Study on College Students' Online Shopping by Using TAM

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Abstract: College students are the main group for online shopping in china. This paper will extend the technology acceptance model by adding trust and perceived risk to construct the intention model for college students' online shopping. Through survey, we empirical test the intention model for college students' online shopping through by Structural Equation Modeling. The empirical result shows that both usefulness and ease-of-use perceived by college students and trust have strong influence on college students' online shopping.

Key words online shopping,the technology acceptance model,Structural Equation Modeling

1 Introduction

With the development of internet, online shopping is emerging as a new shopping way. The China Internet Development Statistics Report released by CNNIC (China Internet Network Information Center) in January 2010 shows that in 2009, the users of China's online shopping increase 45.9% to108 million users, and the sale volume double to 250 billion, and the network Shopping usage continues to rise to 28.1%. However, the 2008 china online shopping survey report released by China IntelliConsulting Corporation show that that users of online shopping, school students accounted for 25.5% of online shopping users, the students contribute to 10.4% of the total amount of online shopping. It is suggested that the college students are an important group of online shopping.

Online shopping behavior of consumers is becoming a hot area of academic study. Lian et al (2007), Michael et al (2007) confirmed that personality of consumer have significant impact on their acceptance of online shopping. The purpose of this paper is to study the major online shopping group of China's college students and to understand well their online shopping behavior. Specifically, this paper extends the technology acceptance model by adding the perceived risk and trust to construct model of college students' online shopping. Through questionnaire survey on university students, we empirically analyze online shopping behavior.

2 Theory and model

2.1The technology acceptance model

Based on the rational behavior theory, Fred D.Davis et al (1989) proposed the technology acceptance model (TAM) to study user acceptance of information systems. TAM suggest that the system use is determined by the behavioral intention and behavioral intention depend on both user's attitude and perceived usefulness, but the user's attitude depend on both perceived usefulness and

perceived ease-use. The perceived usefulness is that user believes one system will be useful; perceived ease-use refers to the degree that the individual expect easily to use the system. As for online shopping, Consumers are a computer user as well as a shopper. Therefore, TAM has a good explanation for on-line shopping behavior.

2.2 The model for college student online shopping

2.2.1 The perceived usefulness of online shopping

The perceived usefulness of online shopping mean that college students believe using the network to better complete the shopping activities and to enhance shopping efficiency. Online stores offer consumers a lot of product information, competitive prices, many types of goods, and thus reduce the physical, time and money expenditure. All that can increase consumer shopping or reduce costs to consumers can help consumers perceive usefulness of online shopping, and thus increase consumer intentions to online shopping. Therefore, we can draw the hypothesis 1.

H1: the more intensely college student perceive online shopping useful, the more likely to form an active online shopping intentions.

2.2.2 The perceived ease-use of online shopping

The perceived ease-use of online shopping means it takes consumers little effort to use online shopping. Usually, simple techniques can be more readily accepted by consumers and the complex technology spread slower, so a simple, easy-learning and easy-practicing online shopping will help the consumer accept online shopping. Chan et al (2004) investigate the e-bank service and show that if consumers feel e-banking services more simple to use, their attitudes would be more inclined to use such service. Therefore, we can draw the hypothesis 2 and 3.

H2: the stronger college students perceive ease-use of online shopping, then the stronger the college students perceive the usefulness of online shopping;

H3: the stronger the college students perceive the usefulness of online shopping, the more likely the college students generate a positive online shopping intention.

2.2.3 The perceived risk of online shopping

The perceived risk of online shopping means that college students feel uncertain about the result of buying activities while online shopping. As for online shopping, college students can not directly see or touch the goods, so it is likely that college students can not receive goods as expected. In addition, consumers may bear the cost of transportation and handling charges for return or replacement. Vellido et al (2000) found that consumer's perceived risk of online shopping has a direct impact on online shopping. College students' risk perception of online shopping have negative impact on online shopping attitudes and intention, further impact on online shopping behavior. Therefore, we can draw the hypothesis 4.

H4: the littler college students perceive risk of online shopping, the more easily college students form positive online shopping intentions.

2.2.4 Trust in online shopping

In general, uncertainty and risk are the causes of trust. Trust can reduce transaction costs, uncertainty and risk during transaction process, and facilitate cooperation and enhance interpersonal communication. Therefore, trust can reduce the perceived risk of online shopping, further help to form a positive intention. Chircu et al' study (2006) found that trust in online shopping has a directly positive effect on online shopping and also has significant effect on the ease-use and usefulness perceived. Therefore, we can draw the hypothesis 5 and 6.

H5: the stronger trust college students have in online shopping, the littler online shopping risk is perceived;

H6: the stronger trust college students have in online shopping, the easier to form positive shopping intentions.

3 Data Collection
3.1 Variable measurement

According to the literature review, measurements for variables of college students' online shopping acceptance model are as follows:

Perceived usefulness will be measured by 4 indicators: increasing the efficiency of shopping, saving time and energy, saving money, probability to buy goods invalid in shopping malls. Perceived ease of use will be measured by 2 indicators: the easy practice of online shopping, easy learning of online shopping. Perceived risk will be measured by 7 indicators: the performance risk, financial risk, security risk, social risk, psychological risk, time costs and opportunity costs. Trust will be measured by 2 indicators: the safety of online shopping

and the mature technology of online shopping. Online shopping intentions will be measured by 3 indicators: to plan to online shopping, to recommend online shopping to friends, to increase the number and frequency of online shopping.

3.2 Data collection

We collect the data through a questionnaire survey on college student from several universities in Changsha city, capital of central Hunan province. The survey was conducted from June 2006 to August 2006. We send a total of 400 questionnaires, and received 336 valid questionnaires.

3.2 Data reliability analysis

The reliability of the questionnaire refers to the degree of consistency or stability of the survey results. In generally, Cronbach's α coefficient is used to test the reliability of variables. We use SPSS13.0 to analyze the reliability of all variables in questionnaire survey and the results are shown in Table 1. The table1 show that the reliability of trust is 0.655 and the reliability of all other variables are above 0.7, so results indicate the high reliability of the survey.

4 The test of Online Shopping Acceptance Model

We use structural equation model to test online shopping acceptance model. Structural equation model consist of the measurement equation and structural equation. The measurement equation is used to measure the relationship between indicators and latent variable. Meanwhile structural equation is used to measure the relationship between latent variables. Therefore, Structural equation model can simultaneously estimate the measurement equation and structural equation. As for this characteristic, structural equation model can get more accurate results, compared to the traditional regression analysis.

According to our model, structural equation model is

$$\eta_1 = \beta_{12}\,\eta_2 + \beta_{13}\,\eta_3 + \Gamma_{11}\,\xi_1 + \Gamma_{12}\,\xi_2 + \zeta_1$$
$$\eta_2 = \Gamma_{11}\,\xi_1 + \zeta_2$$
$$\eta_3 = \Gamma_{12}\,\xi_2 + \zeta_3$$

where, η_1 denote online shopping intention, η_2 denoting the perceived usefulness, η_3 denoting the perceived risk, ξ_1 denoting the perceived ease-use, ξ_2 denoting trust, both β and Γ denoting path coefficient, ζ indicating error term.

Measurement equation model is

$$X = \Lambda_x\,\xi + \delta_x$$
$$Y = \Lambda_y\,\eta + \varepsilon_y$$

Where, X and Y denote manifest variables respectively for ξ (exogenous latent variables) and η (endogenous latent variables), Λ_x and Λ_y respectively

denoting regression coefficient matrix between latent variables and manifest variables, δ_x and ε_y denoting manifest error.

In this paper, we use Lisrel 8.7 software to test all hypothesis suggested in this model, and the result is shown in table 2. Lisrel software also provide the Goodness of fit of structural equation model, as shown in table 3. Table 3 shows that Online Shopping Acceptance Model goodness of fit test meets the requirements. Therefore, the overall goodness of fit of this model is very good.

Table 1　The result of all variables in questionnaire survey

variables	The perceived useful-ness	The perceived ease-use	Behavior inten-tion	The perceived risk	trust
The number of indicators	4	2	3	7	2
Cronbach's α	0.751	0.74	0.935	0.821	0.655

Table 2　College students online shopping acceptance model

hypothesis	path form → to	Standardized estimate	t-value	Conclusion
H1:+	Perceived usefulness→ online shopping intention	0.39	2.02**	supported
H2:+	Perceived ease-use → Perceived usefulness	0.33	4.41***	supported
H3:+	Perceived usefulness→ online shopping intention	0.35	4.39***	supported
H4:-	Perceived risk → online shopping intention	-0.015	-0.25	rejected
H5:-	Trust → Perceived risk	-0.23	-3.13**	supported
H6:+	Trust→ online shopping intention	0.31	8.06***	supported

Note: **denote p< 5% and *** denote p< 1%.

Table 3　Test result for the goodness of fit of online shopping acceptance model

the goodness of fit	P	χ^2 / df	GFI	SRMR	PNFI	PGFI	NFI	CFI
coefficient	0.2576	1.0825	0.93	0.06	0.6	0.59	0.91	0.95
reference	>0.05	<2	>0.90	<0.08	>0.50	>0.50	>0.90	>0.90

5 Conclusion

Empirical result support H1, H2 and H3. The more intensely college student perceive online shopping useful, the more likely to form an active online shopping intentions. The stronger college students perceive ease-use of online shopping, then the stronger the college students perceive the usefulness of online shopping. The stronger the college students perceive the usefulness of online shopping, the more likely the college students generate a positive online shopping intention. Based On behavior and psychology literature review, we extend technology acceptance model by adding the two variables-perceived risk and trust into online shopping acceptance model. Empirical result support H5 and H6, however, H4 does not pass significance test. It indicates that the trust in online shopping can affect college students' shopping intentions and risk perception. However, the perceived risk of online shopping has no significant impact on online shopping intentions. There are two possible rea-

sons: firstly, college students' ability to perceive risk of online shopping is weak. Since Chinese college students usually lack vital social experience enough to assess the risks of online shopping. In addition, online shopping is a new shopping way for most Chinese, so many college students are keeping up with fashion experience online shopping only for keeping up with fashion. Secondly, perceived risk of online shopping may firstly affect college students' attitude to online shopping and further indirectly affect shopping intentions through attitude. In this paper, the construction of online shopping acceptance model does not consider the impact of attitude variables, and then it also requires further study that perceived risk of online shopping indirectly impact online shopping intentions through the attitude.

Our empirical result provides some useful information for the network business to make marketing plan. First, company should enhance the college students' feeling about online shopping benefits through measures

such as increasing the variety, discount. Second, it improve the performance of company that the college students enjoy the convenience of online shopping through measures such as   the high speed of the goods delivery.

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