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Full Research Paper

The Influence Of Network Platform Intelligent Recommendation On Consumer Purchasing Behavior Under The Background Of Big Data——Based On SOR Model.

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Abstract: Based on SOR model, this paper studies the network platform intelligent recommendation characteristic and its influence on consumer purchase behavior, which provides a certain theoretical reference value and practical guidance significance for promoting e-commerce study and optimization of e-commerce platform operation. It is concluded from empirical analysis that the accuracy, richness, novelty and effectiveness of network platform intelligent recommended commodity information and the authority of the authority of the reference have positive effect on consumer purchase behavior, the value and intensity of recommended information and the e-commerce platform have no effect on consumer purchase behavior while non e-commerce platform has negative effect on consumer purchase behavior. Therefore, it is necessary to improve the accuracy, richness, novelty and effectiveness of the commodity recommendation information in the network platform. Network platform store should select not only the authorized and reliable reference but also e-commerce platform as recommendation channel.

Keywords: network platform intelligent recommended commodity information, consumers' behavior, SOR model

1. INTRODUCTION

More and more people begin to select online shopping as the science and technology currently develop rapidly. Compared with traditional shopping in store, it can save more time for consumers when shopping online. Consumers are able to get what they need without going outside. However, based on big data background, the network platform intelligent recommendation is able to collect and portray consumers' information, set up model according to historical interest data, extract users' characteristics and recommend the commodity information in multiple channels. The network platform becomes the first choice of marketing means for these stores because network platform intelligent recommendation is able to efficiently to transform information browser into actual consumers. Therefore, it has become the focus of study for scholars on how to improve the quality of the network platform intelligent recommended information and how to transform information browser into actual consumer. Based on SOR model, this paper studies the network platform intelligent recommendation characteristic and its influence on consumer purchase behavior, which provides a certain theoretical reference value and practical guidance significance for promoting e-commerce study and optimization of e-commerce platform operation. This paper studies the e-commerce platform recommended system based on commodity recommended information, analyzes the influence of commodity recommended information on consumer intention through empirical data and reflects the application of consumers' purchase decision theory in e-commerce field. The empirical study and logical reasoning mode in this study provide a certain theoretical reference value and practical guidance for the e-commerce study.

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2. LITERATURE REVIEW

2.1 Study on network platform intelligent recommendation

It is believed by foreign scholars that network platform intelligent platform can help shorten the consumers' range (Smith, M. D, 2002), reduce consumers' search time cost (Haubl&TriftS, 2000)^[1], simplify commodity selection and evaluation process and reduce risk, thus promoting consumers' purchase decision (Xiao and Benbasat, 2007)^[2] and significantly improve decision quality (Montgomery A. L. K. Hosanna, 2004).

There are few researches on this aspect by domestic scholars. Ye Qunlai(2007)^[3] has set up online shopping recommendation evaluation model so as to evaluate online shopping recommendation result from consumers' experience and consumers' decision making behavior. Zhou He(2011)^[4] has studied the intermediate variable of emotional factor. The result shows that the intelligent recommendation is able to provide useful product information, reduce decision making cost and promote consumers' decision making. It is believed by Zhou Xuefang(2012)^[5] that intelligent recommendation is able to change the information browsers into actual consumers. Sun Yongbo(2018)^[6] believes that intelligent recommendation is able to improve consumers' expression and understanding of product.

Some scholars have different opinion on the impact of intelligent recommendation product information on consumer purchase behavior. It is found by Burke (2011)^[7] that 23.56% consumers suspect and dislike intelligent recommendation system and they believe that the intelligent recommendation platform aims to induce consumers and improve consumption sales volume rather than enhance consumers' purchase quality. It is discovered in Print (2000)^[8] research that decision support system affects consumers' confidence of decision making in a reverse way because consumers are lack of sense of trust for this system and the intelligent recommendation system will make consumer purchase behavior more complicated on the contrary.

2.2 Study on influencing factor of consumers' online shopping behavior

There are four major factors affecting consumers' online shopping behavior, respectively consumers' individual characteristic, product characteristic, online shopping platform characteristic and online consumption environment.

Consumers' individual characteristic. It is believed by Jozee (2005) that consumers' individual characteristics include the basic situation of consumers' online shopping consumption, i.e., online shopping times, online shopping consumption, online shopping habit, online shopping mode, etc. apart from educational background, gender, occupation, age and other demographic variables. At the same time, Bowonder B (2002)^[9] has proposed five individual characteristic affecting consumers' online shopping behavior, including consumers' online shopping attitude, online consumption experience, basic population statistics variable, product evaluation, leader's opinion, risk tolerance, etc.

Product characteristic. It is believed by (2015)^[10] product evaluation is able to reflect its characteristic and consumers will get to know others' evaluation on this product evaluation before consumption. Feng Jia(2016) takes fresh agricultural products as an example and believes that the freshness, taste, condition and other product property will directly affect consumers' online shopping behavior.

Online shopping platform characteristic. It is believed by cooke, A(2006) that online shopping platform characteristic include platform image, platform brand value, platform reputation, platform stable transaction volume, etc. Domestic scholars have paid attention to online store image, online store design style, online store technique application, etc. For example, Fan Jun(2014) believed that the incomplete product information image displayed in the online store will have negative impact on consumers' purchase intention. However, store pictures and sharing pictures by other consumers will significantly increase consumers' purchase intention.

Online consumption environment. It is believed by L. JarvenPaa (2003) that the stability, protection degree

of user's information and security of online payment will directly affect consumers' online shopping behavior. It is discovered in Xu Linyu's research that college students' major recognitions for online shopping environment are website technical risk, fund security risk, product quality risk and individual privacy risk, etc.

2.3 Literature review

Based on the existing literature, it is found that it mainly studies the consumption psychology (user satisfaction degree, trustiness), recommendation effect (information adoption intention, behavior intention, purchase decision) and marketing practice for the influence effect of product recommendation information. It mainly studies the consumers' attitude, perception value, perception risk, theory of planned behavior, TPB) for consumers' purchase intention, involving the subjective and objective influencing factors of purchase intention, such as consumers' individual characteristic, product internal and external factor, situation factor, market factor, etc. Generally speaking, most studies in domestic focus on consumer purchase behavior theory for the impact of recommended product information on consumer purchase behavior or intention.

3. RESEARCH HYPOTHESIS

Based on Hu Xuesong^[11], Deng Lingbin^[12] and other scholars' researches, this paper determines the network platform intelligent recommendation information characteristic from nine perspectives, then proposes the reasonable assumption for the relation between these characteristics and consumer purchase behavior and determine the empirical analysis.

3.1 Authority based on recommender of intelligent recommended information

Authority effect means that people are more likely to trust in those who have high position big power and are highly respected. Therefore, people are easier to make purchase decision when authoritative people (such as star, network performer) recommend the product information. Therefore, it has proposed the following assumptions.

H₁: The authority of the recommender of network platform intelligent recommended product information will have positive impact on consumer purchase behavior.

3.2 Accuracy based on intelligent recommended information

The accuracy of network platform intelligent recommended product information is the fitness degree of e-commerce recommendation system and consumers' individual level. The accuracy is reflected in consumers' style, interest, habit, consumers' expected service level, price level and psychological motive. Currently, most network platforms recommend the product information that is close to consumers' style according to their purchase and browse record, which may evoke their inner desire and purchase intention and promote purchase behavior. Therefore, the higher the accuracy of recommended product information, the more likely it will evoke consumer purchase behavior. Therefore, it proposes the following assumption.

H₂: The accuracy of network platform intelligent recommended product information will have positive impact on consumer purchase behavior.

3.3 Channel based on intelligent recommended information

There are two channels of network platform intelligent recommended product information, i.e., e-commerce platform (Taobao, Jingdong, Pinduoduo) and non e-commerce platform (Tik Tok, Bilibili, Little Red Booklittle). It is pointed out by Gyudong Lee et al. (2009) that the recommendation system of e-commerce platform production information can evoke consumer purchase behavior. Compared with e-commerce platform, non e-commerce platform is of privacy. But consumers have low trustiness on the product information issued on non e-commerce platform and even resist the products. Therefore, it proposes two assumptions.

H₃: E-commerce platform intelligent recommended product information will have positive impact on consumer purchase behavior.

H₄: Non commerce platform intelligent recommended production information will have negative impact on consumer purchase behavior.

3.4 Intensity based on intelligent recommended information

The research proves that the higher intensity of network platform recommended product information, the more likely consumers will purchase the products. However, this situation will be weakened as the recommendation intensity increase because consumers will resist the product and have few purchase intention for this product when they frequently see the same product information. Therefore, it proposes the following assumption.

H₅: The intensity of intelligent recommendation product information on the network platform will have negative impact on consumer purchase behavior.

3.5 Richness based on intelligent recommended information

The intelligent recommendation product information on the network platform is rich and multiple. In other words, the product information is diversified. The richer the recommended product information on the network platform, the more selection consumers will have. Consumers will show great interest for the product, spend more time for browsing and begin to purchase. Therefore, it has proposes the assumptions below.

H₆: The richness of intelligent recommended product information on the network platform will have positive impact on consumer purchase behavior.

3.6 Novelty based on intelligent recommended information

Consumers will find new and interesting products as there are more novel recommended product information on the network platform for their selection, which will improve their shopping enjoyment and efficiency and satisfaction. Therefore, it has proposes the following assumption.

H₇: Novelty of intelligent recommended product information on the network platform will have positive impact on consumer purchase behavior.

3.7 Effectiveness based on intelligent recommended information.

The platform will push relevant recommendation to consumers according to their search, browse, purchase behavior as soon as possible because the intelligent recommended information on the network platform is effective. However, the current intelligent recommendation algorithm is far behind. Usually, the platform constantly pushes relevant information after consumer purchase behavior, thus disturbing consumers. Therefore, it proposes the following assumption.

H₈: Effectiveness of intelligent recommended product information on the network platform will have positive impact on consumer purchase behavior.

3.8 Value based on intelligent recommended information

Consumers will not make a purchase decision only by relying on one push information when the platform push high valued product to them. Instead, they will have a detail understanding before making a decision because consumers are very cautions when purchasing high valued products. But consumers will directly make purchase decision when the platform recommends low valued product. Therefore, it proposes the following assumption.

H₉: Intelligent recommended product information on the network platform will have negative impact on consumer purchase behavior.

4. STUDY MODEL

S-O-R model is used to study mankind behavior, i.e., irritation—individual physiology, psychology—reaction, which is widely applied in the research of purchase behavior, particularly the research of online shopping. This model will irritate consumer purchase behavior and consumers' physiology, psychology and

external environment factor will produce this irritation. Consumers will have the purchase motive under the irritation, make purchase decision and finally purchase products. At the same time, they will evaluate the product, purchase channel and manufacturer. It is a complete purchase experience. Davis (1986) further constructs technical acceptance model(TAM) from new perception feasibility and perception usefulness. This paper has set up the model as shown in Figure 1 based on the theory and research assumption.

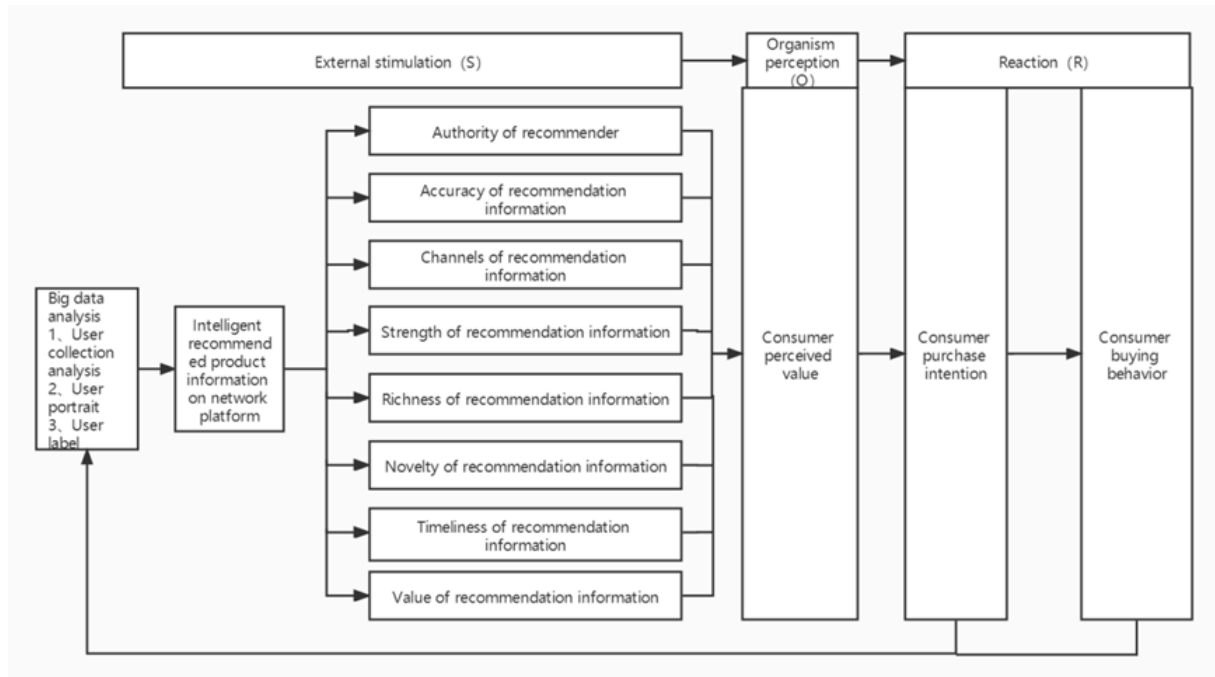


Figure 1. Study model

5. EMPIRICAL ANALYSIS

5.1 Questionnaire design and validity analysis

It has designed one dependent variable. i.e., consumer purchase behavior (X) and relevant independent variables of the intelligent recommended product information on 9 network platforms in this questionnaire, respectively accuracy (T1), richness (T2), novelty (T3), effectiveness (T4), value (T5), authority (T6), intensity (T7), e-commerce platform (T8) and non e-commerce platform. At the same time, it can set “completely agree”, “agree”, “generally” and “disagree” options according to Likert scale. See Table 1 for interviewee basic information. We can see that 66% consumers purchase for over 6 times every month and have strong online shopping habit. It conforms to the research scope. Table 2 is reliability test and the result shows that reliability coefficient value is 0.762, higher than 0.7, showing that the research data are of good reliability quality. The CITC value of the analysis item is higher than 0.4, showing that the analysis items have good relation and reliability level. In conclusion, reliability coefficient value of the research data is higher than 0.7, showing that date reliability is of high quality, which can be used for further analysis. Table 3 is validity test. The result shows that KMO value is 0.873, higher than 0.8. The research data are applicable for information extraction(better validity reflected from side).

Table 1. Descriptive statistics

Name	Option	Frequen cy	Percentage (%)	Cumulative percentage (%)
1. Your gender	Male	111	55.5	55.5
	Female	89	44.5	100

	19years' old and below	35	17.5	17.5
	20-29 years' old	82	41	58.5
2. Your age	30-39 years' old	56	28	86.5
	40-49 years' old	22	11	97.5
	50 years' old and above	5	2.5	100
	Junior high school and below	17	8.5	8.5
3、Your educational background	Senior high school / technical secondary school / technical school	43	21.5	30
	Junior college	50	25	55
	Undergraduate	67	33.5	88.5
	Master degree and above	23	11.5	100
	Government or public institution workers	15	7.5	7.5
	Company manager	21	10.5	18
3. Your occupation	Student	70	35	53
	General staff	59	29.5	82.5
	Freelance	30	15	97.5
	Other	5	2.5	100
	1000yuan and below	23	11.5	11.5
5.Your average month salary	1001 yuan -3000 yuan	61	30.5	42
	3001 yuan -5000 yuan	70	35	77
	5000 yuan and above	46	23	100
	1time and below	13	6.5	6.5
	2-5 times	55	27.5	34
6. Frequency of your online shopping (times / month)	6-10 times	90	45	79
	11-14 times	29	14.5	93.5
	15 times and above	13	6.5	100

Table 2. Cronbach Reliability Analysis

Name	Total correlation of correction terms (CITC)	α coefficient deleted	Cronbach acoefficient
Consumer purchase behavior (X)	0.843	0.697	
Accuracy of recommended information (T1)	0.617	0.712	
Richness of recommended information (T2)	0.499	0.731	
Novelty of recommended information (T3)	0.63	0.712	
Effectiveness of recommended information (T4)	0.569	0.723	
Value of recommended information (T5)	0.566	0.723	
Authority of recommender (T6)	0.547	0.725	0.762
Intensity of recommended information (T7)	0.5	0.731	
E-commerce platform of recommended channel (T8)	0.504	0.731	
Non e-commerce platform of recommended channel (T9)	-0.679	0.865	

Standard Cronbach α coefficient: 0.768

Table 3. KMO and Bartlett Test

KMO value		0.873
Bartlett sphericity test	Approximate chi square	935.445
	df	45
	p value	0. 000

5.2 Correlation analysis

This paper studies the relation of the 9 independent variables and 1 dependent variables by correlation analysis and shows the relevant weakness by using Pearson correlation coefficient. The result is shown in Table 4 that there is significant positive correlation of the accuracy, richness, novelty, effectiveness, value, authority, intensity and e-commerce platform recommended channel and purchase behavior while there is significant negative correlation between the non e-commerce platform recommended channel and purchase behavior.

Table 4. Pearson Correlation

	X	T1	T2	T3	T4	T5	T6	T7	T8	T9
X	1									
T1	0.673**	1								
T2	0.627**	0.354**	1							
T3	0.698**	0.527**	0.350**	1						
T4	0.636**	0.390**	0.323**	0.434**	1					
T5	0.546**	0.508**	0.389**	0.405**	0.381**	1				
T6	0.610**	0.403**	0.295**	0.460**	0.468**	0.421**	1			
T7	0.494**	0.390**	0.399**	0.409**	0.313**	0.326**	0.235**	1		
T8	0.481**	0.327**	0.339**	0.355**	0.426**	0.324**	0.389**	0.394**	1	
T9	-0.720**	-0.439**	-0.484**	-0.456**	-0.460**	-0.436**	-0.464**	-0.403**	-0.451**	1

* $p < 0.05$ ** $p < 0.01$

5.3 Regression analysis

The further regression analysis is shown in Table 5. Model R chi-square value is 0.851. It means that the accuracy, richness, novelty, effectiveness, value and recommender's authority, recommendation intensity and recommendation channel can be explained as the 85.1% change reason of consumer purchase behavior. It is found from model F test ($F=120.773$, $p=0.000 < 0.05$) that the accuracy, richness, novelty, effectiveness, value, recommender authority, recommendation intensity and recommendation channel will affect consumer purchase behavior. In addition, it is found from multicollinearity test of the model that VIF value in the model is less than 5. It means that there is no colinearity problem and D-W value is around 2. Therefore, there is no self-correlation of the model or association of the sample data. It can be known from the analysis that the accuracy, novelty, effectiveness and recommender's authority have positive impact on consumer purchase behavior, the value, intensity, channel of the recommendation of the e-commerce platforms have no impact on consumer purchase behavior and non e-commerce platforms have negative impact on consumer purchase behavior.

Table 5. Regression result

	Non standard coefficient		Standard coefficient	t	p	VIF	R ²	Adjust R ²	F
	B	Standard error	Beta						
Constant	1.355	0.206	-	6.587	0.000**	-	0.851	0.844	F(9,190)=120.773,p=0.000
T1	0.157	0.026	0.219	5.972	0.000**	1.715			
T2	0.168	0.024	0.239	7.044	0.000**	1.465			
T3	0.18	0.028	0.232	6.339	0.000**	1.715			
T4	0.155	0.029	0.191	5.447	0.000**	1.566			
T5	0.004	0.029	0.005	0.133	0.894	1.58			
T6	0.107	0.027	0.139	3.922	0.000**	1.608			
T7	0.025	0.025	0.033	0.972	0.332	1.457			
T8	-0.008	0.026	-0.011	-0.326	0.744	1.476			
T9	-0.19	0.03	-0.239	-6.35	0.000**	1.816			

D-W 值: 1.857

* p<0.05 ** p<0.01

6. CONCLUSIONS

The accuracy, richness, novelty, effectiveness and recommender's authority of the recommended product information on the network platform have positive impact on consumer purchase behavior, the value, intensity, channel of the recommendation of the e-commerce platforms have no impact on consumer purchase behavior and non e-commerce platforms have negative impact on consumer purchase behavior.

Therefore, it is necessary for the network platform to constantly upgrade the recommended system and try to improve the accuracy, richness, novelty, effectiveness of the recommended information. At the same time, it should take into account of appropriateness, maximum reduce consumers' search cost and meet diversified and individual demands. Stores on the network platform should select authorized and trustable recommender and also e-commerce platform for promotion channel in marketing, thus promoting consumers' purchase intention and decision making.

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