



The Effect of TAM in an Online Shopping Context

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Abstract. Technology facilitates and enables consumers to carry out various kinds of activities that have never been conducted. Technology transforms human activities from offline to online transactions. The online store platform provides a variety of features which makes it easier for consumers to purchase a product. Therefore, it triggers consumers to perceive that the technology is useful and easy to use. These perceptions have an impact on the attitude towards online shopping and it influences consumers' intentions to purchase online. This study uses quantitative methods and distributes questionnaires. The questionnaires are obtained from 99 respondents. The respondents are students in Airlangga University, Indonesia. The Structural Equation Modelling – Partial Least Square (SEM-PLS) method is applied. The results show that a perceived ease of use has no effect on the attitude towards online shopping; perceived ease of use has a positive effect on perceived usefulness; perceived usefulness has a positive effect on the attitude towards online shopping; and attitude towards online shopping has a positive effect on the intention to shop online.

Keywords: Perceived ease of use, perceived usefulness, attitude towards online shopping, intention to shop online.

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INTRODUCTION

The Internet shopping mall is one of the types of electronic commerce and fulfils a major role in the Industry Revolution 4.0 era. The Internet shopping mall permits customers to engage during the transaction (Gefen, Karahanna, & Straub, 2003; Jermstipparsert et al., 2019). It has been developed to ensure a high level of collaboration among various companies to sell their products in one portal system and enable the customer to make a transaction. The growth of the Internet shopping mall is a key concern to understanding customers' expectations and how they feel regarding shopping online. The acceptance of technology has been interested in the area of information systems research, with the technology acceptance model (TAM) a prominent theory to predict use and technology acceptance by individual users. There are two primary constructs of perceived ease of use (PEU) and perceived usefulness (PU) which are related with information systems usage behaviours. According to the TAM, the model investigates the acceptance and usage of information technology (Ahn, Ryu, & Han, 2004). Furthermore, perceived usefulness and perceived ease of use are a central antecedent variable to influence the attitude towards using a technology (Davis, Bagozzi, & Warshaw, 1989; Schierz, Schilke, & Wirtz, 2010). A positive influence between perceived ease of use and perceived usefulness of the online shopping application and attitude towards online shopping, have been shown by repeat purchases with prior website experience (Gefen, Karahanna, & Straub, 2017). It will be different for new customers with no prior internet shopping mall experience. Given the lack of prior experience, new customers will find a way that will help them develop their attitude while making a purchase in the Internet shopping mall. A well-designed application that is both easy to use and useful, offers an effective and efficient shopping experience (Koufaris & Hampton-Sosa, 2004), especially for new customers. An internet shopping mall should be easy to use and easy to navigate so that it should not make consumers think too hard while purchasing products (Bilgihan, Kandampully, & Zhang, 2016). Based on the TAM, internet shopping malls should design their applications to be easy to use and useful (Bilgihan et al., 2016).

Furthermore, the TAM has proven the perceptions or beliefs related with the development of attitudes (Chen, Gillenson, & Sherrell, 2002). The perceptions relate to shopping online which may not be strong enough after the first interaction with the Internet shopping mall and directly have a positive impact on attitude. It is explained that the actual system used is driven by a user's behavioural intention to use and a user's attitude towards the use of the system. The attitude is directly influenced by the ease of use and the usefulness of the system (Davis, 1989a). Moreover, some researchers have adopted the

TAM to study the acceptance of Internet related technologies (Koufaris, 2002; Lederer, Maupin, Sena, & Zhuang, 2000; Lin & Lu, 2000). The TAM is acceptable as a theoretical basis for an Internet shopping mall study.

Despite that, previous research using the TAM variables have proven that they have a significant influence on attitudes after multiple visits (Koufaris, 2002). Further, the main dependent variable on the TAM is the intention to use (Schierz et al., 2010), which is determined by prior online shopping experience (Perea y Monsuwé, Dellaert, & de Ruyter, 2004). This study seeks to investigate the case and expect that perceived usefulness and ease of use will have a strong positive effect on the customers' attitude and the customers' intention to shop in the Internet shopping mall, targeted to customers who have no previous online shopping experience. On the other hand, the purpose of this study is to empirically contribute to a deeper understanding of the relationship between customer acceptance and usage application in the Internet shopping mall on customers' attitude towards online shopping and their intention to shop online. We developed the following research questions: (1) is there an effect of perceived ease of use on the attitude towards online shopping?; (2) is there an effect of perceived ease of use on perceived usefulness?; (3) is there an effect of perceived usefulness on attitude towards online shopping?; and (4) is there an effect of attitude towards online shopping on the intention to shop online?

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Subjective perceptions, both ease of use and usefulness, play a vital role in determining a customer's intention to adapt new technology (Davis, 1989). Perceived usefulness is described as a subjective perception by the customer regarding the site's utility in his or her shopping task. Usefulness itself is described as a subjective perception while using the new technology that will improve on her or his performance (Davis, 1989). These perceptions are manifested from the result of his or her shopping experience while they are using the Internet shopping mall as a shopping platform. Meanwhile, perceived ease of use is defined as the subjective perception by the customer regarding the amount of effort necessary to learn and use the website (Koufaris & Hampton-Sosa, 2004). The perceived ease of use affects consumers' attitude towards online shopping in the Internet setting (Perea y Monsuwé et al., 2004). In the online environment, the customer interacts directly with the website. Those perceptions, then, affect a customer's attitude towards online shopping (Perea y Monsuwé et al., 2004). Perceived usefulness is influenced by the ease of use to assure this relationship provides a positive impact on a consumers' attitude towards online shopping (Perea y Monsuwé et al., 2004). Based on the TAM, perceived usefulness is linked with perceived ease of use because the easier the usage of a technology, the more useful it can be (Venkatesh & Davis, 2000). When customers find a website easy to use and useful, they are more likely to have a positive attitude towards the Internet shopping mall. There is a positive effect between perceived ease of use of the website and attitude towards online shopping with prior website experience (Gefen et al., 2017). Therefore, the following is hypothesized:

H1: Perceived ease of use of the Internet shopping mall significantly influences on the attitude towards online shopping in the Internet shopping mall.

H2: Perceived ease of use of the Internet shopping mall significantly influences on the perceived usefulness in the Internet shopping mall.

H3: Perceived usefulness of the Internet shopping mall significantly influences on the attitude towards online shopping in the Internet shopping mall.

Several research studies have applied different usage measures and found the results are consistent with the TAM. In the online shopping context, customers' attitude is manifested in their attitude to assess the product information, form of payment, delivery terms, service offered, risk involved, privacy, security, personalisation, visual appeal, and navigation. Attitude towards shopping online is the degree to which using an internet shopping mall is positively or negatively assessed by an individual (Schierz et al., 2010). The more one has a positive attitude towards technology, it impacts on a higher intention to visit the website (Ahn et al., 2004). Attitude has been identified as a variable influence of intention. The consumers' attitude has a strong, direct, and positive influence on consumers' intentions to actually adapt and use the technology (Mauro & Afonso Mazzon, 2007). The intention to shop through the Internet shopping mall is described as the likelihood a customer will use and adapt a technology as their medium to transform their offline shopping behaviour to online shopping behaviour in the Internet shopping mall (Schierz et al., 2010).

H4: Attitude towards online shopping significantly influences on the intention to shop online.

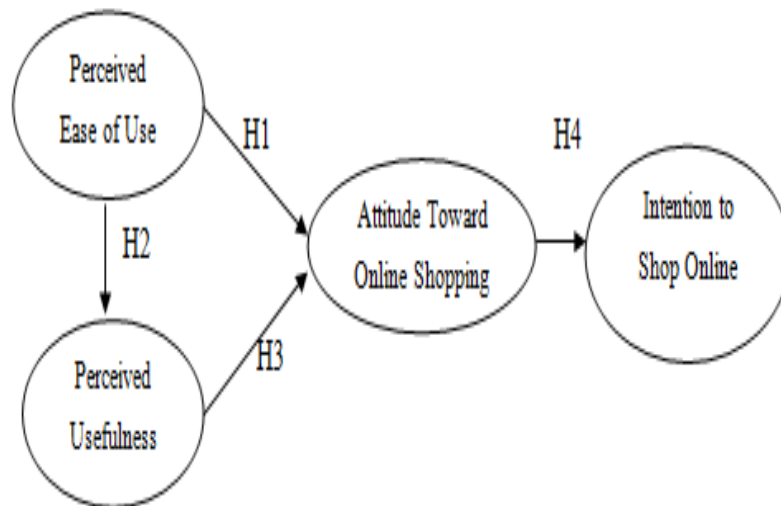


Figure 1. *Conceptual Framework*

METHODOLOGY

The questionnaire consisted of the variables shown in the research model. The measurement items for the perceived ease of use and perceived usefulness are developed from Schierz, Schilke, and Wirtz (2010), and items for the attitude towards online shopping and intention to shop online are derived from Ahn, Ryu, and Han (2004). Prior to administering the survey, a pilot test was conducted among 75 students for analysing the content and readability. In order to test the model, the subjects browsed an internet shopping mall in the shopee application which was downloaded to their gadget. Furthermore, they had never visited and searched for the particular product before. Subsequently, they answered a series of questions regarding their experience on that internet shopping mall. A total of 120 questionnaires were distributed to undergraduate students studying in the Faculty of Economics and Business at the University of Airlangga in Surabaya, Indonesia. Twenty-one of the responses were discarded due to incomplete or invalid answers. Thus, the final number of valid responses is 99.

The indicator items which have low validity and reliability scores were deleted. Furthermore, some wordings were re-specified to clarify the meaning of each questionnaire item. The questionnaire uses a five-point Likert scale which the anchor for 1 is “strongly disagree” to 5 being “strongly agree”, for all the constructs measured. Table 1 presents the demographic data of the respondents in the final sample. To measure the convergent validity, the data is assessed using the average variance extracted and composite reliability measures. The average variance extracted measures the overall amount of variance which is attributed to the construct in relation to the amount of variance attributable to the measurement error (Fornell & Larcker, 1981b). For composite reliability, the value of 0.70 is used (Nunnally & Bernstein, 1994). In this study, the discriminant validity is assessed by comparing the square root of the average variance extracted with the correlations between the construct and all other constructs (Teo & Noyes, 2011).

RESULT

Based on Table 1, the gender distribution of the survey respondents shows 72 percent are male and 27 percent are female. The results depicted that the respondents have an age predominantly between 21 and 23 years, which consisted of 44 percent of the respondents. This was followed by the age range between 24 and 26 years at 26 percent, 18 and 20 years at 19 percent, and 27 and 29 years at 10 percent. The majority level of education of the respondents is bachelor at 74 percent.

Table 1. *Respondents’ Background*

Demographics	Item	Frequency	Percent
Gender	Male	72	72
	Female	27	27
Age	18-20	19	19
	21-23	44	44

	24-26	26	26
	27-29	10	10
Level of Education	College	20	20
	Bachelor	74	74
	Master	5	5

The research model is analysed using the Structural Equation Modelling - Partial Least Square (SEM-PLS) technique, supported by SMARTPLS 3.0 software. The data analysis proceeded in two stages: the measurement model and the structural model. This study calculated the measurement of the outer model in three steps: examine the convergent validity of the indicator items, assess the reliability of the construct variable, and test the discriminant validity.

First and foremost, was conducting an assessment of the convergent validity by the standardised loadings. The measurement items for each construct are presented in Table 2. The values of the standardised loadings correlations range from 0.844 to 0.873 for attitude towards online shopping, and from 0.894 to 0.927 for intention to shop online. In addition to the anchor values from 0.827 to 0.893 for perceived ease of use, and the anchor values from 0.837 to 0.912 for perceived usefulness. The validity of the scales showed in Table 2 are deemed adequate. Meanwhile, the Cronbach's alpha is tested for the internal consistency reliability. The resulting Cronbach alpha value for attitude towards online shopping is 0.912, the value of Cronbach alpha for intention to shop is 0.898, and the range value of Cronbach alpha from 0.897 for perceived ease of use to 0.880 for perceived usefulness. All the items have an alpha value above the standard guideline of 0.70. The resulting, therefore, can be used for analysis with acceptable reliability.

Table 2. *Construct Validity and Reliability*

Variables	Standardised Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Attitude Towards Online Shopping		0.912	0.934	0.739
Purchasing a product in internet shopping mall through shopee mall is a good idea	0.868			
Purchasing a product in internet shopping mall through shopee mall is wise	0.865			
Purchasing product in internet shopping mall through shopee mall is beneficial	0.873			
I have a positive opinion regarding purchasing a product in the shopee mall	0.844			
I like to shop online	0.848			
Intention to Shop Online		0.898	0.937	0.831
I am likely to shop online through the shopee mall in the near future	0.927			
I intend to shop online through the shopee mall when the opportunity arises	0.914			
I am willing to shop online in the near future	0.894			
Perceived Ease of Use		0.897	0.928	0.764
This internet shopping mall would be easy for me for purchasing products	0.893			
My interaction with this internet shopping mall is clear and understandable	0.878			

It would be easy for me to become skillful at using this internet shopping mall	0.827			
It will be easy for me to use if I purchase products in this internet shopping mall	0.834			
Perceived Usefulness		0.88	0.918	0.737
This internet shopping mall can improve my shopping performance	0.900			
This internet shopping mall can increase my shopping productivity	0.912			
This internet shopping mall can increase my shopping effectiveness	0.846			
Purchasing a product in this internet shopping mall is useful	0.837			

Secondly, according to Table 2, we assessed the reliability of the measurement items by composite reliability and the variance-extracted measure. The composite reliability value is 0.934 for attitude towards online shopping, the value of composite reliability for intention to shop online is 0.937, the value of composite reliability for perceived ease of use is 0.928, and the composite reliability value for perceived usefulness is 0.918. The variance extracted measures range from 0.739 for attitude towards online shopping to 0.831 for intention to shop online. Therefore, the results of the reliability show all the constructs variables are of an acceptable reliability. The last step required examining the discriminant validity by comparing the squared correlation with the average variance extracted (Fornell & Larcker, 1981a). Table 3 depicts the squared correlation of each pair of constructs variables are less than the variance extracted measures of both constructs. Therefore, it indicates a good discriminant validity.

Table 3. Comparing the squared correlation and variance extracted

Variables	Attitude Towards Online Shopping	Intention to Shop Online	Perceived Ease of Use	Perceived Usefulness
Attitude Towards Online Shopping	0.86			
Intention to Shop Online	0.763	0.912		
Perceived Ease of Use	0.599	0.636	0.858	
Perceived Usefulness	0.727	0.735	0.805	0.874

A Structural Equation Modelling (SEM) analysis is conducted to confirm the hypothesized relations among the constructs of variable. Table 4 shows the result of the measurement of the structural model. The results of the SEM are presented in Figure 2.

Table 4. Results for the structural model

	Original Sample	Sample Mean	Standard Deviation	T-Statistics	P-Values	
Attitude Towards Online Shopping → Intention to Shop Online	0.763	0.763	0.057	13.328	0.000	Accepted
Perceived Ease of Use → Online Shopping	0.038	0.032	0.115	6.330	0.000	Accepted
Perceived Ease of Use → Perceived Usefulness	0.805	0.800	0.052	15.612	0.000	Accepted

Perceived Usefulness	→	Attitude Towards Online Shopping	0.697	0.695	0.113	6.14	0.000	Accepted
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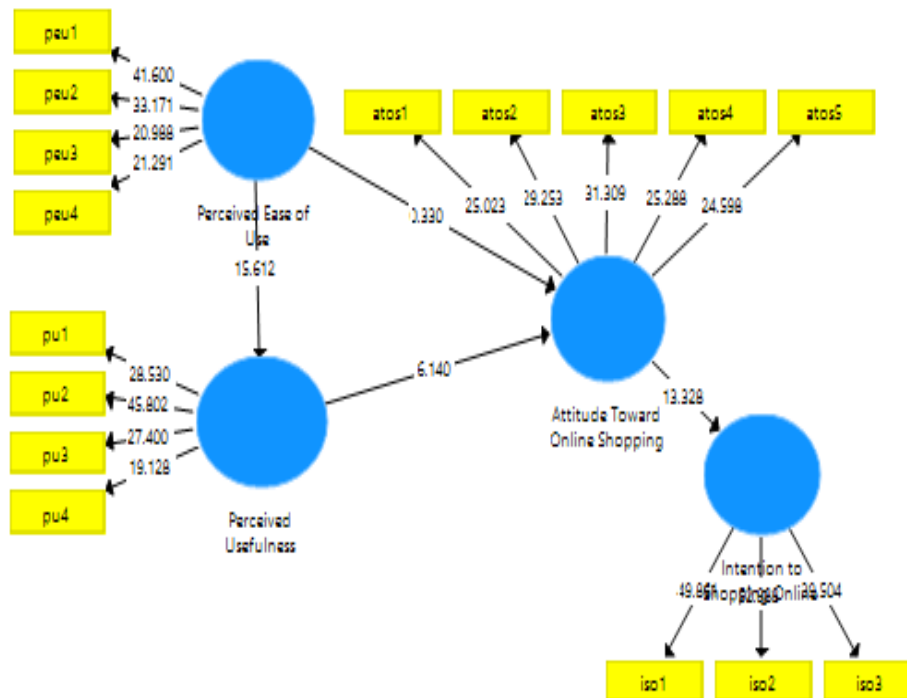


Figure 2. Structural Model

Based on Table 4 and Figure 2, the result showed a significant and positive relationship between perceived ease of use and attitude towards online shopping ($\beta = 6.330$; $p \leq 0.05$), supporting H1. Similarly, the path coefficient of the relationship between the perceived ease of use and perceived usefulness is found positive and significant ($\beta = 15.612$), significant at a 5 per cent level. Thus, H2 is supported. Moreover, the relationship between perceived usefulness and attitude towards online shopping is positive and significant ($\beta = 6.140$, $p \leq 0.05$), H3 is accepted. In addition, the relationship proposed in H4 is confirmed; that is, attitude towards online shopping predicted the intention to shop online ($\beta = 13.328$, $p \leq 0.05$).

DISCUSSION

The result show that this study is in line with previous studies. Perceived usefulness and ease of use influence attitudes towards shopping online, and attitudes towards shopping online positively influence on the intention to shop online. The beliefs determining attitude and intention are influenced by a perceived ease of use and usefulness (Suki, 2011). The result showed a significant and positive relationship between the perceived ease of use and attitude towards online shopping. The relationship between the perceived ease of use and perceived usefulness is found positive and significant, and the relationship between perceived usefulness and attitude towards online shopping is positive and significant. A customer's attitude towards shopping online in the Internet shopping mall confirms that the attitude is influenced by the perceived ease of use and usefulness. Thus, the easier and the more useful an Internet shopping mall, the more positive attitude is shown. In order to ensure young customers will shop through the Internet shopping mall, e-marketers should give attention in designing easy to use and useful Internet shopping malls as an online platform. It is important to develop online shopping platforms which are easy to use and develop the customer's belief of usefulness of the online shopping platform, as well and make them feel more comfortable while using the online platform (Adesina & Ayo, 2010). The attitude towards online shopping is confirmed to positively and significantly predict the intention to shop online. The main concern of the present study is to examine the intention of customers to shop online whom have not purchased anything through the Internet yet. The results of the study show that a positive attitude

towards online shopping and both perceptions has an important role in developing their intention to shop online in the Internet shopping mall. Furthermore, the TAM provides evidence of the acceptance behaviour of the consumers towards the Internet shopping mall. Intention is a measurement of the likelihood that a customer will adopt the application and it is not easy to obtain a customer's intention to perform such behaviour (Suki, 2011).

CONCLUSION

Due to the attitude towards online shopping being positively significant, marketers should seek to make a good impression among the customers whom have no prior experience in online shopping through the Internet shopping mall. Through an application, customers can search for information about the products or services, payment method, delivery services, returns and exchange policy, and after-sales support. Detailed information and an easy to use application will drive customers to shop through the Internet shopping mall application. However, the study may only be generalised to the youth generation. Future studies may also diversify the samples. The samples can be categorised and compare their intention to shop online between student samples and non-student samples.

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