



Behavior Analysis Based on Bigdata: Evidence from Live Streaming and College Students' Online Purchase Behavior

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Abstract. Contemporarily, bigdata technique has been widely implemented in various fields. Based on the background of bigdata, this study briefly describes the application and commonly used models of big data analysis in consumer behavior. With the help of the TAM model and the SOR model, the situations for using data analysis in consumer behavior are specifically analyzed: webcast delivery of goods and college students' buying habits on the internet. According to the model, the impact mechanism is summarized and analyzed, and then relevant suggestions are put forward based on the model analysis results. It is concluded that perceived usefulness, perceived ease of use, user's willingness to interact with information and immersive experience have an important impact on consumer purchase behavior. For students at colleges, they increased focus on quality of product and the advertising interaction, which have the greatest impact on final purchase behavior. Finally, the phenomenon of "big data killing familiarity" and suggestions for improvement are mentioned.

Keywords: Bigdata, Consumer Behavior, Online Purchasing.

1 Introduction

In the process of purchasing, consuming, and using behaviors of goods or some services, consumers will undergo a variety of psychological changes and follow some behavioral characteristics and rules. These are the contents of research in the field of consumer behavior. With the rapid development of commodities economy, more serious market issues, and greater competition, consumer behavior has become a distinct and organized applied science. It has gone through three periods, from the embryonic period, the application period, to the transformation and development period of consumer behavior. At the same time, research techniques often involve quantitative methodologies, with various research viewpoints and research parameters, and the research boundaries are gradually breaking through. Numerous academics domestically and internationally have studied consumer behavior in the context of the Internet economy, concentrating on how to develop online consumer behavior models and investigate consumer behavior models, and they have had successful outcomes [1].

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Consumer behavior has now become a prerequisite for consumers to consume scientifically. The market basis and decision-making basis for corporate marketing activities are the basis for the formulation of national macroeconomic policies.

Under the background of big data, consumers' shopping channels are more diverse, and the products available to consumers are gradually becoming more diversified and internationalized. Consumers' dependence and loyalty to brands are gradually declining. They no longer limit their eyes to a small number of products around them, but continue to try new and popular products or services. In the face of these changes resulting from the big data period, it is necessary to analyze the influencing factors of consumer decision-making behavior.

Big data, according to research, influences data search behaviors like interest attention and information screening and generates external stimuli for purchaser through product promotions and marketing strategies. This influences internal perception of consumers, which ultimately influences their purchasing decisions [2]. Sun analyzed the purchase process of consumers' online e-commerce products based on big data, and believed that the decision-making behavior process is mainly affected by three decision-making factors: price, brand, and evaluation [3]. With the rapidly technological development for large data analysis, many online platforms or companies will collect consumer information, utilize technology for processing and analyzing massive data to combine and extract information on individual behavior, and then accurately provide customers tailored suggestions. This marketing strategy makes it simpler to pique customers' attention, and some of it even has the potential to alter their demand preferences, thereby considerably increasing the effect of substitution of connected items [4]. Consumers can also independently browse the pertinent details about various commodities, benefiting from the extensively utilizing big data, to maximize rational consumption and meet expected demand [5].

Considering the background of big data and the Internet, this essay integrates the basic concepts and common models of big data analysis, as well as common analysis methods. This article summarizes the analysis of consumer behavior in webcast based on TAM model. Using the SOR theoretical model, an examination of college students' online shopping behavior was conducted. Finally puts forward constructive suggestions for the relevant groups of the analysis results, to better cater to consumers' ideas and establish a more Harmonious online shopping environment.

2 Big Data Analysis & Common Models

Large-scale data analysis is referred to as "big data analysis", extracting and utilizing beneficial data, and mining the potential value of data. Data analysis requires a complete set of data analysis methods and related tools. Simply for the model established, the common regression model is multiple regression analysis in most cases, which examines the interaction between several factors and how they affect one another as a whole; the cluster analysis model is used to distinguish data, and each data can be found the characteristics of the set; the time series analysis model is often used to

develop regular and continuous things, and the data of the next stage can be predicted according to this development trend.

According to some studies of relevant scholars, Ma et al. based on the SOR theory to obtain the elements in consumer behavior that affect online buying decisions of college students in a big data environment, and constructed consumer behavior models such as commodity factors, sales services, online shopping safety and satisfaction [6]. Mangasi et al. [7] revealed that customer happiness and customer purchasing interest are significantly impacted by product quality. through multiple regression analysis and hypothesis testing, and customer satisfaction also has a significant impact on purchase interest.

3 Live Streaming with Goods

The most common e-commerce sales technique on the mobile Internet has been live broadcasting online since 2017. According to the 51st "Statistical Report on Internet Development in China" released by the China Internet Network Information Center in 2023, with 515 million people in China using e-commerce live broadcast as of December 2022, or 48.2% of Internet users, the online live broadcast sector, which e-commerce live broadcast represents, will see rapid growth in 2022, and online live broadcast with goods will serve as a new digital economic model of "online drainage + physical consumption". When live broadcasting goods, viewers communicate and communicate with the anchor through various functions of the live broadcast platform, such as likes, comments, sending barrage, sharing and gift giving, etc. The anchor can enhance the user's sense of participation by interacting with users, thereby Promote the interaction between anchors and users, and further promote users' information interaction behavior. Davis first proposed the TAM model in 1986, also known as the Technology Acceptance Model. The core variables of the model are the perceived utility and use of a new product by the user. External factors affect the user's behavioral attitude, willingness, and actual usage behavior by affecting the perceived usefulness and perceived ease of use. In addition, perceived usefulness will depend on perceived simplicity of usage.

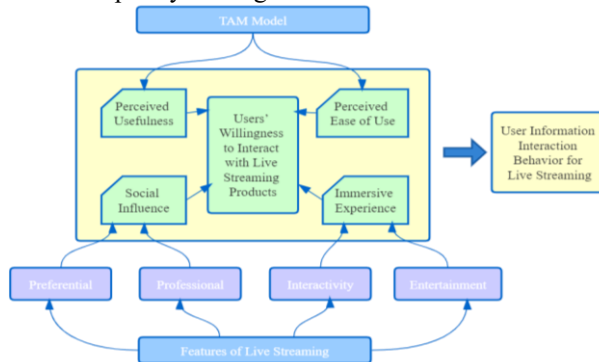


Fig. 1. Conceptual Model of Influencing Factors of Users' Information Interaction Behavior in Live Streaming.

Table 1. Main effects analysis.

Variable	Dependent Variable: Purchase Attitude		Sig.	Dependent Variable: Purchase Attitude		Sig.
Independent Variable	Commodity Competitiveness	0.163	0.003	0.193	0.001	
	Risky	-0.116	0.009	-0.169	0.000	
	Ease of Use of The Live Broadcast Platform	0.161	0.000	0.103	0.012	
	Reference Group	0.699	0.000	0.729	0.000	
Mediator Variable: Purchase Attitude						0.000

Table 2. Mediating effects analysis.

Variable	Dependent Variable: Purchase Intention							
	M1	M2	M3	M4	M5	M6	M7	M8
Independent Variable	Commodity Competitive-ness	0.152**	0.064	-	-			
	Risky			0.114**	0.062			
	Ease of Use of The Live Broadcast Platform					0.160**	-0.040	
	Reference Group						0.689**	0.077
Mediator Variable	Purchase Attitude	0.769**		0.684*		0.679*		0.724**

Note: n=1011, **means p<0.01, *means p<0.05

The immersion theory refers to the immersion experience, which represents a psychological state in which individuals forget the surrounding environment and the passage of time when they devote themselves to an activity. Liu et al. constructed a conceptual model of factors affecting user information interaction behavior in live delivery based on the immersion theory in Fig. 1 [8]. The experience is influenced by four factors, and the willingness to interact plays the role of a mediating variable.

After factor analysis and hypothesis testing, the researchers discovered that the concept model they created for the variables impacting live streaming consumers' information interaction behavior fits their data well. The user's information engagement behavior for live delivery is significantly influenced by perceived usefulness, perceived ease of use, user's willingness to interact with information and immersive experience [8]. Among them, the user's willingness to interact with information is also an influencing factor for user information interaction behavior in live streaming, and social influence has no significant impact on user information interaction willingness in live streaming [8].

Liu et al. constructed a theoretical model and research hypothesis for the research on consumer behavior of live broadcast e-commerce from five dimensions of consumers' perceived usefulness, perceived ease of use, trust, subjective norms, and usage intentions of live e-commerce [9]. The results of the structural equation model's fitting degree test and hypothesis test indicate that consumers' perceptions of live e-commerce are negatively impacted by these factors, whereas consumers' perceptions of perceived usefulness, trust, and subjective norms are positively impacted by these factors. There is no discernible correlation between perceived ease of use and users' intentions to use [9]. However, perceived ease of use, like trust, has a significant positive impact on perceived usefulness, and thus indirectly affects consumers' intention to use live e-commerce.

Ye's research is also based on the TAM model to study the four variables of live delivery: competitiveness of the commodity, risk, reference group and platform usability, and the method of action on customer desire to purchase online live broadcast [10]. The researchers selected consumers who are familiar with live delivery and have experience in live shopping as survey subjects.

Through the main effect test, it is concluded that the four factor variables of e-commerce live streaming have a significant effect on the modifications in customers' purchasing behavior and readiness to watch internet live broadcasts. Through the test of mediation effect, it is found that in the relationship between the above four variables and purchase intention, the purchase attitude of webcast consumers plays a complete mediating role [10]. Table. 1 and Table. 2 display the particular data results.

In short, live streaming is a kind of information technology, and its information interaction characteristics are equivalent to external influencing factors. Perceived usefulness is reflected in the useful information that customers can feel during the live delivery process; the user's view of how difficult it is to get started using the platform technology in the live delivery platform is known as perceived ease of use; behavioral willingness is reflected in the user's Behavioral willingness to interact with information in live streaming [8].

According to the above analysis, in order to make the sales method of live delivery more popular with consumers, from the perspective of the delivery platform, the usability of the live delivery platform should be improved, and different customers should be accurately pushed according to their demand characteristics, so as to be better promote user information interaction. From the merchant's point of view, it is necessary to ensure the items' quality with the purchases and enhance the products' quality with the after-sales services. Meanwhile, it is possible to introduce more ce-

lebrity anchors that match the needs of customers for star chasing, to better attract users. From the anchor's point of view, the behavior of the anchor with live broadcast should be regulated, and the overall professionalism of the anchor should be improved, such as communicating and interacting with users in a timely manner, to enhance the user's perceived usefulness and immersive experience. Merchants can also increase product discounts and interactive activities to ensure the entertainment of the live broadcast and enhance the user experience. In addition, the state should further regulate the words and deeds of anchors in live broadcast rooms to ensure that live broadcasts are legal and compliant, while protecting consumer rights and reducing users' concerns about privacy leaks.

4 College Students' Online Purchase Behavior

Among the consumer groups, college students have a strong curiosity and exploration of new things, and have great consistency in consumption, forming a strong consumption trend in society [11]. Nowadays, college students have become a major part of online shopping, and their motivations for online consumption are also diversified [12]. Based on the relevant theoretical models of big data analysis, scholars in various fields have studied and analyzed the consumer behavior of college students as a group, and these have been applied to the study of college students' purchase behavior in live e-commerce [13] and the impact of online word-of-mouth and college students' online purchase intentions [14]. More specifically, one can apply and analyze the influence of short video advertisement characteristics on the purchase intention of college students [15].

Mehrabian and Russell proposed the SOR theoretical model in 1974. Also known as the Stimulus-Organism-Response hypothesis, the SOR model is based on the environmental psychology idea. Stimulus variables describe outside influences on the purchasing process. Purchase decisions are influenced by the physical and psychological reactions that various environmental stimuli have on customers. Human emotions and cognitive processes (including physiological, psychological, perceptual, and thought processes) are referred to as organism variables. These processes involve the internal state changes that occur as a result of stimulus and reaction. The final psychological or behavioral reactions that incorporate both internal and external factors are referred to as response variables. The influence of outside variables on human behavior can be explained using the SOR model. The SOR hypothesis states that a variety of factors influence customer motivation, which then influences their decision to make a purchase. Therefore, this theory can be applied to the retail environment to study the impact of the retail environment on human behavior. The impact of consumer buying behavior.

Based on the SOR theoretical model and regression analysis method, Liu et al. analyzed the regression analysis of product factors (product quality and price promotion), situational factors (interactivity and attractiveness) on perceived value, and concluded that product quality, price promotion unlike interactivity, which had a positive effect on perceived value, attractiveness showed no significant positive effect [13]. The

regression analysis of product factors and situational factors on purchase behavior shows that product quality, price promotion, interaction and attractiveness have a positive impact on purchase behavior [13]. Perceived value is positively correlated with purchasing behavior, according to a regression study of perceived value and buy behavior [13]. The results are given in Table. 3, Table. 4 and Table. 5.

Table 3. Regression coefficients of product factors and situational factors on perceived value.

Model	Unnormalized Coefficient		Standardized Coefficient Beta	t	Significant	Collinearity Statistics	
	B	Std				Tolerance	VIF
(Constant)	0.211	0.235		0.898	0.370		
Product Quality	0.311	0.065	0.286	4.806	0.000	0.823	1.216
Price Promotion	0.308	0.077	0.246	4.019	0.000	0.773	1.294
Interactivity	0.226	0.110	0.115	2.052	0.041	0.925	1.082
Attraction	0.047	0.049	0.054	0.961	0.338	0.922	1.085
R ²				0.253			
F				21.746			
P				<0.001			

Table 4. Regression coefficients of product factors and situational factors on purchase behavior.

Model	Unnormalized Coefficient		Standardized Coefficient Beta	t	Significant	Collinearity Statistics	
	B	Std				Tolerance	VIF
(Constant)	-0.088	0.243		-0.361	0.718		
Product Quality	0.343	0.067	0.299	5.128	0.000	0.823	1.216
Price Promotion	0.203	0.079	0.154	2.558	0.011	0.773	1.294
Interactivity	0.452	0.114	0.218	3.96	0.000	0.925	1.082
Attraction	0.121	0.050	0.132	2.396	0.017	0.922	1.085
R ²				0.282			
F				25.278			
P				<0.001			

Table 5. Regression coefficients of perceived value on purchase behavior.

Model	Unnormalized Coefficient		Standardized Coefficient Beta	t	Significant	Collinearity Statistics	
	B	Std				Tolerance	VIF
(Constant)	1.413	0.135		10.503	0.000		
Perceived Value	0.381	0.061	0.361	6.240	0.000	1	1
R ²				0.130			
F				38.94			
P				<0.001			

Based on the SOR model, some scholars have also studied the influence of IWOM on college students' online purchase intentions based on the structural relationship between variables and their standardized path coefficient estimates, T values, and hypothesis testing. Finally, it is found that the quantity of IWOM has no significant impact on college students' trust and online purchase intention, the quality of IWOM and the professionalism of IWOM senders have a significant positive impact on desire to shop online among college students, and college students' desire to make an online purchase is mediated by trust between IWOM [14]. More specifically, the research focuses on analyzing the influence of short video advertisement characteristics on college students' purchase intention. Also based on the SOR theory, it was found that the higher the interactivity of short video advertisement features (stimulus variable), the higher the matching degree of perception (organism variable) and purchase intention (response variable) of college students [15]. The visibility and creativity of short video advertisements have the same impact on the perceived matching degree. At the same time, the body variable perceived matching degree has a direct impact on the purchase intention of college students [15].

For college students, they should establish a correct concept of consumption. When consuming content online, students at colleges should take self-development as the fundamental orientation, carry out high-quality consumption, pursue progress in aesthetics and other aspects, and realize the common development of material life and spiritual life. In the face of a more convenient and efficient shopping environment, college students should pay attention to reasonable consumption, rational consumption, increase risk awareness, protect personal privacy, choose useful products suitable for themselves, and avoid blind consumption, mutual comparison consumption, and large credit consumption [16]. Based on the SOR theory and the above research conclusions, the following marketing suggestions are put forward for merchants: pay attention to the interactivity of live broadcasts or advertisements; arrange a comfortable and pleasant live broadcast room style, or improve the matching degree between the relevant information of short video advertisements and the unique cultural preferences of consumers, To enhance consumer perceived value.

5 Limitations & Prospects

Big data has also exposed many problems in the process of vigorous development. While big data promotes technological development and facilitates people's lives, it also hides many risks and hidden dangers. In the context of the digital economy, all Internet merchants know about consumers come from the consumer information collected by the data platform, thus laying a hidden danger for "big data killing familiarity". "Big data killing familiarity" can be simply explained as: based on platform-based consumer data and big data technology, e-commerce operators analyze different consumers' purchase intentions, price sensitivity, and spending power in order to accurately target consumers. Portraits, implement a pricing form that is thousands of people and faces, so that old users who are more sticky to the platform can pay a higher price than the market, so as to maximize the benefits of the behavior [17]. In response

to this phenomenon, from a national point of view, relevant laws on consumer rights and interests protection should be improved. From the perspective of the platform, after-sales services for rights protection should be added to protect consumers' right to complain and report. From the perspective of consumers, they should learn to protect their legitimate interests through legal means.

6 Conclusion

In summary, dig data analysis, i.e., related models (SOR model and TAM model, etc.) have become one of the important tools for analyzing consumer behavior at this stage, which can help consumers make more informed consumption decisions and obtain a more convenient shopping experience. However, the current large data analysis application to the consumer field is still immature, and many problems have emerged in the development process. Therefore, it is necessary to cooperate with multiple parties to provide consumers with a better shopping environment. Overall, these results shed light on guiding further exploration of big data analysis in consumer behavior analysis.

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