A Research on Influencing Factors of Consumer Purchasing Behaviors in Cyberspace

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Abstract

Based on theoretical studies of domestic and foreign scholars on influencing factors of online consumer purchasing behaviors, in this paper the author analyzes factors influencing consumers' online purchasing behaviors. By means of questionnaire survey and AHP (Analytic Hierarchy Process), the author performs an empirical analysis of the hierarchy model of influencing factors of online shopping which is built by domestic scholars, and gets the relative importance of these influencing factors. The results show that: security of online shopping, prices, and commercial credits are primary factors influencing consumers' purchasing behaviors, and genders education levels of consumers, and designs of store are the secondary ones. Accordingly, the author puts forward some suggestions for online retailers.

Keywords: Online shopping, Consumer purchasing behavior, Influencing factor, AHP

1. Introduction

Consumer is the subject of market and the critical strength of existence and development of enterprise. The consumer demand affects an enterprise's marketing decision fundamentally, which is the basic consideration for an enterprise choosing the marketing strategy and tactics. Today, the network environment is gradually updating in China. Net retailers in development must focus on the consumer. An enterprise's marketing behavior should take the consumer as the core. By studying the influencing factors of consumer behaviors, the enterprise can identify the consumer demand, enhance the factors that promote consumer purchasing, and change unfavorable factors, taking the satisfaction of consumer as the start point and ultimate goal of marketing behaviors. Only by providing high-quality products, reasonable prices, and complete services, and satisfying consumers' material and spiritual needs, can an enterprise earn more consumers, increase market shares, and create special core competences and competitive advantages. Meanwhile, consumers will gradually accept the modern selling mode - online retail. And online retailers start to pay attention to the enterprise's strategic management and measures. The study of consumers' online purchasing will help domestic retailers who hope to or has already entered the field to apply marketing strategies.

Early before the year 1999, Internet prophets in China have began to build B2C websites, dedicating to promoting online purchasing. Today, with fast-developing network economy, China's online market keeps in growing. Based on the 2008 Beijing Olympic Games, the 2010 Shanghai World Expo, and new members in the market, such as Baidu, Shanghai Research Market Consulting Co., Ltd. predict that the market size will reach 406 billion RMB in 2011. There is a huge potential market. Therefore, to study a series of interrelated problems, such as which kind of factors are the key ones affecting Chinese consumers' online purchasing, how online retailers change the opinions of online consumers, how to guide consumers to join in online purchasing, and how to master consumers' minds and behaviors, and to form a theoretical system gradually based on research processes and results can effectively promote the healthy and fast development of online retail.

2. Literature review on domestic and foreign studies

Scholars' studies on the influencing factors of consumers' online purchasing are mainly divided into two aspects. One is to directly use theories or methods, but not the TAM model. The other is based on the TAM model and its derived model to study the influencing factors of consumers' online shopping.

Korgaokar (1999) studies the demographic variables of consumers and results show that age, gender, geographic distribution, income, family, and work can affect consumers' online purchasing behaviors (Korgaokar & Wolin. LD., 1999). Bellman (1999) studies online consumers and finds that rich products information can affect the online shopping (Bellman, Lohse G & Johnson E., 1999). From the angle of website technology, Swami Nathan studies the factors that influence consumers' online purchasing based on characteristics of consumers, and results show that the competitive price and the quick cancel of orders are the key for consumers' online purchasing (Swami Nathan. E. Lepkowska-White & B.P Rao, 1999).

Based on the TAM model, Lin & Lu (2001) performs an empirical study on 139 online consumers, from the angle of website quality affecting consumers' online purchasing intention, and results show that the quality of website influences the effects of TAM model's main variables PEOU and PU on the purchasing attitudes and intentions (Lin, Chuan-chuan J & Lu H., 2000). Koufaris (2002) introduces the theory of Flow based on the theoretical frame TAM, and performs an empirical research on 300 consumers from certain online purchasing website. And results show that the pleasure and the utility of online purchasing have a great effect on the purchasing intention of consumers (Koufaris, 2002). Aioa O, Cass, Tino Feneeh (2003) introduce the individual characteristics of a consumer, including personalities, experiences of online purchasing, and guidance of purchasing, based on the TAM model, and perform an empirical research on 392 online consumers. And results show that individual characteristics influence the effects of TAM model's main variables PEOU and PU on online purchasing intention (Aioa O, Cass, Tino Feneeh, 2005). Chang and I-Chiu (2007) uses the Unified Theory of Acceptance and Use of Technology (TUAUT) to make an empirical research on 140 online consumers. And results show that the four core concepts of the model can effectively explain the intention of applying new technology and force them to join in online purchasing (Chang, I-Chiu. et al., 2007).

Currently, Chinese scholars start to pay attention to consumers' online purchasing behaviors. But related systematic studies are quite few. And the online retail, as a brand-new modern commercial mode in China, deserves more researches. As a result, studies on consumers' online purchasing behaviors are far from a complete theoretical system.

Lijun Wu (2001) studies the subject according to the theory of consumer behavior and concludes that two main factors influence online purchasing, respectively external and internal factors. And the internal factors include gender, age, education, and economic condition. The external factors include infrastructure of network, reliability of trading, and prices and quality of products (Lijun Wu, 2001). Xixi Wang (2001) builds a conceptual analysis model for influencing factors of online purchasing and performs an empirical analysis based on data of GVU online survey. This research emphasizes the influences of four factors on consumers' online purchasing activities, including demographic factor, characteristics of online consumers, features of transactions, and characteristics of online retailers (Xixi Wang, 2001). Ying Zhao (2004) theoretically studies the influencing factors of consumers' online purchasing and summarizes the main factors including the security and reliability of network, the infrastructure of network, characteristics of products, and the image of online store. Zhanping Wang (2004) finds the influencing factors according to a consumer-purchasing model and builds a new pattern (Zhangping Wang, 2004). Ji Li (2005) targets at college students and performs an empirical study on influencing factors of online purchasing based on the theory of innovation diffusion. And results show that the main influencing factors that affect college students' online purchasing are innovation, network, time pressure, online time, and disposable income (Ji Li, 2003).

Hua Cheng (2003) introduces the innovation diffusion model with the basis of TAM model, builds a new theoretical model for consumers' online purchasing, and makes an empirical research. Results show that PU, PEOU, and security are the critical factors that influence the intention and attitudes of online purchasing (Gongmin Bao & Hua Cheng, 2003). Miao Jing (2005) theoretically adds a new variable - the perceived risk into the TAM model, which is used to explain the risk of consumers in online purchasing, exposing consumers' online purchasing behavior (Miao Jing & Ying Zhou, 2005). Jiwen Zhu (2005) studies 157 potential online consumers based on TAM model and results show that the main factors that affect potential online consumers are the perceived utility of online purchasing, the perceived convenience of online purchasing, the perceived reliability of online purchasing, the perceived information quality of online store, the perceived service level of online store, the attitude of online purchasing, and the intention of online purchasing (Jiwen Zhu, 2005). Tieniu

Dong (2007) introduces the task technology fit (TTF) and the perceived risk (PR) under the frame of TAM model, builds the TAM/TTF/PR model for consumers' online purchasing, and performs an empirical test in the circumstance of China (Tieniu Dong & Naiding Yang, 2007). Results prove that the online purchasing intention determines consumers' actual behaviors to a great degree, and the main driving factor is the perceived utility. TTF generates a large positive effect on actual behaviors by a direct and indirect way. Besides, TTF can decrease PR significantly, which could produce a big repressive effect on actual behaviors. The perceived convenience has a weak positive effect on actual behaviors indirectly.

3. The empirical research on influencing factors of online consumers' purchasing behaviors

In this paper, the author uses AHP to study the influencing factors of online consumers' purchasing behaviors. The survey is to target at consumers who have bought stuff online. In order to ensure the validity and accuracy of the questionnaire, samples are chosen from Taobao buyers, who are divided into four types: red-heart buyers, diamond buyers, crown buyers, and purple crown buyers, according to the credit rates. Since purple crown buyers are quite few, this survey mainly focuses on other three types.

3.1 The design of questionnaire

The chief purpose of the survey is to find out the relative importance of all influencing factors of online consumers' purchasing behaviors by studying buyers with different credit rates in Taobao. The questionnaire includes three parts. The first part is about the basic conditions of online buyers, including their genders, ages, incomes, education, and online purchasing experiences. The second part is to explain the influencing factors in order to help buyers to understand these factors thoroughly and deeply. The third part is to analyze the influencing factors, respectively listing the factors at two levels in the model, and asking buyers to judge the relative importance of factors by comparisons.

3.2 The analysis of data

In this survey, 80 questionnaires are distributed (38 for red-heart buyers, 28 for diamond buyers, and 14 for crown buyers) and 71 copies are finally collected (35 from red-heart buyers, 26 from diamond buyers, and 10 from crown buyers). Make a double check on collected copies and get 65 valid copies (31 from red-heart buyers, 24 from diamond buyers, and 10 from crown buyers). The validity ratio is 80.25%. This questionnaire survey reaches the expected goal and the results are consistent with the facts. The following data analysis is based on the 65 valid copies as the size of sample.

(1) Analysis of basic conditions

Among these online buyers in the survey, 58% are women and 42% men. Although the number of women is slightly higher than men, the proportion is close. Online buyers in the survey are mostly between 18 and 35 years of age, which indicates that young people are the main force of online consumption. The incomes of 80% online buyers in this survey are mainly below 1000 RMB or in the range from 2000 to 4999 RMB. They have been educated at a higher level and 97% of them have entered vocational colleges or above. And 79% of online buyers in this survey buy things online more than 10 times.

(2) Use AHP to analyze the influences of all influencing factors

1) Build a hierarchic model for influencing factors of online consumers' purchasing behaviors

In this paper, the author does not present a hierarchic model directly based on the interpretation structure model (ISM), but introduces the hierarchic model for influencing factors of online consumers' purchasing behaviors, which is firstly advanced by Xixi Wang (Xixi Wang, 2001). See Figure 1.

2) Establish the judgment matrix and get the solution

Collect all data from valid questionnaires statistically and establish the judgment matrix by comparing the importance of each item and using the method of weighted average. Get the solutions by EXCEL and perform a consistency test. Results are shown in following tables (Table 1, 2, 3, 4, 5).

Get the weights of factors according to the judgment matrix and calculate the total influences of 15 influencing factors at the C level. Results are listed in Table 6.

3) Conclusion

Table 7 shows that the security and privacy factor, among all influencing factors at the level B, is the key influencing online consumers' purchasing behaviors. And the personal characteristics and consumers' psychological factors have an insignificant effect on online consumption. Among the influencing factors at the level C, the security of online transaction, network privacy, prices of products, and service quality affect online

purchasing significantly, while genders of consumers, design of online stores, and education of consumers affect online consumers' purchasing behaviors slightly.

4. Suggestions for online retailers' marketing

(1) Strengthen the communication with consumers, and use reliable network security software to ensure the privacy and security of consumers' information, reducing risks of purchasing. To protect consumers' privacy and ensure the security of transaction is the key issue of online marketing, and also the most central concern of transaction parties online, which seriously affects the development of electronic commerce. For online retailers, consumers are the key for solving the security and privacy issue. Online retailers should figure out a way to convince consumers that the security of online transaction is better than they think, their privacy is protected, and the probability of being attacked is quite small. Therefore, online retailers can try to change consumers' ideas by communication and commitment. Besides, they should try the SSL security protocols. For example, the famous Amazon online bookstore is using this security protocol. It declares clearly that: "You are protected by 'Amazon Safe Purchasing Protocol' when you buy books from Amazon. You never have to worry about the security of your credit card."

(2) Adhere to honesty and credit, ensure the quality and competitive prices of products, improve the service quality and fulfill commitments. Honesty and credit are the precondition of developing business, and also the cornerstone and platform of online purchasing. With honesty and credit, online business can step into a bright road. Online retailers can promote shopping websites by means of training classes, seminars, and consumers meetings, providing with network knowledge for potential consumers. By means of guaranteeing competitive prices, improving service quality, fulfilling commitments, building and maintaining images of websites and stores, online retailers can make their advantages prominent.

(3) Enhance the timeliness of logistics, improve the efficiency of distribution, and realize fast, high- quality, and low-cost shipping services. Efficient shipping is the key for developing online purchasing. Only by ensuring the quality of online purchasing, and guaranteeing good services for returns and replacements, can online purchasing be trusted and finally become popular among normal people. Apart from depending on the third-party logistics, we can introduce the fourth-party logistics, make the optimized combination of whole supply chain, and achieve the fast, high-quality, and low-cost shipping.

(4) Provide convenient shopping environment, guarantee the consistency of products' quality and information, and improve the satisfaction of consumers. Online retailers should supply supportive services as soon as possible in order to help consumers to complete transactions easily, such as multiple payments, answering consumers' questions simultaneously, offering special information for each consumer, providing interesting information for consumers, recommending relevant products, easy refund and returns. In addition, improve the design of websites and purchasing interfaces and help consumers get necessary information more easily and quickly, making the purchasing more convenient and reliable. Besides, online retailers can weaken the virtual character of network by friendly designs, personnel contacts, and information transparency during the purchasing process, they can better satisfy the needs of consumers who pursuit for convenience and information communication, meet the needs of social-experience consumers, and make different types of consumers to recognize and accept online purchasing gradually.

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Table 1. The weight analysis of factors at the principle level A

A	B1	B2	B3	B4	W_i	W_i^0	λ_{mi}	Consistency test
B1	1	1	1/3	1/3	0.463972	0.115993	4.055818	λ_{max}=4.127161
B2	1	1	1/7	1/3	0.358709	0.089677	4.102308	CI=0.042387
B3	3	7	1	3	2.153822	0.538456	4.237673	RI=0.890000
B4	3	3	1/3	1	1.023496	0.255874	4.112846	CR=0.047626<0.1

Table 2. The weight analysis of factors in B1

B1	C1	C2	C3	C4	C5	W_i	W_i^0	λ_{mi}	Consistency test
C1	1	1	1/5	3	1/2	0.742033	0.148407	5.629972	λ_{max}=5.442314
C2	1	1	1/4	1/2	1/3	0.435330	0.087066	5.492190	CI=0.110578
C3	5	4	1	3	2	2.104041	0.420808	5.551592	RI=1.120000
C4	1/3	2	1/3	1	1	0.688061	0.137612	5.141906	CR=0.098731<0.1
C5	2	3	1/2	1	1	1.030535	0.206107	5.395910	

Table 3. The weight analysis of factors in B2

B2	C6	C7	C8	W_i	W_i^0	λ_{mi}	Consistency test
C6	1	1	2	1.200000	0.400000	3.000000	λ_{max}=3
C7	1	1	2	1.200000	0.400000	3.000000	CI=0 RI=0.52
C8	1/2	1/2	1	0.600000	0.200000	3.000000	CR=0<0.1

Table 4. The weight analysis of factors in B3

B3	C9	C10	W_i	W_i^0	λ_{mi}	Consistency test	
C9	1	2	1.333333	0.666667	2.000000	λ_{max}=2	CI=0
C10	1/2	1	0.666667	0.333333	2.000000	RI=0	CR=0<0.1

Table 5. The weight analysis of factors in B4

B4	C11	C12	C13	C14	C15	W_i	W_i^0	λ_{mi}	Consistency test
C11	1	3	2	2	7	1.926837	0.385367	5.375755	λ_{max}=5.281289
C12	1/3	1	2	2	3	1.092130	0.218426	5.434386	CI=0.070322
C13	1/2	1/2	1	2	7	1.078949	0.215790	5.176809	RI=1.120000
C14	1/2	1/2	1/2	1	3	0.663501	0.132700	5.166841	CR=0.062788<0.1
C15	1/7	1/3	1/7	1/3	1	0.238582	0.047716	5.252655	

Table 6. The sequence of factors' influences at C level

B \\ C	B1(0.115993)	B2 (0.089677)	B3 (0.538456)	B4 (0.255874)	Total weight W_i
C1	0.148407	0.000000	0.000000	0.000000	0.017214
C2	0.087066	0.000000	0.000000	0.000000	0.010099
C3	0.420808	0.000000	0.000000	0.000000	0.048811
C4	0.137612	0.000000	0.000000	0.000000	0.015962
C5	0.206107	0.000000	0.000000	0.000000	0.023907
C6	0.000000	0.400000	0.000000	0.000000	0.035871
C7	0.000000	0.400000	0.000000	0.000000	0.035871
C8	0.000000	0.200000	0.000000	0.000000	0.017935
C9	0.000000	0.000000	0.666667	0.000000	0.358970
C10	0.000000	0.000000	0.333333	0.000000	0.179485
C11	0.000000	0.000000	0.000000	0.385367	0.098606
C12	0.000000	0.000000	0.000000	0.218426	0.055890
C13	0.000000	0.000000	0.000000	0.215790	0.055215
C14	0.000000	0.000000	0.000000	0.132700	0.033955
C15	0.000000	0.000000	0.000000	0.047716	0.012209

Note: The value of total weight Wi is retained six decimal places.

Table 7. The sequence of influences

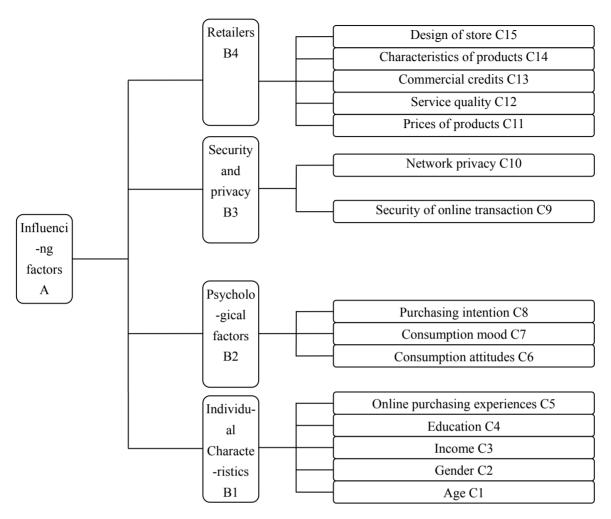| Item		Influence	Rank	Total influence	Final rank
Personal characteristics (B1)	Age (C1)	0.017214	12	0.115993	3
	Gender (C2)	0.010099	15		
	Income (C3)	0.048811	6		
	Education (C4)	0.015962	13		
	Online purchasing experiences (C5)	0.023907	10		
Consumers' psychological factors (B2)	Consumption attitudes (C6)	0.035871	7	0.089677	4
	Consumption moods (C7)	0.035871	7		
	Purchasing intention (C8)	0.017935	11		
Security and privacy factors (B3)	Security of online transaction (C9)	0.358970	1	0.538455	1
	Online privacy (C10)	0.179485	2		
Factors of online retailers (B4)	Prices of products (C11)	0.098606	3	0.255875	2
	Service quality (C12)	0.055890	4		
	Commercial credits (C13)	0.055215	5		
	Characteristics of products (C14)	0.033955	9		
	Design of stores (C15)	0.012209	14		

Figure 1. The Hierarchic Model for Influencing Factors of Online Consumers' Purchasing Behaviors