

DOES PERCEIVED RISK? A STUDY OF TECHNOLOGY ACCEPTANCE MODEL ON ONLINE SHOPPING INTENTION

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ABSTRACT

This research discusses and tests the factors influencing consumer intentions in making online purchases in Indonesia based on technology acceptance models and perceived risks. The survey was conducted online over the internet and collected 308 valid data. Data were analyzed using structural equation model methods and with the help of the Smart PLS 3.0 program. According to the findings, perceived ease of use, usefulness, and risk positively influenced online purchase intentions. Perceived risk concerns, on the other hand, get a negative effect on online purchasing intentions. The research focused on the impact of perceived risk, perceived ease of use, and perceived usefulness on online purchase intentions. Other determinants need to be considered for future studies.

Keywords: Online Shopping, Perceived Risk, Technology Acceptance Model, Online Shopping Intention, Consumer Intention.

INTRODUCTION

Internet World Stats (2015), there will be more than four billion internet users by 2020. The Asian region accounts for 50.3 percent of the total number of internet users. Indonesia is ranked fourth, accompanying the three countries below Japan. According to Annur (2019), Indonesia was ranked 4th in Asia's most significant internet usage presentation with a presentation of 30.5% or reached 78 million users out of 255 million people. Increasing internet users in Indonesia cannot be separated from the people who make an online payment. In 2018, a calculated 1.8 billion individuals worldwide purchased goods and services online. The average number of total internet users worldwide has triggered \$2.8 billion in internet sales and will continue to grow to \$4.8 billion by 2021 (Statista, 2019). In Indonesia in 2018, about \$8 billion could be generated from internet sales and will continue to grow to 50 billion by 2021 (Statista, 2019), a significant surge in online purchasing (Ariffin et al., 2018). This increase shows that the internet has revolutionized online shopping (Bourlakis et al., 2008).

Availability of internet-connected facilities, such as computers, smartphones, and tablet phones, whether at home or away, office, or public facility, makes business transactions accessible online (Ariffin et al., 2018). It is now a common occurrence, such as purchasing airline tickets, hotel reservations, tickets for a movie, clothing, and cosmetics, which leads to an e-shopping system. Among goods purchased by consumers online, travel-related products came out on top with a score of 82.2 percent, which then was books (69%) and general goods (59 percent) (Ariffin et al., 2018).

E-commerce has altered customer perceptions about purchasing goods and services. With the increasing popularity of online transactions and the expanding number of online customers, marketers and researchers have concentrated their efforts on better understanding online purchasing behavior (Lim, 2015). E-commerce businesses must monitor the rise of online buying and comprehend the elements that impact customer intent to purchase online (Lohse & Spiller, 1998; Marron & Steel, 2000). Shopping intentions are thought to be one of the two key elements influencing customer behavior when shopping (Mayer et al., 1995; Muncy & Wilkie, 1987).

Many models are used in research on the factors that impact online purchasing behavior. The technology acceptance model has been widely used to determine the adoption of new technology. Davis (1985) developed the technology acceptance model to explain the factors influencing user adoption or acceptance of information technology. These factors are usefulness and ease of use. The technology acceptance model has been successfully applied in literature studies to examine individual intentions and behaviors in online shopping (Gefen et al., 2003a; Gefen et al., 2003b; Pavlou, 2003). Previous studies have examined factors influencing the adoption of e-shopping technology by proposing a technology acceptance model (Mpinganjira, 2016). Since e-shopping is all about using web apps and mobile apps to purchase products or services, researchers have considered e-shopping to adopt the use of information technology systems. Because the technology acceptance model has been applied to online transactions, it can assist in understanding the context of e-commerce adoption.

Perceived risk is one of the most affecting factors and also a factor that hinders consumer intentions to shop online. In the context of online shopping, consumers' risk will be higher when transacting online, given that purchasers do not contact merchants or the items in issue directly (Jarvenpaa et al., 2000; Pavlou, 2003). The possible risks that consumers will face when doing online shopping are financial risks and product risks (Bhatnagar et al., 2000). Many researchers have investigated the perceived risk effect on online shopping intentions. However, there are differences in results in some studies. According to previous studies, perceived risk is a negatively influential factor in online purchase intentions (Almoussa, 2011; Chiu et al., 2014; Ha, 2020; Clement, 2019; Ariffin et al., 2018; Pires, 2006; Prayag, 2009; Singh & Srivastava, 2018). However, Gefen et al. (2003) find that perceived risk has no direct relationship with online shopping intention. Ventre & Kolbe (2020) found that perceived risk did not affect online purchase intentions. Therefore, this study combines perceived risk in the technology acceptance model to examine consumer intentions in Indonesia's online shopping.

This research's proposed theoretical models contribute to the existing literature by improving consumer adoption intention through the technology acceptance model and perceived risk and giving practical insights critical to improving accepted practice. The theoretical background for this research is presented in the next section. Following that is a concept that incorporates a technological acceptance model and perceived risks studied for the impact on online purchasing intentions. Based on the specified literature, research hypotheses are formed. Furthermore, the study methodology is presented in conjunction with the findings. Finally, this research assesses theoretical and practical consequences, limitations, and future research directions.

LITERATURE REVIEW

Technology Acceptance Model

The Technology acceptance model uses behavioral theory approaches to stigmatize consumers adopting information technology (Lee et al., 2011). Exogenous important terms are

perceived usefulness (PU) and perceived ease of use (PEOU), attitude (ATT), and intention used as endogenous key factors (Zhang et al., 2017). According to Davis (1985), PEOU suggests a person's belief in the ease with which technology may be used. PEOU leads to the individual's belief that the use of such systems does not require effort (Davis, 1985). PEOU is part of the Technology acceptance model. This ease factor is related to how operationally transact online, and the technology acceptance model theory emphasizes convenience and benefits for its users. According to Davis (1985), PU is the degree to which a person feels that employing a specific system would improve his or her employment and performance. ATT refers to someone who forms a good feeling of being able or unfavorable towards adopting a particular technology (Kim, 2016), which leads to the intention to use a particular technology and determine that technology (Wang et al., 2012). The technology acceptance model is compiled by Davis (1985) to predict the acceptance of the technology used by the user. The study used TRA (Theory of Reason Action) as a grand theory in the technology acceptance model. Theory of Reason Action (TRA) is a theory that deals with the behavior and attitudes of individuals. The technology acceptance model adopts components from the TRA model and applies those components as specific domains for information technology. However, what distinguishes between (TAM and TRA) is the placement of attitude factors from TRA. The technology acceptance model introduces two variables, PU and PEOU, to predict user acceptance towards computer technology.

Perceived Risk

Perceived risk (PR), according to Schierz et al. (2010), is a loss forecast. The greater the ability of loss, the greater the level of risk that customers will experience. Laroche et al. (2005) establish PR as a negative perception of unexpected and variable outcomes from purchased goods. Meanwhile, Ko et al. (2004) define the concept of perceived risk as a consumer's perception of changes and opposite outcomes to the purchase of a product or service. Doubt and consequence are two components of this concept. The possibility of an adverse outcome is described as indecision, while the significance of loss is defined as a consequence (Laroche et al., 2005). Pavlou & Featherman (2003) PR consists of financial, safety, psychological risks, social, time, and performance. Moreover, Garner (1986) has six additional PR dimensions: physical, psychological risks, social, performance, financial, and time. Bhukya & Singh (2015) have four dimensions of perceived risk in buying intentions: operational risk, physical risk, psychological risk, and financial risk. In the context of the online market, perceived multi-dimensional risks include products, finance, privacy, social, security, time, and psychology with a more intensive online shopping framework than other dimensions (Han & Kim, 2017). Almousa (2011) emphasizes that financial, product, and security risks are the most influential. This study, using six measurement items, namely, product risk, financial risk, security risk, social risk, time risk, and psychological risk, which affects online purchase intentions (Ariffin et al., 2018).

Online Purchase Intention

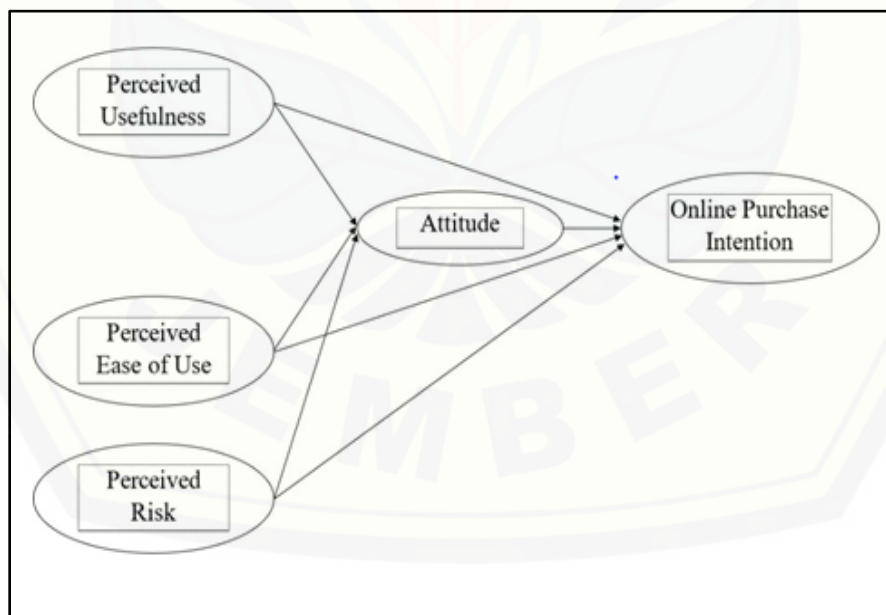
Online Purchase Intention (OPT) can be defined as a factor that predicts consumer behavior towards actions to complete negotiations using the Internet (Wagner Mainardes et al., 2019). OPT is commonly thought to be the outcome of several motivating elements encountered by customers (Diallo & Siqueira, 2017; Pappas et al., 2017). An E-commerce site provides

practical resources such as a product/service catalog, search function, website confidence, pricing comparison sheet, shopping cart, and online payment system. It is thought that a client is more inclined to buy from a virtual store (Liao & Wong, 2008). Thus, each related factor's importance plays an essential role in attracting consumers and maintaining sales. The two main determinants of behavioral intentions towards aspects of personality are buyer attitude and subjective criteria (Chen & Yang, 2019). OPT is the tendency of buyers to represent fixed behavior (e.g., buying) in a fixed context (e.g., virtual stores) (Ventre & Kolbe, 2020).

Hypothesis

In adopting a technology, individuals need to consider factors that may ultimately influence their attitude to the intention of using a technology (Li et al., 2019). According to Davis (1985), intentions are directly influenced by PU and PEOU. Previous research has examined technology acceptance model factors in various contexts and found that PU and PEOU positively affect attitudes (Dutot et al., 2019; Li et al., 2019). Other findings suggest that OPT is significantly affected by attitude (Dutot et al., 2019). Thus, the hypotheses for this study are:

- H₁: PU has been a positive impact on ATT.*
- H₂: PU has been a positive impact on OPT.*
- H₃: PEOU has been a positive impact on ATT.*
- H₄: PEOU has been a positive impact on OPT.*
- H₅: ATT has been a positive impact on OPT.*



Source: Researchers Concept

FIGURE 1
CONCEPTUAL FRAMEWORK

PR has a binding effect in affecting consumer purchase intentions. Consumers' risk perception is crucial in shaping their purchase judgment and action (Ko et al., 2004). When shopping at a physical store, consumers perceive a more significant amount of risk when purchasing online. Consumers at a higher risk are less inclined to purchase items or services online (Lee & Tan, 2003). It is possible to deduce that customers' intentions to buy via the internet are negatively influenced by perceived risk (Liu & Wei, 2003). Kim (2016) stated that the higher the risk of online businesses, the lower customer purchasing inclinations. Perceived hazards harm consumers' intentions to buy online. This implies that when customers realize that the transaction is dangerous, their inclinations to buy online are decreased (Ahmed & Akhlaq, 2015) (Figure 1). Research from Adu et al. (2020) finds if PR negatively affects Attitude and OPT. Thus, researchers suggest the following hypothesis.

H₆: PR has been a negative impact on ATT.

H₇: PR has been a negative impact on OPT.

RESEARCH METHODS

Three hundred eight questionnaires have been distributed to internet users in several major cities in Indonesia, such as Jakarta, Surabaya, Medan, Jogja, and Malang. In the last three months, online shopping activities in web applications or e-shopping include Tokopedia, Shopee, Lazada, & Bukalapak. Data collection is done by providing questions through questionnaires given to respondents. The measure employed in this investigation is a Likert. The Likert scale employed numbers 1 (strongly disagree) to 5 (strongly agree). Previously, measuring items perceived usefulness (4 items) and perceptions of ease of use (4 items) (Davis, 1985). Six items of perceived risk were adopted in the study (Ariffin et al., 2018). In the assessment attitude, three items were employed (Taylor & Todd, 1995). Finally, three items were adapted from Pappas et al. (2017). It is used to measure online purchase intentions. The analysis method used in this study is Partial Least Square (PLS) using data processing tools, namely Smart PLS applications.

RESULTS

Demographic Profile

Table 1 presents a sample demographic profile from the study. Female respondents represented 75.3% of the entire sample, while male respondents represented 24.7%. The majority of respondents were aged 21–30 years (80.4%), 10.4% were less than 20 years old, 5.2% were between 31–40 years old, and 3.9% were over 41 years old. In terms of income, 20.7% of respondents earned between 1,500,000–1,999,999, 25.6% of respondents earned between 2,000,000–2,499,999, 29.8% earned between 2,500,000–2,999,999, and 23.7% earned between 3,000,000. In terms of employment, 4.5% are housewives, 13.6% are domestic workers, 35.7% are private employees, 30.5% are self-employed, 5.8% as café employees, 7.14% as consultants, 3.89% as pharmacist assistants.

	N	%
Gender		
Man	76	24.7
Woman	232	75.3
Age		
<20 years	32	10.5
21–30 years	246	80.4
31–40 years	18	5.2
>41 years	12	3.9
Income		
1.500.000–1.999.999	64	20.7
2.000.000–2.499.999	79	25.6
2.500.000–2.999.999	92	29.8
>3.000.000	73	23.7
Work		
Housewife	14	4.5
Civil Servants	42	13,6
Private Employees	110	35.7
Self-employed	94	30.5
Cafe Employees	18	5.8
Consultants	22	7.14
Pharmacist's Assistant	12	3.89

Source: Output Descriptive Analysis

Evaluation of Measurement Model (Outer Model)

Evaluation of the measurement model is the evaluation of the relationship between the contract and the indicator. Convergent Validity, Discriminant Validity, and Composite Reliability are the three criteria used to evaluate outer models when employing data analysis techniques with Smart PLS. Based on Table 2, it is known that all indicators used in the study have an outer loading value >0.7 . Chin (1998) specified that the loading value must be more than or equal to 0.7 to qualify for convergent validity. Therefore, the variables analyzed in this study have been certified feasible or valid for research usage and can be utilized for future investigation.

The findings of discriminant validity tests will be presented in this section. A cross-loading value is used in the discriminant validity test. An indicator is stated to have discriminant validity if its cross-loading value on its variable is the greatest compared to other variables (Ghozali, 2013). Based on Table 3, it is possible to determine that each indication on the research variable has the most significant cross-loading value on the variable it formed compared to the cross-loading value on other variables. Based on the findings, it is reasonable to conclude that the indicators used in this study already have excellent discriminant validity when generating their respective variables. The reliability measures employed in this research were average variance (AVE), composite reliability (CR), and Cronbach's Alpha (Chin, 1998; Fornell & Larcker, 1981; Hair et al., 2014). The findings demonstrate that the CR and Cronbach's Alpha values were more than 0.7, while the AVE values for each variable were more significant than 0.5. The research results in Table 2 are credible.

Table 2
MODEL MEASUREMENT RESULTS

Construct	Items	Meana	Outer Loading	AVE	CR	Cronbach's Alpha
Perceived Usefulness	PU1	4.500	0.729	0.645	0.879	0.821
	PU2	4.503	0.788			
	PU3	3.867	0.839			
	PU4	4.065	0.850			
Perceived Ease of Use	PEOU1	3.912	0.871	0.735	0.917	0.880
	PEOU2	3.802	0.823			
	PEOU3	4.049	0.875			
	PEOU4	4.065	0.861			
Perceived Risk	PR1	3.838	0.735	0.641	0.914	0.886
	PR2	3.951	0.718			
	PR3	3.802	0.729			
	PR4	3.903	0.864			
	PR5	3.899	0.896			
	PR6	3.763	0.842			
Attitude	ATT1	3.873	0.902	0.645	0.868	0.770
	ATT2	3.318	0.794			
	ATT2	4.049	0.786			
Online Purchase Intention	OPT1	3.873	0.846	0.773	0.911	0.854
	OPT2	3.318	0.904			
	OPT3	3.458	0.886			

Source: Output SPSS

Table 3
CROSS LOADING

	OPT	PEOU	PR	PU	ATT
X1.1	0.737	0.546	0.522	0.729	0.388
X1.2	0.876	0.531	0.585	0.788	0.463
X1.3	0.993	0.657	0.643	0.839	0.653
X1.4	0.883	0.861	0.708	0.850	0.704
X2.1	0.473	0.871	0.728	0.717	0.608
X2.2	0.563	0.823	0.654	0.583	0.651
X2.3	0.525	0.875	0.667	0.697	0.786
X2.4	0.583	0.861	0.708	0.850	0.704
X3.1	0.589	0.613	0.735	0.607	0.636
X3.2	0.491	0.641	0.718	0.554	0.615
X3.3	0.440	0.633	0.729	0.593	0.505
X3.4	0.545	0.641	0.864	0.639	0.596
X3.5	0.571	0.699	0.896	0.705	0.647
X3.6	0.561	0.614	0.842	0.613	0.584
Y3.1	0.646	0.669	0.652	0.732	0.602
Y3.2	0.704	0.483	0.553	0.762	0.694
Y3.3	0.586	0.470	0.547	0.743	0.608
Z.1	0.846	0.669	0.652	0.632	0.902
Z.2	0.704	0.483	0.553	0.462	0.794
Z.3	0.525	0.675	0.667	0.697	0.786

Source: Output SPSS

Structural Model Testing (Inner Model)

After testing the measurement model is complete, then the next is to do structural model testing. The structural model (inner model) test in this study will be explained regarding the results of the path coefficient test and the goodness of fit test. The path coefficient test demonstrates the strength of the effect of independent variables on dependent variables. The coefficient determination (R-Square) method determines that an endogenous variable is affected by other variables.

The Goodness of Fit model is measured using the R² dependent latent variable (Chin, 1998). An R-Square value of 0.67 or above for endogenous latent variables in structural models demonstrates the effect (which affects) of exogenous factors on endogenous variables (which are affected), including in the excellent category. If the result is 0.33-0.67, it is classified as medium, and if it is 0.19-0.33, it is classified as weak. According to the findings of this study, the R-Square value for the Attitude variable was 0.684. According to the value acquisition, the proportion of the degree of consumer attitude by PU, PEOU, and PR was 68.4 percent. Then, given the acquired R-Square value, the OPT variable of 0.852. The number demonstrates how an ATT of 85.2 percent may account for the incidence of OPT.

Hypothesis Test

The analysis results are shown in Table 4, and it is known that PU has a positive and significant effect on ATT with a *p-value* of 0.013 and OPT with a value of *p-value* 0.001. With this discovery, the first and second hypotheses were accepted. PEOU has a significant positive effect on ATT with a *p-value* of 0.004 and OPT with a *p-value* of 0.012, and this result indicates if the third and fourth hypotheses are accepted. Meanwhile, PR negatively affects attitude with a *p-value* worth -0.031 and negatively on OPT with a *p-value* - 0.014. This result follows the research hypothesis adopted in the previous study, then the sixth hypothesis and the point are accepted. However, the attitude has a positive and significant effect on online purchase intention with a *p-value* of 0.002. These findings imply that the possible hazards of adopting e-commerce have a detrimental impact on online purchasing intentions.

Hypothesis	Influence	T-Statistics	P-Values	Result
H ₁	PU – ATT	3.248	0.013	Accepted
H ₂	PU – OPT	5.361	0.001	Accepted
H ₃	PEOU – ATT	9.491	0.004	Accepted
H ₄	PEOU – OPT	7.523	0.012	Accepted
H ₅	ATT – OPT	8.820	0.002	Accepted
H ₆	PR – ATT	5.954	- 0.031	Accepted
H ₇	PR – OPT	4.001	- 0.014	Accepted

Source: Output Smart PLS

DISCUSSION

The study focused on assessing the impact of online purchase intentions based on the technology acceptance model by integrating it with other theories, including PR. The technology acceptance model has been widely used in research to examine how individuals adopt new

technology (Kim, 2016; Li et al., 2019). The function of PR in affecting customer purchase intentions is critical. The perception of risk by consumers is crucial in affecting their purchase decisions and behavior (Ko et al., 2004). High-risk consumers will influence their attitude in adopting new technology (Li et al., 2019). Thus, the study adds PR to the technology acceptance model theory to test its effect on OPT.

This study shows that PU & PEOU has a significant favorable influence on attitude and online purchase intention, which shows that the high PU and PEOU contribute significantly to consumers' attitude towards online purchase intentions. This indicates that consumers who make online purchases on the web or e-shopping applications quickly and conveniently when operated then users assume that e-shopping has its advantages for them (for example, saving time, can be done anywhere and anytime). Therefore, users will tend to have a positive attitude towards online purchases and are more likely to use them. However, to invite individuals to shop online on the Web or e-shopping applications, some strategies must be done by e-shopping companies to increase PU and PEOU. For example, the e-shopping interface should be more attractive to make it easier to operate. E-shopping websites should be professionally and modernly managed to support consumers in shopping online. In addition, in globalization, online consumers are shopping in their own country and other countries. Hence, websites need to use multiple languages to suit many consumers from different countries better. Some promotions need to be done to spread the benefits of online shopping to others. The findings are back with prior studies that looked at the technology acceptance model in various situations of technology adoption (Dutot et al., 2019; Li et al., 2019).

In addition, in the study was found to negatively influence ATT and users' intentions to make online purchases (Almoussa, 2011; Chiu et al., 2014; Ha, 2020; Ariffin et al., 2018; Singh & Srivastava, 2018). However, previous studies have found that PR is not a barrier (not influencing) in online purchases (Ventre & Kolbe, 2020). These results are because the respondents studied are students estimated to have more knowledge and experience in online purchases. In addition, some studies find that there is no direct relationship with online shopping intention (Gefen et al., 2003). In response to some of these, the study used a general sample and used technology acceptance model to examine OPT and found that PR negatively affects ATT and OPT, which supports previous research that also found that PR has a negative influence on ATT and OPT (Almoussa, 2011; Chiu et al., 2014; Ha, 2020; Ariffin et al., 2018; Singh & Srivastava, 2018). With these data, it is possible to state that when users feel that the risk of online shopping is high, they will have a negative attitude to shop online, yet still can shop online or make purchases online even though it is small. E-shopping companies can do some strategies to reduce the risk of users when shopping online. To control online transactions and payments, for example, necessary rules and regulations may be developed. Personal information can be leaked and stolen by third parties, thanks to advanced security technologies. E-shopping companies may implement cash-on-delivery payment methods or payments through third parties to avoid the risk of goods failing to be delivered, but payment has been made.

CONCLUSION

E-Shopping trends are becoming a popular trend to research how individuals can adopt such technology considering relevant factors. The study was designed by combining perceived risk in technology acceptance model theory to obtain different or supportive findings from previous research. The study found that an individual's intention to make an online purchase is

primarily determined by perceived ease of use, perceived usefulness, and perceived risk. In particular, perceived usefulness and ease of use positively influence a user's attitude and intention to shop online. Users' attitudes and intentions to purchase online are negatively influenced by perceived risk. In motivating individuals to shop online, e-shopping companies need to focus on perceived risk, perceived ease of use, and perceived usefulness. Based on these findings, potential consequences have been explored.

RESEARCH IMPLICATIONS

First, this study was surveyed by distributing questionnaires to respondents in several major cities in Indonesia, such as Jakarta, Surabaya, Medan, Jogja, and Malang. Therefore, the following study is expected to expand the survey area. Also, it is advisable to use more channels and other methods to conduct surveys to increase the diversity of samples. Second, the research focused on the impact of perceived risk, perceived ease of use, and perceived usefulness on online purchase intentions. Other determinants need to be considered for future studies.

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