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Factors Affecting Students' Online Shopping Behavior on Mobile Applications - Case Studies at Universities in Hanoi City

Mai Thi Phuong
Faculty of Accounting and Business Administration - Thuyloi University

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Corresponding Author:
Mai Thi Phuong

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ABSTRACT

The purpose of the study is to evaluate the factors affecting the online shopping behavior of students on mobile applications to have more scientific basis in the field of consumer behavior research, through which businesses can invest in developing mobile applications in the strategy of building retail systems and policies of enterprises. The study evaluates the factors, namely perceived usefulness, perceived ease of use, trust, perceived risk, perceived behavioral control, and convenience of online shopping applications. The research results show that trust is considered the factor with the most positive impact on online shopping behavior on mobile applications of students in Hanoi, the factor of perceived behavioral control has the second largest impact, while perceived risk is the only factor in the model that has a negative impact on online shopping behavior of students through mobile applications. From the research results, the author has made implications to help application developers, mobile marketing managers, mobile product and service providers have more scientific basis to make decisions related to the development of mobile applications, aiming to promote online shopping behavior of students on mobile applications.

INTRODUCTION

According to Adjust's Mobile App Trends 2025 report, the number of mobile phone users worldwide is about to reach 6 billion people, with about 18.22 billion devices. Accordingly, the mobile application market is forecast to explode, surpassing the revenue mark of 626 billion USD by 2030, corresponding to a compound annual growth rate (CAGR) of 14.3% in the period 2024-2030.... The report also shows that in 2024, user spending on mobile applications increased by 15.7% compared to the same period last year, while the average smartphone usage time is up to 5 hours per day.

In particular, Vietnam currently ranks 9th globally in terms of application usage time. Vietnamese users spend up to 4 hours a day accessing diverse applications such as mobile games, social networks, entertainment, and utility applications. This rate is expected to grow by 10% per year, bringing great opportunities for application developers to reach and maintain users in Vietnam.

Besides the outstanding advantages that mobile commerce brings to consumers, such as mobility, convenient connection, real-time updates, and time-saving. There are still many potential risks that make consumers worried, such as risks of goods (goods not as advertised; counterfeit goods, smuggled goods, goods infringing intellectual property rights; poor quality goods) or risks from delivery services; risks of safety, network security and personal privacy.

To succeed in mobile commerce targeting students, businesses first need to identify which factors influence students when shopping online through mobile applications and to what extent. From there, businesses can develop mobile applications and business policies to provide a better experience for customers, thereby satisfying customers better than competitors.

Students are a group of young consumers with diverse shopping needs, from essential products to other durable consumer products. Students are also often strongly influenced by emotional factors, so they are easily influenced by advertising or promotional factors. However, this group often has a tight shopping budget and often tends to choose cheap, affordable products. So, discovering what factors really affect students' online shopping behavior on mobile applications will help businesses make good decisions and strategies that appeal to their psychology, making them more satisfied when shopping and becoming loyal customers of that mobile application.

THEORETICAL BASIS AND RESEARCH METHODOLOGY

Theoretical basis

Concept of e-commerce, mobile commerce

According to the World Trade Organization (WTO), "E-commerce includes the production, advertising, sales and distribution of products that are bought and paid for on the Internet but are delivered in a tangible way, both the delivered products as well as the digital information via the Internet."

Mobile Electronic Commerce (M-Commerce) was first mentioned in 1997 by Kevin Duffey: "It is e-commerce on mobile devices, basically electronic transactions carried out using a mobile terminal via a wireless network."

In the current 4.0 technology era, M-commerce and E-commerce are both powerful assistants for users because of their benefits and convenience. However, M-commerce has a slight advantage because this model is applied directly on smartphones - one of the indispensable devices of people today - with outstanding advantages such as mobility, convenient connection, real-time updates, time saving, security, content personalization and so on.

Research models related to online shopping behavior

According to the Theory of Reasoned Action - TRA (Fishbein and Ajzen, 1975; 1980), intention is the continuation of attitude and behavior. Intention is influenced by two factors: attitude leading to behavior (how we feel when doing something) and subjective norms (the influence of the social environment on individual behavior).

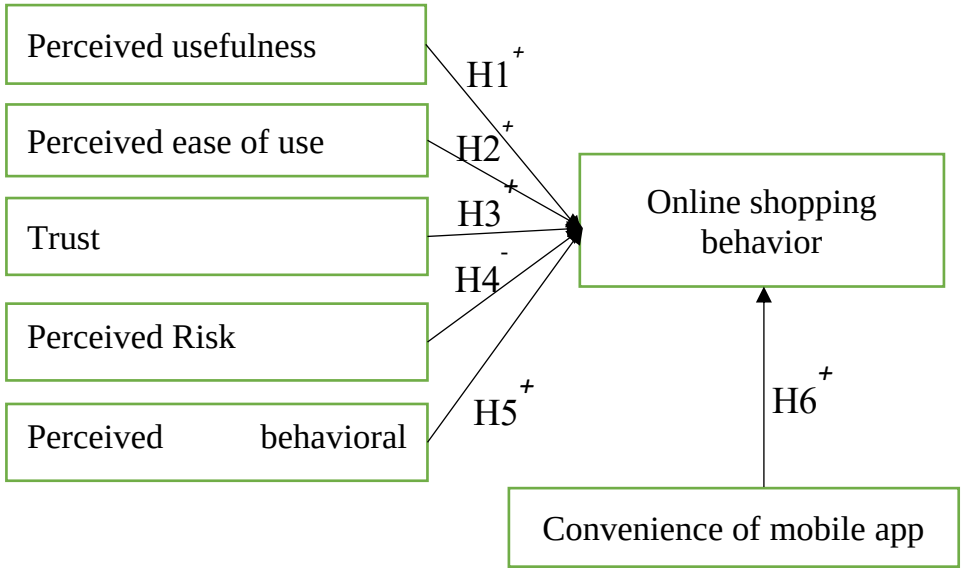
According to the Theory of Planned Behavior - TPB (Ajzen, 1985; 1991; 2002), planned behavior, attitude, subjective norms and perceived behavioral control affect consumers' intention to act. Compared to TRA, the TPB model adds the factor of perceived behavioral control to affect behavioral intention. In addition, the factor of belief in convenience has an impact on the factor of perceived behavioral control.

The Technology Acceptance Model (TAM) (Davis et al., 1989; 1993) is based on the TRA theory for establishing relationships between variables to explain human behavior in accepting the use of information systems.

The study of James L.Brock et al. (2012) investigated the influence of perceived benefits, perceived risks and trust on online consumer behavior in China. The results showed that three benefits (price benefits, convenience and entertainment) and three factors of trust (reputation, assurance and website reliability) have a positive influence on consumers' online shopping attitudes.

Vaggelis Saprikis et al. (2018), focused on exploring the factors that may influence consumer behavior when wanting to adopt mobile commerce. The results showed that there are 9 factors that influence online shopping behavior on mobile applications, including behavioral intention, mobile skills, enjoyment, anxiety, perceived usefulness, perceived ease of use, trust, relationship factors, and innovativeness.

Proposed research model



The proposed hypotheses are as follows:

H1+: Perceived Usefulness has a Positive Influence on Online Shopping Behavior

H2+: Perceived Ease of Use has a Positive Influence on Online Shopping Behavior

H3+: Trust has a Positive Influence on Online Shopping Behavior

H4-: Perceived Risk has a Negative Influence on Online Shopping Behavior

H5+: Perceived Behavioral Control has a Positive Influence on Online Shopping Behavior

H6+: Ease of Use of Online Shopping Application has a Positive Influence on Online Shopping Behavior

Research method

For the qualitative research method, the author collects information and analyzes related studies, from which he proposes a research model. After consulting with experts, the author proposes a preliminary scale and questionnaire. The process of interviewing and pilot testing helps the author complete the official questionnaire to conduct a large-scale official study including 1 factor, 6 variables and 27 observed variables.

For the quantitative research method, the author conducts the study by collecting opinions from 325 students from universities in Hanoi who regularly shop on mobile applications during the period from March to May 2025. The survey results were analyzed by SPSS 20 software to process information through steps such as descriptive statistics, Cronbach's alpha test, exploratory factor analysis (EFA), Pearson correlation analysis and linear regression analysis (the article uses international standard decimal writing).

Cronbach's Alpha Analysis Results

The analysis results show that all observed variables of the scales satisfy the total correlation coefficient > 0.3 and the Cronbach's alpha coefficient is greater than 0.6 (Table 1). Thus, after testing the reliability of the scale, all observed variables are reliable enough and are used for the exploratory factor analysis in the next step.

Table 1: Cronbach's alpha Test Results

Item-Total Statistics

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perceived usefulness	**Cronbach's Alpha = 0.909**			
PU1	10.97	7.177	0.816	0.874
PU2	10.88	7.511	0.778	0.887
PU3	10.89	7.423	0.800	0.879
PU4	10.95	7.897	0.782	0.887
Perceived ease of use	**Cronbach's Alpha = 0.953**			
PEU1	11.43	9.972	0.892	0.936
PEU2	11.41	10.049	0.895	0.935
PEU3	11.58	9.509	0.883	0.940
PEU4	11.34	10.359	0.876	0.941
Trust	**Cronbach's Alpha = 0.864**			
TR1	7.60	2.884	0.777	0.779
TR2	7.58	2.800	0.730	0.821
TR3	7.56	2.869	0.721	0.829
Perceived Risk	**Cronbach's Alpha = 0.890**			
PR1	6.89	1.503	0.816	0.816
PR2	6.92	1.606	0.795	0.838
PR3	6.88	1.501	0.749	0.878
Perceived behavioral control	**Cronbach's Alpha = 0.953**			
PBC1	7.06	3.218	0.898	0.933
PBC2	7.06	3.290	0.882	0.945
PBC3	7.10	3.221	0.922	0.915
Convenience of mobile app	**Cronbach's Alpha = 0.925**			
CMA1	10.56	7.056	0.895	0.880
CMA2	10.58	7.241	0.803	0.911
CMA3	10.58	7.388	0.783	0.917
CMA4	10.53	7.327	0.828	0.902
Online shopping behavior	**Cronbach's Alpha = 0.926**			
PU	18.75	13.976	0.668	0.932
PEU	18.83	14.050	0.836	0.906
TR	18.70	14.196	0.818	0.909
PR	18.77	13.982	0.838	0.906
PBC	18.72	14.087	0.879	0.901
CMA	18.63	14.429	0.719	0.921

Source: Author processed by SPSS

EFA analysis results

The analysis results show that the KMO coefficient = 0.919 > 0.5, Bartlett's test is statistically significant (Sig. < 0.05), showing that the conditions for factor analysis are appropriate and the observed variables are correlated with each other in the whole. The total variance extracted is 82.541%. The factor loading coefficients all satisfy the condition > 0.5 and the observed variables are not disturbed, so the names of the factors are kept as they were originally.

Pearson correlation analysis results

The analysis results show that there is a positive linear correlation between the dependent variable OSB and the independent variables PU, PEU, TR, PBC, CMA in the model (correlation coefficients from 0.344 to 0.572) and a negative linear correlation between the OSB variable and the independent variable PR (correlation coefficient is -0.154). This shows that the relationship between OSB and the independent variables is quite close. The correlation coefficients between the independent variables are all at 0.00 (< 0.05), so there is no possibility of multicollinearity.

Regression analysis results

The results in Table 2 show that all hypotheses in the model (from H1 to H6) are accepted. Of which, 6 independent variables (PU, PEU, TR, PR, PBC, CMA) explain 46% of the variation in the OSB variable.

Perceived risk is the only factor that negatively affects online shopping behavior (beta = -0.009), while the remaining factors (perceived usefulness, perceived ease of use, trust, perceived behavioral control, and convenience of online shopping applications) all positively affect online shopping behavior, in which the factor "trust" has the largest impact on OSB (beta = 0.297), followed by the factors "perceived behavioral control" and "perceived usefulness" with betas of 0.217 and 0.171, respectively.

Table 2: Regression analysis results

Dependent variable	Independent variable	Beta	Sig.	VIF	Conclusion	
					Positive	Negative
Online shopping behavior – OSB	Perceived usefulness – PU	0.171	0.008	2.204	x	
	Perceived ease of use - PEU	0.022	0.047	1.492	x	
	Trust – TR	0.297	0.000	1.528	x	
	Perceived Risk – PR	-0.009	0.043	1.079		x
	Perceived behavioral control – PBC	0.217	0.001	2.176	x	
	Convenience of mobile app - CMA	0.128	0.039	2.061	x	

Source: Author processed by SPSS

Descriptive statistical analysis results

Basically, the factors affecting online shopping behavior on mobile applications are rated by student consumers in Hanoi at only above average (all 6 variables are scored relatively evenly from 3.45 to 3.81/5.0 points), showing that student consumers do not really appreciate consumption on mobile applications. In which the variable perceived usefulness is rated highest by customers (3.81/5.0 points), trust is rated second highest by customers with a score of 3.79/5.0 points, followed by the variable perceived usefulness with a score of 3.64/5 points, and the variable perceived risk is rated lowest by customers (3.45/5.0 points).

CONCLUSIONS AND SOME IMPLICATIONS

The research results show that "trust" and "perceived behavioral control" are considered to be the factors that have the most positive impact on online shopping behavior on mobile applications of students in Hanoi, while the perceived risk factor is the only factor in the model that has a negative impact on online shopping behavior of students through mobile applications. From the above research results, the author proposes to focus on some solutions to promote factors that have positive effects with large beta coefficients.

Promoting trust

Trust is the premise for any voluntary shopping transaction. To increase that trust, mobile application developers need to pay attention to providing many different aspects, such as a reputable seller verification system and transparent reviews from real buyers; strengthening refund commitments, supporting easy returns and order insurance to minimize risks for customers; and enhancing personal information security, especially payment security for orders. Implementing these practical solutions not only helps improve customer experience but also strengthens the reputation of the shopping platform, thereby promoting sustainable development in the field of mobile e-commerce.

Enhance usefulness

First, mobile application designers as well as product/service providers need to make efforts to design solutions to help customers find information faster and more effectively. Second, product/service providers on mobile applications should focus on the benefits

of mobile commerce through advertising campaigns that leverage location-based activities. They must demonstrate to customers that customers will save both money and time to facilitate the purchasing process in order to increase shopping intentions and behaviors. Third, direct discount programs can also motivate customers to shop, focusing on simplifying the exchange (e.g., direct discounts instead of discounts on the next purchase), a fact that would contribute to bringing clear positive attributes to mobile commerce./.

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