Structural Equation Modeling in E-Commerce Application Users: Case Study of Shopee

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Abstract

In line with current developments, especially advances in technology that are increasingly advancing, it facilitates all community activities in buying and selling goods, with the existence of e-commerce now people no longer need to go directly to the store to make these transactions. Using Davis' (1989) Technology Acceptance Model (TAM) methodology, this study attempts to determine what criteria are included in the form of acceptance by users of e-commerce applications, specifically at Shopee. Using a quantitative method with the SmartPLS program and the SEM PLS data analysis tool, 220 respondents who frequently or have used the Shopee application were analyzed for this study. The findings show how users' attitudes toward usage are influenced by their opinions of the e-commerce program Shopee's utility and simplicity of use, which in turn shapes their behavioral intentions and, finally, their actual usage behavior. This research provides a thorough explanation of the relationships between all the Technology Acceptance Model (TAM) variables that were looked at. All things considered the results of this study confirm the use of TAM in examining Shopee use.

Keywords— Shopee, Technology Acceptance Model (TAM), SEM, E-Commerce Application

1. INTRODUCTION

An increasingly advanced world is driven by increasingly sophisticated technological developments. An example of technological advances that occur today is the internet, which is now a primary need for everyone. Technological developments bring differences in the behavior of a person's lifestyle to be modern and every activity carried out becomes more practical. Everyone must be able to adapt to technology because it is influential and important in carrying out activities [1]. One of the advantages of the existence of the Internet today is the ease with which people can communicate and exchange information that is visible to a large audience. The Federal Statistics Office said that 66.48 percent of Indonesians accessed the Internet in 2022, compared to 62.10 percent in 2021, based on the results of the 2022 Susenas poll.

Most people today spend money on shopping for primary and secondary products [2]. People today love to do online shopping activities because many of them find it very easy to do these transactions. Currently, e-commerce online stores have a variety of products to sell. In addition to encompassing auxiliary functions like marketing, advertising, security, payment processing, and delivery, e-commerce is also a comparatively stable retail industry [3].

This surge coincided with the COVID-19 pandemic, which impacted nearly the entire world including Indonesia. The pandemic originated in Wuhan, China, and spread to Indonesia in March 2020, resulting in restrictions and diversion from community activities [4].

Currently, in Indonesia, there are many online applications, especially e-commerce, according to the latest data from Databoks, Shopee was the Indonesian e-commerce site with the most visits in the first quarter of 2023. Shopee has far outperformed its competitors, receiving an average of 157.9 million visits per month from January to March of this year. According to a report from the Databoks website, in March, there were about 10% more visits to the Shopee website than the previous month. Shopee is one of the many applications that are currently being

widely used by all circles [5]. Currently, Shopee also has many competitors in the online shop segment, such as Tokopedia, Lazada, Blibli.com, Bukalapak, and others. Shopee was first launched in Singapore in 2015.

The Shopee application will be analyzed for user acceptance using the Technology Acceptance Model in this study, taking into account the wide range of positive and negative consumer comments. To evaluate the acceptance of new information technology forms, the (TAM) is frequently used [6]. TAM connects perceived utility and perceived ease of use, and it also includes attitude, intention to use, and actual usage on the opposite side [7]. Drawing from earlier studies carried out by Faizah et al. [8], utilizing TAM to analyze characteristics influencing acceptance of usage in e-commerce applications, namely Shopee, which is limited to the student population at Diponegoro University Semarang, as well as earlier study by Hidayatuloh & Aziati [9] by using the DeLone and McLean methodology to gauge user satisfaction with the Shopee e-commerce application[10] this research has limitations that suggest future researchers to expand the area of distribution of questionnaires and use other variables in conducting research.

So based on this explanation, researchers are interested in identifying the form of acceptance from e-commerce users, especially at Shopee, based on measurements using TAM theory.

2. RESEARCH METHODS

2.1 Literature review

2. 1.1 Perceived Usefulness

An individual's threshold for adjusting to the rise in productivity at work brought about by the employment of a certain technology is known as perceived usefulness [11]. More precisely, perceived utility refers to a person's conviction that utilizing a specific technology will boost output or benefit the user [12].

2. 1.2 Perceived Ease of Use

According to Davis [13], the degree to which a person believes that a system may be used without requiring a lot of human intervention is what is meant to be considered user-friendliness. This stems from the understanding that "simplicity" is defined as the absence of significant obstacles or business needs. In other words, the ease of use theory explains how someone can conclude that using information technology is a simple way to make decisions without requiring a significant amount of effort from the user.

2. 1.3 Attitude Toward Using

The Technology Acceptance Model (TAM) defines "Attitude toward using" as a person's attitude toward utilizing a specific system. This can be used to mitigate any potential negative impacts that might occur from using technology at work [14]. This stacking illustrates various aspects, such as cognitive elements, affective components, and behavioral components related to human-technology interaction [15].

2. 1.4 Behavioral Intention to Use

According to Faisal and Kraugusteeliana [16], a user's behavioral intention to use refers to their propensity to continue with or validate the use of a particular technology. One can infer a person's level of computer technology use from their level of technological awareness. The foundation of the technology adoption model is the notion that users' intended behavior is a reliable predictor of their actual usage patterns [17].

2. 1.5 Actual Use

The way that users feel about technology can reveal a lot about how well it is being utilized, including how much they want to use it more and encourage others to do the same [13]. It is crucial to evaluate the degree of real technology use by considering users' attitudes regarding the technology, including their drive to keep using it and inspire others to do the same [18]. Tam and Oliveira [19] point out that in the real-world environment of use, keeping current users is just as crucial as luring in new ones. The user experience cycle indicates how confident the user is in the system, which is relevant to keeping these users around.

2.2 Conceptual Framework and Hypothesis Development

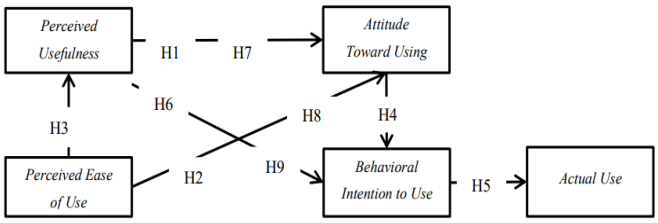


Figure 2 Research conceptual framework

The hypothesis of this existing study is explained in Figure 2, and its contents are presented as follows:

2. 2.1 Perceived usefulness on attitude toward usage

Consequently, customer attitudes will benefit from their perceptions of the system's usefulness [20]. Prior research, as demonstrated by Handayani and Harsono [21], indicates that attitudes toward usage are positively impacted by perceived utility. In a different study, Setiawan, Nurhadi, and Diptyana found that attitudes toward use are positively influenced by perceived usefulness [22]. Additionally, Widodo and Putri's research has shown that [23] people's evaluations of the technology's utility and simplicity of use are considered variables that support and foster the development of attitudes toward use, enhancing the urge to continue using this technology. From the preceding description, the following hypothesis can be deduced:
Ha1: Attitude toward usage is strongly influenced by perceived usefulness.

2. 2.2 Perceived ease of use on Attitude Toward Using

Therefore, consumers' opinions will be favorably impacted by how simple they find something to use. A study by Aprilia and Santoso [24] involved 100 OVO programs' usability, convenience of use, and desire for utilization. The results showed that users' opinions of the OVO app were positively impacted by their assessment of its ease of use. According to a study by Yuliyani et al. [25], people's perceptions of things are positively and significantly impacted when they believe them to be simple to use. From the preceding description, it is possible to infer the hypothesis:
Ha2: Attitude toward using is significantly influenced by perceived ease of usage.

2. 2.3 Perceived ease of use on Perceived Usefulness

Aprilia and Santoso [24] show that perceived ease of use has a positive influence signifying against perceived usefulness with a statistical T value greater than 1.96 which is 16.238.
Discovered that the perceptions of usability were significantly positively impacted by the preceding description, it is possible to infer the hypothesis:
Ha3: Perceived ease of use has a significant on perceived usefulness.

2. 2.4 Attitude toward using Behavioral Intention to Use

Previous studies by researchers, such as Oentario et al [26] and Chitra Laksmi Rithmaya [27], Demonstrate that consumer attitude variables positively and significantly influence their inclination to engage in online transactions. Based on the description provided, hypotheses can be formulated:

Ha4: Attitude toward using has a significant on behavioral intention to use.

2. 2.5 Behavioral Intention to Use on Actual Use

Research by Rohman et al. [28] demonstrates that the real usage variable is influenced by the behavioral intention variable for use. Setyawati [20] states that interest is a human psychological component that can drive a person to their goals. When something is considered useful and enjoyable, one begins to be interested in using it. Interest indicates a tendency to continue using certain technologies. From the preceding description, the following hypothesis can be inferred:

Ha5: Behavioral intention to use has a significant on actual use.

2. 2.6 Perceived usefulness on behavioral intention to use

Previous research by Fadlan [29], Aditya & Wardhana [30], Chitra Laksmi Rithmaya [27], Wahyuningtyas [31], and Wibowo et al [32] has shown that perceptions of usability have a favorable and significant impact on intentional usage behavior. The findings demonstrate that the perceived usefulness variable has the power to affect usage behavior intentions. From the preceding description, it is possible to infer the hypothesis:

Ha6: The behavioral intention to utilize is significantly influenced by perceived utility.

2. 2.7 Because it affects users' attitudes about using and behavioral intentions to use, perceived usefulness has an impact on actual usage behavior.

According to a study by Walean and Talumantak [6], the variable perceived usefulness towards actual use was influenced by attitudes towards using and desire for use, with a value of T=3.882 > 1.96 and p=0.00 <0.05. Those who utilize mobile banking services as study participants may be more inclined to keep doing so if they perceive its advantages. From the preceding description, it is possible to infer the hypothesis:

Ha7: Perceived usefulness has a significant impact on actual usage through both users' attitudes toward using and their behavioral intentions to use.

2. 2.8 Real usage is influenced by perceived ease of use in two ways: attitudes toward and behavioral intentions toward utilizing

A study by Walean & Talumantak [6] found that attitudes toward usage and intention to use influence how easily something is perceived to use, which in turn influences how much people use it. This expansion of research can help us develop products that are easier to use and increase the rate of technology adoption. According to study findings, users of mobile banking services believe BSGTouch to be user-friendly. From the preceding description, the following hypothesis can be inferred:

Ha8: Perceived ease of use influences actual usage behavior through users' attitudes toward using and their behavioral intentions to use.

2. 2.9 Through behavioral intention to use, perceived usefulness is converted into actual use.

According to Walean & Talumantak's study [6], behavioral intention to use and perceived usefulness to actual use have a significant impact. Therefore, the study concludes that customers who use mobile banking services and who participated as study respondents used BSGTouch, beginning with their perception of its usability. This thus establishes the intention to keep utilizing

the BSGTouch app afterward. From the preceding description, it is possible to infer the hypothesis:
Ha9: Perceived usefulness influences actual use through behavioral intention to use

2.3 Research Instrument

This study employed a quantitative methodology, distributing online questionnaires to perform a survey. Perceived usefulness, perceived ease of use, attitude toward using, behavioral intention to use, and actual use are the five variables included in this study. Responses to a questionnaire were gathered for this study, and respondents' ratings on a Likert scale denoting strongly agree, agree, neutral, disagree, and strongly disagree were tallied from 1 to 5. This survey's validity and reliability were examined.

2.4 Data collection and sample

The sample used in this study is those who have frequently or have ever done online shopping transactions, especially with Shopee. Of the 220 respondents, 55% (n=122) were women and 67% (N=148) were between 17 and 25 years of age. Table 1 below displays respondent profiles based on prevalence and age.

Table 1 Respondent Profile

Description	Total	%
Gender		
Male	98	45 %
Female	122	55 %
Age		
17-25	148	67 %
26-35	59	27 %
36-45	9	4 %
46-55	4	2 %
56-65	0	0%
>65	0	0%

3. RESULT AND DISCUSSION

3.1 Measurement Model Evaluation (Outer Model)

a. Validity Test

i. Convergent Validity

As shown in Table 2, convergence validity is deemed satisfactory if the loading factor is larger than 0.7 and the average extraction variance value (AVE) is higher than 0.5. Based on data analysis, it was found that four structures, namely ATU5, AU2, AU3, and BIU2, did not meet the validity criteria. After removal, the remaining indicators in the table are indicators that can be considered valid or meet the established validity standards.

Additional information on these abbreviations:
(ATU): Attitude Toward Using (AU): Actual Use (BIU): Behavioral Intention to Use (PEOU): Perceived Ease of Use (PU): Perceived Usefulness

Table 2 Convergent Validity

Indikator	ATU	AU	BIU	PEOU	PU	AVE	Description
Attitude Toward Using						0,758	*Valid*
ATU1	0,883						*Valid*
ATU2	0,875						*Valid*
ATU3	0,838						*Valid*
ATU4	0,884						*Valid*
Actual Use						0,653	*Valid*
AU1		0,817					*Valid*
AU4		0,734					*Valid*
AU5		0,867					*Valid*
Behavioral Intention to Use						0,654	*Valid*
BIU1			0,834				*Valid*

BIU3	0,841				*Valid*
BIU4	0,718				*Valid*
BIU5	0,836				*Valid*
Perceived Ease of Use				0,766	*Valid*
PEOU1		0,903			*Valid*
PEOU2		0,913			*Valid*
PEOU3		0,899			*Valid*
PEOU4		0,778			*Valid*
Perceived Usefulness				*0,640*	*Valid*
PU1			0,748		*Valid*
PU2			0,806		*Valid*
PU3			0,841		*Valid*
PU4			0,836		*Valid*
PU5			0,784		*Valid*
PU6			0,781		*Valid*

One of the criteria of discriminatory validity is the Fornell-Larcker criteria and cross-loading. The Fornell-Larcker criterion is deemed to be met when the coefficient value of each indicator with its construction is higher than that of the indicator on the other construction in the model. This indicates that the indicator is more closely related to the intended construction than to any other construction. The Fornell-Larcker Criterion correlation coefficients are shown in Table 3 and show that the following variables have high correlation scores: the perceived ease of use (coefficient of 0.875), actual use (coefficient of 0.808), behavioral intention to use (coefficient of 0.809), and attitude toward using (coefficient of 0.870), perceived usefulness (coefficient of 0.800).

Given that their correlations with their particular constructs are larger than with other constructs in the model, all indicators satisfy the requirement. Additionally, each indicator's cross-loading value is higher for its intended construct than for neighboring constructs, as indicated by the data in Table 4. This suggests that each indicator predominantly measures the intended construct, demonstrating good measurement validity.

Table 3 Fornell-Larcker Criterion

	ATU	**AU**	**BIU**	**PEOU**	**PU**
ATU	**0,870**				
AU	0,763	**0,808**			
BIU	0,800	0,787	**0,809**		
PEOU	0,679	0,641	0,645	**0,875**	
PU	0,767	0,772	0,780	0,693	**0,800**

Table 4 Cross Loading

	ATU	**AU**	**BIU**	**PEOU**	**PU**
ATU1	**0,883**	0,733	0,746	0,624	0,715
ATU2	**0,875**	0,677	0,758	0,615	0,694
ATU3	**0,838**	0,583	0,591	0,495	0,585
ATU4	**0,884**	0,650	0,672	0,616	0,665
AU1	0,651	**0,817**	0,633	0,527	0,647
AU4	0,453	**0,734**	0,544	0,356	0,537
AU5	0,719	**0,867**	0,716	0,640	0,678
BIU1	0,718	0,632	**0,834**	0,564	0,672
BIU3	0,643	0,654	**0,841**	0,514	0,634
BIU4	0,496	0,587	**0,718**	0,473	0,519
BIU5	0,709	0,671	**0,836**	0,533	0,684
PEOU1	0,605	0,567	0,569	**0,903**	0,636
PEOU2	0,590	0,535	0,561	**0,913**	0,588
PEOU3	0,609	0,580	0,582	**0,899**	0,618
PEOU4	0,570	0,559	0,543	**0,778**	0,581
PU1	0,570	0,550	0,591	0,488	**0,748**

PU2	0,581	0,620	0,610	0,487	**0,806**
PU3	0,637	0,673	0,657	0,535	**0,841**
PU4	0,590	0,646	0,618	0,560	**0,836**
PU5	0,650	0,589	0,629	0,644	**0,784**
PU6	0,644	0,624	0,634	0,596	**0,781**

b. Reliability Test

In SEM, Composite Reliability (CR) assesses the extent to which indicators consistently represent the underlying construct. High CR values indicate reliable measurement. Cronbach's Alpha simply checks if a group of survey questions is internally consistent. It tells you if the questions seem to be measuring the same thing. By examining the Composite Reliability and Cronbach's Alpha values, structures can be evaluated for reliability. A structure is considered to have sufficient reliability if both the Composites Reliable and Cronbach's Alpha values exceed 0.70.

Table 5 Construct Reliability

	Cronbach's Alpha	**Composite Reliability**	**Description**
ATU	0,894	0,926	Reliable
AU	0,733	0,849	Reliable
BIU	0,822	0,883	Reliable
PEOU	0,896	0,929	Reliable
PU	0,887	0,914	Reliable

Table 5 suggests that the values of Cronbach's Alpha and Composite Reliability for structures have values exceeding 0.7. This shows that the indicators in these kinds of structures measure the structure consistently, demonstrating a sufficient degree of dependability.

3.2 Structural Model Evaluation (Inner Model)

a. Coefficient of Determination (R^2)

The R2 (R squares) analysis can be seen in Table 6, where the Perceived Usefulness variable can be described by Perceived Ease of Use at 48.1%, indicating a weak influence. Furthermore, the Behavioral Intention to Use variables are described as perceived ease of use, perceived usefulness, and attitude toward using at 70.7%, suggesting moderately influenced; in the meantime, the Attitude Toward Using variables can be explained by perceived ease of use and perceived usefulness at 63.1%, indicating a moderate influence.

Table 6 Coefficient of Determination

	R Square
Attitude Toward Using	0,631
Actual Use	0,619
Behavioral Intention to Use	0,707
Perceived Usefulness	0,481

b. *Effect size* (F^2)

Table 7 Effect size (F^2)

	ATU	**AU**	**BIU**	**PEOU**	**PU**
ATU			**0,336**		
BIU		**1,626**			
PEOU	0,113				**0,926**
PU	**0,458**		**0,229**		

From Table 7, it can be concluded that the size effect is categorized as large if it meets the F-Square criterion > 0.35 is ATU->BIU, BIO->AU, PEOU- >PU, PU->ONE. Whereas PEOU>One, PU ->BIO can be classified as a moderate size effect based on the given criteria.

c. Model Fit (NFI)

The closer the model fits to the value of 1 on the NFI (Normed Fit Index), the better. In this context, the NFI of 0.815 in Table 8 indicates that the model in question corresponds to good covariance. On the other hand, an rms Theta of 0.164, which is less than zero, indicates that the model in question has a high threshold of inconsistency.

Table 8 Fit Model

Fit Model	***Value***
NFI	0,815
rms Theta	0,164

d. *Predictive Relevance* (Q^2)

When a model's Q2 value is greater than zero, it is considered to have predictive significance and can be effectively utilized for outcome prediction. Conversely, limited prediction capabilities or less predicted significance are indicated by a Q2 value of less than 0. Based on the information shown in Table 9, it can be inferred that the endogenous variables (ATU=0.469, AU=0.397, BIU=0.457, and PU=0.299) all have Q^2 values greater than 0. This suggests that, within the parameters of this investigation, the model has strong predictive relevance to the endogenic variables.

Table 9 Predictive Relevance Q^2

	SSO	**SSE**	**Q^2 (=1-SSE/SSO)**
ATU	880,000	467,085	0,469
AU	660,000	397,973	0,397
BIU	880,000	477,550	0,457
PEOU	880,000	880,000	
PU	1320,000	925,514	0,299

3.3 Hypothesis Test

a. T-statistical test

Table 10 Hypothesis Testing

	T Statistics (|O/STDEV|)	**P Values**
PU->ATU	9,092	**0,000**
PEOU->ATU	4,190	**0,000**
PEOU->PU	14,571	**0,000**
ATU->BIU	8,563	**0,000**
BIU->AU	24,243	**0,000**
PU->BIU	6,845	**0,000**
PU->ATU->BIU->AU	6,231	**0,000**
PEOU->ATU->BIU->AU	3,473	**0,001**
PU->BIU->AU	4,982	**0,000**

Table 10 indicates a significant relationship between the variable "Perceived Usefulness" and "Attitude Toward Using," with a p-value of 0.00 <0.05 and a T-value of 9.092 >1.96. The T-value represents the measure of the difference between the expected value (based on the zero hypothesis) and the actual value observed in the data sample, the larger the absolute T-value and the smaller the associated p-value (probability value), the stronger the evidence to reject the zero-hypothesis. Thus, it can be concluded that attitudes about usage are positively and significantly influenced by perceived utility, which leads to the **acceptance of Hypothesis (Ha1)**. Based on the study's findings, it can be said that respondents who use the Shopee app have a favorable

opinion of the app's usefulness and, as a result, a positive attitude toward using it. This result is consistent with studies by Venkatesh, Morris, Davis, G.B., and Davis, F.D., which emphasize that one of the most important elements influencing the intention to use a product is the perception of its utility.

Table 10 indicates a significant relationship between the variables "Perceived Ease of Use" and "Attitude Toward Using," with a p-value of 0.00 <0.05 and a T-value of 4.190 >1.96. Thus, it can be concluded that attitudes about usage are positively and significantly influenced by perceived ease of use, which leads to the **acceptance of the Hypothesis (Ha2)**. Based on the findings of this study, it can be concluded that respondents who are users of the Shopee app perceive the app's ease of use positively, which contributes to forming a positive attitude toward its usage.

Table 10 shows a significant relationship between the variables "Perceived Ease of Use" and "Perceived Usefulness," with a p-value of 0.00 < 0.05 and a T-value of 14.571 >1.96. Thus, it can be concluded that perceived usefulness is positively and significantly impacted by perceived ease of use, which leads to the **acceptance of the Hypothesis (Ha3).** Based on the study's findings, it can be said that respondents who use the Shopee app have a tendency to see the app's usability favorably, which leads to the perception that using the Shopee app is advantageous. Indicators like controllability, adaptability, clarity, comprehension, ease of use, and ease of skill advancement all point to this perception.

Table 10 shows a significant relationship between "Behavioral Intention to Use" and the measure "Attitude Toward Using," with a p-value of 0.00<0.05 and a T-value of 8.563 >1.96. Therefore, it can be concluded that behavioral intention to use is favorably and considerably impacted by attitude toward using, which leads to the **acceptance of Hypothesis (Ha4)**. Based on the study's findings, it can be said that respondents who use e-commerce services typically show behavioral tendencies to stick with using the Shopee program once they come to terms with it. Indicators of this inclination include pleasant feelings, positive experiences with the system, and attitudes of acceptance or rejection of the system.

With a T-value of 24.243>1.96 and a p-value of 0.00<0.05, the findings in Table 10 clearly show that the variable Behavioral Intention to Use has a significant impact on Actual Use. Therefore, it can be said that behavioral intention to use affects actual use in a favorable and significant way, thereby **supporting the hypothesis (Ha5)**. These study results suggest that respondents who indicated a propensity to keep using the Shopee application and who were open to the research questions were more likely to use the e-commerce platform. This can be observed in the frequency of usage, which is reflected in indicators such as the number of times a system is used in a given period, the system's use in daily work, the user's environment when using the Shopee application, and the degree to which the Shopee application is used by needs.

With a T-value of 6.845 >1.96 and a p-value of 0.00<0.05, Table 10 data clearly show that the variable perceived usefulness has a considerable impact on behavioral intention to use. Therefore, it can be said that behavioral intention to use is positively and significantly influenced by perceived usefulness, **confirming the hypothesis (Ha6)**. The study's conclusions suggest that responsive consumers of e-commerce services have a propensity to return to Shopee once they are accustomed to its features.

With a T-value of 6.231 >1.96 and a p-value of 0.00 <0.05, the findings in Table 10 clearly show that the variable Perceived Usefulness influences Actual Use through the mediation of both Attitudes Toward Using and Behavioral Intention to Use. Thus, from Attitude Toward Using and Behavioral Intention to Use, it can be deduced that Perceived Usefulness has a positive and considerable impact on Actual Use, **supporting Hypothesis (Ha7)**. Based on the study's findings, it can be said that responsive e-commerce consumers can confirm favorable opinions about the Shopee application by reporting pleasant user experiences.

As demonstrated by a T-value of 3.473 >1.96 and a p-value of 0.001 <0.05, the findings in Table 10 clearly show that the variable Perceived Ease of Use strongly predicts Actual Use through both Attitudes Toward Using and Behavioral Intention to Use. Thus, it can be said that Perceived Ease of Use **supports Hypothesis (Ha8)** by having a favorable and significant impact

on Actual Use through Attitude Toward Using and Behavioral Intention to Use. The study's findings suggest that respondents can perceive the most recent usage statistics from Shopee applications since they are e-commerce users.

With a T-value of 4.982 >1.96 and a p-value of 0.00 <0.05, Table 10 clearly shows that the variable Perceived Usefulness predicts Actual Use through Behavioral Intention to Use. Therefore, it may be concluded that Behavioral Intention to Use, which **underpins Hypothesis (Ha9)**, has a positive and significant impact on Perceived Usefulness. Based on the study's findings, it can be concluded that respondents, who are users of e-commerce services, exhibited genuine usage of Shopee's application.

Table 11 Total, Direct, and Indirect Effects

	Total Effects	***Direct Effects***	***Indirect Effects***
ATU->BIU	0,490	0,490	
BIU->AU	0,787	0,787	
PEOU->ATU	0,679	0,283	0,396
PEOU->PU	0,693	0,693	
PU->ATU	0,571	0,571	
PU->BIU	0,683	0,404	0,279
PU->ATU->BIU->AU	0,220		0,220
PEOU->ATU->BIU->AU	0,109		0,109
PU->BIU->AU	0,318		0,318

In Table 11, it is seen that the greatest impact comes from the BIU to AU ratio of 0.787, while the smallest is from PEOU through ATU to BIU through AU of 0.109. The table also shows that the direct impact from BIU to AU of 0,787 is the most significant, whereas the direct effect from POU to ATU of 0.283 is the least. We can conclude that when consumers find an application convenient to use and respond favorably to that convenience, the user's desire to use the application again will be stimulated.

Furthermore, it can be observed that the PU link through ATU to BIU to AU has a value of 0.220. It follows logically that when a user experiences the advantages of a Shopee application and responds positively to that experience, the user will be more inclined to utilize the program in the future. Thus, the intensity of use of the Shopee app tends to increase. In the end, it may be observed that the linkage between PU through BIU to AU has a value of 0.318.

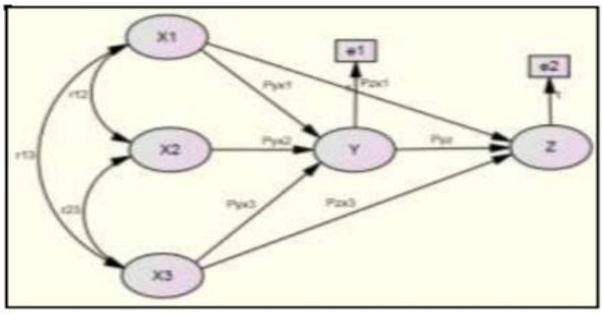


Figure 3 Path Diagram of Causal Relationships X1, X2, X3, to Y and Z

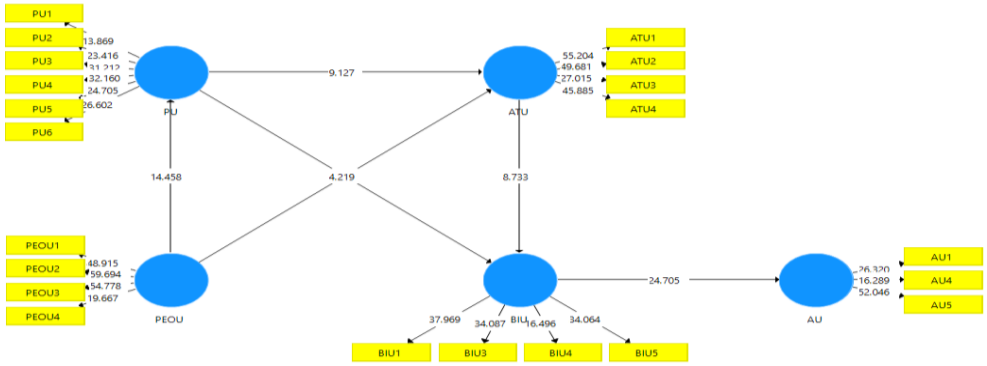
Structural Equation Modeling (SEM), also known as structural modeling, is when each dependent variable (endogenous = Y) is uniquely determined by a set of independent variables (exogenous = X). Figure 3 illustrates the pattern of causal relationships among variables, which is called a path diagram. In this equation, Y = Function (X1, X2, and X3) and Z = Function (X1, X3, and Y) represent structural equations because each equation explains the causal relationship pattern, namely the variables X1, X2, and X3 toward the endogenous variables Y and Z. Structural equations have sub-sub structures whose number depends on the developed model. The structural equation in Figure 4.5 has two sub-structures, namely sub-structures one and two. [33].

Next, we can see Figure 3, which depicts the schematic diagram of the sub-structure one with the formulation of equations :

Y = Pyx1X1 + Pyx2X2 + Pyx3X3

Z = Pzx1X1 + Pzx3X3 + PyzY

Figure 4 Structural Equation Model Estimation



The structural model analysis of this study is shown in Figure 4, which also shows the route coefficients connecting the variables. It also displays each variable's outer loading values in relation to its matching indication. Through the analysis of structural models, this study derives a structural equation elucidating the influence of each exogenous variable on the endogenous variable:

1. *Perceived Usefulness* = 0,693*PEOU
2. *Attitude Toward Using* = 0,283*PEOU+0,571*PU
3. *Behavioral Intention to Use* = 0,404*PU+0,490*ATU
4. *Actual Use* = 0,787*BIU

4 CONCLUSIONS

The research has produced some interesting findings about users of the Shopee app. The findings are that users of online shopping, especially the Shopee app, are dominated by women. Then the next findings showed that the majority of Shopee users were in the age range of 17 to 25. The test results support the hypothesis put forward. More specifically, the perception of usability and ease of use perceived by users has a positive and significant influence on their attitudes. Moreover, the usability perception also positively influences the intention of behavior using the Shopee application. Another interesting finding is that the usage perception variable has the lowest determination coefficient value (48.1%) compared to other variables. That is, this variable explains only 48.1% of the total variance of Shopee use. In other words, there may still be other factors affecting the use of the Shopee application besides the usable perception.

5 SUGGESTIONS

It is recommended that researchers and academics in the future utilize the completed research as a reference to gain a better understanding of how the Technology Acceptance Model theory is applied in the context of e-commerce applications. Furthermore, further researchers are expected to be able to continue this research by considering the use of other theories or making comparisons between several models. The findings of this research are anticipated to serve as valuable considerations and inputs for the management of PT Shopee International Indonesia and other e-commerce applications. Business leaders or service owners are advised to always make sure that the Shopee application has optimal usability and provides convenience for users.

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