A STUDY OF THE INFLUENCE OF ONLINE INTERACTION ON CONSUMER BEHAVIORAL INTENTION IN ONLINE SHOPPING SITUATION

Kaiyi Xue [1*]

[1] Graduate School, Siam University

[*] **Corresponding Author, E-mail:** 774013191@qq.com

Abstract: Nowadays, people's online shopping has gradually shifted from PC to mobile. Mobile shopping mode makes shopping anytime, anywhere a reality, but due to the virtual nature of the Internet itself, information asymmetry has always been an obstacle to the development of online shopping. Buyers and sellers have uneven information, and online merchants are in an absolute advantageous position in terms of information possession. Consumers are unable to accurately screen the quality of products through the information delivered by merchants, thus creating more uncertainty. Various uncertainties in the online shopping environment are still the key factors influencing consumers' purchasing decisions, and in order to improve the conversion rate of consumers' purchases, online merchants should be committed to weakening the asymmetry of the transaction process between buyers and sellers. As a kind of quality signal, online interaction conveys product quality information to consumers through various forms of expression, which makes up for the shortcomings caused by the information asymmetry problem and influences consumers' perception and behavior. Therefore, this study takes online interaction as a research topic in order to explore the mechanism of its effect on consumers' behavioral intention.

This paper adopts a quantitative research method, a total of 517 questionnaires were recovered, and the total number of valid questionnaires was 439, accounting for 84.9% of the total recovered questionnaires. Based on the data from the returned questionnaires, data analysis was carried out using SPSS and AMOS. The final conclusion is that controllability, richness, responsiveness, and mutuality of online interaction have significant positive effects on consumer behavioral intention respectively.

Keywords: Online Shopping, Online Interaction, Behavioral Intention, Controllability

Introduction

Online shopping has gradually integrated into people's lives, becoming an indispensable part of daily routines. The form of online shopping has shifted from desktop PCs to mobile devices, allowing consumers to shop anytime and anywhere without being confined to a computer. With just a mobile

device, consumers can complete the entire shopping process, making the mobile platform the primary arena for e-commerce transactions. According to research by iResearch Consulting Group, in 2017, mobile transactions accounted for 72.8% of China's total online shopping transactions, marking a 4.6 percentage point increase from the previous year. Since surpassing PCs in 2015, the dominance of mobile in online shopping has continued to expand. The concerted efforts of businesses to strengthen their presence on mobile platforms and changes in consumer habits are pivotal in this transformation.

Compared to traditional shopping modes, online shopping presents several new characteristics, with the most prominent being the virtual nature of transactions. This exacerbates the issue of information asymmetry between transaction parties. When shopping online, consumers cannot physically sense products or communicate face-to-face with sales personnel; all actions occur within a virtual environment. Consequently, their experiences are less tangible, and it's challenging to select the most satisfactory products amidst the complexity solely based on information provided by merchants. Thus, consumers are at a distinct disadvantage in online transactions, struggling to accurately assess product quality and susceptible to misleading information from sellers, potentially leading to unsatisfactory shopping experiences.

To mitigate the impact of information asymmetry in virtual environments, major online shopping platforms and retailers are jointly striving to enhance consumers' online shopping experiences and foster purchase conversions. In this endeavor, new functionalities are being developed, and interactive tools are continuously enriched. In recent years, rapid advancements in video technology, particularly the widespread adoption of live streaming on the internet, have provided new impetus. Many online merchants have capitalized on this technological wave, leveraging video streaming to engage in interactive marketing efforts aimed at creating a conducive shopping atmosphere for consumers. Furthermore, some mobile shopping apps have introduced modules for question-and-answer interactions. Users can freely pose questions, which are randomly assigned to consumers who have previously purchased the product, allowing them to provide independent responses based on their usage experiences. This model diversifies forms of consumer interaction, promoting communication and sharing among consumers.

In summary, despite the existence of information asymmetry in online shopping environments, effective forms of interaction can effectively mitigate its drawbacks. Robust interactive formats enable consumers to quickly and comprehensively acquire product information, aiding them in making informed purchasing decisions. Therefore, studying the mechanisms through which online interactions influence consumer behaviors is essential.

In the academic research domain, numerous scholars have investigated the effects of online interactions on customer satisfaction, purchase intentions, consumer trust, and loyalty (Yoo et al., 2010; Chu and Yuan, 2013; Zhao et al., 2015). While existing literature has extensively studied the direct

effects of online interactions, research on their moderating effects remains relatively sparse. Zhang (2016) highlighted the absence of moderating effects in existing studies on website perceived interactivity. Similarly, Guo (2012) proposed that subsequent research should consider the moderating effects of consumer contexts and product types on online interactions. Product category is a crucial variable influencing consumers' online shopping decision-making behavior. Consumers exhibit distinct information search behaviors and purchase intentions when shopping for different types of products, thereby influencing their online shopping decision-making processes (Zhang, 2006).

The development of Internet technology has continuously enriched and updated the interactive forms of mobile shopping, providing new dimensions to online interactions in the e-commerce environment. Therefore, this study integrates previous research and real-world online shopping contexts to refine the factors involved in online interactions. It aims to analyze how online interactions influence consumer behavioral intentions.

Research Objectives

Online interactions are best represented in the online shopping environment. Consumers, as the center of the interactive relationship, interact with websites, online merchants, and other consumers to varying degrees. The degree of interaction influences consumers' perceptions as well as behavioral intentions. Therefore, this study proposes the following research objectives:

1) To examine the influence of controllability on consumers' behavioral intention.
2) To examine the impact of richness on consumers' behavioral intention.
3) To examine the effect of responsiveness on consumers' behavioral intention
4) To examine the role of mutuality in influencing consumers' behavioral intention.

Literature Review

Mobile Shopping

Mobile commerce has emerged driven by the development of mobile technology and e-commerce. Mobile commerce offers a variety of services, including online banking, shopping, ticket booking, and entertainment. Among these, mobile shopping is the most frequently encountered service by people. Scholars such as Chen Rong et al. (2016) believe that mobile shopping refers to shopping activities conducted by consumers through mobile devices like mobile phones, utilizing mobile communication networks. As consumer online shopping scenarios gradually shift from PC to mobile, mobile shopping has become the mainstream mode of online shopping. This study assumes mobile shopping as the broader context of online shopping for further research.

Online Interaction

The term "interactivity" became popular in the 1970s and became more widespread in the 1980s

and 1990s. It is used to describe the "conversation" ability of new media like computers, which is the ability to respond to user input. Over the years, scholars have had varied interpretations of online interactivity, and these views rarely align. Liu and Shrum (2002) believe there are two reasons for this inconsistency: 1. Online interactivity is a general term that has adopted a technical definition. 2. Online interactivity is a multidimensional complex variable, and the different perspectives from which scholars discuss interactivity have led to inconsistent definitions.

Early research on interactivity mainly focused on human-computer interaction, reflecting the degree to which computer systems respond to user behavior. Interactivity refers to the extent to which a communication system (usually including a computer as a component) can converse with users, much like a person participates in a conversation. Steuer's (1992) definition of interactivity has been widely adopted by scholars. He believes that interactivity is the degree to which users can participate in real-time adjustments to the form and content of the media environment. Alba et al. (1997) define interactivity as the speed of response of a computer interface and the degree of relevance between the response and the requested information.

With the emergence and development of the internet and more advanced technologies, human-computer interaction alone is insufficient to encompass the full meaning of interactivity. Scholars have included user-to-user interaction and user-to-information interaction in their research. Blattberg and Deighton (1991) defined interactivity as the ability for individuals and organizations to communicate directly with each other, regardless of distance and time. Liu and Shrum (2002) view interactivity as the degree of mutual influence between two or more individuals involved in communication, the communication medium, and the information, as well as the synchronicity of these mutual influences.

Chen (2007) proposed the factor of "perceived vividness" in the study of interactivity, meaning the perceived richness of the shopping environment by consumers. Yang (2008) and Coursaris (2012) similarly mentioned that content richness helps consumers more actively engage with the content, thus perceiving stronger interactivity when analyzing factors influencing perceived interactivity. It can be seen that richness can influence users' perceived interactivity. In other words, richness can, to some extent, explain the connotation of online interactivity.

Consumer Behavioral Intention

Behavioral intention refers to a consumer's intention to take a specific action in the future, often based on external environmental stimuli that prompt the consumer to take particular actions. Smith and Swinyard (1982) suggested that behavioral intention mainly refers to an individual's probability of performing a certain behavior towards something in the future. Behavioral intention can accurately explain consumer activities, occurring before the purchase behavior, and is generated through the perception of the shopping process, making it a crucial phase of consumer behavior (Ajzen & Drive, 1991).

Behavioral intention is a method to measure the likelihood of an individual undertaking a specific behavior. If an individual has a strong intention to use or purchase something, the likelihood of them engaging in the purchase behavior is high. Behavioral intention becomes the direct determinant of actual action. In other words, consumer behavioral intention plays an important predictive role in their behavior, a conclusion widely agreed upon by many scholars (Bauer et al., 2006; Li et al., 2008). Zeithaml (1996) asserted that behavioral intention can be either positive or negative. Positive behavioral intention is demonstrated by consumers' liking for a product, praising it, and purchasing it; negative behavioral intention is shown by consumers' aversion to a product, criticizing it, and refusing to purchase it. Many scholars interpret consumer behavioral intention from the aspects of purchase intention and recommendation intention (Haemoon, 2009; Van et al., 2012; Xu Longjie, 2015). Purchase intention reflects consumers' willingness to buy the product and to make repeat purchases from the same store, while recommendation intention indicates consumers' willingness to proactively share their product experiences and recommend the product to others.

Based on the above review of literature related to behavioral intention, this study defines the concept specifically as the intention to purchase products and recommend them to others, generated through a series of product information searches in the context of online shopping (Zhang, 2016).

Asymmetry of Information Theory

The theory of information asymmetry originated in the 1970s and refers to the situation where the parties involved in a transaction possess unequal market information, with one party typically having more information than the other (Wang & Wang, 2013). Those with ample information are often in a more advantageous position in the transaction, while those with relatively scarce information are at a disadvantage. The core of information asymmetry theory is that in a transaction market, sellers generally possess more information about the product than buyers. The party with more information benefits by transmitting reliable information to the less informed party, while the less informed party endeavors to obtain information from the other party. The existence of information asymmetry prevents consumers from distinguishing between low-quality and high-quality goods, potentially leading to adverse selection.

Information asymmetry is a common phenomenon, and the virtual nature of online shopping exacerbates this issue. When shopping on e-commerce websites, consumers cannot directly inspect products and must rely on images and textual information provided by online sellers to assess product quality. Businesses have more knowledge about their own credit status and product quality, possessing more unique information than consumers. This unique information results in information asymmetry between the parties involved in the transaction. Typically, consumers are at an informational disadvantage, which makes them more cautious when shopping online. Unpleasant shopping experiences may lead to a loss of trust in the website. Information asymmetry has been a hindrance to

the development of online shopping (Zhang, 2008). For online merchants, improving the quality and richness of their websites and enhancing interaction with consumers is crucial. Since this information is generally more visible and accessible than product attributes, quality-related signals significantly influence customer perceptions in situations of information asymmetry (Wells et al., 2011).

Signal Theory

Signal theory, proposed by American economist Spence in the 1970s, is a crucial component of information economics theory that provides guidance to address adverse selection caused by information asymmetry. Fundamentally, signal theory focuses on reducing information asymmetry between the parties in a transaction (Spence, 2002). This theory primarily consists of two aspects: signaling and screening. Signaling refers to conveying accurate information about product quality through observable actions, while screening involves discerning true information through different contracts.

In her review of signal theory, Huang (2016) also summarized the framework of signal theory based on this timeline. Signal senders possess some potential information unique to insiders. Signals are the positive or negative internal information that insiders must decide whether to convey to outsiders. Signal receivers lack information about the organization but seek to obtain it. Additionally, there is a partial conflict of interest between signal senders and receivers; successful deception benefits the signal senders at the expense of the receivers.

In the context of mobile shopping, there is severe information asymmetry between buyers and sellers, and signaling can mitigate this impact. Consumers cannot physically touch or sense the products, leading to significant uncertainty about product quality. They must rely on actively searching for signals online that indicate product quality. Therefore, it is crucial for sellers to provide high-quality signals that can convince consumers.

Conceptual Framework

This study is based on information asymmetry theory and signal theory, with online interaction as the independent variable, which is divided into four dimensions: controllability, richness, responsiveness, and mutuality assistance. Behavioral intention is the dependent variable. A theoretical model for this study has been constructed accordingly.

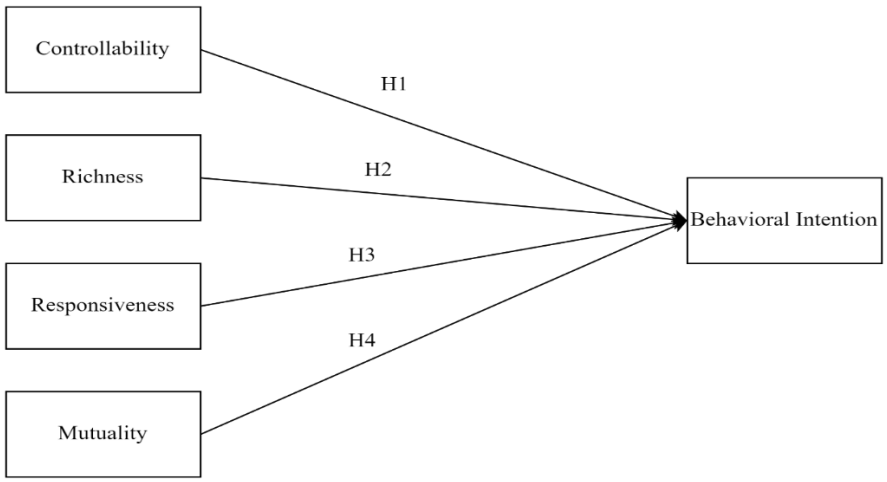
Research Hypothesis

H1: Controllability positively influences consumers' behavioral intention.

H2: Richness positively influences consumers' behavioral intention.

H3: Responsiveness positively influences consumers' behavioral intention.

H4: Mutuality positively influences consumers' behavioral intention.



Picture 1: Conceptual Framework

Methodology

This study adopts a quantitative research method, and according to the purpose of the study, the research population is limited to those who have had online shopping experience in the recent period of time. In order to ensure the quality level of the collected data, this study uses a combination of online and offline channels to distribute the questionnaires.

A total of 517 questionnaires were recovered, of which the offline questionnaires were mainly distributed in the libraries of the universities around Hangzhou, such as Zhejiang University of Finance and Economics, Hangzhou Normal University, China University of Weights and Measures and the Rookie Stage, with a total of 200 questionnaires distributed and 194 questionnaires recovered. The online questionnaires were mainly distributed through QQ, WeChat and other online channels by means of online questionnaire platforms. The online sample covers a wide range of provinces and cities, such as Zhejiang, Shanghai, Henan, Shandong, Yunnan, Chongqing, etc. A total of 323 questionnaires were collected. The collected questionnaires were screened and excluded according to the criteria of incomplete completion, obvious contradiction of options, time spent on completing the questionnaire less than 60 seconds, and consecutive cases of choosing the same option. For offline data, 18 invalid samples were excluded, leaving 176 valid samples. For online data, 60 invalid samples were excluded, leaving 263 valid samples. The total number of valid questionnaires is 439, accounting for 84.9% of the total number of questionnaires collected.

This study conducted reliability analysis of each variable scale using SPSS. As shown in Table 3.2, the Cronbach's Alpha values for the four variables of online interaction are all above 0.8. The Cronbach’s Alpha coefficient for the behavior intention variables is 0.944, exceeding 0.9. Overall, the scales in this questionnaire demonstrate high consistency and reliability, indicating strong internal validity.

Results

Table 1: Results of Reliability Analysis for Each Variable

Variable	Number of questions	Cronbach 's α
Controllability	4	0.821
Richness	4	0.851
Responsiveness	4	0.917
Mutuality	3	0.894
Behavioral Intention	4	0.944

From Table 1, it can be observed that the KMO value for the overall online interaction scale is 0.932, which exceeds 0.7. The Bartlett's test of sphericity has a significance probability of 0.000, which is less than the significance level of 0.05. These indicators suggest that the online interaction scale possesses a good level of validity and is suitable for factor analysis.

Table 2: Online Interaction KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.932
Bartlett's Test of Sphericity	Approx. Chi-Square df Sig.	4200.189 105 0.000

From the data in Table 2, it can be seen that the KMO value for the behavioral intention scale is 0.871, which exceeds 0.7. The Bartlett's test of sphericity reaches a significance level, indicating that the behavioral intention scale has a good level of validity and is suitable for further factor analysis.

Table 3: Behavioral Intention KMO and Bartlett's Test[a]

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.871
Bartlett's Test of Sphericity	Approx. Chi-Square df Sig.	1649.934 6 0.000

Table 5: Structural model fitness parameters

Statistical tests	Absolute fit index			Value-added fitness index			Parsimony fitness index		
	X2/df	RMSEA	GFI	NFI	TLI	CFI	PNFI	PCFI	PGFI
Criteria for fit	<3	<0.08	>0.9	>0.9	>0.9	>0.9	>0.5	>0.5	>0.5
Test result data	1.537	0.035	0.935	0.958	0.982	0.985	0.822	0.846	0.739

As shown in Table 5, the absolute fitness indices X2/df, RMSEA, and GFI are 1.681, 0.039, and 0.928, respectively, which satisfy the fitness criteria. The parameter values of value-added fitness indexes NFI, TLI, and CFI are all greater than 0.9. The value of simple fitness index PNFI, TLI, and CFI are all greater than 0.9. PNFI, PCFI, PGFI all meet the criterion of greater than 0.5, indicating that

the model fits well. This indicates that the model fits well.

The individual path coefficients and significance test results for the structural equation modeling are shown in Table 6 below:

Table 6: Path coefficient test results for structural models

Path relationship	Std Estimate	Estimate	S.E.	C.R.	P
Controllability ---> Behavioral Intention	.073	.106	.049	2.162	.031
Richness ---> Behavioral Intention	.211	.242	.059	4.112	***
Responsiveness ---> Behavioral Intention	.127	.144	.051	2.826	.005
Mutuality --> Behavioral Intention	.126	.156	.051	3.052	.002
Note: *** represents significant at the 0.001 level.					

Table 4: Descriptive Statistics Analysis of Valid Sample Information

Variable	Group	Sample Size	Percentage (%)
Gender	Male	203	46.2
	Female	236	53.8
Age	18 years and under	5	1.1
	18-25 years	221	50.3
	26-30 years	153	34.9
	31-40 years	32	7.3
	Above 40 years	28	6.4
Education	High school and below	28	6.4
	College	66	15.0
	Bachelor's degree	241	54.9
	Master and above	104	23.7
Vocational	Student	152	34.6
	Company staff	171	39.0
	Government staff	20	4.6
	Organization staff	52	11.8
	Freelancer	44	10.0
Monthly disposable amount	Less than 1000 Yuan	62	14.1
	1000-2000 Yuan	136	31.0
	2000-3000 Yuan	84	19.1
	Above 3000 Yuan	157	35.8
Number of online purchases per month	2 times and below	112	25.5
	3-5 times	231	52.6
	6-8 times	43	9.8
	More than 8 times	53	12.1
Age of online shopping	Less than 1 year	60	13.7
	1-3 years	66	15.0
	3-5 years	120	27.3
	More than 5 years	193	44.0

From the analysis results of AMOS output, it can be seen that the standardized path coefficients

of controllability, richness, responsiveness, and mutual aid on behavioral intention are 0.073, 0.211, 0.127, and 0.126, respectively, and the corresponding P-values are all less than 0.05, which have reached the level of significance, which indicates that controllability, richness, responsiveness, and mutual aid have a significant positive impact on the consumers' behavioral intention. Hypotheses H1, H2, H3 and H4 are all verified.

Discussion

This study, through a review of existing literature, defines online interaction into four dimensions and explores the mechanism of its influence on consumers' behavioral intentions. It enriches the research on the effects of online interaction. However, there are inevitably limitations and shortcomings throughout the research process, which future research can further delve into and improve upon. The main limitations of this study are explained as follows:

Limitations in questionnaire design. This study enriches the dimensions of online interaction and appropriately modifies existing measurement scales based on real-life contexts, striving to make the questionnaire design more relevant to actual mobile online shopping scenarios. However, due to limited capabilities, there may be some details in the questionnaire design that were not fully considered.

Relatively single research method. The theoretical model of this study is validated using data collected through a questionnaire survey. Respondents were asked to recall their most recent online shopping experience, but recall inevitably differs from reality. Additionally, the context and emotions of respondents when filling out the questionnaire may affect the objectivity of the data to some extent. In contrast, experimental research can better control other influencing factors, providing more accurate validation of theoretical logic.

Incomplete consideration of factors influencing consumer behavioral intentions. Consumer behavior is inherently a complex concept with many influencing factors. This study investigates the impact of online interaction but does not consider emotional factors such as consumer preferences, brand loyalty, and personal characteristics.

Conclusions

1) Controllability positively influences consumers' behavioral intentions

The higher the degree of control consumers have over the order and content of website and product information, the stronger their intentions to purchase and recommend the products to others. Jiang et al. (2010) suggested that highly controllable websites tend to promote consumer purchase behaviors. The stronger the perceived controllability, the easier it is for consumers to obtain the information they need, thereby enhancing their purchase intentions.

2) Richness positively influences consumers' behavioral intentions

When online merchants use rich media such as detailed text descriptions, animations, short videos, or live streams to showcase products, it helps consumers gain a comprehensive understanding of the product information. This improves consumers' perceptions of product quality and increases their inclination to purchase. Park et al. (2005) similarly found that diverse product display methods positively influence consumer purchase behavior.

3) Responsiveness positively influences consumers' behavioral intentions

Timely responses from online customer service to consumer inquiries and targeted resolution of consumer doubts can meet consumers' information search needs. This responsiveness makes consumers feel that the online merchant values service quality and cares about their needs, fostering trust in the merchant and subsequently prompting purchase behaviors.

4) Mutual assistance positively influences consumers' behavioral intentions

Through buyer reviews and interactions with other buyers, consumers can obtain more third-party product information. Access to this information helps consumers deepen their understanding of the products, more accurately discern product quality levels, and increases the likelihood of purchase intentions.

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