concluded that customer inclusion should not only refer to behaviors other than purchase, but should also include the purchase behavior itself. Gong (2018), on the other hand, took virtual brand communities as the research context and defined customer engagement behavior as in-role and extra-role behavior: in-role behavior is customer loyalty; extra-role behavior is word-of-mouth communication and opinion feedback. Synthesizing the views of many scholars above, although consumers' purchase behaviors bring intuitive benefits to companies, consumers' non-transactional behaviors, such as word-of-mouth communication, advocacy, and providing suggestions, can indirectly affect the overall performance of companies. Therefore, based on the research context of retailers' multi-channel integration quality, this paper argues that customer engagement behavior is a non-transactional behavior that is unrelated to consumers' purchase behavior, and consumers are willing to actively spread word-of-mouth, provide feedback evaluation, and suggest improvements for the company.

As for the division dimension of customer engagement behavior, the main views include the following. Some scholars believed that customer engagement behavior is unidimensional, and Hollebeek (2011) also shared the same view that customer engagement behavior is an interactive behavior between individual consumers and the firm in addition to purchase. Kumar et al. (2010) classified customer incorporation behavior as direct contribution behavior (purchase) and indirect contribution behavior (word-of-mouth communication, positive forwarding, providing advice, etc.) based on consumers' contribution to the firm's value. Some scholars have also expanded on the two-dimensional basis and divided it into three dimensions: Verleye et al. (2014) refined customer incorporation behavior into three aspects based on non-transactional behaviors, namely positive word-of-mouth, helping the firm and helping other customers. In addition, Yu et al. (2015) subdivided it into four specific dimensions, namely, facilitation, communication, self-expression, and collaboration. Integrating the above dimensions, this paper argues that customer engagement behavior, as an interactive response between consumers and companies or other consumers, represents non-transactional

behaviors related to companies driven by certain motives, so specific behaviors such as word-of-mouth communication, forwarding recommendation, and positive feedback can better reflect customer integration, which is specifically subdivided into "communication" behavior. The two dimensions are "communication" and "collaboration".

2.3. Product Involvement

Product involvement was first introduced to the marketing field by Krugman (1965), but its definition has not been standardized until now, Zaichkowsky et al. (1985) suggested that product involvement is mainly from the perspective of individual's interest, need, etc., so as to realize the degree of relevance and significance of the thing. The higher the product involvement level, the more meaningful the thing is to the person, or the closer the relationship is to the person, and the more positive the behavior tendency is, and vice versa. Afonso et al. (2018) defined product involvement as the degree to which one's own intrinsic needs, values, and interests are connected to the product or service offered by the firm, indicating the degree to which consumers pay attention to the firm's product. Peng et al. (2019) suggested that product involvement reflects to some extent the degree to which consumers pay attention to the product, which is motivated by their own intrinsic needs, values, and degree of perceived connection and is motivated by. Integrating the views of the above scholars, this paper argues that product involvement is the degree to which a product or service is perceived to be relevant to consumers from their values, intrinsic needs, and personal interests, and also reflects the time and effort consumers spend in the process of information understanding (Hong, 2015). In terms of the dimensional division of product involvement, the RPII scale is more widely used in academia because product involvement emphasizes more on consumers' subjective perceptions (Zaichkowsky et al., 1985), and the relationship between product involvement and consumers can be fully explained through two dimensions: cognitive and affective. Therefore, this study mainly refers to the dimensions divided by the RPII scale for product involvement. Therefore, this study mainly refers to the dimensions of the RPII scale to measure product involvement, and divides product involvement into cognitive and affective dimensions to ensure the validity of the questionnaire.

2.4. Regulatory orientation

Higgins et al. (1997) pioneered the theory of regulatory orientations in 1997, which revealed two types of self-regulation when people face goals based on individual motivation - promotion orientations that tend towards positive goals and defense orientation that avoid negative goals. The defense orientation, which avoids negative goals. The effects of regulatory orientations on individuals include three main aspects: effects on cognition (Mathews et al., 2013), effects on behavioral strategies (Wallace et al., 2009), and effects on individual decision judgments (Lioba et al., 2007). Among them, promotion orientation is associated with the need for enhancement and tends to pursue positive outcomes; defense orientation is associated with the need for safety and behaves more cautiously and tends to avoid negative outcomes (Rhee et al., 2014). Trudel et al. (2012) founded, after a survey study, that for positive outcomes generated during product application, the satisfaction of individuals with promotion orientation was significantly greater than that of individuals with defense orientation, while for negative outcomes, the

individuals were significantly less satisfied with the negative outcomes than with the defense orientation. In addition, according to the length of period orientation, regulation orientation can also be divided into the following two types, i.e., situational regulation orientation with short-term fluctuations and trait regulation with long duration.

By summarizing and sorting out the current research status at home and abroad, it can be found that the current research on customer involvement behavior is mainly focused on a single channel such as traditional offline retail stores or online stores, and few scholars have started from the new retail industry with multi-channel integration. In addition, looking at the existing research results on product involvement, it is not difficult to find that scholars focus more on the relationship between product involvement and customer satisfaction and purchase intention, and the research on the influence of product involvement on customer engagement behavior is still fragmented, and there is no comprehensive and in-depth research analysis on the product involvement of multi-channel integration quality, so it is very important to build a more comprehensive research framework on the influence of multi-channel integration quality on customer engagement behavior. Therefore, it is necessary to build a more comprehensive research framework on the influence of multi-channel integration quality on customer engagement behavior. At the same time, from the existing research results, there are relatively few studies on the relationship between product involvement and regulation orientation, and there are even fewer studies on the relationship between regulation orientation and customer engagement behavior, and no scholars have studied the influence of multi-channel integration quality on customer engagement behavior from the perspective of regulation orientation.

Therefore, this study compares previous studies and divides the multi-channel integration quality into four dimensions: transparency of service quality, freedom of channel choice, information consistency and process consistency, in order to systematically study the influence of multi-channel integration quality on customer engagement behavior and product involvement and the influence of regulation orientation on customer engagement behavior, and to investigate the moderating effect of regulation orientation on product involvement and customer engagement behavior. It is also expected to investigate the moderating effect between product involvement and customer engagement behavior.

3. Theoretical Inference and Research Hypothesis

3.1. The influence of multi-channel integration quality on customer engagement behavior

Studies related to social exchange theory show that when consumers shop at a retail enterprise, if they perceive that the enterprise has high-quality multi-channel integration, provides them with diversified channel selection services, and reaps good consumption experience in the process, then it will make consumers trust and identify with the enterprise and its products, which will bring positive engagement behaviors, such as active dissemination of recommendation of the enterprise and its products. The implementation of high-quality multi-channel integration by retailers leads to a better shopping experience for customers, thus increasing consumer satisfaction, which in turn is closely related to customer

engagement behavior (Ren, 2018). Retailers' channel integration effectively alleviated consumers' uncertainty in the shopping process and significantly enhanced customers' trust in the company, which was extremely important in increasing customers' willingness to incorporate behaviors (Schramm-Klein et al., 2006). The implementation of online and offline multichannel integration by companies helps to reduce the perceived risk of consumers, thus positively influencing their willingness to pay and repurchase (Herhausen et al., 2015). Science and technology enable retailers to seamlessly integrate online and offline multi-channels to fully optimize the customer consumption experience, so that consumers can not only benefit from online shopping and access to a large amount of product information, but also enjoy the offline advantage of seeing, touching, and feeling the product, bringing better consumer conversion rates (Stone et al., 2002). When a retailer implements an efficient channel integration strategy that makes consumers perceive synergies between different channels, it significantly enhances customer loyalty, which can influence subsequent behavioral tendencies (Shareef et al., 2018). When a retailer offers multichannel services that make consumers feel convenient consumers will have a higher level of identification with the company's, which will result in a higher level of perception (Itani et al., 2019). Combining the above scholars' relevant studies, the implementation of high-quality multi-channel integration strategy by enterprises is conducive to meeting the diversified needs of consumers and promoting more positive customer engagement behavior. Therefore, we posit that a higher level of multi-channel integration quality (consisting of transparency of service construction, freedom of channel choice, process consistency and information consistency) will lead to a higher level of customer engagement behavior.

Hypothesis 1a. The multi-channel integration quality has a positive impact on the communication in customer engagement behavior.

Hypothesis 1b. The multi-channel integration quality has a positive impact on the collaboration in customer engagement behavior.

3.2. Impact of the multi-channel integration quality on product involvement

Product involvement is a personal perception generated by consumers during their contact with a company's product or service, reflecting the importance consumers attach to the product or company and indicating the amount of effort and time spent on it (Behe et al., 2015). Studies have shown that the level of product involvement has a significant impact on subsequent willingness or behavior. When consumers have a high level of product involvement, they will actively follow the retailer's multiple channels and spend more time and effort to learn about the brand or product, and their subsequent willingness and behavior tend to be more positive. On the contrary, when consumers have low product involvement, they will ignore the multiple channels provided by the retailer, seldom actively pay attention to the company or product, and their subsequent behavioral tendency will be more negative. In addition, the multi-channel integration quality can have a direct impact on product involvement. According to the 2013 Multi-channel Retailer Service Quality Gap Report published by Zendesk, only 7% of respondents reported that they were very satisfied with the seamless, integrated and consistent cross-channel integration services provided by retailers

(Zendesk, 2013). Therefore, the implementation of an effective multi-channel strategy by retailers is beneficial in enhancing product involvement. New retailers that have adopted a multi-channel integration strategy can enhance their consumer experience by making comprehensive and diverse information available to consumers in a short period of time through the synergy of channels (Neslin et al., 2006) found through an empirical study that). Zach et al. (2019) constructed a structural equation model by including multi-channel integration quality as the antecedent variable and verify that it positively affects customer engagement and thus has a positive effect on the willingness to spread word-of-mouth. When consumers perceive that they are able to freely select multiple channels provided by the company according to their actual needs, they will perceive the convenience of the service, which will increase the consumer's sense of control throughout the shopping process and help improve customer satisfaction (Shen et al., 2018). In conclusion, the implementation of a multi-channel integration strategy is beneficial for new retailers to meet the diverse needs of consumers and enhance product involvement. Therefore, we posit that a higher level of multi-channel integration quality (consisting of transparency of service construction, freedom of channel choice, process consistency and information consistency) will lead to a higher level of product involvement.

Hypothesis 2. The multi-channel integration quality has a positive effect on product involvement.

3.3. The influence of product involvement on customer engagement behavior

Product involvement is an important factor that affects customer engagement behavior. When consumers consume in a new retailer's online or offline channels, they will compare their actual experience with their pre-consumption psychological expectations, which may influence the generation of customer engagement behavior. The effect of review quality on word-of-mouth referrals was significantly greater for high-involvement than for low-involvement customers, while the effect of review quantity on word-of-mouth referrals was significantly greater for low-involvement than for high-involvement customers (Paul et al., 2011). In terms of the number of reviews, its effect on word-of-mouth referrals of low-involvers is significantly greater than that of high-involvers. That is, the degree of product involvement makes a difference in the degree of influence of reviews on consumers' word-of-mouth recommendations. Customers' willingness to incorporate behavior changes with different levels of product involvement, and when the level of product involvement gradually increases, customers' willingness to incorporate behavior also changes to a positive direction (Islam & Rahman, 2016). Product involvement is significantly and positively related to both transactional and non-transactional behaviors of customers (Bitter & Grabnerkräuter, 2016). To summarize the above studies, it can be concluded that when the product involvement degree is high enough, consumers are more likely to have positive emotions toward the retailer, which is conducive to enhancing the willingness to generate customer engagement behavior. Therefore, we posit that a higher level of product involvement will lead to a higher level of customer engagement behavior.

Hypothesis 3a. Product involvement has a positive effect on the communication in customer engagement behavior.

Hypothesis 3b. Product involvement has a positive effect

on collaboration in customer engagement behavior.

3.4. The mediating role of product involvement

Product involvement measures consumers' psychological perceptions and has a certain impact on word-of-mouth propagation intentions. Specifically, in the new multi-channel retail environment, the more consumers know about a company's channel services, the more they will be willing to search for information about that retailer, i.e., the multi-channel integration quality will enhance consumers' product involvement in channel integration, and when consumers' cognitive information interacts with channel integration information, consumers' cognitive fluency will also increase, and this interaction will facilitate word-of-mouth communication. This interaction will facilitate the increase of willingness to spread word-of-mouth. If the product involvement level is low, it indicates that the recognition of the company's channel integration quality is low, and the willingness to spread word-of-mouth will be significantly reduced. In the online services provided by retail companies, service integration quality positively influences perceived value, which in turn is positively correlated with product involvement, which in turn influences positive word-of-mouth communication (Hui et al., 2014). Product involvement positively affects perceived value, i.e., when the level of product involvement is higher, the level of consumer perceived value is higher and consumers identify more with the brand and are more likely to develop engagement behavior (Caleb et al., 2014; Kim et al., 2021) founded through three experiments that consumers with higher product involvement were more likely to recognize the firm and more likely to participate in events organized by the firm. Consumers evaluate the level of service provided by retailers, which in turn influences their willingness to stay in contact with the retailer (Foa et al, 1980). In other words, the theory suggests that when a retailer provides value, it affects consumers' product involvement, and when product involvement is high, consumers will actively invest their personal resources in that business. Thus, a retailer's multichannel integration of a set of characteristics of quality will, to some extent, increase product involvement. In addition, information exchange among consumers is open, and the more information they receive about channel integration, the higher the product involvement, which further enhances customers' willingness to incorporate behavior. Hence, this hypothesis is presented in this study.

Hypothesis 4a. Product involvement plays a mediating role between the multi-channel integration quality and the communication in customer engagement behavior.

Hypothesis 4b. Product involvement plays a mediating role between the multi-channel integration quality and collaboration in customer engagement behavior.

3.5. The regulating role of regulatory orientations

Individuals' regulatory orientations can influence their cognitive attitudes, behavioral strategies, and decision-making judgments. Generally, promotion-oriented

individuals are more likely to pursue positive outcomes with an optimistic attitude, while defense orientation individuals are more likely to avoid negative outcomes with a pessimistic attitude (Higgins et al., 2001). Regulatory orientations have an impact on consumers' product satisfaction, and when consumers are more satisfied with a product, they are more likely to give higher word-of-mouth ratings and customers are more willing to incorporate behavior will be more positive (Trudel et al, 2012). Individuals who promote orientation will be more willing to communicate with others, whereas individuals who prevent orientation typically avoid communicating with people (Hodis et al., 2021). Therefore, it is reasonable to assume that individual regulatory orientations can influence the transformation of product involvement on customer incorporation behavior. Promoter-directed individuals have deeper product involvement, are more knowledgeable about the company and its products, and are more willing to associate with the company or other consumers. On the other hand, defense orientation individuals are less product-involved, tend to ignore information about the company and its products, and usually maintain a strict and cautious attitude when making specific behaviors, and are not willing to initiate contact with the company or other consumers (Greifen et al., 2012). Since promotative individuals value gains and have higher customer product involvement, consumers pay more attention to positive content, also have higher willingness to recommend by word of mouth and give positive feedback (Molden et al., 2010), and are more likely to generate customer engagement behavior; defense orientation individuals prefer loss avoidance, and even with higher product involvement, consumers pay less attention to positive content, have lower willingness to recommend by word of mouth, and are seldom willing to actively feedback, resulting in a lower willingness of customers to incorporate behaviors (Wan et al., 2009). In other words, the product involvement of consumers with different orientations differs for the transformation of customer incorporation behavior. Hence, this hypothesis is presented in this study.

Hypothesis 5. Individual regulatory orientations will differentially affect communication in customer engagement behaviors by regulating product involvement.

Hypothesis 5a. Promotion orientations play a positive moderating role between product involvement and communication in customer engagement behavior.

Hypothesis 5b. Defense orientation individuals negatively moderate the relationship between product involvement and communication in customer engagement behavior.

Hypothesis 6. Individual regulatory orientations differentially affect collaboration in customer engagement behaviors by modulating product involvement.

Hypothesis 6a. Promotion orientation individuals positively moderate between product involvement and collaboration in customer engagement behaviors.

Hypothesis 6b. Defense orientation individuals negatively moderate product involvement and collaboration in customer engagement behavior.

In summary, the conceptual model of the research proposed in this paper is shown in Figure 1.

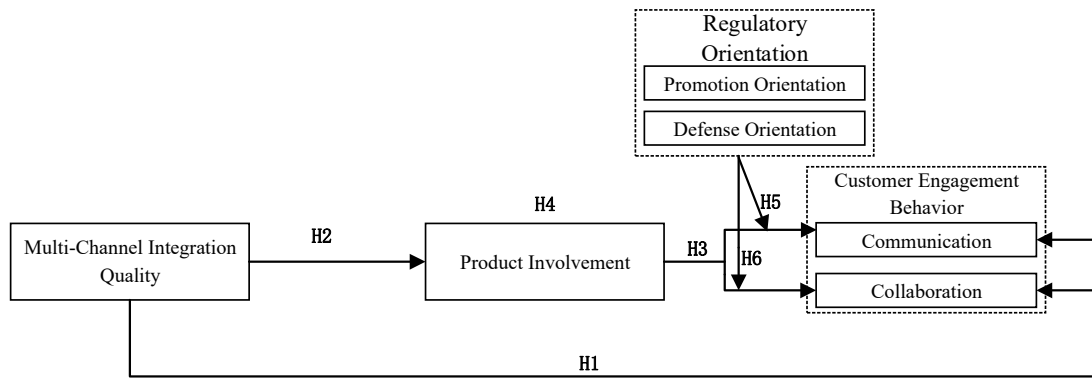


Figure 1. Research model.

Table 1. Variable measurement question items.

Variable	Dimension	Code	Question item
Multi-channel integration quality	Transparency of service quality	TCS1	I am familiar with the retailer's offline brick-and-mortar and online stores before shopping.
		TCS2	I am familiar with the services offered by the retailer's offline brick-and-mortar and online stores.
		TCS3	I know how to use the different features of the retailer's offline and online stores to meet my purchasing needs.
	Freedom of channel choice	BCC1	The retailer allows me the freedom to choose my channel of purchase.
		BCC2	The retailer's offline store can service the products I purchase in the online store.
		BCC3	Whichever channel I choose, the retailer allows me to arrange various service options (delivery, installation, technical guidance, etc.).
	Process consistency	PRC1	The retailer's offline store and online store have the same service image.
		PRC2	The retailer's offline store service is at the same level as the online store service.
		PRC3	I feel the same about the services I receive from the retailer's offline physical stores and online stores.
		PRC4	The retailer's offline brick-and-mortar stores and online stores are the same in terms of timeliness of service.
	Information consistency	COC1	The retailer's offline brick-and-mortar stores and online stores have the same product information.
		COC2	The retailer's offline brick-and-mortar stores and online stores have the same price information.
		COC3	The retailer's offline brick-and-mortar stores and online stores are consistent in terms of promotional information.
		COC4	Consistent inventory information between the retailer's offline brick-and-mortar and online stores
	Product involvement	PIN1	The products or services offered by this retailer are important to me.
		PIN2	The product or service offered by this retailer is the product or service I want.
PIN3		I am interested in the products or services offered by this retailer.	
PIN4		The retailer offers a product or service that I am willing to take the time to learn about.	
Communication	ACC1	I am willing to participate in community discussions about the brand on online media.	
	ACC2	I am willing to share my experience with the brand with others.	
	ACC3	I am willing to actively recommend the brand's products or services to others.	
Collaboration	COO1	I am willing to assist in the brand's business activities, i.e. to suggest improvements to the product or service, etc.	
	COO2	I will actively cooperate with the brand's user surveys.	
	COO3	I am willing to assist in the brand's business activities.	
Promotion orientation	PON1	I usually don't get what I want out of life compared to most people.	
	PON2	I have done things successfully that have made me work harder.	
	PON3	I feel like I'm getting closer to success in my life.	
	PON4	When I do what I want to do, I usually do it well.	
	PON5	When I'm about to accomplish something important, I often find that it doesn't turn out as well as I thought it would.	
Defense orientation	NEN1	Growing up, I often made my parents nervous and worried about me.	
	NEN2	Growing up, I often did things that my parents thought were wrong.	
	NEN3	In my daily life, I always followed the rules set by my parents.	
	NEN4	Growing up, I often did things that crossed the line that my parents couldn't stand.	

4. Research Methodology

4.1. Variable measurement

The questionnaire consisted of three main parts. The first part contains filtering questions to determine the eligible

respondents. Part 2 is used to obtain basic information about the respondents. Part 3 lists questions related to the dependent, independent, mediating, and moderating variables. All questions were scored by respondents on a seven-point Likert scale (where 1 means "strongly disagree", 7 means "strongly agree", and 1-7 means a gradual increase in personal

agreement). In order to ensure that the survey respondents understood the measurement items accurately, this study refined the measurement instrument. First, the initial items of some of the study variables were in English, and a standard translation-back translation procedure was used to avoid ambiguity or ambiguity (Brislin, 1970). On this basis, they were compiled in the multi-channel context of new retail enterprises, and the wording of the measurement items was modified as appropriate. Second, the questionnaire was corrected and improved in a timely manner by selecting a small sample for pre-research and analyzing the reliability and validity of the data. The specific sources of measurement items for each construct in this study are as follows: multi-channel integration quality was divided into four dimensions of service construction transparency, channel choice freedom, information consistency, and process consistency, and specific questions were modified according to the actual research subjects(Sousa, 2006), with a total of 14 items; the measurement of regulation orientation was measured using The two-dimensional scale was used to measure two dimensions of defense orientation and promotion orientation (Higgins et al., 2001), with a total of 9 items; the product involvement was divided into 2 dimensions (Zaichkowsky et al., 1985; Mittal, 1995; Zach et al., 2019), with a total of 4 items; Customer integration behavior is measured in two dimensions(Yu et al., 2015), with 6 items. See Table 1 for the specific measurement items.

4.2. Questionnaire collection

The main target of this paper is consumers who have had consumption experience in any of the channels of the multi-channel retailer. The filtering question for identification in the questionnaire is "Have you ever had consumption experience in both offline brick-and-mortar and online stores of a retailer?" If yes, then continue to complete the remaining questions; if no, then the survey is terminated and only the basic information is recorded.

In this study, data were collected by distributing questionnaires both online and offline, among which paper questionnaires were distributed mainly in the vicinity of well-known large department stores and offline brick-and-mortar stores with high traffic flow, and consumers were selected to be surveyed by the targeted interception method. The online questionnaire was distributed using the questionnaire star platform, and the questionnaire was distributed in March 2022 and ended in June 2022. A total of 585 questionnaires were distributed in both ways, of which 364 questionnaires were distributed online and 221 questionnaires were distributed offline. A total of 563 questionnaires were collected, and after deleting the unqualified questionnaires, 510 questionnaires were valid, and the rate of valid questionnaires collected was 90.6%. In the official sample, the sample statistics are shown in Table 2 below.

Table 2. Description of basic information of the sample.

Item	Type	Frequency	Percentage
Gender	Male	243	47.6%
	Female	267	52.4%
Age	Under 18 years old	2	0.4%
	18-30 years old	267	52.4%
	31-40 years old	210	41.2%
	41-50 years old	17	3.3%
	50 years old and above	14	2.7%
	Amount 1000 yuan or less	38	7.5%
Monthly disposable	1001~3000RMB	187	36.7%
	3001~5000RMB	209	41.0%
	5001~8000 RMB	17	8.4%
	More than 8,000 yuan	14	6.5%
	Junior high school and below	5	1%
Education level	High school or junior college	13	2.5%
	College	111	21.8%
	Undergraduate	283	55.5%
Occupation	Master and above	98	19.2%
	Student in school	57	13.1%
	Enterprise company personnel	297	71.4%
	Party and government institutions	50	9.8%
	Individuals and freelancers	94	18.4%
Annual shopping frequency of the same family online and offline	Other	2	0.4%
	1-5 times	40	7.8%
	6-10 times	112	22.0%
	11-20 times	120	23.5%
	20 times or more	138	46.7%

5. Analysis of Data and Empirical Results

5.1. Reliability and validity tests

In order to test the reliability of the data collected in this

paper, SPSS 22.0 and AMOS 26.0 software were used to analyze the data of all scales. First, the Cronbach's alpha values of all latent variables were greater than 0.7 by SPSS 22.0 test, which indicated that each question item had good reliability. Next, the validity was tested using Amos 26.0, and validation factor analysis was conducted for each variable, i.e.,

standardized factor loading coefficient (standard value should be greater than 0.6), combined reliability CR (standard value should be greater than 0.70), and average variance extraction value AVE (standard value should be greater than 0.50) were required, and the validation results are shown in Table 3, where the data of each variable met the standard, indicating the convergent validity of the overall model is good. In addition, the square root of AVE of the latent variable is

compared with the correlation coefficient between the latent variable and other latent variables to reflect the discriminant validity, as shown in Table 4, the bolded values on the diagonal line indicate the square root of AVE of each latent variable, which are all greater than the absolute value of the correlation coefficient between the latent variable and other latent variables, so all five latent variables in the model have good discriminant validity.

Table 3. Reliability and convergent validity tests.

Variables	Dimension	Cronbach' α	Standardization factor	Load factor	CR	AVE
Multi-channel integration quality	Transparency of service quality	0.808	0.823		0.925	0.755
	Freedom of channel choice	0.744	0.865			
	Process consistency	0.846	0.901			
Product involvement	Information consistency	0.804	0.884		0.855	0.597
			0.763			
		0.853	0.759			
			0.834			
			0.730			
Promotion orientation		0.916	0.884		0.916	0.686
			0.797			
			0.844			
			0.793			
Defense orientation		0.923	0.821		0.925	0.754
			0.874			
			0.898			
			0.803			
Communication		0.859	0.896		0.874	0.672
			0.796			
			0.832			
Collaboration		0.839	0.830		0.874	0.640
			0.838			
			0.839			
			0.717			

Table 4. Discriminant validity analysis.

Variables	Multi-channel integration quality	Product involvement	Promotion orientation	Defense orientation	Communication	Collaboration
Multi-channel integration quality	0.869					
Product involvement	0.638***	0.773				
Promotion orientation	0.197***	0.287***	0.828			
Defense orientation	0.143**	-0.303***	0.762***	0.869		
Communication	0.409***	0.459***	0.533***	-0.467***	0.820	
Collaboration	0.436***	0.468***	0.704***	0.593***	0.763***	0.800

Note: 1. The bold values on the diagonal are square roots of AVE.
2. ***: $p < 0.001$, **: $p < 0.01$.

5.2. Structural equation model analysis

For the research hypothesis, the structural equation model path analysis method is used to verify this paper. The path model drawn by Amos 26.0 is shown in Figure 2. The fit results of the model are as follows: CMIN/DF=2.06 < 3, GFI=0.920 > 0.8, AGFI=0.901 > 0.8, RMSEA=0.046 < 0.08, all the above indicators meet the requirements of the fit

criteria, so the data fit well with the structural model. The model's path coefficients, significance levels, standard errors (S.E values), standardized path coefficients, and significance are detailed in Table 5. The coefficients between the multi-channel integration quality, product involvement, and customer engagement behavior (communication, collaboration) in the model are significant, and hypotheses H1a, H1b, H2, H3a, and H3b are valid.

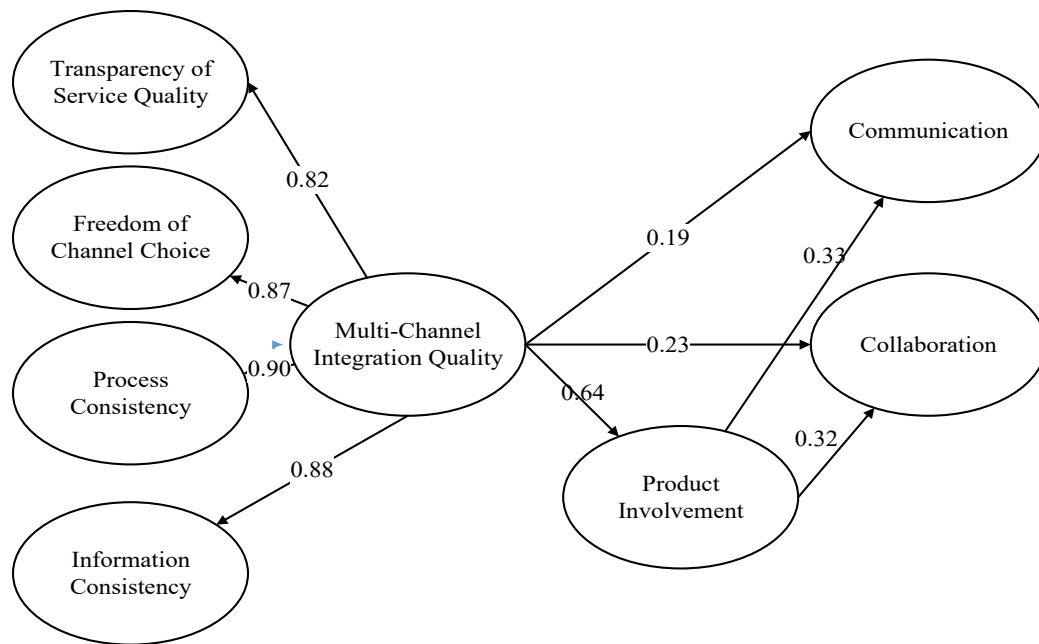


Figure 2. Structural equation model diagram

Table 5. Structural equation model analysis results

Variable relationships	Unstandardized coefficients	Standardized coefficient	Standard error (S.E.)	T-value	Significance level (P)
Multi-channel integration quality → Communication in customer engagement behavior	0.293	0.195	0.195	2.896	**
Multi-channel integration quality → Collaboration in customer engagement behavior	0.379	0.234	0.234	3.471	***
Multi-channel integration quality → Product involvement	0.876	0.638	0.084	10.366	***
Product involvement → Communication in customer engagement behavior	0.367	0.335	0.074	4.952	***
Product involvement → Collaboration in customer engagement behavior	0.377	0.318	0.079	4.767	***
Multi-channel integration quality → Service quality transparency	0.940	0.822	0.083	11.341	***
Multi-channel integration quality → Freedom of channel choice	1.000	0.868			
Multi-channel integration quality → Process consistency	0.995	0.900	0.084	11.831	***
Multi-channel integration quality → Information consistency	1.048	0.882	0.089	11.736	***

5.3. Mediating effect test

Bootstrap method (Bootstrap) was used to test the robustness of product involvement as a mediating effect. A sample of 5000 times was selected and the confidence interval was set at the level of 95%, Bias-Corrected and Percentile were used to make the judgments, and if the confidence interval did not contain 0, it indicated that the mediating effect existed. The effect diagram of product involvement playing a mediating role between the multi-channel integration quality and the communication in customer engagement behavior is shown in Table 6. The confidence intervals of both methods do not contain 0, indicating that product involvement plays a partially mediating role between the multi-channel

integration quality and the communication in customer engagement behavior, and the size of the mediating effect is 0.322, accounting for 52.36% (i.e., 0.322/ 0.615), i.e., hypothesis H4a holds. The effect plot of product involvement playing a mediating role between the multi-channel integration quality and collaboration in customer engagement behavior is shown in Table 7, and the confidence intervals of both methods do not contain 0, indicating that product involvement plays a partially mediating role between the multi-channel integration quality and communication in customer engagement behavior, and the size of the mediating effect is 0.330, accounting for 46.54% (i.e., 0.330/ 0.709), i.e., hypothesis H4b holds.

Table 6. Product involvement plays a mediating role between the multi-channel integration quality and communication in customer engagement behavior.

Variable relationships		Point estimate	Coefficient multiplication product		Bootstrap (95% Confidence interval)			
			Standard error (S.E.)	Threshold (Z)	Bias-corrected method		Percentile method	
					Lower limit	Upper limit	Lower limit	Upper limit
Multi-channel integration quality → Communication	Total effect	0.615	0.083	7.410	0.471	0.805	0.461	0.788
	Direct effect	0.293	0.114	2.570	0.077	0.524	0.060	0.509
	Indirect effect	0.322	0.093	3.462	0.161	0.522	0.160	0.522

Table 7. Product involvement mediates between the multi-channel integration quality and collaboration in customer incorporation behavior.

Variable relationships		Point estimate	Coefficient multiplication product		Bootstrap (95% Confidence interval)			
			Standard error (S.E.)	Threshold (Z)	Bias-corrected method		Percentile method	
					Lower limit	Upper limit	Lower limit	Upper limit
Multi-channel integration quality → Collaboration	Total effect	0.709	0.090	7.878	0.552	0.904	0.549	0.902
	Direct effect	0.379	0.116	3.267	0.164	0.617	0.153	0.610
	Indirect effect	0.330	0.087	3.793	0.181	0.520	0.180	0.519

5.4. Moderating effect test

In order to verify the moderating effect of regulatory orientation (promotion orientation, defense orientation) between product involvement and customer engagement behavior (communication, collaboration), regression analysis is used. To reduce the possibility of multicollinearity, product involvement and regulatory orientations (promotion and defense orientations) were standardized before the regression analysis was conducted. The results of the data analysis (see Tables 8, 9, 10, and 11) showed that the interaction term of product involvement and promotion orientation had a significant positive effect on customer engagement behavior (communication, collaboration) ($\alpha=0.144$, $p<0.01$; $\beta=0.072$, $p<0.05$), and the interaction term of product involvement and

defense orientation had a significant negative effect on customer engagement behavior (communication, collaboration) ($\alpha=-0.05$). The negative effect was significant ($\alpha=-0.113$, $P<0.01$; $\beta=-0.093$, $P<0.05$). To facilitate understanding, the moderating effect plots (as in Figures 3, 4, 5, and 6) show that the higher the promotion orientation, the stronger the positive effect on customer engagement behavior; the higher the defense orientation, the stronger the negative effect on customer engagement on behavior (communication, collaboration), i.e., individual regulatory orientation will have different effects on customer engagement behavior (communication, collaboration) by adjusting product involvement. Hypotheses H5, H5a, H5b, H6, H6a, and H6b were tested.

Table 8. Examination of the moderating effect of promotion orientation on communication behavior in customer engagement behavior.

Variables		Communication			
		Model 1	Model 2	Model 3	Model 4
Control variables	Gender	-0.018	-0.012	-0.029	-0.031
	Age	0.006	0.014	0.015	0.022
	Monthly disposable amount	0.028	0.016	0.023	0.007
	Education level	0.079	0.072	0.079	0.078
	Occupation	0.015	0.013	0.003	0.006
	Frequency of shopping per year	0.068	0.027	0.007	0.004
Independent variable	Product involvement	—	0.389***	0.289**	0.310***
Moderating variable	Promotion orientation	—	—	0.401***	0.449***
Interaction item	Product involvement* Promotion orientation	—	—	—	0.144**
	R ²	0.012	0.161	0.311	0.328
Statistical quantities	ΔR^2	—	0.149***	0.150***	0.017***
	F	0.992	13.780***	28.236***	27.120***

Note: ***: $p<0.001$; **: $p<0.01$.

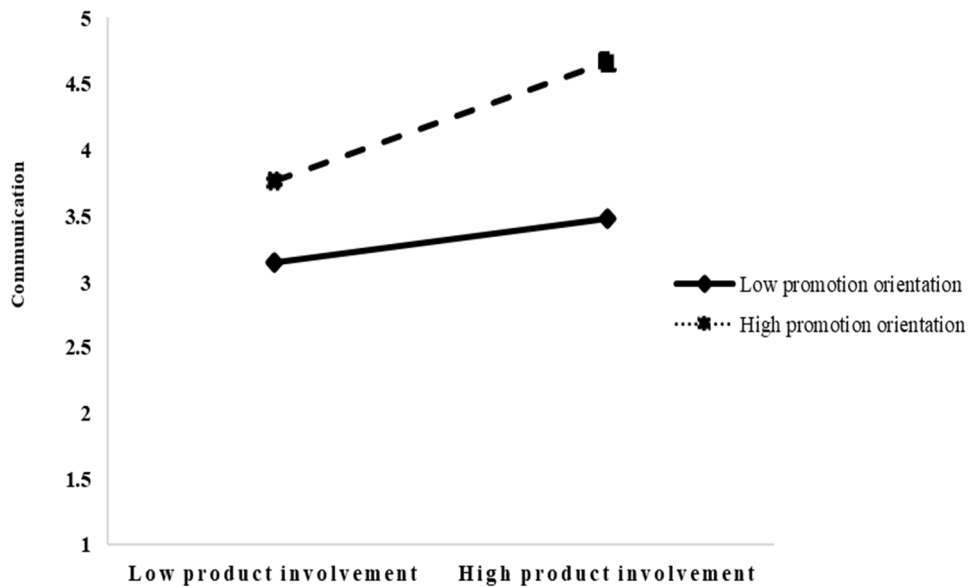


Figure 3. Graph of the moderating effect of promotion orientation on the communication in customer engagement behavior

Table 9. Examination of the moderating effect of defense orientation on communication in customer engagement behavior.

Variables		Communication			
		Model 1	Model 2	Model 3	Model 4
Control variables	Gender	-0.018	-0.012	-0.021	-0.027
	Age	0.006	0.014	0.004	0.000
	Monthly disposable amount	0.028	0.016	0.019	0.018
	Education level	0.079	0.072	0.079	0.073
	Occupation	0.015	0.013	0.012	0.013
	Frequency of shopping per year	0.068	0.027	0.022	0.021
Independent variable	Product involvement	—	0.389***	0.298***	0.311***
Moderating variable	Defense orientation	—	—	-0.333***	-0.371***
Interaction item	Product involvement* Defense orientation	—	—	—	-0.113**
Statistical quantities	R ²	0.012	0.161	0.264	0.275
	Δ R ²	—	0.149***	0.103***	0.011**
	F	0.992	13.780**	22.433***	21.027***

Note: ***, p<0.001; **, p<0.01.

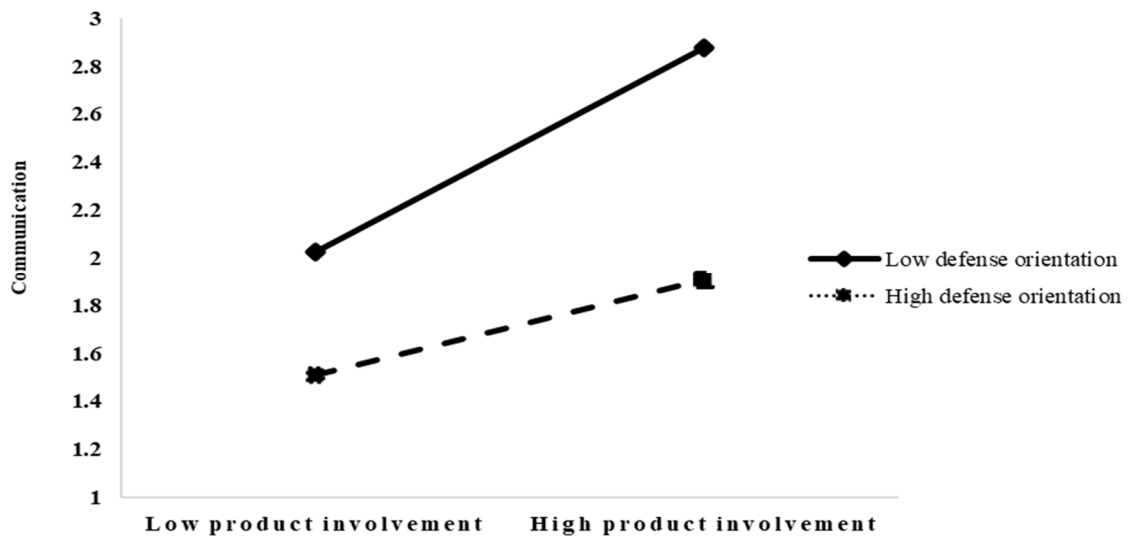
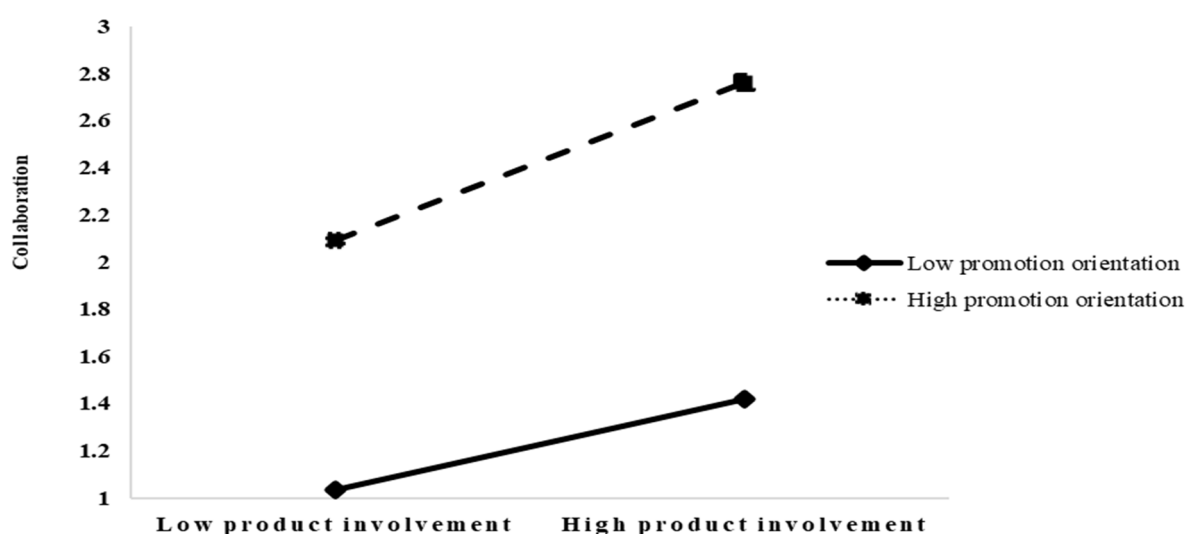


Figure 4. Graph of the moderating effect of defense orientation on the communication in customer engagement behavior

Table 10. Test of the moderating effect of promotion orientation on collaboration in customer engagement behavior.

Variables		Collaboration			
		Model 1	Model 2	Model 3	Model 4
Control variables	Gender	0.004	0.010	-0.013	-0.015
	Age	-0.007	0.001	0.002	0.006
	Monthly disposable amount	0.016	0.004	0.014	0.006
	Education level	0.060	0.053	0.062	0.062
	Occupation	-0.004	-0.006	-0.021	-0.019
	Frequency of shopping per year	0.065	0.023	-0.007	-0.009
Independent variable	Product involvement	—	0.397***	0.252***	0.263***
Moderating variable	Promotion orientation	—	—	0.577***	0.600***
Interaction item	Product involvement*	—	—	—	0.072*
	Promotion orientation	—	—	—	—
Statistical quantities	R ²	0.007	0.163	0.472	0.476
	ΔR ²	—	0.155***	0.309***	0.004*
	F	0.631	13.935***	55.903***	50.449***

Note: ***: p<0.001; **: p<0.01.

**Figure 5.** Graph of the moderating effect of promotion orientation on collaboration in customer engagement behavior**Table 11.** Examination of the moderating effect of defense orientation on collaboration in customer engagement behavior.

Variables		Collaboration			
		Model 1	Model 2	Model 3	Model 4
Control variables	Gender	0.004	0.010	-0.002	-0.007
	Age	-0.007	0.001	-0.013	-0.016
	Monthly disposable amount	0.016	0.004	0.009	0.008
	Education level	0.060	0.053	0.063	0.058
	Occupation	-0.004	-0.006	-0.008	-0.008
	Frequency of shopping per year	0.065	0.023	0.016	0.014
Independent variable	Product involvement	—	0.397***	0.269***	0.280***
Moderating variable	Defense orientation	—	—	-0.469***	-0.500***
Interaction item	Product involvement*	—	—	—	-0.093*
	Defense orientation	—	—	—	—
Statistical quantities	R ²	0.007	0.163	0.365	0.373
	ΔR ²	—	0.155***	0.203***	0.007*
	F	0.631	13.935***	36.048***	32.993***

Note: ***: p<0.001; **: p<0.01.

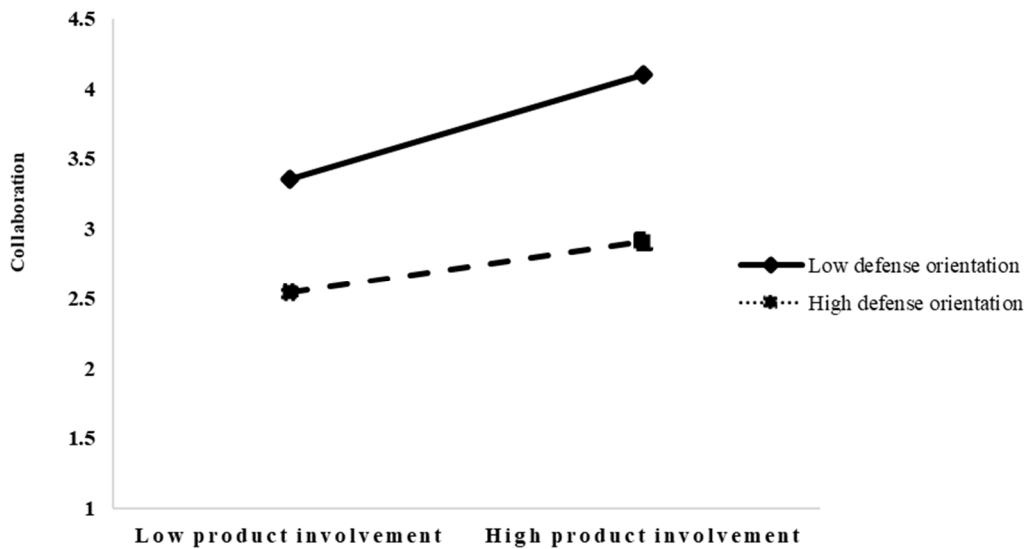


Figure 6. Graph of the moderating effect of defense orientation on collaboration in customer engagement behavior

6. Conclusions, Contributions and Insights

6.1. Conclusion

This paper explores the mechanism of the impact of the multi-channel integration quality of new retail enterprises on customer engagement behavior from the perspective of consumers, explains the mediating role of product involvement in it, and introduces the regulatory orientation and verifies its moderating role in product involvement and customer engagement behavior. The specific findings are as follows.

Firstly, the multi-channel integration quality has a significant positive effect on customer engagement behavior (communication and collaboration).

Secondly, the multi-channel integration quality has a significant positive effect on product involvement

Thirdly, product involvement has a positive effect on customer engagement behavior (communication, collaboration).

Then, product involvement plays a part in mediating the relationship between multi-channel integration quality and customer engagement behavior (communication and collaboration).

Finally, regulatory orientation plays a moderating role in the relationship between product involvement and customer engagement behavior (communication and collaboration), i.e., product involvement positively moderates customer engagement behavior (communication and collaboration) when consumers are promotion orientation, and negatively moderates customer engagement behavior (communication and collaboration) when consumers are defense orientation.

6.2. Theoretical contributions

Firstly, this paper verifies the mediating role of product involvement in the relationship between the multi-channel integration quality and customer engagement behavior. Specifically, when consumers are in a multi-channel retail environment, their product involvement level is also an important factor influencing customer engagement behavior, i.e., product involvement plays a positive mediating role, which clarifies its importance and enriches the relevant theory.

Secondly, this paper introduces regulatory orientation into

the research model, which helps retailers to provide personalized marketing services to consumers. This paper expands the research by revealing the moderating role of regulatory orientation in the relationship between product involvement and customer engagement behavior.

Finally, in the past, the research on customer engagement behavior was mainly focused on a single channel, such as offline physical retail stores or online outlets, but this paper explores the mechanism of its influence on customer engagement behavior from the multi-channel integration quality of new retail, which enriches the relevant research.

6.3. Management Insights

Firstly, new retail companies should focus on the multi-channel integration quality when implementing integration strategies. In an increasingly competitive market, new retailers in different categories should make full use of the advantages of different channels to maximize the synergy effect, which helps to enhance product involvement and customer engagement behavior if they want to implement efficient multi-channel resource integration. Specifically, from the perspective of transparency of service quality, retailers can use various ways to promote their multi-channel services to facilitate consumers' understanding and recognition; from the perspective of freedom of channel choice, retailers should allow consumers to choose appropriate channels, such as offline experience online purchase, offline order offline pickup, and return and exchange services at the nearest physical stores; from the perspective of information consistency, to ensure that each channel provides products. From the consistency of information, ensure that each channel provides the same price, quality, discount strength, etc.; from the process consistency, enterprises should ensure that the service level and service timeliness of multiple channels remain consistent.

Secondly, new retailers of different categories should influence customers' engagement behavior by improving product involvement. In the context of multi-channel integration of new retailers, product involvement is an important antecedent variable that influences customer engagement behavior, so companies should pay full attention to product involvement. In the multi-channel integration strategy, new retailers should use various promotion, marketing and service methods to increase the product

involvement of consumers in the process of understanding. When product involvement levels are high, they require a high level of information search and alternative evaluation, and therefore more cross-channel interaction with retailers. If retailers are unable to provide consistent information and processes, consumers will be frustrated when moving from one channel to another and are likely to move to other retailers. It is recommended that multichannel retailers with high-involvement products maintain consistent cross-channel messaging and processes to avoid any potential consumer frustration. For example, ensure that the product and marketing information provided by the business is synchronized across multiple channels; instruct the business staff to follow standardized business steps and procedures to ensure consistent and professional responses to consumer inquiries. When the level of product involvement is low, multi-channel retailers should ensure freedom of channel choice for consumers, allowing them to complete a given shopping task in a channel that is satisfactory and convenient for them (i.e., freedom of channel choice). In addition, customers should be informed about the existence of complementary services between multiple channels (i.e., service quality transparency).

Finally, individual trait-regulated orientation is a more stable trait that affects the degree of control consumers have over subsequent behavioral tendencies. When product involvement is in a stable state, promotion orientation positively reinforces customer integration behavior, while defense orientation negatively influences customer integration behavior. Therefore, new retailers should strengthen the evaluation of consumers' individual regulatory orientations when carrying out multi-channel integration, develop marketing strategies based on different regulatory orientations, and provide personalized recommendations for consumers, so as to promote customer integration behaviors among individuals with different regulatory orientations. For consumers with promotion orientations, new retail enterprises should meet the diverse needs of consumers as much as possible during channel integration, ensure that all channels of the enterprise have the same level of service quality, strengthen information exchange between different channels, deliver the same information to consumers at all touch points, strengthen consumers' perception of the retail enterprise, guide them to share and forward positive word-of-mouth information, and actively provide optimization suggestions to the company. For consumers with defense orientations, who seldom actively pay attention to the multiple channels provided by retailers, companies should increase the design interest of promotional advertisements to make consumers interested in the company and its products and services, promote them from multiple channels, make the relevant information about the company penetrate into consumers as much as possible, improve consumer favorability, and thus contribute to enhancing consumers' customer integration behavior, in addition to It should also focus on the accuracy and brevity of the information, reduce the cost of consumer understanding, understand consumers' interests as much as possible, optimize consumers' shopping experience, strengthen the positive interaction between consumers and retail enterprises, improve consumers' recognition of the enterprise, and thus lead consumers to take the initiative to spread word-of-mouth and opinion feedback, and promote the willingness to generate customer integration behavior.

6.4. Limitations and future research

Firstly, the research sample is relatively single. The research subjects of this paper are mainly consumers of electronic and department store new retailers, and we do not consider whether the findings of this study are also applicable to consumers of other retail formats, and we may consider other types of retail consumers as research subjects in the future.

Secondly, the research variables can be diversified. Mediating or moderating variables could be replaced in the future, and there may be other variables that influence consumers' interactions with multi-channel retailers, such as consumers' familiarity with each channel and the level of consumer perceptions arising from the quality of channel integration. Future research should incorporate these potential variables into the research model to draw conclusions about the propensity of multi-channel integration quality on consumer behavior.

Thirdly, research methodological limitations. This paper used a questionnaire survey to conduct the assessment and relied mainly on consumers' recollection of their previous experiences, and its findings may be potentially biased. In the future, diverse research methods, such as field or laboratory experiments, could be used that could manipulate the extent of multi-channel integration quality dimensions to reveal their impact on product involvement, allowing other potential confounds to be minimized and better controlled.

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