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Quantitative Analysis of Consumption Influencing Factors in Smart Retail Scenarios Based on Structural Equation Modeling

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Abstract: *Taking Beijing as an example, we explore the paths and effects of several key factors on urban residents' consumption in smart retail scenarios. The study measured business identification (BI), marketing perception (MP), product experience (PE), environmental experience (EE) and purchase intention (PI). A structural equation model of the relationship between the five latent variables and their influences was constructed based on the measurement of the five influences of purchase intention (PI). In addition, the six observed variables of payment form, type, quality, logistics and delivery, shop environment and discount are very important in influencing purchase intention. Accordingly, the problems associated with smart retailing at this stage of development are identified and methodological recommendations are made. These include improving consumers' commercial acceptance of smart retail, optimising the product mix, strengthening the marketing management of smart retail and improving the quality of smart retail services.*

Keywords: *smart retailing; consumption; influencing factors; structural equations*

1. Introduction and literature review

At present, a new round of technological revolution and industrial change is sprouting, with the formation of big data, innovation of theoretical algorithms, improvement of computing power and evolution of network facilities driving the development of artificial intelligence into a new phase. Intelligence has become an important direction for technological and industrial development. Artificial intelligence has significant spillover effects and will further drive the progress of other technologies and promote overall breakthroughs in strategic emerging industries, and is becoming a new driving force to promote structural reform on the supply side, a new opportunity to revitalize the real economy and a new engine to build a strong manufacturing country and a strong network country. In addition, with the continuous development of science and technology in China, artificial intelligence has begun to enter our national strategic plan. The 19th Party Congress report points out that "accelerating the building of a strong manufacturing country, accelerating the development of advanced manufacturing industries, and promoting the deep integration of the Internet, big data, artificial intelligence and the real economy". General Secretary Xi Jinping stressed that "we should promote the innovative development of big data technology and industry, build a digital economy with data as a key element, and promote the integration of the real economy and the digital economy". In recent years, many government reports and policy documents, such as the "Three-year Action Plan for the Development of New Generation Artificial Intelligence Industry", have conveyed the country's concern and attention to the field of artificial intelligence, in order to promote the development of artificial intelligence industry, enhance the level of manufacturing intelligence, and promote the deep integration of artificial intelligence and the real economy. The integration of the Internet, big data, artificial intelligence and the real economy are jointly driving Chinese enterprises into a new stage of development.

According to the 49th Statistical Report on the Development Status of the Internet in China in 2022, the scale of Internet users in China is on a continuous growth trend, and as of December 2021, the scale of Internet users in China reached 1.032 billion, an increase of 42.96 million compared with December 2020, and the Internet penetration rate reached 73.0%. Among them, the scale of mobile payment users in China reached 904 million, an increase of 49.29 million over December 2020, accounting for 87.6% of Internet users as a whole [1]. The gradual increase in the income of urban residents has led to a continuous expansion in the scale of mobile payments. Online retailing by internet retail giants such as Tmall and Jingdong has entered a bottleneck stage, and the offline retail market is receiving renewed attention.

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In order to improve consumer experience and promote healthy business development, Chinese retail companies have combined their specific conditions and proposed new retail concepts such as "new retail" and "retail without borders". The concept of "Smart Retail" is a comprehensive approach to improve operational efficiency by applying Internet, IoT, big data and artificial intelligence technologies to sales, procurement and digital business. Smart retail is the use of Internet and IoT technologies to sense consumers' consumption habits, predict consumption trends, guide manufacturing and provide consumers with diverse and personalized products and services.

Currently, China's retail industry has undergone three major changes, the first two being physical retail and virtual retail respectively. The third retail change is the smart retail that we are currently experiencing, which is a fusion of the real and the virtual. Smart retail breaks the unilateral development of online and offline, and achieves a perfect integration of new technologies and the physical industry; it is an open and shared ecological model that global enterprises can explore and develop together. Analyzing the factors influencing consumption in smart retail scenarios and the paths and effects of influence is a prerequisite for effectively guiding consumers to identify with and participate in smart retail. Taking Beijing as an example, this paper analyses the influencing factors of urban residents' consumption under the smart retail scenario, with a view to providing ideas and suggestions for the smooth operation and long-term development of the smart retail model.

With the increasing volume of our economy and the gradual improvement of people's living standards, China's retail industry has grown significantly, both in form and theory. Various strategic management theories of traditional retailing, e-commerce retailing and smart retail have been systematically and innovatively researched by experts and scholars. In the field of smart retail, Chinese scholars have proposed ideas that are more in line with China's current industry and economic development, such as reconstructing the relationship between "people, goods and fields", integrating online and offline marketing channels, focusing on consumer experience, and using platforms to build a new model of retail ecology.

In terms of the profitability model of traditional retailing. According to Chen,Y (2012), the traditional retail profitability model is a matching combination of profit factors. According to Chang,T.Y (2018), the traditional retail profit model is a bridge between customer value and the intrinsic value of business investment [2-3]. According to Huang,I.X (2014), the traditional retail profitability model is a business system that creates value through a series of business processes, resulting in the flow of products or services, capital and information [4], and generates revenue from customers. According to Hung-Ming Lin (2019), the traditional retail profitability model is the business structure established by a company to organize its business activities [5]. Jiekun Huang (2020) believes that the traditional retail profitability model is the way in which a business makes its profit [6]. Qinghua Zhu (2013) believes that the traditional retail profitability model is the methods and means by which a business makes profits [7].

In terms of the core values of e-commerce retailing. Li Zhao (2013) argues that the core of e-commerce retailing to remain profitable lies in the retailing mechanism that guides and guarantees that the business can consistently earn excess profits and update them in a timely manner [8]. Chen. Meifang (2018) argues that the core of the profitability model of e-commerce retailing is to allow companies to reinvent or redesign some new connecting links and components through all the relevant activities, technologies, customer base and other resources currently available to facilitate the delivery of better services to customers [9]. Qiao. Guanghua (2010) argues that the core of e-commerce retailing is to carry out value creation for the business and to maintain an enduring business mix for profit [10].

In terms of the transformation of traditional retailing to smart retail. A group from the School of Economics, Beijing University of Business and Economics (2014) analyzed the current structural adjustment of the retail industry in China, and Wei Ming Huang (2008) conducted a study on the countermeasures for the transformation of the physical retail industry into "smart retail" [11]. Ying Fan (2006) studied four typical characteristics of "smart retail": ecological, borderless, intelligent and experiential [12].

As smart retail is a new concept introduced by China, there has been little research on it abroad. So far, foreign research has mainly focused on the recognition of smart retail as the future direction of retail. Dutch scholars Tversky A, and Kahneman see smart retail as part of the concept of smart cities in a broad sense [13]. They see technology as a new approach to retail management that innovates and improves the quality of life of consumers. Smart retail is the use of modern technology to realize a new vision of retailing. Australian academic Schulhofer-Wohl proposes the integration of offline retail shops, online retail, mobile app retail and other channels and a seamless customer experience [14]. New York University scholars Shea J and Jens Nordfalt argue that the Internet of Things, virtual reality, artificial intelligence,

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robotics, unmanned aircraft and driverless vehicles are driving the future of retail [15]. In addition, British scholars Khalifa S and Anestis K. Fotadis point out that the retail industry is undergoing a major transformation due to the rapid development of technology. Smart technology has improved the customer experience and has become a lever for retailers to remain competitive in the market [16]. Smart retail will expand its reach and they expect retailers to adapt quickly to this dynamic environment.

In general, regarding smart retail, scholars at home and abroad have discussed more about the profit model, core values and transformation of traditional retail, e-commerce retail and smart retail. The concept of smart retail was initially proposed by China, and there are differences in the perception and linguistic expressions of it among foreign scholars, but the main concepts are basically the same. However, not much research has been done to quantify the factors influencing consumption in a smart retail scenario from the perspective of consumer demand, combined with structural equation modelling. This paper will explore the attitudes of Beijing citizens towards smart retail and further investigate the factors influencing consumers' purchases in order to explore effective ways for the smooth operation of the smart retail model and provide ideas and suggestions for the long-term development of smart retail.

2. Research ideas and data sources

2.1 Research ideas

Based on the summary of existing research results and the characteristics of smart retail itself, this paper defines the purchase intention of customers in a smart retail scenario as: customers first develop a good feeling towards this business model, and then upgrade to trust, dependence and other emotions. In this scenario, when making purchase decisions, customers are inclined towards this business model and will increase the frequency of purchase under this business model while decreasing or giving up participation in other business models.

There are few research findings on the factors influencing consumption in smart retail. In this paper, we have summarized marketing theories and consumer behavior, borrowed from the consumption influencing factors of traditional and e-commerce retailing, and combined with the development characteristics of smart retail itself, and set five research variables: Business Identification (BI), Marketing Perception (MP), Product Experience (PE), Environmental Experience (EE) and Purchase Intention (PI).

Regarding the research methodology, most previous studies have used consumers' buying habits and consumption lists as a starting point to speculate on the influencing factors of smart retail consumption, while studies using multivariate statistical methods are relatively rare. In this paper, we use Structural Equation Modelling (SEM) and SPSS 21.0 and AMOS 24.0 software to analyze the data and investigate the factors that influence consumer purchases in smart retail scenarios. Structural equation modelling (SEM), also known as covariance structure analysis, is a statistical method for analyzing the relationship between variables based on their covariance matrices and is an important tool for multivariate data analysis. Structural equation modelling can study both observable and non-observable variables; it can study not only direct but also indirect interactions between variables, which can lead to more accurate analysis results.

2.2 Data sources

Data was obtained through both an online survey and an offline stratified sample survey of urban residents in Beijing. The questionnaire survey was conducted in October - December 2021. A small pre-survey was conducted before the formal survey was conducted, which was highly effective. Subsequently 200 questionnaires were distributed online and 200 questionnaires were surveyed offline, giving a total of 400 questionnaires. The offline survey was conducted in public places in commercial areas and residential communities. The questionnaires were completed by one-to-one face-to-face structured interviews. A total of 376 valid questionnaires were returned, with an effective rate of 94%. The main reasons for rejecting the questionnaires were:

(1) incomplete answers; omission of key questions;

(2) ambiguous answers; 2 or more answers to the same single question;

(3) highly similar answers; consistent answers to attitude questions, e.g., most of the attitude questions were answered with the same answer (i.e., attitude).

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From the basic information of the respondents, 48.94% were male and 51.06% were female. The gender of the respondents was selected close to 1:1, which ensures the gender of the sample is even and makes the research results more realistic and reliable. In terms of education, 60.64% of the respondents had higher education; in terms of income, 70.52% of the respondents had a monthly income of RMB 5,000. The above data shows that the sample is dominated by people with high education and medium to high income. Compared to the general public, this group is more receptive to new things, pursues high technology, and pays more attention to the timeliness and convenience of consumption.

3. Measurement of variables

The variables measured include Business Identification (BI), Marketing Perception (MP), Product Experience (PE), Environmental Experience (EE) and Purchase Intention (PI). The Five Latent Variables Are Marketing Perception (MP), product experience (PE), environmental experience (EE) and purchase intention (PI). Based on the content of the study and the variables set, the following hypotheses were formulated:

H1: Consumers' commercial recognition of smart retail has a positive impact on their purchase intention;

H2: Consumers' marketing perception of smart retail has a positive impact on their purchase intention;

H3: The environmental experience of smart retail has a positive impact on purchase intention;

H4: The product experience of smart retail has a positive impact on purchase intention;

H5: Commercial identity of smart retail has a positive impact on marketing perception;

H6: Commercial identity of smart retail has a positive impact on environmental experience;

H7: Commercial identity of smart retail has a positive impact on product experience;

H8: Marketing perception of smart retail has a positive impact on environmental experience;

H9: Marketing perception of smart retail has a positive impact on product experience;

H10: The environmental experience of smart retail has a positive impact on product experience.

The specific theoretical model is shown in Figure 1 below.

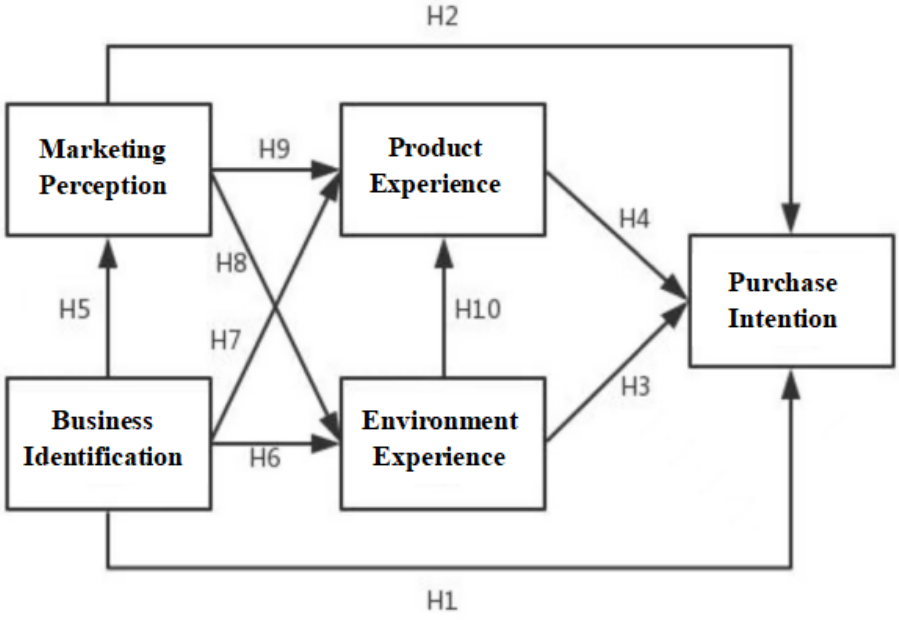

Figure 1: Diagram of theoretical model with assumptions

In order to more fully analyze the factors influencing consumer purchases in smart retail scenarios and their intrinsic links, two to three observed variables were set for each latent variable, for a total of 12 observed variables, as shown in Table 1.

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Table 1: Specific latent and observed variables question items

Latent variables	Observed variables
Business Identification (BI)	BI1: Consumers' perceptions and agreement with the form of goods purchased in smart retail
	BI2: Consumers' perception and agreement with smart retail payment forms Product Experience
Product Experience (PE)	PE1: Consumers' perception of the quality of products sold in smart retail
	PE2: Consumers' perception of the variety of products sold in smart retail
	PE3: Consumer perception of price of smart retail sales products
Marketing Perception (MP)	MP1: Consumer's perception of logistics and distribution of smart retailing
	MP2: Consumer perception of discounts in smart retailing
	MP3: Consumer perception of membership activities in smart retail
Environmental Experience (EE)	EE1: Consumer perception of smart retail shopping environment
	EE2: Consumer perception of smart retail customer service
Purchase Intention (PI)	PI1: Consumers frequently purchase products in the smart retail model
	PI2: Consumers are willing to spend a higher amount per visit in the smart retail model

The 12 observed variables were assigned on a 5-point Likert scale, scores 1 to 5:

1 indicates complete negativity;

2 indicates basic negativity;

3 indicates general agreement;

4 indicates moderate agreement;

5 indicates strong agreement.

4. Structural equation modelling

A total of 12 questions were included in the five domains, namely Business Identity (BI), Marketing Perception (MP), Product Experience (PE), Environmental Experience (EE) and Purchase Intention (PI). The questionnaire was tested for reliability using AMOS 24.0, and structural equation modelling was carried out.

4.1 Data tests

4.1.1 Reliability test

Reliability testing refers to the reliability of a questionnaire, the degree to which the results are consistent when repeatedly measured on the same subject using the same method, i.e., the degree to which they reflect the actual situation. Hair (2008) suggests that the minimum acceptable level (CR) is 0.7 [17]; Fornell and Larcker (1981) suggest a CR of 0.6 or more. In Table 2, the CR values for the four dimensions of business identity, product experience, marketing perception and purchase intention are all greater than 0.7 [18]. Only the CR value for the environmental experience dimension is less than 0.7 (0.693), but is within the acceptable range.

As recommended by Auterman Y (2002) [19], the SMC of the questions should be greater than 0.5. In Table 2, most of the questions have SMC values greater than 0.5, while only two questions (MP2 and EE2) have SMC values less than 0.5 (0.478 and 0.469 respectively), but are close to 0.5, which is within the acceptable range.

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Table 2: Confidence analysis table for the five constructs

CONSTRUCT	ITEM	SIGNIFICANCE ESTIMATES OF FACTOR LOADINGS			QUESTION RELIABILITY			COMPONENT RELIABILITY
		UNSTD	S.E	Z-Value	P	STD.	SMC	CR
Business Identification	BI1	1			***	0.730	0.598	
	BI2	0.873	0.112	8.094	***	0.782	0.692	0.832
Product Experience	PE1	0.736	0.120	8.341	***	0.841	0.792	
	PE2	1	0.037	7.769	***	0.793	0.836	0.869
	PE3	1.062	0.149	8.632	***	0.789	0.769	
Marketing Perception	MP1	1.093	0.176	7.394	***	0.725	0.704	
	MP2	1	0.123	8.022	***	0.756	***0.478***	0.753
	MP3	0.478	0,065	8.379	***	0.864	0.832	
Environmental Experience	EE1	1	0.078	7.323	***	0.735	0.795	***0.693***
	EE2	0.879	0.154	7.405	***	0.759	***0.469***	
Purchase Intention	PI1	1	0.092	8.205	***	0.767	0.739	0.801
	PI2	1.125	0.783	8.036	***	0.821	0.786	

Note: *** indicates that p is less than 0.001.

4.1.2 Validity test

Validity analysis refers to validity and correctness, the extent to which a questionnaire can measure an indicator of the thing to be measured. Hitt L (2007) [20] suggest a standard value of >0.5. In Table 3, AVE is the Average Variance Extracted, or convergent validity, and the AVE value for each construct is >0.5. Differential validity refers to the degree of correlation between items within a construct. In Table 3, the lower triangular figures are the Pearson correlation coefficients between the constructs, and the diagonal values are the values of the AVE with the root of the mean variance extracted. The diagonal values are all greater than the Pearson correlation coefficients, and the diagonal values are all greater than the values in the lower triangular region, indicating that the correlation within the constructs themselves is greater than the correlation between the constructs and the constructs, indicating good discriminant validity between the constructs.

Table 3: Validity analysis table for the five constructs

Structure	Convergent validity	Distinct validity				
	AVE	BI	PE	MP	EE	PI
BI	0.624	0.753				
PE	0.593	0.632	0.725			
MP	0.668	0.686	0.684	0.739		
EE	0.551	0.642	0.592	0.692	0.716	
PI	0.679	0.458	0.576	0.690	0.613	0.772

4.2 Model composition

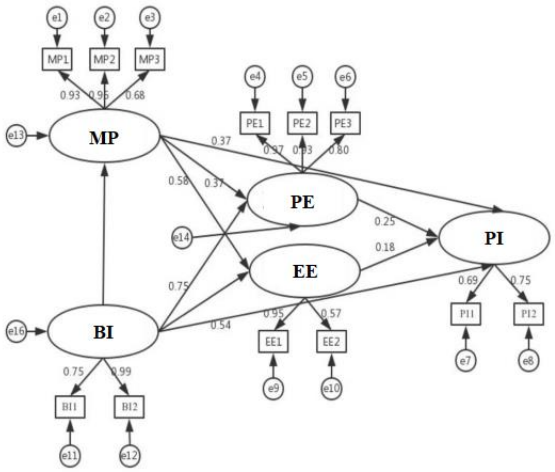

Figure 2: Structural equation model path diagram

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On the basis of the above hypotheses and the validity of the data, the path coefficients of the SEM model were tested for significance using AMOS 24.0 software. It is assumed that the coefficient of the path of H10 is 0.001, but its corresponding significance probability p-value=0.914>0.1, so the original hypothesis is rejected, i.e., "environmental experience has a positive influence on product experience" is not valid, and the path "environmental experience → product experience" is deleted. ". We are now so rich in material goods that many products are very similar and homogenized. Consumers can purchase similar products both online and offline, making the impact of different purchase scenarios on the perception of products insignificant. After repeated fitting, testing and correction, the path diagram of the revised SEM model was obtained, see Figure 2 for details.

4.3 Overall model fitness test

The fit of the structural equation model is assessed by the model fitness metric. The AMOS 24.0 software was used to test the fit of the model. Table 4 shows the values of six metrics used to evaluate the fit of the model, specifically: the cardinality to degrees of freedom ratio; the goodness of fit index; the root mean square of the approximation error; the adjusted fit index; the Tucker-Lewis index; and the relative fit index. The overall fit indices of the modified model are shown in Table 8. In Table 4, the data show that all indices are within the standard range, indicating that the modified structural equation model fits well overall.

Table 4: Model suitability indicators

Indicator	Evaluation criteria	Fitted values
Normed Chi-sqr (X^2/DF)	$1 < X^2/DF < 3$	2.316
GFI	> 0.9	0.921
AGFI	> 0.9	0.974
RMSEA	< 0. 08	0.075
SRMR	< 0. 08	0.062
TLI	> 0.9	0.963
CFI	> 0.9	0,947

4.4 Validation of hypothesis testing

Based on the above analysis, the ordinary least square method was used to obtain the unstandardized regression coefficients as shown in Table 5.

Table 5: Standardized path coefficient

PATH			STANDARDISATION FACTOR	P	RESULT
BI	—>	PI	0.283	***	H1: support
MP	—>	PI	**0.365**	***	H2: support
EE	—>	PI	**0.179**	***	H3: support
PE	—>	PI	**0.248**	***	H4: support
BI	—>	MP	***0.672***	***	H5: support
BI	—>	EE	***0.539***	***	H6: support
BI	—>	PE	***0.752***	***	H7: support
MP	—>	EE	***0.583***	***	H8: support
MP	—>	PE	***0.367***	***	H9: support
BI	—>	BI1	**0.747**		
BI	—>	BI2	**0.985**		
PE	—>	PE1	**0.968**		
PE	—>	PE2	**0.934**		
PE	—>	PE3	**0.795**		
MP	—>	MP1	**0.927**		
MP	—>	MP2	**0.953**		
MP	—>	MP3	**0.683**		
EE	—>	EE1	**0.949**		
EE	—>	EE2	**0.568**		
PI	—>	PI1	**0.689**		
PI	—>	PI2	**0.748**		

Note: *** indicates that the path coefficient is significant at the 1% level.

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Table 5 shows that the p-value for the significance level of the effect of business identity on purchase intention is less than 0.001 (***), indicating that enhancing consumers' business identity for smart retail will increase their purchase intention and hypothesis 1 (H1) is valid.

The significance level of the effect of product experience on purchase intention is less than 0.001 (***), indicating that improving the quality of the products, expanding the product range and reducing the price will help to increase consumers' purchase intention, hypothesis 2 (H2) holds.

The significance level of the effect of marketing perception on purchase intention is less than 0.001 (***), indicating that improved delivery logistics, rich discounts and membership activities will promote users' purchase intention, and hypothesis 3 (H3) holds.

The significance level of the effect of environmental experience on purchase intention is less than 0.001 (***), indicating that shop environment and shop staff service quality positively affect users' purchase intention, and hypothesis 4 (H4) holds.

By comparing the standardized path coefficients, it can be seen that the standardized path coefficients for business identity on marketing perception and environmental experience are 0.672 and 0.539 respectively, indicating that consumers have a certain understanding and objective evaluation of smart retail product discounts, logistics and delivery, membership activities and online and offline shopping environment, and form a strong and direct positive contribution to marketing perception and environmental experience. Hypotheses 5 and 6 (H5 and H6) are valid.

The standardized path coefficients for marketing perceptions on environmental and product experience are 0.583 and 0.367 respectively, indicating that marketing perceptions have a greater direct impact on the experience of the environment than they do on the experience of the product. This is due to the fact that consumers can directly understand the price and type of goods through online and offline shopping channels. In contrast, the product quality element of the product experience is often only available from the reviews of users who have already purchased the product in an online shopping environment. This indirect method of information acquisition is inaccurate and can be easily guided by extreme reviews. Hypotheses 7 and 8 (H7 and H8) hold.

The standardized path coefficient of 0.752 for commercial identity on product experience indicates that excellent commercial identity, such as sophisticated smart retail purchasing methods and payment forms increase consumer trust in the product, and hypothesis 9 (H9) holds.

The standardized factor loading coefficients for the 12 observed variables were all above 0.7, indicating that the observed variables are a good representation of the latent variables. The factor loading coefficients of the six observed variables, namely form of payment, type, quality, logistics and delivery, shop environment and discounts, were all above 0.9, indicating the importance of these factors in influencing purchase intention.

5. Conclusions and recommendations

5.1 Conclusions

Based on the results of a sample survey of 376 urban residents in Beijing, this paper constructed a structural equation to measure the relationship between five latent variables and their influencing factors: business identification (BI), marketing perception (MP), product experience (PE), environmental experience (EE), and purchase intention (PI). Based on the measurement of the five influencing factors of business identification (BI), marketing perception (MP), product experience (PE), environmental experience (EE) and purchase intention (PI), a structural equation model of the relationship between the five latent variables and their influencing factors was constructed to analyze the influence paths and effects of each factor on consumer behavior in the context of smart retail. Among them, the influence of environmental experience on product experience was not significant, so the environmental experience variable was removed and the following main findings were obtained.

The degree of consumers' commercial identification with smart retail has a positive impact on their purchase intentions; The degree of consumers' marketing perceptions of smart retail has a positive impact on their purchase intentions; The environmental experience of smart retail has a positive impact on purchase intentions; The product experience of smart retail has a positive impact on purchase intentions; The commercial identification of smart retail has a positive impact on marketing perceptions; The commercial identification of smart retail has a positive impact on environmental experiences; The

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commercial identification of smart retail has a positive influence; commercial identity of smart retail has a positive influence on product experience; marketing perception of smart retail has a positive influence on environmental experience; and marketing perception of smart retail has a positive influence on product experience.

In addition, six factors are very important in influencing purchase intentions: form of payment, variety, quality, logistics and delivery, shop environment and discounts.

5.2 Recommendations

This paper analyses the attitudes and expectations of Beijing consumers towards smart retail, examines the commercial acceptance of smart retail and the factors influencing consumers' willingness to buy, and makes the following recommendations:

5.2.1 Increased consumer commercial identity for smart retail

Excellent commercial identity, such as mature smart retail purchase methods and payment forms will increase consumers' trust in the product. By obtaining consumer data in multiple dimensions and comprehensively understanding consumer consumption preferences as well as purchase characteristics and other information through comprehensive analysis, smart retail can accurately identify consumer needs and provide different personalized services to different consumers in a targeted manner, enhancing consumer stickiness and loyalty. In the era of "cloud consumption", smart retail allows consumers to express their shopping behavior without the constraints of time and space, and to truly express their consumption wishes, effectively improving consumer convenience.

5.2.2 Optimize the product mix of smart retail

Product experience and environmental experience are important factors affecting consumers' willingness to buy. Smart retail obtains data from consumers in multiple dimensions, and through comprehensive analysis, it can fully understand consumers' price level, consumption preferences and purchasing characteristics, and continuously optimize its product structure through data to understand consumers better than they do. Combined with the reasonable placement of goods, it brings consumers a better shopping experience, stimulates their desire to buy and increases customer unit price.

5.2.3 Strengthen the marketing management of smart retail

The important advantage of smart retail lies in precipitating customer data through omnichannel and establishing its own customer big data to achieve automated, personalized and accurate marketing. Consumers have a certain understanding and objective evaluation of product quality, discounts on goods, logistics and distribution, membership activities, etc. The diversification of marketing methods for smart retail operations can increase consumer loyalty. Through a variety of marketing methods such as new user benefits, card coupon distribution and micro-page marketing, new customers are attracted to the shop and old customers are promoted to return. The establishment of an intelligent membership management system, together with a variety of marketing tools such as member discounts and redemptions, enhances member stickiness and consumption, while achieving the protection of users' personal privacy.

5.2.4 Improving the service level and quality of smart retail

The model of smart retail is more service-oriented and acceptable to consumers than traditional retailing models, resulting in faster and more intuitive problem solving. The consumer's buying experience is conducive to promoting their consumption efforts. Strengthening the service quality requirements of smart retail and maximizing the resolution of problems in the consumer process is conducive to the long-term smooth operation of the smart retail model. During the epidemic, smart retail's contactless delivery played a crucial role as a way to reduce the movement of large numbers of people and non-essential contact with shopping, in line with the trend of the times.

With economic development, the integration of the Internet, big data, artificial intelligence and the real economy is jointly driving Chinese enterprises into a new stage of development. Smart retail is an inevitable trend for the future development of the retail industry. In the future development process, smart retail should further play the role of online data, dig deeper into consumer habits, realize the smooth connection of smart stocking, smart logistics and smart decision-making with the help of the latest technology, combine online and offline, maximize the user experience and realize the upgrading of traditional retailing.

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