



# Driving Factors for Digital Technology Innovation in Financial Markets in Indonesia

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**Abstract.** This study aims to investigate the relationship between Perceived Usefulness and Perceived Risk on Intention to Use mediated by attitude on the use of Fintech with the Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) theoretical approaches. The testing of the model used primary data, namely by distributing online questionnaires using the google form application. The respondents were 202 banking and marketplace services users domiciled in the Greater Jakarta area (Jabodetabek). Data were collected using the non-probability sampling method data analysis using the multiple regression method with the Smart PLS version 3.0 program. The study results show that Perceived Risk and Perceived Usefulness positively affect Intention to Use and attitude mediates the relationship between Perceived Risk and Perceived Usefulness on Intention to Use. This research is the first attempt to use digital banking service users simultaneously in Indonesia with two theoretical approaches.

**Keywords:** Perceived risk · perceived usefulness · attitude · intention to use · fintech

## 1 Introduction

The banking industry in Indonesia has been using mobile and internet banking services as their facilities. The use of technology in the financial system has resulted in innovations resulting in new products, services, technologies, and/or business models. At the macro level, it impacts monetary stability, financial system stability, efficiency, smoothness, security, and reliability of the payment system. People can enjoy financial services or services easily. In addition, work-related to financial transactions such as payments, loan applications, or credit can be done more easily and quickly. Thus, fintech is expected to strengthen the country's economy.

The most dominant fintech business model in Indonesia until the end of the second quarter of 2020 was online loans at 44%, followed by the Digital Financial Innovation (IKD) at 24%, digital payments at 17%, and crowdfunding service at 1%. During the Covid-19 pandemic, the fintech industry is considered a sector that could survive. People's lifestyles during the pandemic tend to change. Restrictions on activities outside the home cause people to carry out financial transaction activities, such as shopping, paying

bills, and even applying for loans. Based on the 2019/2020 Aptech Member Survey Annual Report, it is known that the number of electronic money instruments reached the highest point of 412,055,870. The cumulative transaction value increased rapidly from IDR 47 trillion in 2018 to IDR 145 trillion in 2019 and IDR 93 trillion in January–June 2020. However, the SME sector during the Covid-19 pandemic has experienced a negative impact.

Decisions to utilize information technology for a payment transaction, otherwise known as financial technology (FinTech), can be viewed from the Theory of Acceptance Model (TAM) perspective. The basic concept of TAM is the attitude of management in accepting a fintech innovation adoption will be quickly accepted if the fintech innovation follows what is needed (perceived usefulness) and easy to apply (perceived ease of use) [1]. TAM explains that people will use information technology systems if they are easy to use and follow what the organization needs. According to Morris [2], a fintech application is easy to use (usefulness) if management believes that using new technology will improve organizational performance. In addition, the application is easy to use if the management believes that using the new technology will avoid difficulties or the risk of failure is low. Thus, the perception that fintech provides good benefits will lead to a desire to adopt fintech. Phuc et al. [3] explain that if fintech is useful and improves organizational performance, it will encourage managers to use fintech services and vice versa. Fintech innovations are not always easy to apply. Ryu [4] explains that innovation can cause problems, such as the risk of losing money, incurring additional costs, loss of user data, and uncertain legal settlements. If the problem is easy to solve, it will affect the user's attitude (perceived risk) to use it.

This study aims to investigate the relationship between Perceived Usefulness and Perceived Risk on Intention of Use mediated by attitude when using Fintech. The approach is problem-solving using TAM. The novelty of this study is placing the attitude variable as a mediating variable.

TAM was developed from the Theory of Reasoned Action (TRA), which management uses as a basis in adopting an information system technology. TAM introduces two key variables: perceived ease of use and perceived usefulness, as aspects of assessing user acceptance of information technology by management [1]. The level of usefulness of fintech is associated with its impact on company performance, while the level of convenience is associated with the risks posed by fintech [5]. Management will seek more information to reduce risk. Information seeking is a strategy to reduce risk to a manageable level [6]. Perceived risk from online transactions is the customer's belief about the negative consequences that may occur as a result of conducting online transactions [7].

Risk consists of two dimensions: uncertainty and consequences [8]. Uncertainty is something from the future that is unknown, uncontrollable, and predictable. At the same time, the consequence results from an action or something that must be borne after doing an action [7]. Risks that may arise are leaking personal data, lost funds, and fees that may occur after the transaction. To address this, customers seek more information to reduce risk. Information seeking is a strategic action to reduce risk to a manageable level. From the quality of information collected, management will have a level of perception (perceived risk) [6]. The benefits and risks of Fintech adoption can be considered beliefs (positive and negative) that determine users' attitudes, intentions, and action [9].

Information technology development has revolutionized the financial market by adopting information technology in the financial market (fintech) so that transaction processes are more efficient and effective. According to Ryu [9] and Chuen and Teo, [10], fintech combines financial services with information technology innovation to make financial services [11]. Perceived risk is a form of management distrusting uncertainty and the possibility of negative consequences related to fintech adoption. The perceived risk depends on the user because each user has a different perception of risk. Risk factors can be a barrier for users in deciding whether to use fintech services [12]. Perceived risk is the main factor that negatively affects technology adoption [13]. Adopting fintech has financial, legal, security, and operational risks [9]. Attitude refers to the user's subjective judgment and personal inclination associated with something [14, 15]. Attitudes toward the system used TAM to assess the impact experienced by management when using a particular system in their work Davis [1].

The intention is the driving force of a person to perform a certain behavior [15]. Based on the TAM model, the intention to use fintech is the impetus for the actual use of information system technology applied to the financial system [1]. Therefore, the intention to use fintech is used to determine how strong the attitude of acceptance of a new technology adopted in the financial market is. According to the perceived risk theory, risk consists of two dimensions: uncertainty and consequences that can occur in the future from a decision made now [8]. The consequence is the result of the action that must be borne after doing an action [7]. Management can assess the risk. The assessment results determine user attitudes which in turn lead to the intention to adopt fintech [9]. Perceptions that arise can be in a negative attitude towards their desire to adopt fintech [12]. Financial and privacy risks are often felt by fintech users [12]. Therefore, perceived risk is an important factor that has a negative impact on the intention to use financial technology services or fintech [12].

Hypothesis 1: Perceived risk has a negative effect on the intention to use fintech services.

Forsythe et al. [16] state that the perceived risk of fintech could be the risk of company information' misuse when using fintech services. Fintech usually involves big data, the Internet of Things, cloud computing, and some potential risks of leaking corporate data [15]. Therefore, perceived risk will affect the management to use fintech services [9]. Perceived risk can influence management attitudes through their trust in fintech services, whereas trust is a factor that influences users to adopt fintech services. Fintech service providers can reduce the perceived risk of their customers by providing users with accurate information about fintech products and services. Thus, it can increase users' willingness to use fintech services [9].

Hypothesis 2: Perceived risk affects attitudes toward the adoption of fintech services.

Perceived usefulness can be understood as the extent to which users believe that technology will improve their performance [1]. Users will be interested in using fintech services if they believe they will bring several benefits and increase their work efficiency. It is in line with the research of Phuc et al. [3], which states that perceived usefulness has a positive impact on intentions to use fintech.

Hypothesis 3: Perceived usefulness has a positive effect on the intention to use fintech services.

Perceived usefulness can be interpreted that if users feel the benefits of using new technology, the user's attitude towards the technology will be positive. If the user has high perceived usefulness of fintech services, the user's attitude towards fintech will also be higher because he feels the benefits of fintech that support his performance, and vice versa [9]. The use or benefit of fintech is perceived by its users from the capabilities offered by fintech services to improve the performance of its users in carrying out tasks.

Hypothesis 4: The perceived usefulness of fintech has a positive effect on attitudes related to the adoption of fintech services.

Based on the TAM theory, it is known that a positive attitude towards new technology is the driving factor for the intention to adopt the technology [1]. TAM illustrates a positive correlation between user attitudes towards certain technologies and their adoption intentions [9]. In contrast, the user's attitude can be influenced by various factors, such as the benefits and risks of using the information technology system. If the user has a positive attitude towards fintech services, the intention will appear to use the fintech service. A positive attitude will lead to a positive intention. However, users will also not intend to adopt fintech if it has been preceded by a negative attitude towards fintech shown by the user. So attitude is something that determines the user's desire to use fintech.

Hypothesis 5: Attitudes have a positive effect on the intention to use fintech service.

Perceived risk can affect the intention to use fintech by being mediated by attitudes toward the adoption of fintech. If fintech users have a negative attitude towards fintech adoption, it can lead to a high perceived risk and impact the user's intention to continue using fintech. This statement is supported by Henry et al. [17], who conclude that perceived risk affects customer attitudes in online shopping. However, the perceived risk does not affect customer purchase intention, while customer attitude affects customers who shop online. Furthermore, Henry et al. [17] postulate that the indirect effect of the perceived risk variable on purchase intention through the mediation of customer attitude is greater than others. The mediation of the customer attitude variable has a more significant impact on purchase intention. The indirect effect of the perceived risk variable on purchase intention through the mediation of customer attitude is greater when compared to the direct effect of the perceived risk variable on purchase intention, which shows that perceived risk cannot significantly influence customer buying interest. With all the risks, customer behavior towards online shopping has a more significant influence.

Hypothesis 6: Attitude mediates the relationship between perceived risk and intention to use fintech services.

Attitudes can influence perceived usefulness in using fintech. If someone has a positive attitude toward fintech, then that person has high perceived usefulness towards fintech adoption. As a result, someone's intention to use fintech is also increasing. This statement is reinforced by Shanmugam et al. [18], which say that attitudes in using mobile banking mediate the relationship between perceived usefulness and intention to use mobile banking in Malaysia. Research by Hosseini et al. [19] also states that perceived usefulness positively correlates the intention to use m-banking mediated by attitudes towards m-banking. Similar results were also found in the study of Nyoman et al. [20], which states that attitudes partially mediate the effect of perceived usefulness on intentions to use internet banking in Denpasar City. So the attitude variable serves

to bridge the relationship between perceived usefulness and the intention to use internet banking in Denpasar City.

Hypothesis 7: Attitude mediates the relationship between perceived usefulness and intention to use fintech services.

## 2 Research Methods

The subjects in this study were mobile banking or internet banking services and online transaction services users. While the object in this study was user acceptance of fintech services described through the dependent variable: the intention to use fintech services and attitudes toward the adoption of fintech, with the independent variables were perceived risk and perceived usefulness. The type of design used in this research was descriptive research and verification research. The research variable was the latent variable measured using a 5-point Likert scale indicator. The data were obtained by distributing a questionnaire built with Google docs software. The questionnaire was then distributed via social media, email, WhatsApp, Facebook, and Line. The data obtained from excel were processed using Smart PLS 3.0 software.

The samples in this study were users of financial technology applications. The sampling method used was non-probability sampling with several criteria: those who have worked, aged 15 to 56 years, domiciled in the Greater Jakarta area, minimum education level: Diploma 3 (D-3), active users of FinTech (E-Banking & M-Banking). The analytical method in this study used the Partial Least Squares (PLS) application program. The statistical test consists of the outer model (outer relation or measurement model) and the inner model.

## 3 Results and Discussion

The data sample was from the Greater Jakarta area. The questionnaire was distributed online from May 2 to 20, 2021. The research subjects were users of mobile and internet banking and online marketplaces such as Tokopedia, Shopee, Blibli, Bukalapak, and Lazada. Jabodetabek. Description of respondents includes gender, education level, location of residence, age group, and monthly income (Fig. 1).

The inner model or structural model testing was done by testing the Goodness of Fit (GoF), the Coefficient of Determination (R<sup>2</sup> Test), and t-test (Statistical hypothesis test). The results of the Goodness of Fit (GoF) and Coefficient of Determination (R<sup>2</sup> test) are presented in Table 1. The Goodness of Fit (GoF) test was measured by looking at the value of the Normed Fit Index (NFI) value. The test result with NFI obtained NFI = 0.820. This value is close to 1.0. Therefore, the research model is found to be fit. The coefficient of determination test (R<sup>2</sup> value) result is 0.581.

One endogenous variable is declared significant to one exogenous variable (*ceteris paribus*) if the t-statistic result is greater than 1.96 or the P-Value < 0.05. The results of the t-statistics for each variable can be seen in Table 1. The statistical hypothesis test analysis results prove that all direct and indirect relationships between the variables in Table 1 have a significant effect because the P-value is smaller than 0.05 or the t

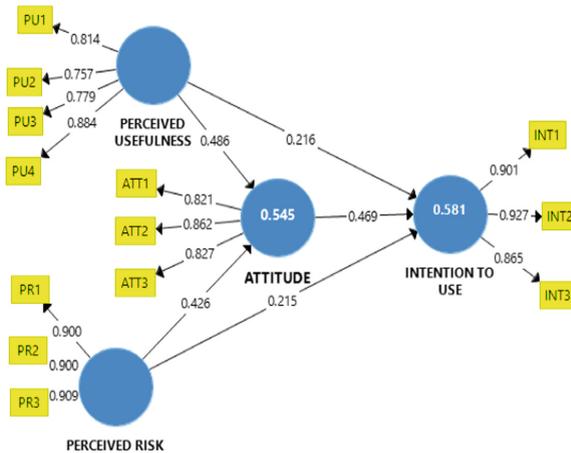


Fig. 1. Validity Test with Loading.

Table 1. Statistical Hypothesis Test (t-test)

	S	Sample Mean	St. Dev	T Stat	P-Val
<b>Direct Effect</b>					
ATT → INT	0.469	0.467	0.075	6,292	0.0
PR → ATT	0.426	0.431	0.051	8,344	0.0
PR → INT	0.215	0.213	0.070	3,078	0.0
PU → ATT	0.486	0.481	0.060	8,059	0.0
PU → INT	0.216	0.221	0.076	2,856	0.0
<b>Indirect Effect</b>					
PR → ATT → INT	0.200	0.201	0.037	5,376	0.0
PU → ATT → INT	0.228	0.226	0.049	4,667	0.0

Information:

ATT: Attitude, INT: Intention to Use, PR: Perceived Risk PR: Perceived Usefulness

value statistic is greater than 1.96. The original sample value is positive, proving that the relationship is positive. On this basis, all hypotheses built are accepted.

The existence of the Financial Services Authority (OJK) that has the authority to oversee the operations of financial institutions can reduce fintech’s perceived risk, which affects the strong desire of individuals to use fintech. A better attitude towards the benefits (effectiveness and efficiency) of a fintech innovation will encourage a stronger influence between Perceived Risk (PR) on the intention to use fintech. It happens because attitude is part of the intention dimension in the Theory of Planned Behavior. So that attitude is the main driver of an intention to do something [21].

According to the TAM theory, the benefits of a fintech innovation include three aspects: economic, convenience, and seamless transaction. The economic aspect is lower transaction and capital costs than other financial services such as banks [22]. The convenience aspect refers to the flexibility of time and location. In this case, fintech is a digital financial service that can be accessed using a smartphone, making it easier for users to enjoy fintech services anywhere and anytime [23]. The seamless transaction is an important characteristic of fintech. Fintech offers the benefit of enabling users to perform and manage their financial transactions through a cost-effective platform [24].

Perceived usefulness is related to a person's level of acceptance of technological innovation in financial transactions that can increase the work efficiency of individuals or organizations. Compared to traditional financial transactions, fintech users can increase transaction speed and efficiency of financial transactions [9]. Perceived risk is related to the customer's perception of uncertainty and the possibility of negative consequences of fintech adoption. Risk factors can be a barrier for users considering whether to use fintech services or not. Perceived risk is the main factor that has a negative impact on technology adoption [13]. The risks that arise can be financial, legal, security, and operational [9]. TAM theory explains that this perceived risk will provide a perceived level of the impact experienced by a person when using technological innovation in his work. The emergence of risks from fintech innovation provides an assessment that causes the tendency of customers to avoid fintech innovations [1, 15].

The ease of using technological innovation in financial transactions can encourage someone to be more willing to use fintech. The impetus for the use of fintech will be further stimulated if a positive attitude is felt from using the perceived benefits. It impacts the desire of individuals who are getting stronger to use fintech innovations for financial transactions.

The findings of this study are that TAM combined with TPB, can explain the model of the relationship between the variables built in this study. It impacts future studies of the benefits of the theory related to the intention variable, which is applied to decisions in the management science field.

## 4 Conclusion

From the results of reference studies, analysis, and problem-solving approaches used in this study, it can be concluded as follows: perceived risk and perceived usefulness have a positive effect on a person's attitude in using technological innovations in financial transactions. Perceived risk and perceived usefulness have a positive effect on attitude towards a person's intention to use technological innovations in financial transactions. Attitude is a partial mediation of the relationship between perceived risk and perceived usefulness on a person's intention to use technological innovations in financial transactions. It is recommended to add other essential variables for further research because the coefficient of determination is still considered low.

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