



## Fear of the COVID-19 Pandemic in Driving Mobile Payment Applications Adoption

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### ARTICLE INFO

### ABSTRACT

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*Perceived Fear; Technology Acceptance Model (TAM); Mobile payment applications; COVID-19*

*The purpose of this study is to investigate how the perceived fear of COVID-19 affects the adoption of mobile payment applications. The information was gathered from 500 Indonesian users of mobile payment applications. The Structural Equation Model-Partial Least Square (PLS-SEM) was used to analyze the relationship between variables and test the hypotheses. According to the findings, Two TAM factors are influenced by perceived fear: perceived usefulness and perceived ease of use. The two TAM constructs have a considerable impact on attitude. However, only perceived ease of use has a significant influence on intention to use. Finally, attitude influences the intention to use mobile payment applications. This study will help mobile payment app providers plan services and promote the use of mobile payment apps during the COVID-19 pandemic. This study will also contribute to the literature on mobile payment applications. This study complements the marketing literature in analyzing the adoption of mobile payment applications during the COVID-19 pandemic based on perceived fear of the COVID-19 pandemic.*

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### Introduction

Mobile payment is a relatively new area of research, less explored (Flavian et al., [2020](#); Oliveira et al., [2016](#)). Mobile payment applications can deliver economic inclusion, in particular in rising markets, by presenting monetary offerings to the unbanked and making their lives better (Patil et al., [2017](#)). Because of the many benefits they provide, mobile payment applications allow consumers to be more flexible in their transactions, mainly at some stage in the COVID-19 pandemic (Rafdinal & Senalasari, [2021](#)). The pandemic has occurred in almost every country in the world. This phenomenon urges individuals to stay at home in order to avoid the spread of the COVID-19 virus, encourages people to use mobile payment applications. Thus, this study illustrates, in a limited way, the desire to utilize mobile payment applications during the pandemic. This study will extent to the marketing literature by offering

new insights on the intention to use mobile payment applications at a certain point during the COVID-19 pandemic.

This study used Technology Acceptance Model (TAM) (Davis, [1989](#)) which is the most popular theory for understanding technology uptake. The previous studies used the TAM to explain the technological adoption of mobile payment (Rafdinal & Senalasar, [2021](#); Wiese & Humbani, [2020](#)) and have applied the TAM in analyzing the adoption of technology during the pandemic (Al-Hamad et al., [2021](#); Al-Marroof et al., [2020](#); Rafdinal & Senalasar, [2021](#)). However, an explanation other than TAM is needed to make it more comprehensive. Past studies have researched the perceived fear in the context of technology adoption during the pandemic (Al-Hamad et al., [2021](#); Al-Marroof et al., [2020](#)). Considering the benefits of using TAM in discussing technology adoption and understanding the fear of intent to use mobile payment during the COVID-19 pandemic, this study integrates the role of perceived fear and TAM to analyze the intention of using mobile payment applications. Hence, this study may also help to overcome the shortcomings identified in prior literature.

This study serves as a cohesive research model for describing why people want to utilize mobile payment apps to solve identified gaps. Specifically, The TAM and perceived fear will be used in this study to measure the intention to use mobile payment applications, and the importance-performance map analysis (IPMA) will be used to identify the constructs (attitude and intention to use) which have important low-or-high relativity. This examines the intention to use mobile payment applications in the context of non-users in Indonesia. At some stage in the pandemic, the volume of e-money transactions is growing. The reason that using mobile payment technology will keep rising in the course of this time, it is critical to identify elements that influence the intention to utilize mobile payment applications both conceptually and practically.

## Literature Review

### Technology Acceptance Model (TAM)

The TAM or abbreviation of the Technology acceptance model (Davis, [1989](#)) is adapted from the theory of reasoned action (Fishbein & Ajzen, [1975](#)). The TAM presents perceived ease of use and perceived usefulness as beliefs about how technology influences people's attitudes regarding its use (Davis, [1989](#)). The TAM theory postulates that perceptions about ease of use and value are cognitive elements that determine the popularity of the records system (Agag & El-Masry, [2016](#)). Perceived usefulness and perceived ease of use are elements that influence attitude toward the adoption of a certain technology and, as a result, the purpose for which the technology is used (Davis, [1989](#)). In order to explore the usage of mobile payment applications as a predictor of utilization goal, the current study employs the TA (Rafdinal & Senalasar, 2021).



Perceived usefulness is described right here as the degree to which someone believes that the use of a specific device might enhance someone's task performance (Davis, 1989). Perceived usefulness is a person believes that using a technology or innovation will improve performance (Scherer et al., 2019). Perceived ease of use, in evaluation, refers to the degree to which someone believes that using a selected machine would be free of effort (Davis, 1989). Perceived ease of use is shown to be important in innovation diffusion in widespread (Venkatesh & Davis, 1996). Several researchers have observed that the perceived usefulness and perceived ease of use may be implemented in predicting diverse techniques such as m-wallets (Kumar et al., 2018), short-range communication (NFC) (Flavian et al., 2020), and mobile banking apps (Rafdinal & Senalasar, 2021).

TAM delivers consistent findings for predicting and explaining user adoption of diverse technologies (Jamshidi & Hussin, 2016). It expanded from a strong theoretical foundation and has been extensively studied in a wide range of sectors (Jamshidi & Hussin, 2016). During the COVID-19 pandemic, the TAM is utilized to investigate the intention to use the latest technology (Al-Marouf et al., 2020) and mobile payments (Rafdinal & Senalasar, 2021). For this cause, the TAM is used as one of the key models in this study to predict the intent behind mobile payment applications during the pandemic. Consequently, it demonstrates the significance of this study.

### Perceived Fear

Fear is a crucial adaptive response to survival and is taken into consideration as the primary thing of tension (Yıldırım & Güler, 2020). The concern of the pandemic has many forms, which include the texture of uncertainty, health anxiety, and the hazard to cherished ones and it has raised important issues: the high degree of concern and the excessive opportunity of suffering from the disease (Ahorsu et al., 2022; Gerhold, 2020). Research has claimed that doubts can be felt at any time there may be a real danger and, the fear of the Coronavirus has grown to be persistent and burdensome (Al-Marouf et al., 2020). At first, this fear arose because of the ongoing COVID-19. Of this fear, the public will continue to carry out various preventive activities to suppress the spread of COVID-19, including in transactions. Cashless transactions are considered capable of being a preventive measure against the spread of COVID-19 as an accommodation for reducing the anxiety that occurs (Rafdinal & Senalasar, 2021).

### Hypotheses Development

*Perceived fear and TAM.* The contemporary examination has meant to research the relationship between the use of TAM and the outside aspect of perceived fear (Al-Marouf et al., 2020). At first, this fear arose because of the ongoing COVID-19. Of this fear, the public will continue to carry out various preventive activities to suppress the spread of COVID-19, including in transactions. Cashless transactions are considered



capable of being a preventive measure against the spread of COVID-19 as an accommodation for reducing the anxiety that occurs (Rafdinal & Senalasar, [2021](#)). People are looking for mobile payment applications that can support cashless transactions and is also able to provide benefits (usefulness) and is easy to use. Therefore, The investigation is an attempt to overcome the TAM model's shortcomings, which is an application of external elements that might be context-specific (Tarhini et al., [2015](#)). With the aid of exploring the effect of perceived fear in the TAM model, specifically perceived usefulness and perceived ease of use together.

H1: Perceived fear positively influences perceived usefulness

H2: Perceived fear positively influences perceived ease of use

*Perceived usefulness and perceived ease of use.* Perceived usefulness mentions that perceived usefulness influences attitude and behavioral intentions both immediately and circuitously and can impact the consumer reputation of systems due to the reinforcement value of outcomes (Igbaria et al., [1994](#)). It was shown that perceived usefulness is a major predictor of use behavior and intentions. It has been noted that perceived usefulness appears to have a stronger and more consistent link with use intentions than other factors mentioned in the research, including attitude (Davis, [1989](#)). Perceived ease of use is a predictor of intention or behavior (Davis, [1989](#); Venkatesh, [2000](#)). Primarily based on the preceding assumption, when people find helpful technology that is simple to use, they are more likely to have a favorable attitude toward the technology. Hence, the user's perception of its use is clear. Similarly, when users understand that technology is beneficial and perceive it as useful, they will have a positive attitude to the intent of the technology. Based on this assumption, these are [hypothesized](#):

H3: Perceived usefulness positively influences attitude

H4: Perceived usefulness positively influences intention to use

H5: Perceived ease of use positively influences attitude

H6: Perceived ease of use positively influences intention to use

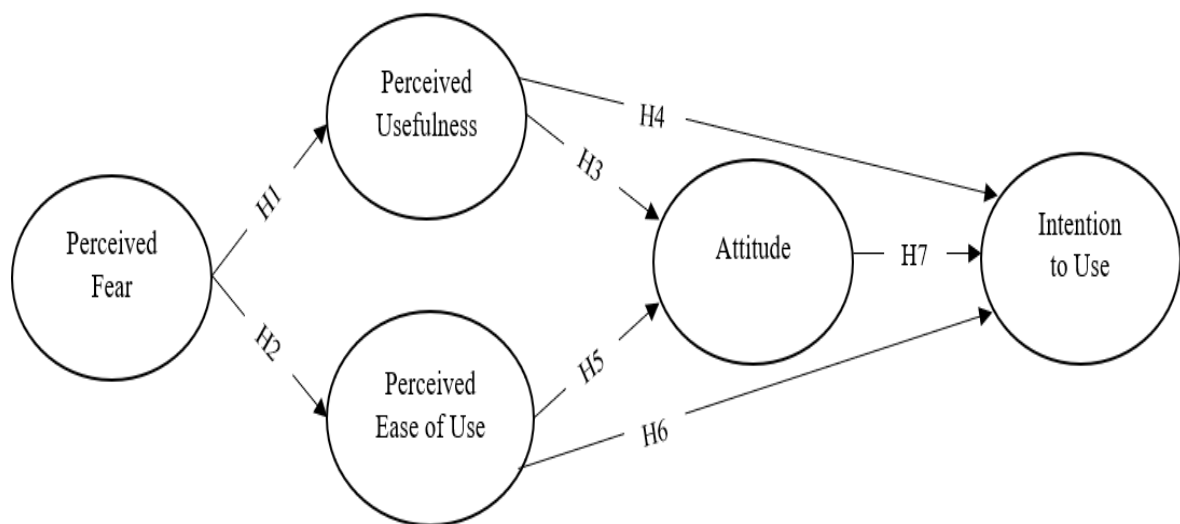
*Attitude.* Attitude as the beliefs that a person has associated with the effects so one can be provided through the usage of the software of sure behaviors, and his evaluation of viable effects (Ajzen, [2012](#)). According to the Technology Acceptance Model (Davis, [1989](#)), each perceived usefulness and perceived ease of use are motivators of customer attitude toward the intention of new technology or system (Nguyen et al., [2019](#)). The TAM is commonly used to characterize people's attitudes and intentions in online transactions, such as mobile payment (Verma et al., [2019](#); Wiese & Humbani, [2020](#)). Consumers will have a positive attitude toward the usage



intention of a product when they perceive devices related to the internet are smooth to function (Nguyen et al., 2019). The effective relationship between attitudes toward intention to use mobile payment services is proven in previous studies (Liébana-Cabanillas et al., 2018; Ting et al., 2016; Verma et al., 2019). Attitude is a critical predictor of desire to utilize a payment device (Liébana-Cabanillas et al., 2018). Therefore, this implies that there is a relationship between mobile payment software users' emotions and their willingness to use (Rafdinal & Senalasar, 2021). Based on this assumption, this is hypothesized:

H7: Attitude positively influences intention to use.

Figure 1 depicts a conceptual model of the implementation of the literature review and hypotheses development. Perceived fear behaves as a basis for the intention to use mobile payment during the COVID-19 Pandemic which has a direct effect on the TAM (H1 and H2). The TAM explains the attitude toward intention to use mobile payment applications (H3 - H7).



**Figure 1** Research Model

## Method

### Sampling and Data Collection

To achieve the goal, this study used the purposive sampling approach. An online questionnaire was used for non-users of mobile payment applications in many locations of Indonesia to analyze each item in the perceived fear and TAM. The data were collected over a half-month from January to February 2022. The researchers ensure that respondents were not users of the intended mobile payment applications



according to the purpose of this study and did this through control questions on the questionnaire. The process obtained a convenience sample of 500 respondents. A minimum sample size is required by The Partial Least Square Structural Equation Model (PLS-SEM). To calculate the sample size based on the statistical power, G\*power was conducted. This sample's statistical power was 0.95, which was greater than the minimum threshold of 0.8 (Carranza et al., [2020](#); Hair et al., [2019](#)). As a result, the sample is deemed acceptable.

The respondent's demographic present there was the majority of gender is dominated by men (52.4%), and women (47.6%). Regarding age, respondents aged 23 - 28 years old dominated in this study with a total of (50%), aged 17 - 22 years old (37.6%), 29 - 35 years old (7.6%), and over 35 years (4.8%). By education level, high school graduates (40.8%), diploma graduates (12%), bachelor graduates (43.2%), master graduates (3.2%), and others (0.8%). Regarding occupation, most of the respondents have jobs as private employees (47.2%), followed by students (31.6%), entrepreneurs (10%), others (9.2%), and government employees (2%). The largest number of respondents who have income above IDR 5.000.000 (44.4%), followed by the income of IDR 1.000.000 up to IDR 5.000.000 (34.8%), IDR 500.000. up to IDR 1.000.000 (12%), and below IDR 500.000 (8.8%). All 100% of respondents reported they have never used mobile payment applications.

## Research Instrument and Measurement

The constructs of this study were measured by a Likert scale which ranged from 1 to 5 with the descriptions 1 is strongly disagree to 5 is strongly agree. The questions about demographics: gender, age, level of education, occupation, and income. The respondent's use of mobile payment was also included. The construct of perceived fear consists of four items (Al-Marouf et al., [2020](#); Yıldırım et al., [2021](#)) which analyzed the fear in the context of mobile payment used during the Pandemic. Furthermore, the constructs of TAM, perceived usefulness consists of three items while perceived ease of use consists of five items (Davis, [1989](#); Rafdinal & Senalasar, [2021](#)). In the context of measuring the attitudes of respondents, the five items consist (Rafdinal & Senalasar, [2021](#); Verma et al., [2019](#); Wiese & Humbani, [2020](#)). Four items consist of the intention to use mobile payment applications (Muñoz-Leiva et al., [2017](#); Rafdinal & Senalasar, [2021](#); Verma et al., [2019](#)).

## Data Analysis

This study was conducted The Structural Equation Model-Partial Least Square (PLS-SEM) technique due to a comprehensive multivariate technique for statistical evaluation that could concurrently have a look at every courting between variables inside the research framework including the measurement and structural model evaluation (Hair et al., [2019](#)). This study conducted SmartPLS 3.3.9 software. A two-



step approach was applied by following the PLS-SEM analysis literature to evaluate the measurement and structural model (Hair et al., 2019). In terms of evaluating the reliability and validity of the constructs, the measurement model was assessed, while the structural model assessed  $R^2$ ,  $f^2$ ,  $Q^2$ , and the path coefficients (Hair et al., 2019). Subsequently, to determine the performance of each independent construct and which constructions are highly relevant to the dependent construct, the IPMA was used (Henseler et al., 2015).

## Result and Discussion

### Measurement Model

The reliability scale in every construct was first analyzed to evaluate the measurement model. The loadings within the respective constructs were conducted in assessing the reliability of the item individually. The loadings value must be higher than 0.708 (Hair et al., 2019). This study indicates all loadings are greater than 0.708. Therefore, it is required to validate the findings of several measurement indices for the item constructs (Hair et al., 2019). The composite reliability (CR) was calculated in assessing every reliability of each construct individually. The Composite Reliability (CR) value must exceed 0.70 to confirm the internal consistency of reliability (Hair et al., 2019). These results are shown in table 1.

Convergent validity was assessed by assessing the Average Extracted Variance (AVE) and must have a higher value than 0.50 or higher to indicate all the constructs describe at the minimum 50 percent of the variance items and to such an extent that convergent can be stated to be valid (Hair et al., 2019). The results show that all of the AVEs for each component are more than 0.50 (value of 0.572 – 0.638). From the result of AVE, decidedly the convergent validity is satisfactory. Furthermore, To achieve the statistical value, each loading was calculated using the bootstrap approach with 5.000 subsamples (Hair et al., 2019). The results present all loadings are significantly in the 99% of confidence level.

To analyze the discriminant validity, the Fornell-Larcker criterion using in the further step. The square root of AVE is compared to the correlation of latent constructs (Hair et al., 2019). A latent construct should explain more of its own indicator's variance rather than the variance of other constructs. As a result, the square root of the AVE of each construct should be larger than the correlations with other constructs (Hair et al., 2019). If the value is less than 0.90, the discriminant validity is said to be good and valid (Henseler et al., 2015) or 0.85 (Hair et al., 2019). This study reported the result is still below the cut-off value, indicating high reliability and validity (Table 2).



**Table 1. Measurement Model**

Constructs/items	Outer loading	$\alpha$	$\rho A$	CR	AVE
<i>Perceived Fear</i>		0.633	0.636	0.800	0.572
Avoid close contact in transaction	0.760				
Reduce the fear of being infected with the COVID-19 virus	0.750				
Preventive measure	0.759				
<i>Perceived Usefulness</i>		0.672	0.674	0.820	0.604
Mobile payment applications facilitate transactions	0.748				
Mobile payment applications can help with payment processing	0.793				
Mobile payment applications save user's time in the transaction	0.790				
<i>Perceived Ease of Use</i>		0.763	0.765	0.849	0.584
Easy to learn to use	0.760				
Easy to become proficient in the usage	0.742				
Easy to use	0.802				
The user's interaction is clear and easy to be understood	0.752				
<i>Attitude</i>		0.809	0.810	0.875	0.636
The usage is a great concept all through the COVID -19 pandemic	0.774				
Mobile payment applications are positive in the user's opinion	0.796				
Mobile payment applications will be useful during the COVID-19 pandemic	0.812				
During the COVID-19 epidemic, mobile payment applications might be interesting to use.	0.808				
<i>Intention to Use</i>		0.811	0.812	0.876	0.638
Intent to use mobile payment applications instead of paying manually during the pandemic	0.819				
Intend to continue using mobile payment applications throughout and beyond the pandemic	0.775				
Mobile payment applications deserve to be recommended to others	0.798				
Interested in using the applications	0.802				

Note:  $\alpha$  = Cronbach's Alpha;  $\rho A$  = Dijkstra-Henseler's rho; CR = Composite Reliability; AVE = Average Variance Extracted

**Table 2. Discriminant Validity (Fornell-Larcker Criterion)**

Latent Construct	Latent Constructs				
	Attitude	Intention to Use	Perceived Ease of Use	Perceived Fear	Perceived Usefulness
Attitude	0.798				
Intention to Use	0.794	0.799			
Perceived Ease of Use	0.718	0.667	0.764		





Latent Construct	Latent Constructs				
	Attitude	Intention to Use	Perceived Ease of Use	Perceived Fear	Perceived Usefulness
Perceived Fear_	0.371	0.351	0.310	<i>0.756</i>	
Perceived Usefulness	0.605	0.544	0.654	0.429	<i>0.777</i>

**Note:** The square root of AVEs presented diagonally in italic.

## Structural Model

Collinearity has to be evaluated to verify that the regression effects were not biased, before analyzing the structural relationships (Rafidinal & Senalasaki, 2021). The Variance Inflation Factor (VIF) value less than 3 is considered desirable (Hair et al., 2019). This result found no collinearity due to the VIF value not exceed than 3 (Table 3). The evaluation of the path coefficient is done through a 95% confidence bootstrap interval using 5000 samples to assess the significance of the indicators and path coefficients (Hair et al., 2019). Before testing the hypotheses, the model's quality was evaluated. The coefficient of determination ( $R^2$ ), effect size ( $f^2$ ), cross-validated redundancy ( $Q^2$ ), and path coefficient were evaluated as the criteria (Hair et al., 2019).  $R^2$  measures all endogenous structures were considered to be 0.75 (substantial), 0.50 (moderate), and 0.25 (weak) (Hair et al., 2019). The result of  $R^2$  of perceived usefulness is 0.184, perceived ease of use 0.096, and intention to use 0.651, each means the variables are influenced by exogenous with criteria 18.4% (weak), 9.6% (weak), and 65.1% (moderate).

The effect size ( $f^2$ ) turned into evaluated because it is miles one of the supporting standards to decide whether or not the independent variable indicates a particular effect on the established variable (Hair et al., 2014). In assessing the value of the effect size, there are three categories; 0.02 (small), 0.15 (medium), and 0.35 (large) (Cohen & Levesque, 1990; Hair et al., 2019). The relationship between perceived fear on perceived usefulness (0.225) has a medium effect size. While the relationship between attitude on intention to use (0.531) and perceived ease of use on attitude (0.404) shows a large effect size. In addition, the relationship between perceived usefulness on attitude shows a small effect size with a value of 0.070. The small effect size was also found in the relationship between perceived ease of use on intention to use (0.039) and perceived fear on perceived ease of use (0.107). However, the relationship between the result of perceived usefulness on intention to use with a value of 0.002 does not have an interpretation of the effect size because the values are below 0.02. The further step is to evaluate predictive relevance by  $Q^2$  value. This value is greater than zero, indicates that the proposed research model has predictive relevance. Primarily based on the results acquired, it can be stated that all predictions are relevant because they have values above zero (Table 3). Table 4 displays the results of hypothesis testing



using one-tailed testing. If the coefficients are assumed to have a positive impact, one-tailed testing is strongly advised.

**Table 3. Structural Model**

Relationships	$\beta$	R <sup>2</sup>	R <sup>2</sup> Adjusted	Q <sup>2</sup>	f <sup>2</sup>	VIF
Perceived Fear_ -> Perceived Usefulness	0.429	0.184	0.181	0.105	0.225	1.000
Perceived Fear_ -> Perceived Ease of Use	0.310	0.096	0.093	0.054	0.107	1.000
Perceived Usefulness -> Attitude	0.236	0.548	0.544	0.344	0.070	1.747
Perceived Usefulness -> Intention to Use	0.038	0.651	0.647	0.408	0.002	1.870
Perceived Ease of Use -> Attitude	0.564				0.404	1.747
Perceived Ease of Use -> Intention to Use	0.182				0.039	2.452
Attitude -> Intention to Use	0.640				0.531	2.212

**Note(s):** n= 5.000 subsamples; \*\*\*p< 0.001; \*\*p< 0.01; ns: not significant (one - tailed test); VIF: Variance Inflation Factor.

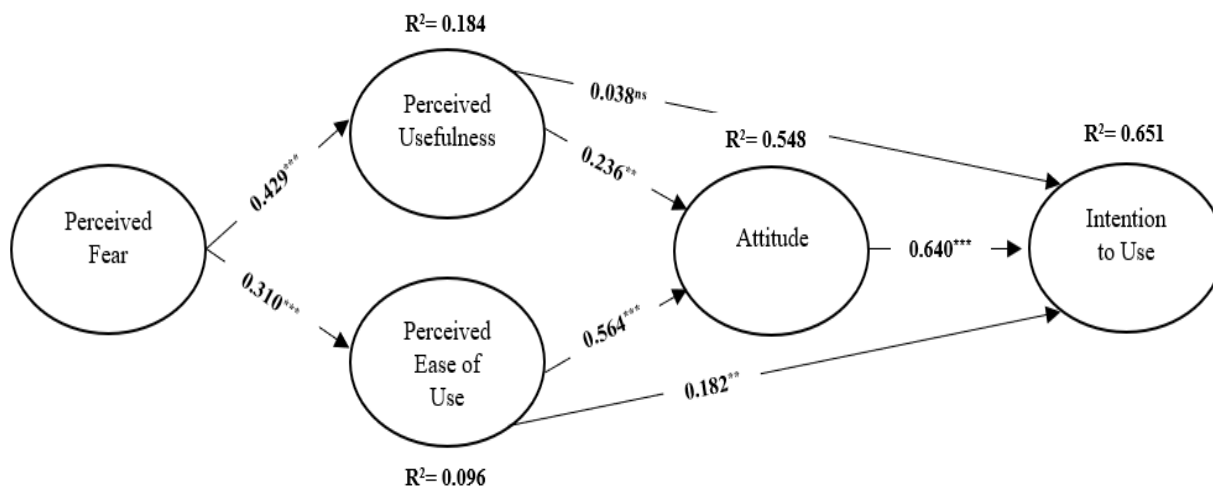
**Table 4. Hypotheses Testing Results**

Relationships	$\beta$	T Value	Confidence Interval (95%)	Supported
H1: Perceived Fear_ -> Perceived Usefulness	0.429	4.664***	[0.281;0.561]	Yes
H2: Perceived Fear_ -> Perceived Ease of Use	0.310	4.348***	[0.188;0.413]	Yes
H3: Perceived Usefulness -> Attitude	0.236	3.431**	[0.117;0.371]	Yes
H4: Perceived Usefulness -> Intention to Use	0.038	0.063 <sup>ns</sup>	[-0.057;0.134]	No
H5: Perceived Ease of Use -> Attitude	0.564	9.428***	[0.456;0.665]	Yes
H6: Perceived Ease of Use -> Intention to Use	0.182	2.708**	[0.074;0.297]	Yes
H7: Attitude -> Intention to Use	0.640	10.183***	[0.538;0.738]	Yes

**Note(s):** n= 5.000 subsamples; \*\*\*p< 0.001; \*\*p< 0.01; ns: not significant (one - tailed test);

Perceived fear has a positive effect on perceived usefulness ( $\beta = 0.429$ ,  $t = 4.664$ ) and perceived ease of use ( $\beta = 0.310$ ,  $t = 4.348$ ); therefore, H1 and H2 are accepted. Perceived usefulness has a positive effect on attitude ( $\beta = 0.236$ ,  $t = 3.431$ ) but gives no significant effect on the intention to use ( $\beta = 0.038$ ,  $t = 0.063$ ); therefore, H3 is accepted and H4 is rejected. Perceived ease of use has a positive effect on attitude ( $\beta = 0.564$ ,  $t = 9.428$ ) and intention to use ( $\beta = 0.182$ ,  $t = 2.708$ ); H5 and H6 are accepted. Attitude also has a positive effect on the intention to use ( $\beta = 0.640$ ,  $t = 10.183$ ), therefore H7 is accepted in Figure 2.





**Figure 2** Result Model

### Importance – Performance MAP Analysis

The IMPA of the attitude and intention to use variables are shown in Table 5. The IMPA's purpose is to find constructs that are extremely important for the target construct yet have a noticeably low performance (Henseler et al., 2015). The first IPMA is the attitude construct. The Perceived fear construct has a higher performance than perceived usefulness and perceived ease of use, with the value of 81.444. However, the perceived fear construct has an importance value of 0.276, higher than perceived usefulness but lower than perceived ease of use. In the TAM, perceived ease of use has lower performance (47.613) than perceived usefulness (66.352). However, perceived ease of use has a higher importance value (0.564) than perceived usefulness (0.236), but both constructs have nearly the same importance. This means the perceived ease of use construct should be maximized because it has the largest importance with the average performance (Figure 3).

The intention to use construct is the second IPMA. As previously stated, the perceived fear construct has a higher performance than the two constructs of TAM. The perceived fear construct has a higher level of importance (0.250) than perceived usefulness (0.189) but is lower than perceived ease of use (0.544). The attitude construct has a higher importance (0.640) compared to the TAM and perceived fear constructs. The attitude has an average performance value (33.577) compared to other constructs; perceived fear (81.444), perceived usefulness (66.352), and perceived ease of use (47.613). This implies that the attitude construct must be improved because it has the largest importance with the average performance (Figure 4).



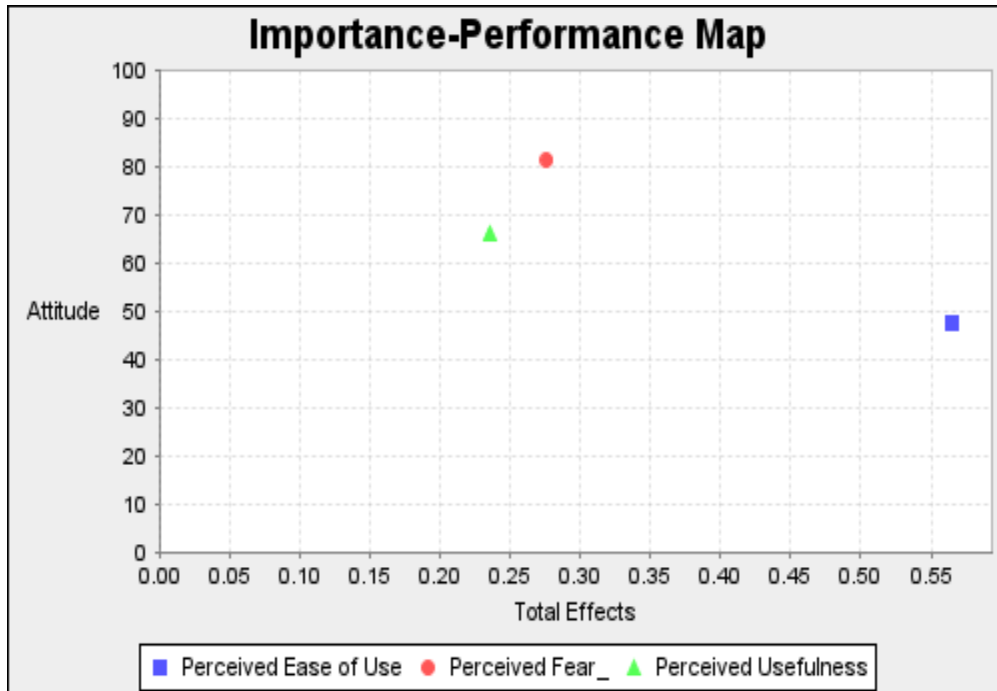


Figure 3. IPMA of Attitude

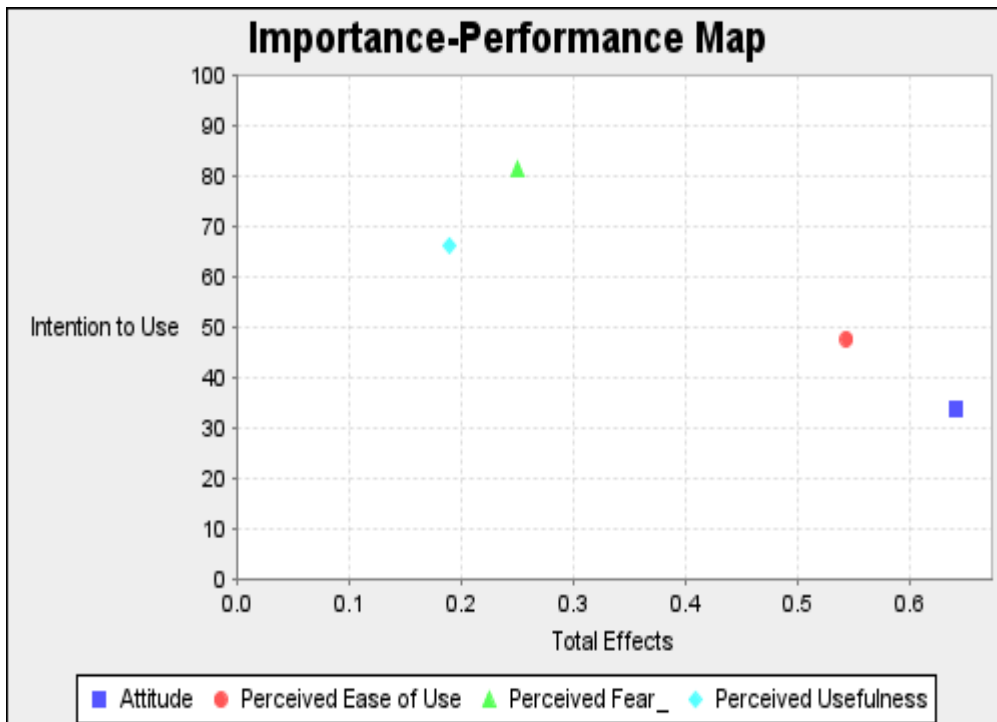


Figure 4. IPMA of Intention to Use



**Table 5.** IPMA of Attitude and Intention to Use

Constructs	Attitude		Intention to Use	
	Importance	Performance	Importance	Performance
Perceived Fear	0.276	81.444	0.250	81.444
Perceived Usefulness	0.236	66.352	0.189	66.352
Perceived Ease of use	0.564	47.613	0.544	47.613
Attitude	-	-	0.640	33.577

## Discussion and Theoretical Implication

This study supports prior studies by demonstrating that combining perceived fear and TAM into a single structure can predict the intention to use mobile payment applications (Al-Hamad et al., 2021; Al-Marroof et al., 2020). The two TAM constructs measure the specifically in certain systems (Davis, 1989; Rafdinal & Senalasar, 2021), while the perceived fear plays an important role in the study on intention to use mobile payment applications in the context of the COVID-19 pandemic (Al-Hamad et al., 2021; Al-Marroof et al., 2020). Even though there have been studies related to perceived fear and TAM, the model used in this study is and has been validated and proven to explain customer intention to use mobile payment, which contributes to a better understanding of consumer behavior and technological adoption during the COVID-19 pandemic.

The two TAM constructs are essential constructs in forming attitudes regarding mobile payment applications. The more users who find mobile payment apps useful and easy to use, the more favorable their attitude about utilizing them becomes, this is supported by previous studies (Liébana-Cabanillas et al., 2018; Rafdinal & Senalasar, 2021). Additionally, the result shows that attitude affects the intention to use (Rafdinal & Senalasar, 2021; Verma et al., 2019). In the case of a pandemic, the perceived fear of catching COVID-19 influences the intention to utilize technology (Al-Hamad et al., 2021; Al-Marroof et al., 2020). These aspects are related to the quality of technical (Rafdinal & Senalasar, 2021). In influencing the intention to use mobile payment applications, the results emphasize the urgency of technical issues (Rafdinal & Senalasar, 2021). People are required to keep social distancing during the COVID-19 pandemic, the mobile payment applications assist it (Flavian et al., 2020). Consequently, It may be stated that mobile payment applications might be more widely used without difficulty if they are useful and easy to use throughout the pandemic (Rafdinal & Senalasar, 2021). This study extends to the literature by highlighting the influence of two TAM constructs on attitude and intention to use mobile payment applications during the COVID-19 pandemic.

However, this study indicates that perceived usefulness does not have a positive effect on the intention to use. These results are in line with the results that perceived



usefulness has no significant effect on the intention to use (Ramayah & Ignatius, 2005). This shows that some mobile payment applications in developing countries such as Indonesia are still unable to provide benefits to consumer expectations such as being able to make transfers to another bank, payment later feature, more places to top up balance, and added savings feature. The results show evidence that the more an application can provide usefully, the more they will intend to use the application. It is very important to know that they will evaluate the usefulness of perceived usefulness in the intention to use mobile payment applications (Sohn, 2017). At the stage during the pandemic, it should be common to use new technology that can provide them with “useful”. These results reveal that user characteristics will determine that it is important in evaluating user perceptions regarding the usefulness of the application (Sohn, 2017).

Perceived fear has a significant effect on the two Technology Acceptance Model (TAM) constructs, perceived usefulness and perceived ease of use. Previous study confirms up these findings that stated the effect of perceived fear on perceived usefulness and perceived ease of use (Al-Hamad et al., 2021; Al-Marroof et al., 2020). These results prove that from fear of the spread of the COVID-19 virus in conducting transactions during the pandemic, consumers will look for applications that can assist them in facilitating the transaction process on the condition that the applications can provide useful and easy to use. Perceived fear is the dominant factor in this study. This is also similar to that empirically that the fear felt at the time of disease (in this case COVID-19) should be regarded as an essential aspect in any adoption model (Al-Marroof et al., 2020). Moreover, the variables of perceived usefulness and perceived ease of use play a role in the intention to use mobile payment applications (Davis, 1989). Therefore, the most important thing is that mobile payment applications should be provided with usefulness and ease of use.

## Conclusion

Regarding the IPMA results, it can be stated that perceived ease of use has the greatest level of importance in their effect on attitude. Meanwhile, attitude has the greatest level of importance on intention to use. Hence, to perceived ease of use and attitude, the aspects related to perceived ease of use and attitude can be enhanced because they are the most important and average performance. Perceived ease of use is important for improving attitudes. To attract more people to utilize mobile payment applications, need to take practical processes such as training and guidance to improve their capabilities, perceived usefulness, and how easily the mobile payment service will lead to better absorb mobile payments among clients (Mutahar et al., 2018). The support of the right practical processes can improve the intention to use mobile payment applications in serving to attract new potential users.



In the TAM model, perceived usefulness and perceived ease of use have an important role in attitude and the long-term effect of the intended use of mobile payment applications during the pandemic. Perceived usefulness performs an important function in customer interactions with mobile payment applications (Rafdinal & Senalasaki, [2021](#)). Merchants believe that the goal and success of brand-new technologies, like as mobile payment applications, are based on value-added services provided by the technology (Singh & Sinha, [2020](#)). Low processing costs, reward points, cashback, client data control, and other system-related aspects such as flexibility and operability can all be used to evaluate this service (Dave, [2016](#)). Merchants feel mobile payment applications are faster, more useful, high-performance, and more convenient when processing payments; In the long run, it enhances productivity and turnover. (Liébana-Cabanillas et al., [2018](#)). They also confirmed that recognized technologies with great awareness and knowledge, felt useful and had a significant effect on perception (Singh & Sinha, [2020](#)). In addition, their use of the system will be influenced by peer influence, existing facilitation conditions (help desk, online support services, and infrastructure resources (Chen & Aklidikou, [2019](#)). To influence consumers to use mobile payments find it useful for enabling better user experience with the services mentioned in the above factors. As mobile payment applications benefits, they are supporting COVID-19 circumstances requiring social distancing, benefits, and simplicity of use must function more successfully than traditional payment systems.

Perceived Fear plays an important role in the study of intention to use mobile payment applications in the context of the COVID-19 pandemic. Fear concerns about downloading and using mobile payment applications can provide them in conducting safe transactions during the COVID-19 pandemic. The solution to this challenge is to give an awareness of how to reduce anxiety and enable good communication and information exchange in order to use mobile payment applications throughout the pandemic. To lessen fear and panic, it is critical to discover and support educated and credible sources of information and advise concerning mobile payment applications. It is also critical for individuals to "hear" messages that make more sense about COVID-19 and respond more methodically (Ng & Kemp, [2020](#)). Their reactions to learn about the pandemic and ideas about it will be influenced by their level of confidence in information sources, including how they will choose the right information in using mobile payment applications during the covid-19 pandemic (Ng & Kemp, [2020](#)).

In convincing them to diversify from conventional payment to mobile payment applications during the pandemic, Several stakeholders, including the government and financial institutions, banks, network providers, and merchants, must cooperate together. These components need to contribute to and qualify the environment to stimulate the usage of mobile payment applications in all regions, especially in



Indonesia (Rafdinal & Senalasar, [2021](#)). Lastly, merchants must entice customers to adopt mobile payments while still providing a nice transaction experience.

### Limitations and Future Research

This study was able to extend our understanding of the use of mobile payment applications during the COVID-19 pandemic, especially mobile payment applications. However, several limitations must be recognized. First, the R square value for perceived usefulness and perceived ease of use are still not satisfactory. There are still many other factors that cause the perceived usefulness and perceived ease of use are still not satisfactory towards intention to use mobile payment applications during the pandemic. Therefore, it is recommended for further research to consider using other technology intention models to explain perceived usefulness and perceived ease of use toward intention to use. Each mobile payment applications have different features and technologies in the context of usefulness and ease of use that will affect user intentions. Future study is planned to focus on the critical characteristics of mobile payment applications in order to assess overall use intentions. Second, user characteristics are no longer being investigated in this study. They will determine the technology's readiness. Further study is expected to distinguish user characteristics and examine their influence on the intention to utilize mobile payment applications. Third, the variables measured in this study are still limited. Therefore, future research is also recommended to expand the variables that measure attitudes and intentions toward mobile payment applications. Fourth, the results of this study can be expanded through the context of other mobile payment applications.

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