
An Empirical Assessment of Technology Adoption Model in E-Commerce

Nanda Pretty Amalia Zakiah¹, Evanitha Kurrata Aini², Ferdy³, Muhammad Ali Fikri⁴,
Gan Xinxin⁵

^{1,2,3,4,5}Faculty of Economic and Business, Ahmad Dahlan University, Indonesia

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ABSTRACT

Background: Over the past few decades, e-commerce has become one part of the development of electronic commerce technology. The development has caused customers' online purchasing habits to change. This research analyzes how e-commerce can be made more efficient and profitable and achieve business goals by using the Technology Acceptance Model (TAM) as a theoretical framework. Method: Data were examined using Smart's Partial Least Square (PLS) method. The widely used TAM is preferred as a suitable hypothetical model to examine how well the development of electronic commerce technology to support e-commerce. Results: The findings demonstrated that attitudes about and behavioral intentions to use were positively impacted by perceived usefulness. Research indicates that attitudes about utilizing are positively impacted by perceived ease of use, while behavioral intention to use is negatively impacted. It has also been demonstrated that behavioral intention to use is positively impacted by attitude toward usage. It has also been demonstrated that attitudes toward usage modulate the effects of perceived utility and perceived ease of use on behavioral intention to use. Conclusion: This research extends the theoretical and applied understanding needed to apply the TAM model in the e-commerce industry. This research enables business owners to better and more effectively utilize electronic commerce technology.

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Corresponding Author:

Muhammad Ali Fikri

Faculty of Economic and Business, Ahmad Dahlan University,

Kapas Street Number 9, Semaki, Umbulharjo, Yogyakarta, Indonesia

Email: muhammad.fikri@mgm.uad.ac.id

1. INTRODUCTION

The global economy has experienced unprecedented digitization over the last three decades [1]. Due to this, businesses now perform their managerial and operational duties using technology-mediated methods rather than traditional management techniques [2], [3]. The goal is to maintain their competitive position in the market while ensuring their survival or growing market share [4]. These technological advancements in business are made possible by the internet and information technology [5]. Mobile devices with internet access allow users to shop whenever and wherever it's convenient for them from a huge marketplace. Customers can now choose from a wide range of brands and both premium and low-cost products. They may also compare different items based on features and price quickly and remotely. To remain competitive, most retail enterprises have shifted to internet retail, or electronic commerce [6], [7]. E-commerce refers to businesses that conduct business online and using technology [8]. Customers can use it to conduct electronic transactions for goods and services from anywhere at

any time. According to claims, e-commerce has expanded dramatically over the past five years and is now a sizable part of the internet and related technologies [8]. It is anticipated that the practice will carry on at the same or faster pace. Businesses are upgrading to more sophisticated technologies on a daily basis [9].

Over the years, technology has changed and now affects many facets of society, most notably the economy [10]. Numerous industries, including healthcare, marketing, education, finance, and e-commerce, have demonstrated the value of technology [11]. Due to the outstanding success of e-commerce companies, businesses now view them as both an opportunity and a necessity of modern business, making them a requirement for nearly all kinds of businesses. The development of technology successfully satisfies these demands and creates new avenues for the expansion of e-commerce [12]. In e-commerce, there are two primary groups of technology users: customers and business owners. Media for responding to consumer questions, creating product descriptions, managing and processing company data, forecasting sales, privacy and cybersecurity, providing after-sale support, and eliminating fraudulent reviews are among the technologies that business owners use. Customer-side technologies, on the other hand, include conversational media, recommendation engines, image recognition or tagging, personalization, simpler payment processes, etc.

Every day, technology is transforming the e-commerce sector [13]. Customers are becoming more inclined towards e-commerce, the COVID-19 outbreak has further encouraged people to shop online, and as their experience improves, so will their online shopping behavior [13]. This raises the need for businesses to incorporate technology. To evaluate the continued applicability of the TAM model, [14] carried out an analysis examining 2.399 papers that were posted on Web of Science between 2010 and 2020. Notable results showed that further study was done on TAM and its uses, suggesting that the model is still relevant, flexible, and extensible across a wide range of fields and applications.

2. RESEARCH METHOD

Population, Sample, Sampling Method

This research was conducted on e-commerce users, especially Shopee in Yogyakarta, whose number is not yet known with certainty. The sample in this study was taken using purposive sampling techniques based on several criteria, 1) Shopee e-commerce users for at least one year, with the hope that these users really understand the various services provided by Shopee e-commerce, 2) Shopee e-commerce users who have made purchase transactions at least three times within one year using Shopee e-commerce. Based on these criteria, 116 respondents were obtained.

Data Collection Method

The responses of respondents were gathered via distributing an online questionnaire to Shopee customers in Yogyakarta. Many statements in the questionnaire characterize the characteristics of behavioral intention to use, attitude toward use, perceived utility, and perceived ease of use. There are four items in the perceived usefulness variable, five items in the perceived ease of use variable, three items in the attitude toward use variable, and two items in the behavioral intention to use variable. Likert scales with five points were used to rate each item in the questionnaire.

Data Analysis Method

In order to ascertain the range of measuring instruments that are appropriate for measuring the object to be measured, [15] states that the validity of the research is tested. Each indicator's loading factor value is evaluated analytically using the SmartPLS application. An indicator is deemed good if its loading factor value is greater than 0.7 and falls below 0.4 when it comes to the research model [16]. The next step involves measuring reliability, specifically by examining the composite reliability of the SmartPLS output results. According to [16] the reliability value between the indicators of the constructs that make it up is determined by composite reliability. The variable is deemed good if both the Cronbach's alpha recommendation value and the composite reliability value are greater than 0.7. Direct effect testing is also necessary in order to evaluate the design of the hypothesis testing. The research hypothesis was tested using the bootstrap resampling method. The hypothesis is regarded as accepted or supported if the p value is less than 0.5 [16].

3. RESULT AND DISCUSSIONS

Table 1. Validity Test Results

Indicator/Item	Perceived Usefulness (PU)	Perceived Ease of Use (PEU)	Attitude Toward Using (ATU)	Behavioral Intention to Use (BIU)
ATU1			0.927	
ATU2			0.872	

Indicator/Item	Perceived Usefulness (PU)	Perceived Ease of Use (PEU)	Attitude Toward Using (ATU)	Behavioral Intention to Use (BIU)
ATU3			0.895	
ATU4			0.890	
PU1	0.866			
PU2	0.849			
PU3	0.804			
PU4	0.821			
PEU1		0.943		
PEU2		0.941		
PEU3		0.962		
PEU4		0.915		
BIU1				0.903
BIU2				0.827
BIU3				0.852
BIU4				0.873

Source: Primary Data Processed (2023)

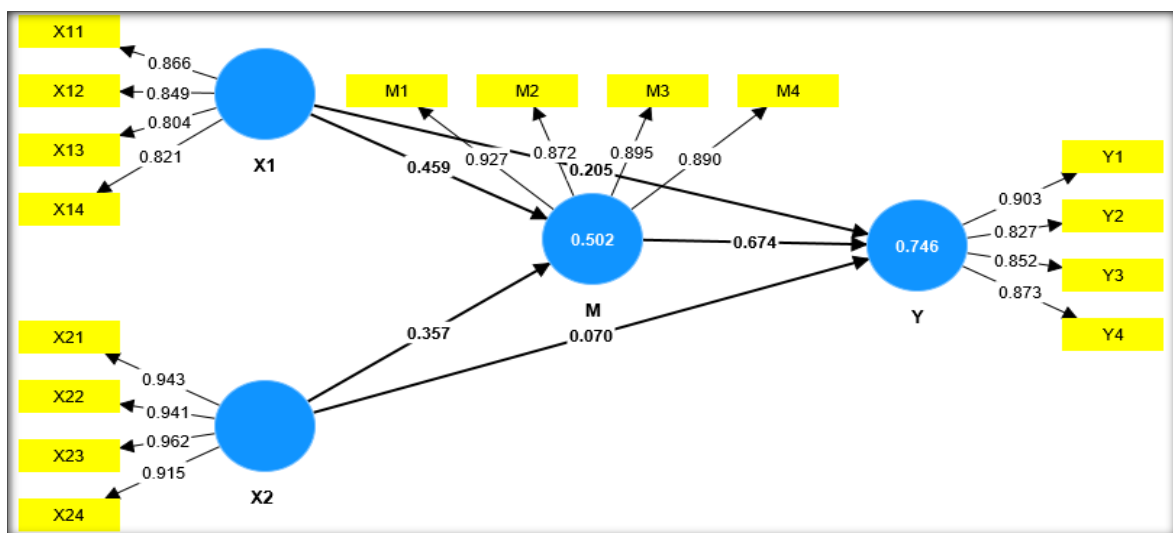


Figure 1. Measurement Model

Table 1 and Figure 1 above display the findings of the validity tests for perceived usefulness, perceived ease of use, attitude toward usage, and behavioral intention to use. Since each item's load factor number is higher than 0.5, they are all regarded as legitimate.

Table 2. Reliability Test Results

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extraxted	Conclusion
Perceived Usefulness	0.918	0.921	0.803	Reliable
Perceived Ease of Use	0.957	0.962	0.885	Reliable
Attitude Toward Using	0.856	0.859	0.698	Reliable
Behavioral Intention to Use	0.887	0.888	0.747	Reliable

Source: Primary Data Processed (2023)

The findings of the reliability test conducted on the research variables are displayed in Table 2. All variables are regarded as reliable since the cronbach's alpha value is higher than 0.5. The variables for perceived utility (0.918), perceived ease of use (0.957), attitude toward utilizing (0.856), and behavioral intention to use (0.887) are all measured.

Table 3. Hypothesis Test Results

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Value	Conclusion
Attitude Toward Using → Behavioral Intention to Use	0.674	0.670	0.081	8.319	0.000	Hypothesis Accepted
Perceived Ease of Use → Attitude Toward Using	0.357	0.359	0.083	4.311	0.000	Hypothesis Accepted
Perceived Ease of Use → Behavioral Intention to Use	0.070	0.075	0.094	0.748	0.455	Hypothesis Rejected
Perceived Usefulness → Attitude Toward Using	0.459	0.449	0.107	4.283	0.000	Hypothesis Accepted
Perceived Usefulness → Behavioral Intention to Use	0.205	0.206	0.071	2.899	0.004	Hypothesis Accepted
Perceived Usefulness → Attitude Toward Using	0.309	0.301	0.083	3.749	0.000	Hypothesis Accepted
Perceived Ease of Use → Attitude Toward Using	0.241	0.238	0.055	4.341	0.000	Hypothesis Accepted
Perceived Ease of Use → Behavioral Intention to Use						

Source: Primary Data Processed (2023)

The first, second, fourth, fifth, sixth, and seventh hypotheses are accepted with evidence of variable probability values less than 0.05, while the third hypothesis is rejected because it has a variable probability value greater than 0.05, according to the results of the hypothesis testing displayed in Table 3. According to the first hypothesis, behavioral intention to use is positively influenced by attitude toward using. According to the second hypothesis, attitudes about usage are positively impacted by perceived simplicity of use. According to the third hypothesis, behavioral intention to use is negatively impacted by perceived ease of use. The fourth hypothesis demonstrates that attitudes about usage are positively impacted by perceived usefulness. The fifth hypothesis demonstrates that behavioral intention to use is positively impacted by perceived usefulness. The relationship between behavioral intention to use and perceived usefulness is mediated by attitude towards usage, according to the sixth hypothesis. The relationship between behavioral intention to use and perceived ease of use is mediated by attitude towards using, according to the seventh hypothesis.

The Effect of Attitude Toward Using on Behavioral Intention to Use

When someone uses a product or service, their attitude toward doing so is a positive action that stems from a number of pleasant experiences that motivate them to use it [17]. Behavioral intention is one of the many direct and indirect elements that affect a person's attitude toward adopting a certain product or service [18]. Behavior and attitude are directly correlated with one another. There is a strong bond between the two [19]. Let's say we liken the correlation between behavior and attitude to an iceberg. Behavior is the portion of the iceberg that is visible above the water, while attitude is the portion that is submerged in the water [20]. The hidden component (attitude) is always the basis for calculating the strength of the visible part (behavior). This implies that conduct will be determined by attitude [21]. Human psychology has always been fascinated by attitudes and behaviors. Psychologists contend that conduct is only the outward manifestation of human psychology, whereas attitude encompasses all of it [22]. That being said, psychologists' theory leads one to the conclusion that attitude drives conduct. One's behavior is determined by their attitude [23].

The Effect of Perceived Ease of Use on Attitude Toward Using

Perceived ease of use is the degree to which a person thinks using a particular system would be easy [24]. Numerous studies have shown that views regarding a particular product or service are influenced both directly and indirectly by perceived ease of use [25]. This demonstrates that perceptions of the technology's utility and simplicity of use have a significant impact on attitudes regarding behavioral intentions and technological adoption [26]. Humans, as we all know, always prefer convenience, so they favor using things that are simple to use [27]. People are more likely to make purchases online as mobile phone technology becomes more widely used worldwide [28]. Therefore, rather than physically going to a physical market, they find it more convenient to purchase goods online while relaxing at home [29]. Numerous studies' conclusions indicate that consumers will only use goods or services that they find simple to use. When their current easy-to-use alternative is unavailable on the market or they require access to it, they will only transition to using non-easy-to-use products [30].

The Effect of Perceived Ease of Use on Behavioral Intention to Use

Ease of use that is felt by consumers or users or can be said to be easy to learn or use. This indicates that the higher the level of convenience felt by e-commerce users, especially Shopee, it can affect the attitude of such users towards the platform and services provided by Shopee. The ease of users in using the services provided in Shopee e-commerce is a consideration for users to switch to other e-commerce, thus giving a positive impression and increase user loyalty. Persepsi ease use of provide contributions for users to determine attitude in using e-commerce platforms. The results of this study are not in line with research conducted by [31] and [32] that the perception of ease of use on behavioral intentions to use.

The Effect of Perceived Usefulness on Attitude Toward Using

Users' subjective perception that utilizing a specific technology will enhance the caliber of their work is known as perceived usefulness [33]. But usage intention is directly impacted by perceived usefulness [34]. Moreover, behavioral goals influence the real application of behavior. This relationship is supported by the results of numerous studies that have tested this theory [35]. Humans have a tendency to always want to purchase more expensive goods [36]. The utility of the brand is linked to the fundamental idea of brand loyalty. When a person values a brand, they will stick with it, use it constantly, and tell their friends and family about it [37]. A person's perception is a social phenomenon that emerges gradually as a result of rationality, experience, and observation. The way that person displays his attitude will depend on this perception. Positive attitudes toward a product's use are fostered by positive perceptions of it [38]. One of the key elements influencing how customers feel about a good or service is its usability [39]. Customers can choose from a wide range of brands to suit their needs when making purchases. But the only product that will satisfy their preferences will be the more beneficial one [40].

The Effect of Perceived Usefulness on Behavioral Intention to Use

Perceived usefulness is defined as the degree to which an individual believes that utilizing a specific technology will improve their job performance [41]. The use of such goods and services is what primarily sets off a person's behavioral intention toward them [42]. A person's behavior is a quality that they develop over time as a result of various experiences. A person's behavior will naturally lead him to want to use a brand if his experience with it is positive [43]. It is a typical occurrence for them to constantly desire to purchase more expensive goods [36]. Businesses typically aim to highlight the products' utility in marketing ads because they believe it is a key component that influences consumers' behavioral intention to purchase their goods [44]. They will be naturally motivated to use the product or service on occasion if it meets their needs [45].

Attitude Toward Using Mediates the Relationship between Perceived Usefulness and Behavioral Intention to Use

Based on the results of this study, it is proven that attitudes towards using mediate on the influence of perceived usefulness on behavioral intentions to use. When Shopee e-commerce users feel perceived usefulness increases, it will encourage increased attitudes towards using and ultimately will also increase behavioral intention to use as well.

Attitude Toward Using Mediates the Relationship between Perceived Ease of Use and Behavioral Intention to Use

Based on the results of this study, it is proven that attitudes towards using mediate on the influence of perceived ease of use on behavioral intentions to use. When Shopee e-commerce users feel perceived ease of use, it will encourage increased attitudes towards using and ultimately will also increase behavioral intention to use as well.

4. CONCLUSION AND RECOMMENDATION

Based on the research results, it can be concluded that the purpose of this study is to determine whether the TAM model consisting of perceived usefulness, perceived ease of use, attitude towards use affects behavioral intention to use Shopee e-commerce in Yogyakarta. Future research can use other subjects and variables that are different from this research. Research [46] used students as the research subject. Then research [47] uses perceived security variables in its research to determine the factors that influence behavioral intention to use.

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