



# FACTORS INFLUENCING ONLINE SHOPPING INTENTION: AN EXTENSION OF THE TECHNOLOGY ACCEPTANCE MODEL

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**Abstract:** The aim of this research is to discuss and test the effect of the factors on Vietnamese consumers' online shopping intention based on the technology acceptance model. The questionnaire was sent directly to the respondents and through the Internet. After 5 months collecting, there were 423 valid replies being analyzed. The data were analyzed in accordance with the process from EFA to Cronbach's Alpha and multiple regression technique. The results showed that perceived usefulness, perceived ease of use and trust had a positive effect on consumers' online shopping intention, while the factor of perceived risk had a negative effect on consumers' online shopping intention.

**Keywords:** online shopping intention, perceived risk, technology acceptance model, trust

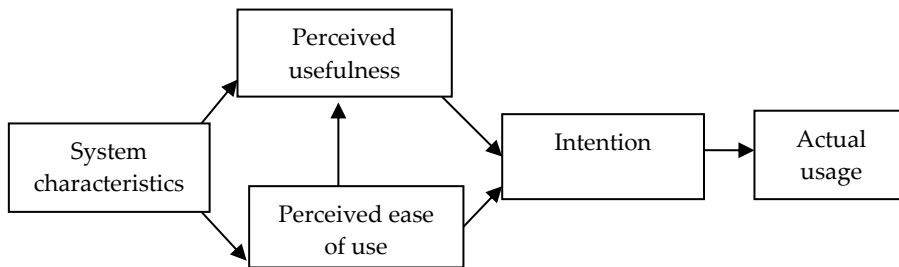
## 1 Introduction

In recent years, online shopping has become more and more popular around the world (Wu et al., 2011). The proportion of internet users who conduct their shopping online and the revenue from online retail industry are constantly increasing over time (Ozen & Engizek, 2014). However, the percentage of Vietnamese consumers that use shopping online is lower than that in other countries in the Asia-Pacific region as well as in the world (Ministry of Industry and Trade, 2014). Companies with plans for the growth of online retailing need reliable estimates of the growth of online shopping and need to understand the factors influencing customers' online shopping intention (Lohse et al., 2000). It is believed that shopping intention is one of the two key factors that carry a decisive impact on customers' shopping behavior (Blackwell et al., 2001).

The research of factors that impact the intention of online shopping behavior applies numerous models in which technology acceptance model (TAM) has been widely used. Within this known range, TAM has been successfully applied in the role of a theoretical framework which is used to forecast online shopping intention and behavior (Gefen et al., 2003a; Gefen et al., 2003b; Ho & Chen, 2013; Pavlou, 2003). TAM is originally introduced by Davis (1985) as an adaptation version of Theory of Reasoned Action (Hernandez et al., 2009). According to TAM, "intention" is directly impacted by two factors – "perceived usefulness" and "perceived ease of use" (Davis, 1989).

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**Figure 1.** Technology acceptance model

*Source: Davis et al., 1989*

On the other hand, trust is one of the barriers that keep the percentage of Vietnamese consumers' online shopping at a low level (Cimigo, 2012). Lack of trust is recognized as one of the main reason that keeps consumers away from purchasing online (Jarvenpaa et al., 2000; Lee & Turban, 2001). If trust is not built, the online transaction will not be executed (Winch & Joyce, 2006). Therefore, customer trust is the foundation for online sellers to facilitate the online shopping process (Abbasi et al., 2011; Chen & Chou, 2012).

Trust is believed to be the central factor in an exchange relationship environment (McKnight et al., 2002) and a significantly influencing factor to consumer behavior in both traditional and online shopping (Winch & Joyce, 2006). In online shopping context, the trust holds an enormously important role as in this virtual environment, consumers' perceived risk of online transactions is definitely higher given the buyer is not conducting such procurement face-to-face with both the seller and the desired product (Jarvenpaa et al., 2000; Pavlou, 2003). Risks that consumers must face when engaging in online shopping include financial and product risk (Bhatnagar et al., 2000). Nowadays, there is much research done regarding the relationship between perceived risk and online shopping intention. Nevertheless, the results drawn from such research seem to be contextual, the impact of perceived risk to online shopping intention was not clear and there are a number of conflicts present. Some research proved that perceived risk has a negative impact on online shopping intention (Hsin Chang & Wen Chen, 2008), while Gefen et al. (2003b) argued that such factor does not have a direct relationship with online shopping intention. Similarly, Gefen et al. (2003b) and Hu et al. (2009) also argued that perceived risk did not influence online shopping intention.

Therefore, this paper will combine the factor of trust and the factor of perceived risk into the technology acceptance model to study Vietnamese consumers' online shopping intention.

## 2 Theoretical framework and hypothesis

The intention is a factor used in an evaluation of behavior execution possibility in the future (Blackwell et al., 2001). According to Ajzen (1991), intentions are assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, and how much of an effort they are planning to exert, in order to perform the behavior (Ajzen, 1991, p. 181). Thus, Delafrooz et al. (2011) stated that "online purchase

intention is the strength of consumer's intentions to perform a specified purchasing behavior via Internet".

According to Davis et al. (1989), the intention is directly impacted by "perceived usefulness" and "perceived ease of use". Perceived usefulness is "the degree to which a person believes that using a particular system would enhance his or her job performance", and perceived ease of use is "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). In online shopping context, perceived usefulness refers to the degree a consumer believes that online shopping will increase their procurement effectiveness (Shih, 2004), and perceived ease of use is the degree where a consumer believes that they will not need any effort doing shopping online (Lin, 2007). There is evidence that online shopping intention bears a significant impact on perceived usefulness and perceived ease of use (Gefen et al., 2003a). Thus, the hypotheses for this paper will be

H1: Perceived usefulness has a positive impact on online shopping intention.

H2: Perceived ease of use has a positive influence on online shopping intention.

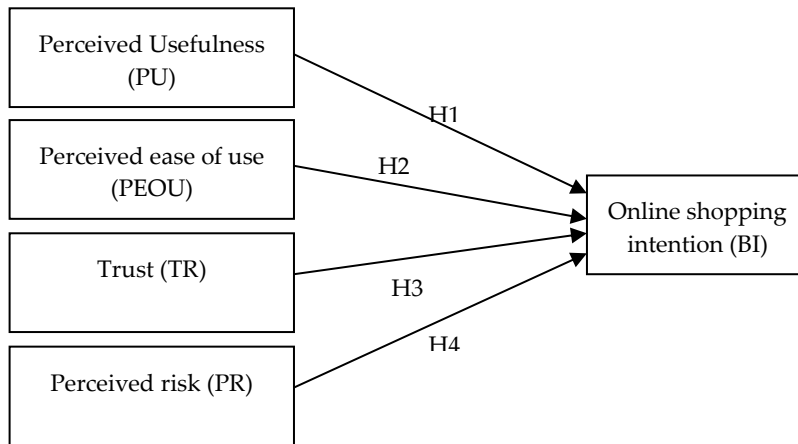
Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party (Mayer et al., 1995, p. 712). Trust is established from 3 different angles: (1) ability; (2) integrity and (3) benevolence (Mayer et al., 1995). Ability is the faith that the trustee will be able to fulfill the needs of the trustor. Integrity is the faith that the trustee will be bona fide and honor his/her commitments. Benevolence is the faith that the trustee will take care and act on behalf of the trustor's benefit. In online shopping context, trust is the willingness to accept unfavorable condition possibility to conduct shopping transaction with online selling companies with the expectation that they will act according to what best for consumer basic (Lee & Turban, 2001). The results of previous researches showed that trust is an important factor influencing online shopping intention (Gefen et al., 2003a; Gefen et al., 2003b; Pavlou, 2003; Wen et al., 2011). Thus, another hypothesis for this research is

H3: Trust has a positive impact on online shopping intention.

Perceived risk is the consumer's perceptions of the uncertainty and adverse consequences of buying a product (or service) (Dowling & Staelin, 1994, p. 119). The uncertainty involved with online transactions creates many different risks which Pavlou (2003) classified into financial risk, seller risk, privacy risk (private information may be released illegally) and security risk (credit card information theft). Some researchers had found the inverse relationship between perceived risk and online shopping intention (Hsin Chang & Wen Chen, 2008). Thus, the last hypothesis for this research will be

H4: Perceived risk has a negative impact on online shopping intention.

The corresponding research hypotheses are presented and described in Figure 2.



**Figure 2.** Research Model

*Source: Authors proposal*

**Table 1.** Construct definitions

| Construct                 | Definition   | Reference               |
|---------------------------|--|-------------------------|
| Perceived Usefulness      | The degree to which a person believes that using a particular system would enhance his or her job performance  | Davis, 1989             |
| Perceived Ease of Use     | The degree to which a person believes that using a particular system would be free of effort   | Davis, 1989             |
| Trust                     | Trust is the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party | Mayer et al., 1995      |
| Perceived risk            | Perceived risk is the consumer's perceptions of the uncertainty and adverse consequences of buying a product (or service)  | Dowling & Staelin, 1994 |
| Online shopping intention | Is the strength of a consumer's intentions to perform a specified purchasing behavior via Internet   | Delafrooz et al., 2011  |

*Source: Author's collect from previous research*

### 3 Research methodology

#### 3.1 Qualitative study

The purpose of this qualitative study is to test, screen and identify the relationship among the variables in the theory model, then based on such foundation to propose a research model for this paper. Besides, this qualitative study also aims to correct and develop the inherited scales from previous research. Specifically, since there are differences in culture and language, the variables' scales used in this paper are adapted to better suit Vietnamese research context.

In order to achieve the above-mentioned aims, the authors had conducted 10 depth interviews with consumers who are experienced online shoppers in several big cities in Vietnam, namely Hanoi, Ho Chi Minh City, Haiphong, Danang, and Halong. Such consumers were selected carefully to ensure the representativeness in terms of following main indicators: income, occupation, gender, education, internet experiences, and online shopping experiences. Interviewing different customers who possess different characteristic will provide complete and multidimensional information to achieve preset research aims. The interviews were conducted with stop-when-no-new-factor-is-found ego. With the preset contents, the authors found no new factors in the 8th conversation compared with the previous interviews. However, to further ensure the research precision, the authors still conducted 2 more intensive interviews and did not find any new factors in comparison with previous interviews, thus, stopped intensive interview activity after the 10th one.

The result from this qualitative study showed that besides perceived usefulness and perceived ease-of-use in TAM, online shopping intention is also significantly impacted by trust and perceived risk by consumers towards a certain retail website. Thus, based on this qualitative research's results, the authors have developed TAM by combining 2 variables of trust and perceived risk into this model.

### **3.2 Quantitative study**

#### **Survey design**

The survey questionnaire is built based on this paper's research overview and adapted to match with Vietnamese research environment. The respective scales for perceived usefulness and perceived ease of use are inherited from Lin (2007). Perceived risk is measured by inherited scale from Corbitt et al. (2003) and Forsythe et al. (2006). Trust is measured by inherited scale from Jarvenpaa et al. (2000) and McKnight et al. (2002). Online shopping intention within this research paper will be measured by the inherited scale from Pavlou and Fygenson (2006). Along with the combination of inherited scales from previous research, this paper will also alter such scales in the variable for perceived usefulness and trust in order to better fit with Vietnamese research environment. The variables are measured by the Likert scale from 1 (Totally disagree) to 7 (Totally agree).

Before extending the investigation on a large scale, this questionnaire was sent to some individual clients for a pre-test (30 people). In general, the questionnaire is acceptable with minor alteration required in terms of wording and meaning so that the respondents can avoid misunderstanding and in terms of some questions design to promote respondents' convenience.

#### **Sample and data collection**

This research generally targets experienced users who use The Internet for online shopping purpose in Vietnam. The research sample is taken from a total user profile with those who use The Internet for shopping purpose with the snowball method. The questionnaires were sent directly and through The Internet to the targets. There were 582 returned results, in which 159 items were invalid due to lack of information or non-target respondents. All 159 replies

were excluded before data process commenced. Therefore, the volume of official valid replies in use for analysis was 423. The demographic profile of the final sample is presented in Table 2.

From observing previous research related to innovation, especially that related to information technology and communication (ICT) as well as services that ICT plays an intermediate role such as computer, Internet and online payment. There is sufficient evidence to show that the user profile is getting younger (Rogers, 1995). Meanwhile, the subject of this paper is online shopping intention. In order to conduct online shopping behaviour, a customer must have the ability to often interact and use the Internet. This normally is the youngster with a high education level. Therefore, the research sample which carries the above characteristic will reflect in true and fair view of reality and ensure the sample representativeness.

**Table 2.** Demographics of the sample ( $n = 423$ )

| Characteristic         |                       | Frequency | Percentage |
|------------------------|-----------------------|-----------|------------|
| Gender                 | Male                  | 169       | 40.0       |
|                        | Female                | 254       | 60.0       |
| Education              | High school degree    | 179       | 42.3       |
|                        | College school degree | 57        | 13.5       |
|                        | Bachelor degree       | 137       | 32.4       |
|                        | > Bachelor degree     | 47        | 11.1       |
|                        | Others                | 3         | 0.7        |
| Average monthly income | ≤ 5,000,000 VND       | 265       | 62.6       |
|                        | > 5,000,000 VND       | 158       | 37.4       |
| Age group (years)      | 18–25                 | 285       | 67.4       |
|                        | 26–30                 | 54        | 12.8       |
|                        | 31–36                 | 46        | 10.9       |
|                        | > 36                  | 38        | 9.0        |

*Source: Authors' work*

## Data analysis

After screening and rejecting unsatisfactory replies, the authors proceeded coding and input data. Such raw data were then processed using SPSS 16, and the hypotheses were tested with a multiple regression technique. However, the authors conducted an exploratory factor analysis (EFA) and reliability assessment (using coefficient alpha) prior to the multiple regression technique to test the hypotheses.

The chosen method includes EFA, Cronbach's Alpha, correlation and multiple regression technique to test the hypotheses.

## 4 Results

### 4.1 EFA analysis

The EFA analysis for independent variables comes up with the following result: KMO test and Bartlett's test of sphericity score give a value of 0.606, within the allowed range from 0.5 to 1. On the other hand, 18 observed variables converging on 4 factors (in line with theoretical model)

have an Eigenvalue greater than 1 and explain approximately 75.6 % data volatility. The factor loadings of observed variables are all greater than 0.5; thus, all variables in the model were significant.

**Table 3.** Rotated component matrix

|       | Component |       |       |       |
|-------|-----------|-------|-------|-------|
|       | 1         | 2     | 3     | 4     |
| PU1   | 0.894     |       |       |       |
| PU2   | 0.808     |       |       |       |
| PU3   | 0.902     |       |       |       |
| PU4   | 0.938     |       |       |       |
| PU5   | 0.915     |       |       |       |
| PR1   |           | 0.656 |       |       |
| PR2   |           | 0.709 |       |       |
| PR3   |           | 0.903 |       |       |
| PR4   |           | 0.892 |       |       |
| PR5   |           | 0.869 |       |       |
| PR6   |           | 0.865 |       |       |
| TR1   |           |       | 0.770 |       |
| TR2   |           |       | 0.855 |       |
| TR3   |           |       | 0.715 |       |
| TR4   |           |       | 0.966 |       |
| PEOU1 |           |       |       | 0.720 |
| PEOU2 |           |       |       | 0.846 |
| PEOU3 |           |       |       | 0.815 |

*Source: Authors' work*

**4.2 Reliability**

The reliability of scales is tested using Cronbach's alpha for each factor. In this case, the returned Cronbach's alpha values are all greater than 0.7, and the Corrected Item-Total Correlation values are all greater than 0.5, which proves that the used scales fulfill the reliability requirement. The results are shown in Table 4.

**Table 4.** Results of reliability analysis

| Factor                    | Number of items | Cronbach's Alpha | Minimum of Corrected Item-Total Correlation |
|---------------------------|-----------------|------------------|---|
| Perceived Usefulness      | 5               | 0.925            | 0.793                                       |
| Perceived ease of use     | 3               | 0.842            | 0.677                                       |
| Trust                     | 4               | 0.860            | 0.556                                       |
| Perceived risk            | 6               | 0.900            | 0.551                                       |
| Online shopping intention | 2               | 0.921            | 0.854                                       |

*Source: Authors' work*

### 4.3 Correlation analysis

Pearson correlation coefficient is used to analyzed the correlation between quantitative variables. Correlation coefficients showed that the relationships between dependent variables and independent variables all have statistical meaning. On the other hand, the magnitude of the correlation coefficients ensures no multi-co-linearity phenomenon. Thus, other statistical results can be used to test the relationship between variables.

**Table 5.** Correlations matrix

|                    |                     | Trust   | Risk     | Usefulness | Ease of use | Intention |
|--------------------|---------------------|---------|----------|------------|-------------|-----------|
| <b>Trust</b>       | Pearson Correlation | 1       | -0.089   | 0.295**    | 0.384**     | 0.505**   |
|                    | Sig. (2-tailed)     |         | 0.066    | 0.000      | 0.000       | 0.000     |
|                    | N                   | 423     | 423      | 423        | 423         | 423       |
| <b>Risk</b>        | Pearson Correlation | -0.089  | 1        | 0.057      | 0.062       | -0.322**  |
|                    | Sig. (2-tailed)     | 0.066   |          | 0.242      | 0.206       | 0.000     |
|                    | N                   | 423     | 423      | 423        | 423         | 423       |
| <b>Usefulness</b>  | Pearson Correlation | 0.295** | 0.057    | 1          | 0.517**     | 0.289**   |
|                    | Sig. (2-tailed)     | 0.000   | 0.242    |            | 0.000       | 0.000     |
|                    | N                   | 423     | 423      | 423        | 423         | 423       |
| <b>Ease of use</b> | Pearson Correlation | 0.384** | 0.062    | 0.517**    | 1           | 0.325**   |
|                    | Sig. (2-tailed)     | 0.000   | 0.206    | 0.000      |             | 0.000     |
|                    | N                   | 423     | 423      | 423        | 423         | 423       |
| <b>Intention</b>   | Pearson Correlation | 0.505** | -0.322** | 0.289**    | 0.325**     | 1         |
|                    | Sig. (2-tailed)     | 0.000   | 0.000    | 0.000      | 0.000       |           |
|                    | N                   | 423     | 423      | 423        | 423         | 423       |

\*\* . Correlation is significant at the 0.01 level (2-tailed).

*Source: Authors' work*

### 4.4 Hypotheses testing

The results of regression analysis showed 4 independent variables: perceived usefulness, perceived ease of use, trust, and perceived risk which have standardized (beta) coefficient of 0.124, 0.130, 0.391 and 0.302, respectively with Sig. less than 0.05. Therefore, all four hypotheses H1, H2, H3, and H4 are supported.



**Table 6.** Result of multiple regression of factors impact online shopping intention

| Model       | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig.  | Collinearity Statistics |       |
|-------------|-----------------------------|------------|---------------------------|--------|-------|-------------------------|-------|
|             | B                           | Std. Error | Beta                      |        |       | Tolerance               | VIF   |
| (Constant)  | 3.138                       | 0.319      |                           | 9.831  | 0.000 |                         |       |
| Usefulness  | 0.130                       | 0.048      | 0.124                     | 2.712  | 0.007 | 0.721                   | 1.387 |
| Ease of use | 0.146                       | 0.053      | 0.130                     | 2.746  | 0.006 | 0.671                   | 1.490 |
| Trust       | 0.423                       | 0.046      | 0.391                     | 9.190  | 0.000 | 0.827                   | 1.210 |
| Risk        | -0.314                      | 0.041      | -0.302                    | -7.725 | 0.000 | 0.979                   | 1.021 |

Dependent variable: Intention

Source: Authors' work

## 5 Discussion and implications

The main contribution of this research is the development of a technology acceptance model by introducing trust and perceived risk factors within the context of studying consumers' online shopping intention. On the other hand, this research also tested the unclear relationships from previous research, namely perceived risk versus online shopping intention. The results of this research showed that consumers' online shopping intention is strongly influenced by trust. This is in line with results by Gefen et al. (2003b). However, unlike Gefen et al. (2003b), this research concludes that perceived risk negatively impacts online shopping intention of consumers. This, in turn, is in line with results by Hsin Chang and Wen Chen (2008). Meanwhile, the influencing level of perceived usefulness and perceived ease of use on consumers' online shopping intention is relatively low.

Thus, in order to improve consumers' online shopping intention, retailers need to find a way to lessen the risk perceived by consumers. With regards to financial risk, many customers worry that they may lose their money and receive no goods in return through a pre-payment method. Thus, online retailers may apply Cash-on-Delivery (COD) shipping method or payment via a third party service. COD also helps customers lessen their perceived product risk, given they have the chance to cross check the underlying product before making the payment. With regards to product risks, for a customer to be able to evaluate correctly, sellers need to provide accurate and sufficient images of the mentioned product. With a tangible item, sellers can use modern technology to present the product such as a digital image or a 3D illustration of the product which is believed to support customers to lessen their perceived risk level in comparison with a 2D illustration (Shim & Lee, 2011). With digital products such as music, software, etc., sellers should include a trial version for customers to test run within a certain period of time to experience and evaluate before making a decision.

On the other hand, research results also proved that the trust is an important influencing factor to consumers' online shopping intention. Thus, to further improve such intention, retailers must build the trust with their customers. To build the trust, retailers need to set up

clear and transparent policies on warranty, compensation, and feedback for customers. Policies on goods compensation should have detailed conditions and regulations for specific circumstances. Circumstances that are not able to enjoy compensation must be consulted with customers before the transaction is executed. With regards to customers' complaints or feedback, handling such a timely and reasonable manner in line with the listed policies is crucial to ensure customers' satisfaction.

Besides the above findings, this research also faces several shortcomings. Within the context of online shopping, the risks that customers may face include financial risk, sellers' risk, illegal private information leakage, security risk, etc. (Pavlou, 2003). However, this paper only dealt with the financial and product risk. Thus, in the future, other risks impacts such as security, private information leakage to consumers' online shopping intention must be studied as well.

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