# Decoding User Attitudes in Mobile E-Commerce: The Mediating Role of Attitude Toward Use in the Indonesian Shopee Experience

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Abstract. This study aims to examine the influence of Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) on Intention to Use (ITU) of the Shopee application, with Attitude Toward Using (ATU) as a mediating variable. This study is based on the development of the Technology Acceptance Model (TAM) and focuses on Shopee users in Indonesia. Data were collected from 189 respondents via an online survey and analysed using Structural Equation Modelling–Partial Least Squares (SEM-PLS). The results of the study indicate that ATU influences ITU, PEOU influences ATU, PEOU influences ITU, PEOU influences ITU, PU influences ITU through ATU. These findings confirm the mediating role of attitude as an important mechanism in bridging users' perceptions of their intention to use e-commerce applications. Further research is recommended to adopt a longitudinal approach and incorporate additional variables such as trust and user satisfaction to gain a broader understanding of e-commerce app user behaviour. This study contributes theoretically by expanding the application of TAM in the context of local mobile e-commerce and practically for digital platform developers in enhancing user experience.

Keywords: Perceived Ease of Use, Perceived Usefulness, Attitude Toward Using, Intention to Use, Shopee, TAM, e-commerce.

### Introduction

Advances in information and communication technology have driven significant transformations in various aspects of life, including consumer behavior in economic transactions. One such transformation is evident in the increasing use of mobile devices in electronic commerce (mobile commerce or m-commerce). Over the past decade, the adoption of mobile commerce (m-commerce) has shown significant growth in various developing countries, including Indonesia. According to a report by We Are Social and Hootsuite (2023), Indonesia ranks fourth globally in terms of active internet users, with over 212 million users, the majority of whom access the internet via mobile devices. This creates significant opportunities for the growth of the app-based e-commerce sector. Among the various platforms available, Shopee, as one of the leading m-commerce platforms in Southeast Asia, according to a report from Momentum Works, shows that Shopee leads the e-commerce market in the Southeast Asian region in 2023, with a gross transaction value of US\$55.1 billion and a 48% market share, and Shopee emerges as the most popular e-commerce platform in Indonesia. It has seen significant growth in Indonesia with over 100 million downloads and has dominated the shopping app category over the past three years. According to a survey by Katadata Insight Center (2023), Shopee ranks first with the highest number of active users compared to competitors like Tokopedia and Lazada. This popularity is driven by aggressive strategies such as free shipping, flash sales, flexible payment methods (including COD and e-wallets), and gamified interactions within the app. However, despite the high transaction volume, many consumers remain hesitant and cautious when making online purchase decisions.

Various studies have shown that perceived ease of use has an influence on intention to use; perceived ease of use will encourage the intention to use certain technology. One such study (Ramayah, 2006) aimed to examine the relationship between interface characteristics, perceived ease of use, and intention to use using the TAM model. The results of this study showed that PEOU has an influence on IU. Another study showing that perceived ease of use influences intention to use was conducted by (Fagan et al., 2008), where the technology in question was computer use. However, a study by (Palumian et al., 2021) found that perceived ease of use does not influence intention to use in online cinema ticketing on the island of Java, Indonesia.

Another study conducted by (Lyu et al., 2024) found a significant relationship between perceived ease of use and intention to use. In this study, PEOU as a significant predictor indirectly influences the intention to continue using the application through perceived usefulness. A similar study conducted by (Farmani et al., 2012) showed that perceived ease of use and perceived usefulness have a positive influence on the intention to use technology.

However, in a study conducted by (Lee, 2022) aimed at investigating the relationship between the characteristics of innovative technology, innovation resistance, and acceptance intention of automobile autonomous driving systems by applying the TAM model. The results of this study indicate that perceived usefulness and perceived ease of use of the autonomous driving system have a negative influence on acceptance intention.

Previous studies have attempted to explain the factors influencing technology adoption behavior in the context of m-commerce. However, most of these studies are still limited to other countries and do not fully reflect the sociodigital conditions of Indonesian society. In Indonesia itself, although the use of applications such as Shopee continues to increase, some studies have noted issues with user retention and consumer loyalty to a particular platform (Felix & Rembulan, 2023). This indicates that technology adoption is not only influenced by functional factors such as ease or usefulness but also by psychological factors such as users' attitudes, which are shaped by their initial experiences and perceptions of the system.

This study aims to explore the influence of Perceived Ease of Use on the Intention to Use the Shopee app in Indonesia, by testing the direct and serial mediating roles of Perceived Usefulness and Attitude Toward Using.

To address the objectives of this study, a quantitative approach was used through a questionnaire survey of active Shopee users. Data were analyzed using SEM-PLS (Structural Equation Modeling-Partial Least Squares) to test the direct and serial mediating relationships among variables in the model.

This study contributes theoretically by expanding the application of TAM in the context of local mobile ecommerce, as well as practically for app developers and digital marketers in designing strategies that enhance perceived ease of use and user experience to encourage sustained use.

### Literature review

Attitude Toward Using (ATU) and Intention to Use (ITU)

Attitude toward use is the main determinant in forming the intention to use the system. The more positive a person's attitude toward the application, the greater their intention to use it (Al Zubaidi & Al-Alnsari, 2010). *H1*. Attitude Toward Using (ATU) influences Intention to Use (ITU)

Perceived Ease of Use (PEOU) and Attitude Toward Using (ATU)

PEOU also influences users' attitudes toward system usage. Users tend to have positive attitudes if they find the application easy to learn and use. These findings are reinforced by (Al Zubaidi & Al-Alnsari, 2010) *H2*. Perceived Ease of Use (PEOU) influences Attitude Toward Using (ATU)

Perceived Ease of Use (PEOU) and Intention to Use (ITU)

Perceived Ease of Use refers to the degree of confidence a person has that using the system does not require significant effort (Ma & Liu, 2004). In other words, it refers to the extent to which a person believes that the system is easy to understand and use.

H3. Perceived Ease of Use (PEOU) influences Intention to Use (ITU)

Perceived Usefulness (PU) dan Attitude Toward Using (ATU)

Perceived Usefulness (PU) is defined as the extent to which a person believes that using the system will improve their performance. Research conducted by (Davis, 1989) states that PU has a significant influence on attitudes toward use.

H4. Perceived Usefulness (PU) influences Attitude Toward Using (ATU)

Perceived Usefulness (PU) dan Intention to Use (ITU)

TAM research shows that perceived usefulness (PU) influences the intention to use the system. In the context of e-commerce, if users find the application useful, they will tend to use it again (Ramayah, 2006) *H5.* Perceived Usefulness (PU) influences Intention to Use (ITU)

Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Intention to Use (ITU)

Research (Lyu et al., 2024) shows that PEOU not only has a direct influence, but also an indirect influence through PU and Flow. In this study, mediation was carried out through PU and attitudes toward use.

H6. Perceived Ease of Use (PEOU) influences Intention to Use (ITU) through Attitude Toward Using (ATU)

Perceived Usefulness (PU), Attitude Toward Using (ATU), dan Intention to Use (ITU)

In the extended TAM model, Perceived Usefulness not only has a direct impact on Intention to Use, but can also influence that intention indirectly through user attitude (Attitude Toward Using). (Davis, 1989)explains that Perceived Usefulness (PU) encourages the formation of positive attitudes, which in turn strengthens the intention to continue using the system. Recent research by (Lyu et al., 2024) and (Ramayah, 2006) also confirms the mediating effect of Attitude Toward Using (ATU) in this model.

H7. Perceived Usefulness (PU) influences Intention to Use (ITU) through Attitude Toward Using (ATU)

### Theoretical framework

Figure 1 shows the conceptual framework developed for this study, which refers to and expands on previous research on the Technology Acceptance Model. (Al Zubaidi & Al-Alnsari, 2010) also examined TAM as used in online shops in their study. The findings of this study demonstrate that Perceived Ease of Use (PEOU) has a positive effect on Perceived Usefulness (PU). This demonstrates that if a system is easy to use, consumers perceive its benefits more clearly. Both PEOU and PU significantly predict Behavioral Intention (BI) for online shopping, meaning that these two variables increase the intention to shop online. Other factors such as customer satisfaction, perceived online risk, and age were also found to influence BI.

In a study (Davis, 1989) examining Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, it was proven that Perceived Usefulness (PU) is the most influential factor on the intention to use technology. The greater the perception that the system is beneficial, the more likely someone is to use it. This model was applied in the context of Shopee Indonesia, a leading e-commerce platform, to explore how various perceived risks shape consumer trust and ultimately influence their purchase intentions. The complete theoretical model is illustrated in Figure 1.

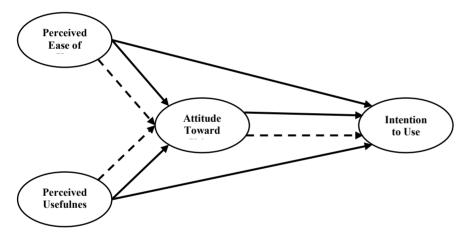


Figure 1. The conceptual model

	Tabl	e 1.	Varia	bel
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PEOU		(Al Zubaidi Alnsari, 2010)	&	Al-
DEOLI1	M. Cotanada and the Tutanatal and a site in the same day and a site in the same day.			
PEOU1	My interaction with an Internet shopping site is clear and understandable			
PEOU2	It is difficult to learn how to use the Internet to do my shopping activities			
PEOU3	Using the Internet for shopping is (will be) frustrating.			
PEOU4	I find it easy to get Internet shopping sites to do what I want them to do.			

PEOU5	I feel that most Web sites allow easy ordering online.	
PEOU6	I feel that most Web sites allow easy payment	
		(Al Zubaidi & Al-
PU		Alnsari, 2010)
PU1	Using an Internet shopping site would improve my performance in shopping or information seeking (e.g., save time or money)	
	( to	
PU2	Using an Internet shopping site would increase my productivity in shopping or information seeking (e.g., make purchasing decisions or finding product information within the shortest time frame).	
PU3	Using an Internet shopping site would enhance my effectiveness in shopping or information seeking (e.g., getting the best deal or finding the most information about a product).	
PU4	The Internet makes (will make) it easy to do comparison shopping	
PU5	The Internet enables (will enable) me to complete shopping quickly.	
PU6	Overall, I find the Internet useful for my shopping activities	
ATU		(Tran & Nguyen, 2022)
ATU1	You like the idea ofusing Internet toshop fromwebsites/ browsers	
ATU2	Using internet toshop fromwebsites/ browsersshall be a goodidea	
ATU3	Buying goods fromwebsites/ browsersshall be a wisedecision	
ITU		(Al Zubaidi & Al- Alnsari, 2010)
ITU1	I intend to use Internet shopping sites (e.g., purchase a product or seek product information)	
ITU2	I use (intend to use) the Internet frequently to do my shopping	
ITU3	I am willing to pay online	
ITU4	I think it would be very good to use the Internet for my shopping activities in addition to traditional methods	
ITU5	Overall, I like using the Internet for my shopping activities.	

# Methods

A total of 189 respondents in this research questionnaire were distributed to internet users in Indonesia who have Data collection was conducted over three months using purposive sampling to ensure relevance to the research objectives. using purposive sampling to ensure relevance to the research objectives. This study employs a quantitative approach to analyze the influence of perceived risk dimensions on consumer trust and purchase intent

in the context of e-commerce. The variables in this study include Perceived Use, Perceived Usefulness, Attitude Toward Using, and Intention to Use. Data were analyzed using SEM-PLS.

### **Result and Discussion**

This study involved 189 active respondents who were e-commerce users in Indonesia. Based on demographic data, the majority of respondents were female (59.26%), with the largest age group in the range of 20–30 years. Most respondents were students (41.27%) and the dominant users came from the Shopee platform (47.09%). In general, the average value (mean) for all research variables ranged from 3.5 to 4.3 with a standard deviation below 1, indicating that respondents gave a positive assessment of the gamification elements, ease of use, and quality of information on the e-commerce platform they use.

Table 2 Demographic Characteristics of Respondents

Category		Frequency	Percentage (%)
Condon	Female	112	59,26
Gender	Male	77	40,74
	20-25	66	34,92
	26-30	65	34,39
A	31-35	25	13,23
Age	<20	15	7,94
	36-40	9	4,76
	>40	9	4,76
	Bachelor	72	38,1
	Associate Degree	48	25,4
Education	High School	41	21,69
	Master	20	10,58
	PhD	8	4,23
	Student	78	41,27
	Private Sector Employee	73	38,62
Job	Entrepreneur	23	12,17
	Public Sector Employee	9	4,76
	Others	6	3,17
	1-2	69	36,51
	3-5	64	33,86
Experience in e-commerce (years)	<1	29	15,34
	>5	27	14,29
	1 time/week	80	42,33
Chan fuaguangs	1-2 times/month	45	23,81
Shop frequency	>1 time/week	43	22,75
	<1 time/month	21	11,11
	Shopee	89	47,09
	Tokopedia	49	25,93
The e-commerce use	Lazada	23	12,17
	Bukalapak	14	7,41
	Tiktok Shop	14	7,41

Before testing the relationships between constructs in the structural model, a collinearity analysis was conducted to ensure that there were no multicollinearity problems among the exogenous constructs that could affect

the stability of the path estimates. According to Hair (2022), VIF values exceeding 5 indicate potential collinearity issues that may distort model interpretation.

The results of the collinearity assessment in Table 3 show that there is a moderate positive correlation between Attitude Toward Using and Intention to Use (0,347) shows that the more positive users' attitudes toward Shopee are, the greater their intention to use it. There is a moderate to strong positive correlation between Perceived Ease of Use and Attitude (0,423), indicating that the ease of use of Shopee has an impact on the formation of positive attitudes among users. PEOU – ITU has a weak positive correlation (0,185), meaning that the perception of ease does not directly influence the intention to use. There is a moderate positive correlation between Perceived Usefulness and ATU (0,379), indicating that the more useful Shopee is perceived to be, the more positive the attitude of users. Perceived Usefulness and Intention to Use has a moderate positive correlation (0,367), indicating that perceived benefits contribute to usage intention, either directly or indirectly.

Table 3 Collinearity Assessment

	ATU	ITU	PEOU	PU	
ATU		0,347			
ITU					
PEOU	0,423	0,185			
PU	0,379	0,185 0,367			

Notes: ATU=attitude toward use; ITU=intention to use; PEOU=perceived ease of use; PU=perceived usefulness Source: Authors' work (2025)

All constructs in the model have met the criteria for convergent validity, as indicated by AVE values that are all above 0.70. All items have loadings > 0.75 and most are above 0.85. This indicates very strong convergent validity. The factor loadings for each item are also high, indicating that each indicator reflects the construct well. On the other hand, the Composite Reliability (CR) and Cronbach's Alpha values for all constructs indicate very good internal consistency (>0.90). Thus, it can be concluded that the measurement instrument used in this study has met the standards of validity and reliability in the context of Shopee users in Indonesia.

Table 4 Validity and Reliability for Constructs

			Keliability for Construc	
Items	Loadings	AVE	CR	Cronbach's
				alpha
Attitude toward use		0,834	0,938	0,901
ATU1	0 <mark>,</mark> 903			
ATU2	0,922			
ATU3	0,915			
Intention to use		0,741	0,935	0,912
ITU1	0,875			
ITU2	0,786			
ITU3	0,864			
ITU4	0,890			
ITU5	0,885			
Perceive ease of use		0,710	0,936	0,918
PEOU1	0,850			
PEOU2	0,885			
PEOU3	0,890			
PEOU4	0,804			
PEOU5	0,798			
PEOU6	0,822			

Perceive usefulness		0,748	0,947	0,933
PU1	0,884			
PU2	0,901			
PU3	0,825			
PU4	0,851			
PU5	0,897			
PU6	0,829			

Notes: ATU=attitude toward use; ITU=intention to use; PEOU=perceived ease of use;

PU=perceived usefulness Source: Authors' work (2025)

Discriminant validity testing was conducted using two approaches: the Fornell-Larcker Criterion and the Heterotrait-Monotrait Ratio (HTMT). Based on the analysis results, the AVE values of each construct were higher than the correlations between other constructs, indicating good discriminant validity according to the Fornell-Larcker criteria.

Furthermore, all HTMT values were below the threshold of 0.90, confirming that each construct in the model is discriminative and does not overlap conceptually. Thus, it can be concluded that the constructs used in this study fully meet the criteria for discriminant validity.

Table 5 Fornell-Larcker Criterion (HTMT Criterion)

	ATU	ITU	PEOU	PU	
ATU	0,913				
ITU	0,748 <b>(0,824)</b>	0,861			
PEOU	0,733 <b>(0,804)</b>	0,739 <b>(0,805)</b>	0,842		
PU	0,725 <b>(0,785)</b>	0,769 <b>(0,829)</b>	0,818 <b>(0,880)</b>	0,865	

Notes: ATU=attitude toward use; ITU=intention to use; PEOU=perceived ease of use;

PU=perceived usefulness Source: Authors' work (2025)

All hypotheses were accepted because an influence was found. The results show that attitude toward use is related to intention to use ( $\beta$ = 0.347; p= 0.000). Users who have a positive attitude toward using Shopee will have a higher intention to continue using it. Perceived Ease of Use has a relationship with Attitude Toward Use ( $\beta$ = 0.423; p= 0.000). Intuitive interface design and navigation are crucial in enhancing positive attitudes. Perceived Ease of Use has a relationship with Intention to Use ( $\beta$ = 0.185; p= 0.037). The ease of use of Shopee not only shapes attitudes but also directly increases the intention to use. Perceived Usefulness shows a relationship with Attitude Toward Use ( $\beta$ =0.379; p=0.001). Users who feel that Shopee provides real benefits (saving time, money, practicality) will have a more positive attitude toward the app. Perceived Usefulness influences Intention to Use ( $\beta$  = 0.367; p = 0.001). The more useful Shopee is perceived by users, the higher their intention to continue using it. Attitude Toward Use mediates the relationship between Perceived Ease of Use and Intention to Use for using Shopee ( $\beta$ =0.147; p=0.002). Perceived Usefulness indirectly influences Intention to Use through Attitude Toward Use ( $\beta$ =0.131; p=0.030).

Table 6 Effect of endogenous variables

Hypotheses	β	SE	<i>t</i> -value	<i>p</i> -value	Decision
H1 ATU→ITU	0,347***	0,089	3,878	0.000	Supported
H2 PEOU→ATU	0,423***	0,107	3,951	0.000	Supported
H3 PEOU→ITU	0,185**	0,088	2,089	0.037	Supported
H4 PU→ATU	0,379***	0,118	3,213	0.001	Supported
H5 PU→ITU	0,367***	0,111	3,320	0.001	Supported

Notes: ATU=attitude toward use; ITU=intention to use; PEOU=perceived ease of use; PU=perceived usefulness; \*\*\*significant p<0.01; \*\*significant p<0.05.

Source: Authors' work (2025)

Hypotheses	eta	SE	<i>t</i> -value	<i>p</i> -value	Decision
H6 PEOU→ATU→ITU	0,147***	0,047	3,116	0.002	Supported
H7 PU→ATU→ITU	0,131**	0,061	2,170	0.030	Supported

Notes: ATU=attitude toward use; ITU=intention to use; PEOU=perceived ease of use; PU=perceived usefulness; \*\*\*significant p<0.01 (t>1.96); \*\*significant p<0.05.

Source: Authors' work (2025)

The structural model in this study shows adequate and reliable quality. The AVE values for all constructs are above 0.70, indicating very good convergent validity. Additionally, the determination coefficients ( $R^2$ ) for key constructs such as attitude toward use ( $R^2$  = 0.584) and intention to use ( $R^2$  = 0.678) indicate that the model has strong predictive power. The Goodness of Fit Index (GFI) value of 0.691 indicates that the model has good overall fit. This reinforces the finding that the modified TAM model in the context of e-commerce (Shopee Indonesia) can accurately explain user behavior.

Table 7 Goodness-of-fit Index

Constructs	AVE	$R^2$
ATU	0,834	0,584
ITU	0,741	0,678
PEOU	0,710	
PU	0,748	
Average scores	0.758	0.631
$(GFI = \sqrt{\overline{AVE} \ x \ \overline{R^2}} \to)$	0.691	

Notes: ATU=attitude toward use; ITU=intention to use; PEOU=perceived ease of use; PU=perceived usefulness.

Source: Authors' work (2025)

### Conclusion

This study aims to examine and analyze the factors that influence users' intention to use Shopee in Indonesia, using the Technology Acceptance Model (TAM) approach. The main focus of the study is to explore the mediating role of attitude toward use in bridging the relationship between perceived usefulness (PU) and perceived ease of use (PEOU) on intention to use (ITU). The results of the data analysis indicate that all hypotheses proposed are statistically supported. First, both PU and PEOU are proven to have a significant direct influence on attitude toward use, which in turn has a positive impact on intention to use. Additionally, both constructs also demonstrate a direct influence on intention to use, indicating that users not only consider their attitudes but also directly factor in usability and ease of use.

Another important finding is the role of attitude toward use as a partial mediator. The mediation test results show that users' attitudes significantly bridge the influence of PU and PEOU on ITU. This indicates that users' positive experiences with the application—both in terms of ease of use and benefits—contribute to the formation of attitudes that then increase the intention to continue using Shopee. Statistically, this model has excellent validity and reliability. The AVE, Composite Reliability, and Cronbach's Alpha values are all within ideal limits. The high R<sup>2</sup>

value indicates the model's predictive power, while the Goodness of Fit Index (GFI) of 0.691 indicates adequate model fit. Overall, this study reinforces the relevance of TAM in the context of mobile e-commerce and provides empirical evidence that user attitudes are a key factor in shaping loyalty and intention to use the Shopee app in Indonesia.

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