

Factors Contributing to the Adoption of Fintech in Indonesia

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ABSTRACT

The technology acceptance model (TAM) proposes that perceived ease of use and usefulness predict technology usage. This model, however, may not fully explain user behavior in 'fintech' (financial technology), one of the fastest-growing global businesses, especially the payment-type fintech services in Indonesia. This paper explores the supplementary factors of consumers' adoption of fintech such as trust, credibility, perceived benefit, and perceived risk. By using convenience sampling, we collected 166 cases from the users of OVO, Indonesia's fastest-growing fintech platform, to survey their adoption of fintech. The results of statistical analysis using PLS-SEM demonstrated that trust and perceived ease of use had significant impact on attitude towards the use technology, which also determined behavioral intention and drove actual use. This study provides guidance for decision-makers to increase market penetration of fintech in Indonesia.

Keywords

credibility, fintech, perceived benefit, perceived risk, TAM, trust

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Introduction

In line with mobile phone and internet penetration, mobile services have increasingly become part of everyday life; one of them is financial technology (fintech), one of the fastest growing global business. PWC defines fintech as the intersection between financial services and emerging technology, converging ways that impacts infrastructure and operations for existing and emerging business models (Pwc.com, 2017). Amalia (2016) stated that there are key reasons why fintech has thrived in the past years. First, fintech fulfills the Millennials' needs in the financial context through the use of technology. Second, conducting transactions online has been driven by the rise of smartphones, the internet, and social media. Third, 'big data' has enabled the utilization of data in large volumes, with variety and speed that supports the performance of fintech. Fintech is believed be one of the most important solution to help to realize a national cashless society by increasing financial inclusion. Despite the advantages offered, a large group of customers still refuse to adopt fintech services as the adoption of non-cash payments still stands at less than 10% (Momentum Works, 2016).

Consumers' adoption towards new service has garnered interest from practitioners and researchers as it explains new product or services diffusion processes. The technology acceptance model (TAM) is one of the most widely-used models for explaining factors impacting user acceptance. Many scholars have focused on using this model to understand the factors affecting technology adoption (Suh & Han, 2002; Schierz, Schilke, & Writz, 2010; Chuang, Liu, & Kao, 2016). However, there are only a limited number of studies covering the topic of fintech, especially in the payment category in Indonesia. Riskiananto, Kelana, & Hilmawan (2017) has conducted e-Payment adoption research in Indonesia using TAM moderated by age. However, another explanatory variable might be required to explain financial technology adoption in Indonesia

OVO is an up-and-coming mobile-based fintech service in Indonesia that allows its users to pay instantly and have access to various financial services, such as collecting loyalty points, transferal to other OVO users and bank accounts, creating savings accounts, and buying mutual funds, from a single app. It is equivalent to Apple Pay and Alipay, creating momentum in the fintech industry in Indonesia. Right now, OVO has more than 10 million users and is accepted in more than 30,000 outlets in more than 200 cities in Indonesia within less than a year of its launch. OVO, backed by the Indonesian conglomerate Lippo Group, launched an eye-catching marketing program to draw in first-time fintech users in Indonesia.

This study intends to enrich the understanding of customers' rationales in adopting fintech in Indonesia, with OVO as a study case. To achieve this goal, this study utilized TAM with additional factors such as trust, credibility, perceived benefit, and perceived risk. Understanding factors of fintech adoption would be helpful for industry players to define approaches aimed at increasing acceptance, especially in the payment category, as more than 40% out of 140 fintech players in Indonesia is in the payment category (Indonesia Fintech Report, 2016). They are expected to serve as a guideline to companies aiming to develop fintech or similar services.

Literature Review

Davis (1986) used TAM to examine the effect of external variables on personal internal beliefs and attitudes. TAM is predicated on the premise that the key determinant of behavioral intentions is contingent on a person's judgments about their own ability to use and their subjective response of the usefulness of technology (Chuang, Liu, & Kao, 2016). TAM used Theory of Reasoned Action (TRA) model's causal relationships to demonstrate technology acceptance. Online services' open infrastructure nature has posed risk for the consumers, including risk of loss of privacy and risk

related to technology being unreliable. (Safeena, Date, & Kammani, 2011). In this study, perceived risk is defined as consumer's belief on potential negative outcomes of security/privacy risk from fintech service transactions.

Lee (2009) stated that perceived benefits are divided into two main types, namely direct and indirect advantages. Direct advantages refer to actual and tangible benefits by using fintech such as faster transaction speeds and discounts. While, indirect advantages are more difficult to measure, for instance by having access to the services and doing transactions 24 hours a day. Perceived benefit is described as users' belief that they will become better by using fintech services.

Previous literature has stated that reputation is an essential element of the success of a corporation and credibility builds reputation of company (Goldsmith, Newell, & Lafferty, 2000). Credibility relies on a company's commitment and promises at a specific time. It is fundamentally imperative to have a secure and credible service regarding acceptance (Jarvenpaa, Tractinsky, & Vitale, 2000), which also applies in the context of fintech.

Trust has been conceptualized as confidence in the intentions or actions of a person or a group (Chuang, Liu, & Kao, 2016) and has always been essential in influencing user behavior and has proven to have high significance in ambivalence environments. Hence, the definition of trust in this study is the degree of influence that the fintech service has on transactions such as money transfers, payments, savings, investments, borrowings, or insurance.

Hypothesis Development

Based on the theoretical model developed, this study formulated the following research hypothesis. In this study, TAM is used as the foundation and referenced relevant literature to construct a holistic conceptual framework; therefore, we need to test the following TAM hypothesis in the financial technology context. Most previous studies also showed that attitude is significantly affected by perceived usefulness and perceived ease of use (Venkatesh & Davis, 2000; Safeena, Date, & Kammani, 2011; Schierz, Schilke, & Writz, 2010). Hence, we tested the following hypothesis:

Hypothesis 1. Perceived usefulness has a positive effect on a consumer's attitudes toward using a fintech service.

Hypothesis 2. Perceived ease of use has a positive effect on a consumer's attitudes toward using a fintech service.

Van der Heijden, Verhage, & Creemers (2003) proposed that cognition of trust when using new technology will directly affect a consumer's attitude. When the information provided is trusted, positive attitude will be developed towards the service. Moreover, previous studies (Horvat & Dozen, 2013; Ariff, Sylvester, Zakuan, Ismail, & Ali, 2014) also found that perceived risk impacted attitude negatively. We hypothesize that:

Hypothesis 3. Trust has a positive effect on a consumer's attitude towards using a fintech service.

Hypothesis 4. Perceived risk has a negative effect on a consumer's attitude towards using a fintech service.

A study on online banking conducted by Lee (2009) shows that benefits has a significant influence on attitude. In any business environment, including fintech, credibility is important, not only to the content but the communicator as

well (Lu, Chang, & Chang, 2014). The more credible the corporation, the more people will be welcoming and open to its products and services. Thus, we test the following hypothesis:

Hypothesis 5. Perceived benefit has a positive effect on a consumer's attitude towards using a fintech service.

Hypothesis 6. Credibility has a positive effect on a consumer's attitude towards using a fintech service.

According to TAM, the influence on intention to use is a person's attitude, the degree to which using a technology is valued by an individual (Schierz, Schilke, & Writz, 2010). Previous studies also showed that attitude has a significant positive impact on the intention to use and system use is highly influenced by consumer's intention to use (Venkatesh & Davis, 2000; Safeena, Date, & Kammani, 2011). Therefore, we come up with following hypothesis:

Hypothesis 7. Consumer's attitude towards fintech services has a positive effect on behavioral intention of using a fintech service.

Hypothesis 8. Consumer's behavioral intention to use fintech services has a positive effect on actual use of a fintech service.

Research Methodology

Measurement

The constructs for the instrument were adopted from previous studies. Perceived ease of use was adapted from the measurements defined by Chuang, Liu, & Kao (2016), containing five items for the construct. Four items for perceived usefulness, four items for intention to use and three items for attitude were adapted from Chuang, Liu, & Kao (2016) and Suh and Han (2002). Four items for credibility were adapted from the measurements defined by Erdem & Swait (2004). Trust was measured using four items adapted from Suh and & (2002). Three measurement items for perceived benefit were adapted from Yiu, Lau, & Bruton (2007). Two items for perceived risk were defined by Featherman and Pavlou (2003). Actual use includes three items adapted from the measurements defined by Cheung, Chang, & Lai (2000).

The instrument requested information designed in a two-part questionnaire. The first part gathered basic demographic data including age, gender, education, domicile, household income, and spending allocation. The first part used nominal scales, while the second part used a five-point scale ranging from 1 representing "strongly disagree" to 5 representing "strongly agree".

Data Collection

We collected data from users of OVO using online survey method. To avoid double data dipping, the respondents are asked to provide their email. In total, this online survey gathered 166 cases, resulting in a sample size of 152 users with overall response rate of 93% (55.6% female and 43.4% male) with most of them ranging from 20-30 years old. 55.3% of the respondents lived in Jakarta, the capital of Indonesia and its surroundings. 73.1% of respondents had a bachelor degree. Elaborated descriptive statistics related to the respondents' profile can be seen in Table 1.

Results And Discussions

We used partial least squares (PLS) to validate the measurements and test the hypothesis. PLS-SEM uses a regression-based approach that minimized residual variances from internal constructs. Compared to CB-SEM, it is more powerful with fewer identification issues, works with large and small samples, and is able to include and combine formative and reflective constructs (Hair, Ringle, & Sarstedt, 2011). The significance level of indicators and path coefficients were assessed by using a bootstrapping procedure.

Measurement Model

The convergent and discriminant validity of the measurements were confirmed by three tests. First, as shown in Table 2, all factor loadings ranged from 0.529 to 0.965, surpassing the recommended 0.5 cutoff point (Hair, Anderson, Tatham, & Black, 1998). Second, all AVEs are higher than 0.5, ranging from 0.610 to 0.867. Third, to assess discriminant validity, the square root of AVE and all inter-construct correlations were compared as shown in Table 3. The reliability of the measurements was evaluated using the composite reliability scores. As Table 2 shows, the reliability scores of all constructs exceeded recommended cutoff point of 0.70 (Hair, Ringle, & Sarstedt, 2011), ranged from 0.764 to 0.963.

Hypotheses Test Results

The structural model testing results are shown in Figure 1. Perceived usefulness did not significantly affect attitude ($b = 0.167$, $p > 0.05$), thus H1 was not supported. Consistent with prior literature, trust was found to significantly affect attitude ($b = 0.339$, $p < 0.001$), as is perceived ease of use ($b = 0.211$, $p < 0.005$), thus supporting H2 and H3. Meanwhile, perceived benefit ($b = 0.188$, $p > 0.05$), perceived risk ($b = 0.096$, $p > 0.05$), and credibility ($b = 0.051$, $p > 0.05$) was found to be insignificant towards attitude, therefore H4, H5, and H6 were not supported. The link between attitude and behavioral intention was significant ($b = 0.728$, $p < 0.001$), providing support for H7. Behavioral intention was found to have a significant positive influence on actual use ($b = 0.569$, $p < 0.001$), thus supporting H8.

Results

Primary contribution of this research was to integrate technology acceptance constructs and variables associated with behavioral and environmental uncertainty (trust, credibility, perceived risk, perceived benefit) into a model predicting the adoption of fintech. Our study theoretically emphasizes several points. Attitude was greatly affected by trust, consistent with previous research (Suh & Han, 2002) that suggests that trust is one of the key factor in deciding customer acceptance in the technology context, particularly important where uncertainty and risk were indispensable, such as in the online environment. This was an important finding, since trust was not part of the original TAM and is often not studied by technology acceptance researchers. As

suggested by TAM and previous studies (Venkatesh & Davis, 2000; Safeena, Date, & Kammani, 2011; Schierz, Schilke, & Writz, 2010), customer perception of ease-of-use also affected attitude significantly. This meant that user-friendliness and usability affected customers' attitude in adopting fintech services. Respondents also agreed that it was easy to complete transactions using OVO and learn about OVO without spending too much time.

On the contrary, perceived usefulness, as one of the most critical determinants in technology acceptance research, had no significant influence on attitude. OVO may not perceived useful at the moment because the majority of respondents first download the app because of the promotion and thus only using the payment feature. In this stage of its adoption, OVO focused on giving promotion/cashback and thus not emphasizing its product in managing financial and increasing users' productivity.

Perceived risk and credibility had no significant effect on attitude. Risk such as abuse of billing information was not considered high, as in Indonesia the penetration of credit card was still as low as 2.4% (World Bank, 2017). Also, according to Kuo, Hanafi, Sun, & Robielos (2016), Indonesia customer is more willing to try a new product and services as it has a bigger risk-taking attitude, despite the risk and/or the company's credibility.

Contrary to previous research, perceived benefits were found to be insignificant towards attitude in fintech adoption. The fintech industry is in the early stage of its adoption and its biggest competitor is cash, which comprises more than 90% of all transactions in Indonesia. Therefore, benefits such as saving transaction fees and time with fintech was still less than doing the transaction with cash; therefore, the benefits had not been delivered to the users. One can translate this finding to argue that, with an increasing number of benefits offered with fintech, it is more likely to gain significance in the future.

Conclusions

TAM is a widely accepted model for technology acceptance research. However, empirical test on the context of fintech is limited. This research is one of the first empirical studies to measure fintech adoption using extended TAM in Indonesia, and proposed practical suggestions for fintech specialists. In line with previous studies (Chuang, Liu, & Kao, 2016; Suh & Han, 2002; Schierz, Schilke, & Writz, 2010), we found that attitude is significantly impacted trust and perceived ease-of-use. To ignite the adoption of fintech services, trust and usability should be continuously improved.

Managerial Implications

The importance for managers of corporations providing fintech services, such as OVO, is to answer how to quickly and efficiently increase the number of user base. This finding will be essential for fintech practitioner to help them in formulating strategy and allocating resources and provides valuable practical guideline for increasing the adoption of fintech. The factors mentioned in this study can be a guidance for increasing market penetration of the fintech. As trust shown to be an important factor, as suggested by Abayi and Khoshtinat (2016), industry players

are challenged to develop a trustful service and advertisement where consumers believe that they can put their money onto fintech with confidence. Further, the second most important factor was perceived ease-of-use. To encourage users to continue using fintech services and also to garner interest from non-users, fintech platform should be user-friendly and usable focusing on clear information architecture, friendly content, and a delightful interface (Hornbæk & Hertzum, 2017).

Another contradictive insight is showed by the relationship of perceived risk and attitude of using fintech service, that it is not a main concern when introducing a fintech service in Indonesia. Perceived benefit was also less important and practitioners should be more strategic in luring in customers so that fintech services can gain high levels of adoption.

Suggestion for Future Research

This study is intended to be a valuable source for further empirical and conceptual research on fintech and provides starting points for further investigations. Future research could continue on the existing structural model and customize it to suit other fintech services, such as peer-to-peer lending or crowdfunding services which are having increasing user bases. Further, our study is limited to an Indonesian sample. It will be beneficial if explored in other countries to test global generalizability and compare fintech adoption in an emerging country such as India and a developed country such as the United Kingdom.

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Table 1 Respondents' Characteristics

Measure	Item	Frequency	Percentage (%)
Age	<23	46	30.3
	23-30	82	53.9
	31-37	15	9.9
	38-45	6	3.9
	>45	3	2
Gender	Male	66	43.4
	Female	86	56.6
Education Level	Senior High School	26	17.1
	Diploma	8	5.3
	Bachelor	98	64.5
	Master	12	7.9
	PhD	1	0.7
	Others	7	4.5
Domicile	Jabodetabek	84	55.3
	Outside Jabodetabek	68	44.7
Monthly Income	<1.000.000	20	13.2
	1.000.000-5.000.000	50	32.9
	5.000.001-10.000.000	37	24.3
	10.000.001-15.000.000	20	13.2
	>15.000.000	25	16.4
Biggest Expense in a Month	Grocery	50	32.9
	Transport	9	5.9
	Education	14	9.2
	Gasoline	7	4.6
	Travel	8	5.3
	Entertainment	39	25.7
	Others	25	16.4
Most OVO Usage	Payment	103	67.8
	Buy deals	14	9.2
	Transfer	6	3.9
	Collect points	25	15.1
	Paybill	1	0.7
	Top up phone credits	5	3.3
Reason to Download	Promotions	79	52
	Simple and convenient	11	7.2
OVO	Recommended by friend/colleagues	19	12.5
	Ad in malls	12	7.9
	Ad in social media	1	0.7
	Approached by OVO SPG	17	11.2
	Others	13	8.5

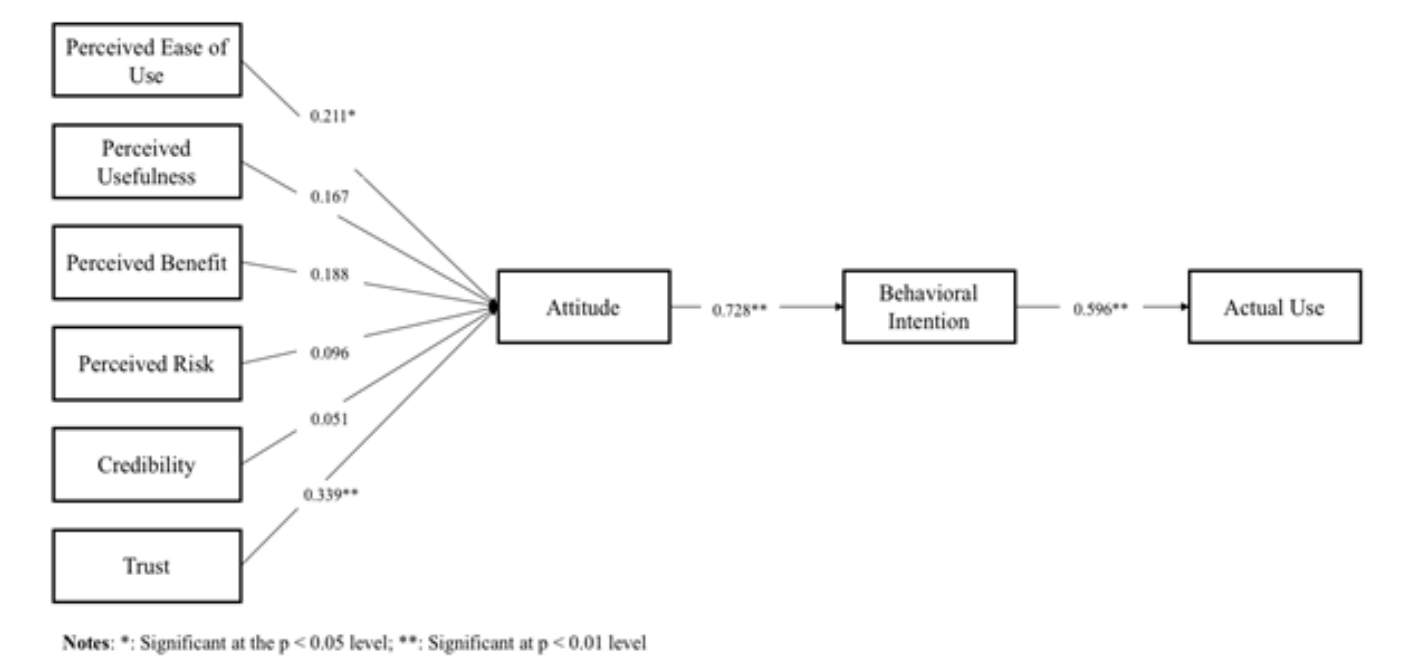
Table 2 Factor Loadings and Reliability

Construct	Measurement Item	Factor Loading	Composite Reliability	AVE
Perceived Ease of Use (PEOU)	PEOU1	0.857	0.839	0.636
	PEOU2	0.760		
	PEOU3	0.771		
Perceived Usefulness (PU)	PU1	0.846	0.890	0.670
	PU2	0.827		
	PU3	0.806		
	PU4	0.794		
Perceived Benefit (PB)	PB1	0.824	0.861	0.675
	PB2	0.727		
	PB3	0.904		
Perceived Risk (R)	R1	0.563	0.764	0.610
	R2	0.950		
Credibility (CR)	CR1	0.893	0.963	0.867
	CR2	0.935		
	CR3	0.948		
	CR4	0.948		
Trust (TR)	TR1	0.872	0.931	0.771
	TR2	0.895		
	TR3	0.849		
	TR4	0.896		
Attitude (AT)	AT1	0.932	0.950	0.864
	AT2	0.948		
	AT3	0.908		
Behavioral Intention (B)	B1	0.824	0.933	0.778
	B2	0.727		
	B3	0.904		
Actual Use (USE)	USE1	0.965	0.869	0.701
	USE2	0.944		
	USE3	0.529		

Table 3 Discriminant Validity

Construct	1	2	3	4	5	6	7	8	9
1. Attitude	0.929*								
2. Actual Use	0.482	0.837*							
3. Behavioral Intention	0.728	0.596	0.882*						
4. Credibility	0.551	0.278	0.675	0.931*					
5. Perceived Benefit	0.607	0.494	0.710	0.647	0.821*				
6. Perceived Ease of Use	0.549	0.386	0.502	0.477	0.581	0.797*			
7. Perceived Usefulness	0.567	0.510	0.741	0.660	0.617	0.522	0.819*		
8. Perceived Risk	-0.385	-0.303	-0.512	-0.584	-0.487	-0.353	-0.485	0.781*	
9. Trust	0.615	0.409	0.665	0.659	0.611	0.444	0.551	-0.603	0.878*

Figure 1 Hypothesis Test Result



Hypothesis	Path	Path coefficient	T Statistics	P Values
H1	PU -> A	0.167	1.852	0.064
H2	PEOU -> A	0.211	2.963	0.003
H3	T -> A	0.339	3.490	0.000
H4	PR -> A	0.096	1.304	0.192
H5	PB -> A	0.188	1.918	0.055
H6	C -> A	0.051	0.543	0.587
H7	A -> BI	0.728	15.776	0.000
H8	BI -> AU	0.596	11.753	0.000