

Perceived Risk and the Technology Acceptance Model: A Proposed Study for e-Commerce Adoption

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Abstract: Electronic-commerce (e-commerce) nowadays has become an important platform for conducting business. While researchers and market practitioners are trying to fully understand online consumer attitude and behavior, one of the current issues in the management of information technologies is the difficulty of recognizing significant factors that affect consumers to adopt, accept and continue to use the information technologies. A model that commonly used by the researchers to examine behavior in the information system field is the technology acceptance model (TAM), which consists of 3 variables; perceived usefulness (PU), perceived ease of use (PEOU) and intentions to use. In this study, we propose the extension of the TAM for its application in the e-commerce field. The original variables of technology acceptance model will be modified, by adding a moderator variable, perceived risk, which is expected to strengthen or weaken the relationship between perceived ease of use, perceived usefulness and behavioral intention.

1 INTRODUCTION

Your paper will be part of the conference proceedings therefore we ask that authors follow the guidelines explained in this example and in the file «FormatContentsForAuthors.pdf» also on the zip file, in order to achieve the highest quality possible (Smith, 1998).

Electronic-commerce (e-commerce) nowadays has become an important platform for conducting business. Research shows that the commercial trade development through the Internet has astonishingly transformed the retail industry since 1990 (Chen & Chang, 2003) due to the usage of the Internet in the contemporary era as a means of transaction for consumers in the global market (Delafrooz, Paim, & Khatibi, 2011). While researchers and market practitioners are trying to fully understand online consumer attitude and behavior, one of the current issues in the management of information technologies is the difficulty of recognizing significant factors that affect consumers to adopt, accept and continue to use the information technologies. A model that commonly used by the researchers to examine behavior in the information system field is the technology acceptance model (TAM), which consists

of 3 variables; perceived usefulness (PU), perceived ease of use (PEOU) and intentions to use.

The technology acceptance model is based on the Theory of Reasoned Action (TRA) and theory of planned behavior that seeks to explain behavior intention to use information system (Grandón, Nasco, & Mykytyn Jr, 2011). This model has been widely used by information system researchers because of its understandability and simplicity (King & He, 2006), although the model also has drawbacks. For instance, Lim and Tang (2012) noted that findings of TAM relationships are not borne out in all studies, and there remains a wide variation of predicted effects in various studies with different types of users and systems. As a result, there are some modified or extended models that have been developed to fully understand the information system adoption, for example the unified theory of acceptance and use of technology (UTAUT) model (Venkatesh, Morris, Davis, & David, 2003), the integration of risk and trust on TAM model (Pavlou, 2003).

Over decades, information researchers have closely examined factors that affect information system adoption. However, little is known about the acceptance of online shopping and the factors which influence this behavior in the developing countries; and what factors that can strengthen or weaken the information system adoption. This study attempts to

fill in this gap by providing insights on how consumers form their online shopping intentions, and the intentions are transformed in to actual use of e-commerce. In addition, this study also will explore the moderation effect of perceived risk; a factor that possible can hinder the e-commerce adoption. The original variables of technology acceptance model will be modified, by adding a moderator variable, perceived risk, which is expected to strengthen or weaken the relationship between perceived ease of use, perceived usefulness and intention to use. Based on the study background that has been explained, we formulate 3 research questions that will be answered in this research. The research questions are:

1. Does perceived ease of use significantly influence intention to shop online in an e-commerce platform, and is the relationship moderated by perceived risk?
2. Does perceived usefulness significantly influence intention to shop online in a e-commerce platform, and is the relationship moderated by perceived risk?

The proposed research has several purposes to achieve:

1. To examine the relationship between perceived ease of use and intention to shop online in an e-commerce platform. Further, the research also investigates the moderation effect of perceived risk on the relationship between between perceived ease of use and intention to shop online in an e-commerce platform.
2. To examine the relationship between perceived usefulness and intention to shop online in an e-commerce platform. Moreover, the research also investigates the moderation effect of perceived risk on the relationship between between perceived usefulness and intention to shop online in an e-commerce platform.

2 LITERATURE REVIEW

2.1 e-Commerce Adoption

As the innovation of technology, e-commerce develops rapidly in recent years. Fast spreading of the Internet has made the e-commerce an indispensable and effective tool to realize the commercial transactions. E-commerce is described like to make production, presentation, selling, insurance, distribution and payment transactions of the goods and services in the electronic domain (Çelik & Yılmaz, 2011). The simplest meaning of the e-

commerce is described as buying and selling of the goods via the Internet. For instance, consumers could purchase clothes from online shop, they could order football tickets through the internet order systems, and they could buy anything from the online stores no matter where they are now. Whereas e-commerce has become an important issue with the growth of the Internet, there are insufficient empirical studies to explore consumer behavior in the e-commerce platform, particularly the customer behavior to accept, adopt and continue using e-commerce platform.

In this study, we mainly focus on the B2C e-commerce platform, where companies provide the goods or services in the Internet directly and offer sufficient information and convenient interface to attract consumers to buy online in order to eliminate channel intermediaries (Wawan, 2013). In Indonesia, e-commerce is growing rapidly. Bhinneka.com became the pioneer for e-commerce platform in Indonesia. Several e-commerce platforms followed, such as Berniaga.com, TokoBagus.com (now it is olx.com), Tokopedia.com, Bukalapak.com, Blibli.com (Widjaja & Tedjawidjaja, 2012). Although there are more and more e-commerce platform, and other online shopping or ticketing sites, there are not so a lot empirical studies to examine the e-commerce adoption. This study is trying to fill in the gap, specifically to get more insights on the e-commerce adoption.

2.2 The Technology Acceptance Model

The Technology Acceptance Model (TAM) is very popular modeling approach in information system research. Originally, the Technology Acceptance Model (TAM) was developed by Davis (1989), which purposely explains the computer usage behavior in order to predict technology acceptance. The TAM suggests that beliefs in a technology are related to users' attitudes and their decision to adapt the technology. Davis (1989) describes how people adopt and accept new technology applications. In TAM, it is hypothesised that the perceived usefulness and perceived ease of use predict intention to use information technology which, in its turn, is believed to affect the adoption of technology. Further, TAM shows that perceived usefulness and perceived ease of use improves the users adoption of the technology. The general model of technology acceptance is depicted below:

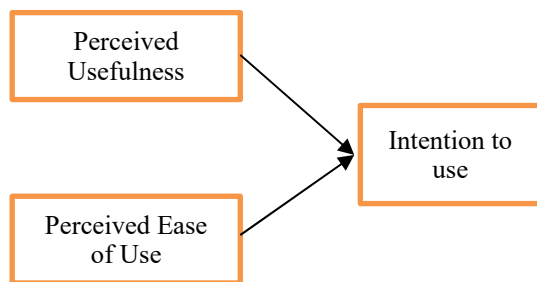


Figure 1: The Technology Acceptance Model

Figure 1 shows the 2 variables; perceived usefulness and perceived ease of use; which influence the intention to use information technology. Perceived usefulness is defined as 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 defined as the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). Due to its understandability and simplicity (King & He, 2006), the model has been widely used by information system researchers to examine the user adoption toward information system. In fact, the model has limitations due to wide variations of predicted effects, and this drives the information system researchers to modify the original model.

2.3 Perceived Risk

While the Internet offers online consumers with additional way for searching information of products and services, it still has some issues to be solved. For example, when consumers do shopping on the Internet, they cannot feel, watch, and touch the reality of the products or services before they buy what they need. They may worry about the safety and the security of transmitting credit card information via the internet when the payment should be made. It is a problem that consumers perceive lack of security, safety and privacy on the internet in the adoption of electronic commerce. Internet users hope that the e-commerce providers on the Internet could assure the transaction security. Thus perceived risk is an important factor should be taken into account on the e-commerce adoption.

Previous research has examined the relationship between the perceived risk of a new shopping channel and the choice of purchasing using that channel (Bhatnagar, Misra, & Rao, 2000). By definition, there are 2 major components; the probability of a loss and the subjective feeling of unfavorable consequences.

2.4 Hypotheses Development

The purpose of TAM is to explain and predict the acceptance of information technology based on two specific behavioral beliefs: perceived ease of use (PEOU) and perceived usefulness (PU). Since TAM has been applied to the transactions of electronic commerce, it may help us to understand the context of adopting electronic commerce.

Perceived usefulness is the individual's assessment of the utility offered by using new information technology in a specific context. Perceived usefulness in the TAM model reflects task-related productivity, performance, and effectiveness. Perceived ease of use refers to the degree to which the user expects the target system to be free from effort (Davis, 1989). The concepts of perceived usefulness and perceived ease of use are individual subjective judgments about the usefulness and ease toward specific system.

The TAM posits users think that it is beneficial to use the technology in completing his/her work; and when users perceive the ease of using information systems, there is likely that users will intent to use the information system. However, due to the nature of e-commerce platform, risk is one of the aspects that may hinder the information system adoption. Previous research use perceived risk as the factor that influence user intention to use information system; on this research, we use perceived risk as a moderator variable which will strengthen or weaken the relationship between perceived ease of use, perceived usefulness and intention to use. Thus, we arrive at the following hypotheses:

Hypothesis 1: *Perceived ease of use is related to customer intention to shop online in a e-commerce platform. The relationship is moderated by perceived risk; if perceived risk is high the relationship between perceived ease of use and intention to shop online in a e-commerce platform will be weaken.*

Hypothesis 2: *Perceived usefulness is related to customer intention to shop online in a e-commerce platform. The relationship is moderated by perceived risk; if perceived risk is high the relationship between perceived ease of use and intention to shop online in a e-commerce platform will be weaken*

3 RESEARCH MODEL

Figure 2 depicts the research model which summarizes the research questions. The first research question consists of three independent variables and one dependent variable. Finally, the gender difference in satisfaction is examined.

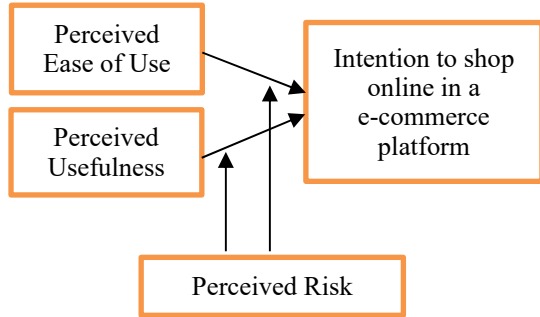


Figure 2 the Technology Acceptance Model

4 MEASUREMENT

Table 1 shows the research indicators that will be used in the research questionnaire.

Table 1: Research Indicator

No	Variables	Empirical indicators
1	Perceived ease of use	<ol style="list-style-type: none"> 1. I find most online shopping sites easy to use. 2. I find it easy learning to use most online shopping sites. 3. I find it easy to use most online shopping sites to find what I want 4. I find it easy to become skilful at using most online shopping sites 5. I find it easier to compare products when shopping at online retailers. 6. I feel that most online shopping sites are flexible to interact with. 7. I am able to browse online shopping sites with ease.
2	Perceived usefulness	<ol style="list-style-type: none"> 1. I am able to accomplish my shopping goals more quickly when I shop online. 2. I am able to improve my shopping performance when I shop online (e.g. save time or money). 3. I am able to increase my shopping productivity when I shop online (e.g. make purchase decisions or find product information within the shortest time frame). 4. I am able to increase my shopping effectiveness when I

		shop online (e.g. get the best deal or find the most information about a product). 5. I find the website of online retailers useful in aiding my purchase decisions. Shopping from online retailers improves my purchase decisions. 6. Shopping from online retailers makes it easier for me to satisfy my needs.
3	Intention to shop online in a e-commerce platform	<ol style="list-style-type: none"> 1. It is likely that I will continue to purchase products from online retailers in the future. 2. I intend to continue purchase products from the Internet in the future. 3. I would likely visit an online shopping site to shop for my needs. 4. I plan to do more of my shopping via online shopping sites. 5. When I need to buy a particular product, I would search for an online retailer which has the product. 6. There is a substantial chance that I would purchase the same product from an online retailer. 7. There is a substantial chance that I would purchase different products from an online retailer
4	Perceived risks	<ol style="list-style-type: none"> 1. How would you characterize the decision to transact with this Web retailer? (Significant risk/insignificant risk) 2. How would you characterize the decision to transact with this Web retailer? (Very negative situation/Very positive situation) 3. How would you characterize the decision to buy a product from this Web retailer? (High potential For loss/High potential for gain)

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