Analysis of the Influencing Factors of Online Shopping Users' Purchasing Behavior

Shaogang Cheng[1, 2], Jun Yin[1,2,*]

EMAIL: 1299542929@qq.com (ShaoGang Cheng); yinlijun0908@163.com (Jun Yin)*

[1]College of Computer, Qinghai Normal University, Xining, 810016, China

[2]The State Key Laboratory of Tibetan Intelligent Information Processing and Application, Xining, 810016, China

Abstract: Online shopping websites collect and analyze product data that users browse every day, and then predict their possible purchasing behavior. This prediction method has randomness in increasing user purchasing behavior. This article adds a psychological prediction method that can more accurately distinguish user groups, predict their potential purchasing behavior, and combine Structural Equation Models to explore the relationship between user personal characteristics and their impact on purchasing.

Keywords: Online Shopping, behavior analysis, Structure Equation Model, data analysis

1 Introduction

1.1. Research Background

In order to study the influencing factors of consumers' willingness to purchase recommended products and use them to promote consumers' purchase of products with potential demand, in this paper, literature research, questionnaire survey, statistical analysis and data analysis are used to study the reasons for the influence of recommended products on consumers' purchase intention, put forward the assumption of consumers' purchase intention on product characteristics, recommendation frequency and recommendation direction on consumers' purchase intention, and the sales volume. The most obvious correlation and significance were obtained by proposing the study hypothesis, recovery of the questionnaire data and analysis of the data results, according to the research results, we can provide some reference suggestions on the establishment of product recommendation projects and recommending consumers to potentially buy products from various aspects.

1.2. Analysis of Research Status

In the exploration process of influencing consumer purchasing behavior, some classic theories have been proposed. The Expectation Confirmation Theory was proposed by Oliver in 1980[1][2], which considers consumers' purchasing behavior to be a joint result of expectations before purchase and post purchase feedback, and generates a satisfaction index for the product, which serves as a reference for consumers' second purchase. The Economic Theory of Cyber Effect is an economic thought generated with the technological revolution of information and

FFIT 2023, July 07-09, Chongqing, People's Republic of China

DOI 10.4108/eai.7-7-2023.2338053

communication technology. Network effect means that the more people use a product, the greater the value of the product, and the greater the attraction, so as to continue to attract more people to buy [3][4].

Most papers in the field of related research using clustering analysis for user division, and then use general prediction methods to make simple predictions of user behavior, from the perspective of big data, the research results are general. The results can be applied in the relevant shopping platform auxiliary algorithm design, but there are still a lot of uncertainty, especially the users may exist impulse consumption behavior or after a long time of similar goods secondary consumption data caused by inaccurate [5]. If the prediction factors are added in the data analysis, the user groups can be divided more carefully, so as to promote products more targeted, improve the accuracy of the prediction, and reduce the users' time on information search. Therefore, how to add more abundant predictors to the process of prediction has become the main direction of current research.

1.3. Research Objective

Due to the large user base of online shopping, different users have different preferences and behavior characteristics, if data mining and analysis techniques can be used to analyze and study user purchasing behavior, targeted and precise product recommendations can be made based on user preferences, thereby increasing sales volume, and effectively alleviated the phenomenon of blind or incorrect push of similar products on the platform [6], then improve the user experience.

The innovation of this article lies in the addition of using general clustering and regression analysis when studying user coordinated purchasing behavior, and incorporating predictive methods to study user potential purchasing power. Through multi-factor comprehensive analysis, using the combination of mathematical prediction and psychological prediction, the transaction rate is greatly increased and makes the prediction more accurate.

2 Theoretical Model

2.1. Theoretical Model

As outlined earlier on the current research status, the current domestic research has not shown the specific role of individual characteristics in individual potential behavior well, and for individual characteristics in affecting individual potential purchasing behavior, only fuzzy summarizes the characteristics of the individual can affect the individual behavior characteristics, psychological characteristics and way of thinking aspects, then affect the individual potential purchase behavior[7]. In economics, consumer purchasing behavior is not only simple payment and use problems, but also includes complex thinking and positive action. Math 's research found that the entertainment perceived value of goods also affects consumers' purchase intention, so browsing experience is added to the influencing factors [8]. Therefore, evaluating the positive impact of individual characteristics solely based on their potential impact during the purchasing process lacks the potential psychological impact of individual psychology at the psychological level. So, this article attempts to explore the impact of individual characteristics on individual potential purchasing behavior from a micro perspective by evaluating the above

aspects.In response to the above conclusions, this article proposes a new explanatory framework, as shown in Figure 1.

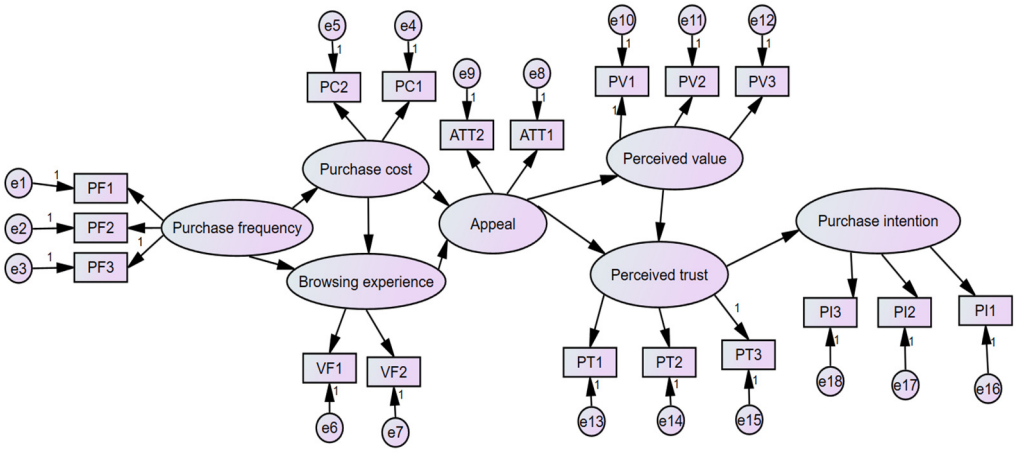

Figure 1: The explanatory framework

2.2. Research Hypothesis

Suppose 1: User purchase frequency has a positive impact on user purchase cost

Suppose 2: User purchase frequency has a positive impact on user browsing experience

Suppose 3: User purchase cost has a positive impact on the user browsing experience

Suppose 4: User purchase costs have a positive impact on attractiveness

Suppose 5: The user browsing experience has a positive impact on the attractiveness

Suppose 6: Attraction has a positive impact on user-perceived value

Suppose 7: Attraction has a positive impact on user-perceived trust

Suppose 8: User perceived value has a positive impact on user perceived trust

3 Study Design and Model Testing

3.1. Questionnaire Design

This paper collects data in the form of questionnaire survey. The questionnaire adopts the Likert Five-level Scale, in which the main part of the questionnaire is analyzed, and the rest is personal basic information, which is used to distinguish the questionnaire.

3.2. Variable Definition

The variables involved in this paper include purchase frequency, purchase cost, browsing experience, appeal, perceived value, perceived trust, and purchase intention [9], set two or three questions under each variable [10], as shown in Table 1 below.

Table 1 Measurement items

variable	number	Measure the item
Purchase frequency	PF1	I browse the shopping websites every day
	PF2	I feel that the online shopping process is simple
	PF3	Compared with traditional online shopping, I prefer online shopping
Purchase cost	PC 1	I spend a lot of time and energy searching for the goods I need
	PC 2	I need to spend more time and effort on the "Guess You Like" recommended product
Browsing experience	VF 1	I feel more interesting when browsing "Guess you like"
	VF 2	The pleasure of my browsing "Guess you like" kept me going
Appeal	ATT 1	I think the recommendation for the "Guess You Like" feature has impressed me
	ATT 2	The "guess you like" recommendation interests me
Perceived value	PV1	I think the product recommended by the "Guess You Like" feature is just for my needs
	PV2	I think the "guess you like" recommended product is highly practical
	PV3	I think the "Guess You Like" recommended product will satisfy my demand for such products
Perceived trust	PT1	I trust the quality and service of "Guess You Like"
	PT2	I think the "guess you like" feature is good
	PT3	I think "guess you like" is safe
Purchase intention	PI1	When browsing "Guess you like", I will buy products that are not in the purchase plan
	PI2	When browsing "Guess you like", I experienced the urge to buy goods many times
	PI3	I have a good chance of buying the "Guess You Like" recommendation

4 Data Analysis

4.1. Credit and Validity Analysis

The reliability analysis.

Table 2 Reliability analysis table

The Cronbach's α coefficient	Normalized Cronbach's α coefficient	number of terms	sample number
0.985	0.985	18	183

According to the reliability score done in the previous pre-survey, the α coefficient of the questionnaire is shown in Table 2, which is 0.987, and the α coefficient of this questionnaire is 0.985, indicating that the reliability of the scale is very good and passes the reliability test.

Validity analysis.

According to the criteria commonly used in the current study: for KMO test, it is very suitable to do factor analysis on 0.9, suitable between 0.8 and 0.9. For the Bartlett test, if the significance is less than 0.05, the null hypothesis is rejected, indicating that factor analysis can be done.

Table 3 Confirmatory factor analysis

KMO test and Bartlett's test		
KMO price		0.965
Bartlett Test of Sphericity	Chi-squared approximation	4861.939
	df	153
	P	0.000***

According to Table 3, the results of KMO test showed that the value of KMO was 0.965. Meanwhile, the results of Bartlett spherical test showed that the significance P value was 0.000 * * *, significant at the level, rejected the null hypothesis, correlation among the variables, the factor analysis was effective, and the degree was fit.

4.2. Analysis of Model Parameters

Table 4 The degree of model fit

χ^2	df	P	χ^2/df	GFI	RMSEA	RMR	CFI	NFI	NNFI
-	-	>0.05	<3	>0.9	<0.10	<0.05	>0.9	>0.9	>0.9
324.1	126.0	0.00***	2.572	0.936	0.093	0.198	0.960	0.936	0.951

GFI: mainly uses judgment coefficients and regression standard deviations to test the degree of fitting of the model to sample observations. Its value ranges from 0 to 1, and the closer it is to 0, the worse the fit. CFI ≥ 0.9 indicates that the model fits well.

RMSEA : In general, RMSEA is below 0.10 (smaller is better).

CFI (Comparative Fit Index): When comparing hypothetical and independent models, this index has a value between 0 and 1. The closer it is to 0, the worse the fit, and the closer it is to 1, the better the fit. In general, if the CFI is ≥ 0.9, it is considered that the model fits well.

NFI and NNFI: The larger the value, the better, and the fitted model performs better.

The RMR index less than 0.1 indicates excellent fitting performance, while the index size of this model is 0.198, indicating good fitting performance.

According to the indicators in Table 4, the Structural Equation Model has a good fitting effect and meets the research requirements.

5 Conclusions

5.1. Research Conclusions

Conclusion 1: Users' purchasing frequency positively affects users' purchasing cost and browsing experience

According to the path coefficient analysis, the frequency of online shopping positively affects users' purchasing cost and browsing experience. Through the summary of the problem, the purchasing frequency of users mainly refers to the dependence of users on online shopping, while the purchasing cost refers to whether they need to spend more time to select the goods, and the browsing experience refers to the pleasure generated when using the recommendation function of the shopping website. Through general analysis, users who frequently shop online are more likely to find the items they need, and are more willing to browse similar products when using the recommendation function, which in line with the general pattern. In other words, people who do not frequently shop online do not have a certain degree of user stickiness towards shopping websites. Often, these people will directly search for the desired items, which will prevent their group from using and browsing similar products recommended by the recommendation function too much.

Conclusion 2: Users' purchasing cost positively affects consumers' browsing experience

According to the conclusion of this paper, the users' purchasing cost affect consumers' browsing experience, which can be explained by consumers who spend time to find their target products, will produce the function of dependence, thus will enhance their browsing experience when browsing goods with pleasure, which is more likely to buy products on the recommendation system.

Conclusion 3: Users' purchasing cost and browsing experience positively affect the attractiveness of recommendation systems

According to the general inference, when users spend a lot of time on the recommendation system to browse the same goods, means that the user is not tired of the system, at the same time, more time people who stay on these pages means that users gradually develop a sense of pleasure when browsing products, make users deeply impressed by the recommended products in the recommendation system and help stimulate their purchasing interest.

5.2. Study Recommendations

According to the results of this paper: from the perspective of functional satisfaction, consumers have a high degree of recognition of the recommendation features. Therefore, it can be concluded that the products recommended by the recommendation function will be concerned by most consumers, so there is a high likelihood of purchasing behavior occurring, therefore, we can consider increasing the exposure of commodities in the recommended plate to enhance the turnover. In terms of the functional fit, some users still have the problem of not intuitively buying the goods they need, mainly due to the repeated recommendations of similar products, which develop a psychology of comparison and hesitation. Therefore, it is recommended that the recommendation of similar products should be combined with user portraits, accurately locate user preferences, which can effectively increase the transaction volume. From a platform

perspective, the appeal of the recommendation feature to users is a long and lasting process, Therefore, it is necessary to further improve the aesthetics of the functional plates.

Through the conclusion of the research conclusion, there are many positive ways to improve the influence of users' purchase intention. Firstly, the platform needs to increase the frequency of users' online purchases, for example, through promotional activities or attracting new customers, further increase the number of platform users. Secondly, improve the user's browsing experience by optimizing the visual effects or recommendation algorithms of recommendation functions. Thirdly, enhance the attractiveness of the recommendation algorithm and enhance the user viscosity. When customer engagement increases, it enhances user purchase intention and submits high transaction rates by influencing consumers' perceived value and trust.

5.3. Research Limitations

The questionnaire collection period in this study was relatively short, and the questionnaire was randomly selected for distribution. The respondent group had a certain span, and the questionnaire design considered few factor variables and fewer intermediate variables, which could only be explored from a certain aspect, and the inquiry was not comprehensive enough. Multifaceted design of models and scales can be attempted in future studies.

The design of this article has not yet taken into account the excessive impact of user psychological factors, such as the impulsive buying behavior generated by users during purchase, in order to ensure the research model construction, this study ignoring the small value product recommended behavior, to consider bulk commodity recommendation, because of high value products is less vulnerable to the influence of impulse purchase behavior.

Acknowledgements

This work is supported by the Natural Science Funds of China (Nos.11801296 and 11961055).

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