

Factors Determining Behavioral Intentions to Use Islamic Financial Technology: Three Competing Models

Darmansyah¹, Primandanu Febriyan Aziz^{1*}, Bayu Arie Fianto², Achsaniana², Hendratmi²

Purpose – This paper aims to provide an improved understanding of the influential factors on behavioral intentions towards Islamic financial technology usage in Indonesia, for all types of financial technology services including payment, peer to peer lending and crowdfunding both simultaneously and partial for each service to enhance the financial inclusion.

Design/Methodology/Approach – This study adopted structural equation modelling using the partial least squares approach to test the hypotheses. The questionnaire was distributed through an online survey and collected 1,262 responses based on the purposive sampling technique.

Findings – The results demonstrate that the latent variables; planned behavior, acceptance model and use of technology have a significant impact on encouraging behavioral intentions to use Islamic financial technology. The acceptance model is the most significant factor.

Research limitations/implications – This study is conducted in Indonesia, therefore, the results cannot be generalized to other countries. However, this paper provides important strategic guidelines for policy-makers in designing a framework to enhance the development of Islamic financial technology and to achieve financial inclusion. It is suggested that future studies includes samples from financial technology users in different countries.

Originality/value – This study adds to the literature especially on the factors affecting behavioral intentions to use Islamic financial technology. There are limited studies concerning to this topic, especially for Indonesia. The unique feature of this study is the use of a large primary dataset that covers most provinces in Indonesia. Furthermore, this study focusing on three types of Islamic financial technology: payment, peer to peer lending and crowdfunding.

JEL Codes: G23, G41

Keywords: Islamic financial technology, behavioral intention.

¹Otoritas Jasa Keuangan (OJK), Indonesia.

²Faculty of Economics and Business, Universitas Airlangga, Indonesia.

*Corresponding author: primandanu.febriyan@ojk.go.id.

This paper is part of the 2019 research project funded by Otoritas Jasa Keuangan (OJK). The authors thank the panelists and participants at OJK Research Seminar in August 24-25, 2019 for their valuable comments and suggestions. The findings and interpretations expressed in this paper are entirely those of the authors and do not represent the views of OJK. All remaining errors and omissions rest with the authors.

1. Introduction

Islamic finance continues to gain interest globally from society not only from Muslims but also from non-Muslims. The presence of Financial Technology (FinTech) is expected to contribute significantly to the development of Islamic finance (Reuters, 2018). Technology and automation have become important parts of the financial services market worldwide (Dubai Islamic Economy Development Centre, 2018). Marszk and Lechman (2018) state that, today, Information and Communications (ICTs) have a significant impact in shaping the economic and social environment. Aaron *et al.* (2017) define FinTech as an application of digital technology for financial intermediation problems. FinTech plays an important role as a financial intermediary for society and in the daily activities of people around the world, which implies a new era in financial services is being born for banks with the rise of FinTech (Milian *et al.*, 2019). FinTech has greatly changed consumers' ways of performing their financial transactions (Huei *et al.*, 2018). This is shown by the rising investment of FinTech companies worldwide, which reached US \$4,256,202 million in 2018. The global transaction value is expected to reach US \$7,971,957 million by 2022, an annual growth rate of 17% (KPMG, 2019).

The increased use of technology in financial services reveals that this phenomenon is for several reasons, such as increased bank efficiency through reduced opportunity costs and encouraging higher customer satisfaction because people can take advantage of financial services anytime, anywhere, so long as they are connected to the internet (Asmy *et al.* 2018). Above all, several studies such as Solomon *et al.* (2013), Huei *et al.* (2018), Gupta and Xia (2018), Ryu (2018), Zhang *et al.* (2018) and Asmy *et al.* (2019), explain that FinTech helps increase transparency, accessibility, flexibility, reduce risk and improve returns for shareholders. The accelerated growth in the use of FinTech is also caused by an increased number of people connected to mobile services. The Global System for Mobile Communications Association (GSMA) estimates that, by 2025, mobile internet users will exceed five billion people; this implies that the market for FinTech will expand widely (Beyene Fanta and Makina, 2019).

Indonesia, with the world's largest Muslim population, is very much expected to become a world leading Islamic financial center and FinTech hub. FinTech is growing rapidly in Indonesia and has gained an increasingly favorable impression from foreign investors as a country with a digital economic potential (Hendratmi *et al.* 2019). According to the Dubai Islamic Economy Development Centre (2018), Indonesia has the most startups worldwide, it is home for 31 of 93 startups that have been registered with the country's

Islamic FinTech Association. KPMG (2019) report there are around 167 FinTech companies

with an investment of US\$ 182.3 million in Indonesia. The total value of disclosed FinTech Investment in 2017 was \$176.75 million, the transaction value in the FinTech market in 2018 was \$22,338 million and the transaction value is expected to show a 16.3% annual growth (Fintechnews, 2018).

Based on the above explanation, we confirm that Indonesia has great potential to strengthen economic growth through optimizing the role of FinTech as an intermediary between investors and firms. However, to the best of our knowledge, previous studies focused on consumer preferences in adopting mobile banking; there are few studies that observe consumer intentions to use Islamic FinTech, especially in Indonesia. According to Narayan and Phan (2019), the literature of Islamic banking and finance mostly focused on Islamic bank performance (44%), i.e., equity market performance (24%), market interaction (15%) and asset pricing (7%). Though FinTech has attracted the attention of stakeholders, the long-term use of FinTech is still vulnerable and doubtful (Ryu, 2018). Being skeptical about considerable and unexpected risk is a barrier to maximizing the potential of FinTech. This study aims to fill the gap with analyzes the factors affecting behavioral intentions to use Islamic FinTech services including Payment, P2P lending and Crowdfunding in Indonesia. This study uses theory including the Theory of Planned Behavior (TPB) developed by Ajzen (1985), the Technology Acceptance Model (TAM) 3 proposed by Davis (1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) 2 of Venkatesh and Davis (2000). The theories have been widely used by researchers to explore the customers' intentions.

The rest of this paper is organized as follows. In section 2, we present a brief literature review of the relevant theories. In section 3, we describe the research methods and the variables and in Section 4, we discuss empirical results of this study. Section 5 summarizes the study's main findings and provides some policy recommendations for policymakers and stakeholders to develop appropriate operational frameworks to optimize the potential of the Islamic FinTech revolution.

2. Literature Review

2.1 Planned Behavior

Planned Behavior is a variable adapted from the TPB. The theory is popular because it has proved to be an efficient model to explain intentions, the control of perceived behavior and to predict behavior (Hamzah and Mustafa, 2019). TPB is an extension model from Theory of Reasoned Action (TRA). The TRA model has been expanded by taking a degree of control over behavior into account that is expected to moderate the effect of intentions on behavior (Ajzen, 2012).

The only difference between TPB and TRA is that regulations are considered additional determinants of intentions and behavior. According to the theory, understanding behavior depends both on motivation (intention) and ability (control over motivation). These cognitive-behavioral models postulate human behavior guided by three considerations: (1) attitude; (2) normative beliefs; and (3) control beliefs (Hamzah and Mustafa, 2019). TPB proposes that the probability of individuals performing certain behaviors increases if they believe that the behavior will produce the desired results; if they think a valued person wants them to behave that way; and if they believe they have resources and opportunities to engage in such behavior (Ajzen, 1991). TPB explains that behavioral intentions are influenced by one's attitude towards the behavior, the subjective norm, and perceived behavioral control. Perceived behavioral control is influenced by experience and a person's estimation of the difficulty to perform or not perform certain behaviors (Ajzen, 1991). Therefore the first hypothesis of this study is:

H 1: Planned Behavior has a positive effect on behavioral intentions to use Islamic FinTech.

2.2 Acceptance Model

TAM was first introduced by Davis (1985), followed in 2000 by TAM 2 (Venkatesh and Davis, 2000) and then TAM 3 by Venkatesh and Bella (2003). TAM is a very popular model to explain and predict system usage (Chuttur, 2009). Later development of TAM involved behavioral intention as a new variable that was directly influenced by the benefits received. Davis (1989) defines perceived usefulness as the degree to which a person believes using a particular system will improve his/her work performance (Davis, 1985). TAM is also consolidated with other theories and models such as TPB (Lee *et al.*, 2003). Davis (1985) includes TAM as being effective in determining the use of innovative technology within an organization or group.

The development for TAM was in three phases: adoption, validation, and extension. In the adoption stage, it was tested and adopted through a large number of information system applications. In the validation phase, the researchers note that TAM uses accurate measurements of the use of acceptance behavior in various technologies. The extension phase saw studies in which several new variables were introduced and the relationships between TAM constructions were determined (Momani and Jamous, 2017).

Using TAM, Huei *et al.*'s (2018) study identified the potential factors that influence consumers' intentions to adopt FinTech products and services in Malaysia. The results show that perceived ease of use and perceived usefulness have a significant positive effect on intentions to adopt FinTech's products and services. However, perceived risk and cost have significant negative effects on users' attitudes to FinTech's products and services.

TAM 2 theorizes that the three mechanisms of social influence: compliance, internalization and identification, play a role in understanding the process of social influence. Compliance represents a situation where someone performs a behavior to get a certain reward or avoid punishment (Miniard and Cohen, 1979; Venkatesh and Bala, 2008). TAM 2 discusses additional theoretical constructs that attach to social interaction (subject norms, volunteerism and imagery) and cognitive instrumental processes (job relevance, quality of results, ability to show results, and influence of use utilization) (Venkatesh and Davis, 2000).

Acceptance is a variable adapted from TAM 3. In using information systems, users consider the benefits and usefulness of the systems. Consumer behavioral intentions in using technology are done by TAM. The TAM model, based on the Theory of Reasoned Action (TRA), was developed to predict individual adoption and use of new information technology. It states that an individual's behavioral intentions to use is determined by two beliefs: perceived benefits, defined as the extent to which a person believes that using information technology will improve his/her work performance, and perceived ease of use, defined as the level at which a person believes that using information technology will be free from effort (Venkatesh and Bala, 2008).

Venkatesh and Bala (2008) combine TAM 2 (Venkatesh and Davis, 2000) and the perceived ease of use determinant model (Venkatesh, 2000), and develop a technology acceptance model that is integrated into TAM3. TAM3 presents a complete network of determinants of the adoption and use of individual information technology. Based on a combination of TAM and TAM 2, TAM 3 includes subjective norms, images, job relevance, output quality, result demonstrability, computer self-efficacy, perceptions of external control, computer anxiety, computer playfulness, perceived enjoyment, and objective usability that

affect perceived ease of use and perceived usefulness, which determine consumers' behavioral intentions. The adapted theory is used in this study. Thus, the second hypothesis is: H 2: The Acceptance Model has a positive effect on behavioral intentions to use Islamic FinTech.

2.3 Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) model was introduced and developed two decades ago by Venkatesh (2000) based on eight competing technology acceptance models. The models and theories are TRA, TAM, the Motivational Model (MM), the TPB, a cumulative model, the Technology Acceptance Model and the Theory of Planned Behavior (C-TAM-TPB) model, the PC utilization model, the innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) model (Venkatesh and Davis, 2000). Nistor *et al.* (2019) explain that UTAUT is divided into two categories including TAM and TPB.

UTAUT brings together important factors related to consideration of the importance of using technology and the technology used primarily in organizational contexts. UTAUT has four main contributions (i.e., performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC)) that affect intentions to use technology (Venkatesh *et al.*, 2012). Performance expectancy is the level at which the individual believes using the system will help him or her attain gains in job performance. The second contribution is effort expectancy. This is the level of convenience associated with using the system. Social influence is the level where he or she believes they must use a new system. Finally, facilitating conditions is the level to which an individual believes the existing organizational and technical infrastructure supports use of the system. The development of UTAUT was into UTAUT2, which has seven constructs: PE, SI, EE, FC, price value (PV), hedonic motivation (HM) and habit (H) (Venkatesh *et al.*, 2012).

Venkatesh *et al.* (2003) find that older men with extensive use experience tend to rely more on habit to encourage technology use both in the stored intention pathway and the instant activation pathway thereby expanding the network associated with the use of technology to include a series of new constructs and theoretical mechanisms related to behavioral intentions in the use of technology. Venkatesh and Bala (2008) adapted this construction and definition from UTAUT to the context of the acceptance and use of consumer technology. UTAUT2 can be adopted using technology (Raza *et al.*, 2019).

Current studies show that, in the context of consumer use of technology, the effects of Hedonic Motivation, Price Value, and Habit are complex. First, the impact of Hedonic Motivation on Behavioral Intention is moderated by Age, Gender, and Experience. An important role of Hedonic Motivation, Price Value, and Habit motivation is in influencing the use of technology in UTAUT2, which is adjusted to the context of consumer acceptance and use of technology. Therefore, the third hypothesis is:

H 3: Use of Technology has a positive effect on behavioral intention to use Islamic FinTech.

An extensive literature review by Asmy *et al.* (2019) explores the factors among Malaysian users that impact the decision to use Islamic mobile banking. The study uses TAM and its three indicators: perceived ease of use, perceived usefulness, and social norm. The study also added relative advantage and perceived risk to increase the probability of identifying which factors influence the adoption of Islamic mobile banking. The study used 250 respondents aged 18 and above who live in Selangor and Kuala Lumpur; the questionnaire answers were analyzed using partial least squares (PLS). The study found that perceived usefulness and risk had a significant impact on shaping the users' decision to adopt Islamic mobile banking services. The authors explain that a higher educational level of respondents increases the independence of users in decision-making. Akhtar *et al.* (2019) explore the factors that impact on the individuals' intentions to use mobile banking in Pakistan and China. The study had 570 respondents, multiple and hierarchical regression was used to analyse the responses. The results show that, in Pakistan, individuals' intentions to adopt mobile banking are influenced by perceived usefulness, social influence, and perceived ease of use. In China, perceived usefulness is an important factor that predicted individuals' intentions. The study also reveals a positive relationship between cultural values and individuals' intentions.

Zhang *et al.* (2018) investigated the determining factors in consumers' adoption of mobile banking and explore mobile banking's effect on shaping consumer interactions with banks. There were 520 respondents in the study from various age, income level, ethnic, and educational level backgrounds. The study demonstrates that perceived usefulness, perceived ease of use, and the features of mobile banking service, and customers' innovativeness are the most influential factors in consumers using mobile banking. Consumers' safety, such as a guarantee that mobile banks will protect their privacy, also has a significant impact on consumers' decisions.

Asmy *et al.* (2018) conducted a study aimed at revealing the most significant factors affecting customers' continuing intention to use Islamic mobile banking services. The study had 250 respondents primarily through a survey in Klang Valley. To discover customers' intentions the study investigated several factors such as usability and customer service, which have a strong correlation with customers' trust and satisfaction that, in turn, influences consumer loyalty. The study used PLS. The results show that usability and customer service quality of Islamic mobile banking services are significantly correlated with users' preferences to continue using Islamic mobile banking. Customer satisfaction and trust, as mediating factors, also influence customers' loyalty in using Islamic mobile banking services.

Raza *et al.* (2018) examine the factors that influencing mobile banking acceptance of Islamic banks in Pakistan. This study used the UTAUT2 model as the dependent variable with performance expectancy, facilitating conditions, social influence, effort expectancy, perceived value, habit, and hedonic motivation, as the independent variables. The PLS-Structural Equation Model (SEM) was used to test the 229 respondents' answers. The results show that seven of eight independent variables are significant in impacting the acceptance of mobile banking. The authors suggest increasing the interaction with users through a feedback system that aims to get their advice, feedback, and criticisms.

Ryu (2018) analyzes the reason why Koreans decide to adopt FinTech and so understand whether there are different intentions among users in continuing to use FinTech depending on service type. This study involved 243 participants who had at least one experience using FinTech services such as mobile payment, mobile remittance, P2P lending or crowdfunding. The study uses the PLS method with two latent variables, perceived benefit and perceived risk. The study finds that perceived benefit is the most important thing considered by users rather than perceived risk. Among the three factors of perceived benefit, convenience had a higher impact than economic benefit and seamless transaction.

Glavee-Geo *et al.* (2017) conducted research to understand the factors that influence an individual's intention to adopt mobile banking among Pakistani. The study looked at gender differences by applied multi-group analysis. The study used 189 respondents and many variables: adoption intentions, attitude, perceived behavioral control, social norm, perceived ease of use, perceived usefulness, perceived risk, regulatory support, self-efficacy, and technology support. The results show that perceived behavioral control (PBC) and attitudes (ATT) have a strong positive relationship with an individual's intention to adopt mobile banking. PBC has a stronger significant impact on women's intentions than on men's' intentions. The study also implies that gender difference has a significant effect on subjective

norms in adopting mobile banking. Thus, the practical implication suggested by the authors is to design different marketing strategies to gain men and women consumers to increase the adoption rate of mobile banking in an emerging country.

Solomon *et al.* (2013) conducted a study to conceptualize acceptance in adopting the electronic banking model for Nigerian customers. The study emphasizes the mediating process for acceptance through identifying the factor that has a significant impact on the customers' intentions to accept electronic banking. The study is a conceptual one based on the TAM and 20 hypotheses from existing research. The results are that trust, financial security, information quality, time and money significantly influence the use of electronic banking in Nigeria.

3. Research Methods

This study uses an online survey to investigate the determining factors of the behavioral intention to use Islamic FinTech in Indonesia. The questionnaire was in Bahasa Indonesia, and the items are measured by a four-point Likert scale from strongly disagree to strongly agree. The questions under this study were developed according to operationalization of the research variables. The questionnaire was divided into two components: general statements relating to the respondents' demographics and secondly, relating to the variable indicators about knowledge of Islamic FinTech. The second part of the questionnaire consists of three variables, planned behavior, including attitude towards behavior (one item), subjective norm (two items), and perceived behavioral control (two items); acceptance model image (one item), job relevance (one item), output quality (one item), results' demonstrability (two items), perceptions of external control (two items), computer anxiety (one item), computer playfulness (one item), perceived enjoyment (one item) and objective usability (one item); and use of technology includes social influence, price value and habit, one item each. Eighteen questions were used to investigate the intentions of Islamic FinTech users of the three FinTech types in Indonesia.

The questionnaire was pre-tested for its reliability and validity before being used to the sample population; all those respondents have internet access to the FinTech services. The study used purposive sampling with boundaries according to the respondents' characteristics. The sampling criterion in this study was people who can access Islamic FinTech services with a smartphone in the various demographics, geographic areas and religions in Indonesia. The online survey questionnaire was distributed to 1,455 respondents from July to September 2019; 1,262 qualifying questionnaires consisted of 778 non-users and 484 users of Islamic

FinTech. Users of Islamic FinTech divided into 407 users of the Islamic FinTech payment service, 39 users of the Islamic Fintech P2P lending, and 38 users of Islamic Fintech crowdfunding.

PLS for structural question modelling is a useful and flexible tool for the construction of statistical models. PLS analysis can process data from a large sample, and is suitable for weak theoretical foundation models and does not require a normality of the data assumption (Aguirre-Urreta and Rönkkö, 2015). The analytical method used to test the hypotheses was SEM. PLS – SEM is a superior method in social science issues and is suitable for large and small samples, as well as normal data (Hamdollah and Baghaei, 2016), PLS examines two models, the outer and inner models, to obtain the results. The conceptual framework for this study is explained in Figure 1.

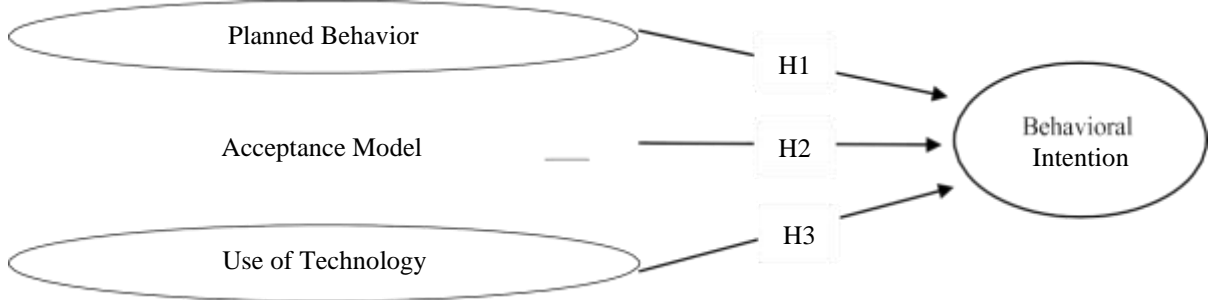


Figure 1. A diagram of the conceptual framework of the study

4. Results and Discussions

4.1 Respondents’ Characteristics

Table 1 summarizes the respondents according to the different types of Islamic FinTech that they used. From Table 1 we can conclude that the payment is the most popular Islamic FinTech service used by respondents, 407 out of 484 respondents used Islamic FinTech for payment activities. Only 39 and 38 respondents identify P2P lending and crowdfunding, respectively, as the service they use. This implies that these latter two types of Islamic FinTech are still in the early stage of development. Table 1 shows that most respondents were male, 67.1% in payment group, 66.7% in P2P group and 60.5% in crowdfunding group. The F-test shows no significant difference in gender for the three groups.

Table 1. The descriptive statistics of the users of the three types of Islamic FinTech services

Characteristic of Users		Payment Users		P2P Users		Crowdfunding		Statistical
		(N=407)		(N=39)		Users (N=38)		
		Sub-total	% to N	Sub-total	% to N	Sub-total	% to N	Test
Gender	Male	273	67.1%	26	66.7%	23	60,5%	F = 0.670
	Female	134	32.9%	13	33.3%	15	39,5%	
	Elementary School	15	3.7%	1	2.6%	1	2,6%	
	Junior High School	30	7.4%	1	2.6%	4	10,5%	
Education Background	Senior High School	225	55.3%	17	43.6%	20	52,6%	F = 2.066
	Diploma	21	5.2%	5	12.8%	2	5.3%	
	Bachelor	122	43.5%	15	38.5%	11	28.9%	
	Others	4	0.1%	0	0.0%	0	0.0%	
	Professional	113	27.8%	0	0.0%	0	0.0%	
Profession	Student	88	21.6%	0	0.0%	0	0.0%	F = 23.858***
	Housewife	33	8.1%	0	0.0%	0	0.0%	
	Businessperson	106	26.0%	39	100%	38	100%	
	Others	67	16.5%	0	0.0%	0	0.0%	
	Top Manager	43	10.6%	8	20.5%	4	10.5%	
Job Position	Business Owner	56	13.8%	19	48.7%	19	50.0%	F = 67.340***
	Staff	117	28.7%	10	25.6%	9	23.7%	
	No Job Level	191	46.9%	2	5.1%	6	15.8%	
	< 3 million	196	48.2%	9	23.1%	10	26,3%	
Income	3-5 million	135	33.2%	19	48.7%	14	36,8%	F = 14.990***
	6-10 million	60	14.7%	8	20.5%	9	23,7%	
	11-15 million	9	2.2%	0	0.0%	0	0,0%	
	16-20 million	4	1.0%	2	5.1%	3	7,9%	
	>20 million	3	0.7%	1	2.6%	2	5,3%	
Expenditure	< 2 million	226	55.5%	14	35.9%	18	47,4%	F = 10.009***
	2-4 million	147	36.1%	18	46.2%	13	34,2%	
	5-9 million	29	7.1%	6	15.4%	5	13,2%	
	10-14 million	3	0.7%	0	0.0%	1	2,6%	
	14-19 million	1	0.2%	0	0.0%	0	0,0%	
>19 million	1	0.2%	1	2.6%	1	2,6%		

In terms of the educational level, payments users were dominated by senior high school (55.3%) and bachelor degree (43.5%). P2P lending users consist of senior high school (43.6%) and bachelor degree (38.5%). Crowdfunding respondents are dominated by two education background categories, over half (52.6%) had a senior high school qualification and 28.9% had a bachelor degree, whereas 17.5% were elementary school, junior high school, diploma, and others. In summary, senior high school and bachelor degree users are dominant in the three types of Islamic FinTech service; the statistical test shows no significant difference in terms of education background for the three groups of users.

Table 1 also shows the profession of Islamic FinTech users, most of the payment group users were professional (27.8%), followed by businessperson (26%), and student (21.6%). All respondents in P2P lending and crowdfunding were businesspersons. The results shows a significant difference in the profession background among the three groups ($F = 23.858$, significant at the 1% level), which means the distribution of the Islamic FinTech users is strongly associated with profession. Based on job position, nearly half of the payment users (46.9%) did not have specific jobs position or level, whereas most of the respondents in P2P group and crowdfunding were business owners, 48.7% and 50% respectively. The statistical test for job position was significant at the 1% level among the three groups, which means that the distribution Islamic FinTech users is associated with their job position.

Islamic FinTech users' income and expenditure were divided into six levels. Payment users mostly have an income of less than IDR 3 million, whereas P2P lending and crowdfunding users mostly have an income between IDR 3-5 million. In terms of expenditure, most of the payments users were spend less than IDR 2 million (55.5%) followed by with 36.1% spending between IDR 2-4 million. P2P lending users spend IDR 2-4 million (46.2%) followed by 35.9% spend less than IDR 2 million. Crowdfunding group show a similar result to the payments group, with 47.4% of respondents having expenditure of less than IDR 2 million and 34.2% in the IDR 2-4 million range. The statistical test for income and expenditure were significant at 1% level, imply that the distribution of the Islamic FinTech users were strongly associated with income and expenditure.

4.2 Measurement Model Evaluation

Mehmetoglu (2012) explains PLS estimates both the measurement and structural model simultaneously. PLS involves a two-step process encompassing: (1) examination of the measurement model and (2) assessment of the structural model. The measurement model allows us to examine whether the constructs are measured with satisfactory accuracy and the structural model assess the explanatory power of the model. Composite reliability (CR), average variance extracted (AVE), item loading size significance, and discriminant validity are measurements that use the measurement model.

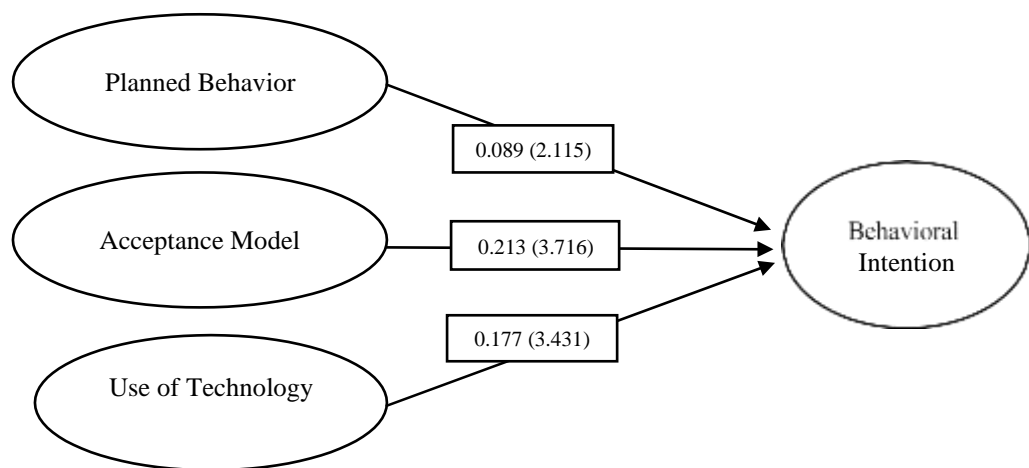


Figure 2. The SEM-PLS inner model

This study uses the factor loading, AVE, CR and Cronbach's alpha to assess convergent validity. The recommended factor loadings and AVE values to support convergent validity must be higher than 0.5 (Ryu, 2018). The recommended CR and Cronbach's alpha values to support convergent validity are higher than 0.7 (Tenenhaus et al., 2005). Table 2 shows that the CR (> 0.70), Cronbach's Alpha ($\alpha > 0.70$), FL (> 0.50), and AVE (> 0.50) for each construct is higher than the recommended relevant, thus indicating that all constructs support convergent validity.

Table 2. The results of the SEM outer model

	Item	Factor Loadings (FL)	CR	AVE	Cronbach's Alpha (CA)
Indicators	Planned Behavior Questionnaire statement		0.913	0.778	0.857
Attitude toward behavior (ATB) Perceived	ATB1. Using Islamic FinTech will provide benefits in my life. PBC1. I have the resources and knowledge to use	0.843			
behavior control (PBC)	Islamic FinTech. PBC2. I am able to use Islamic FinTech.	0.892			
Subjective norm (SN)	SN1. People around me believe that using Islamic FinTech is useful. SN2. The popular person whom I know is a user of Islamic FinTech.	0.909			
Indicators	Acceptance Model Questionnaire statement		0.927	0.586	0.910
Image (IM)	IM1. Using Islamic FinTech increases my prestige.	0.614			
Job relevance (JR)	JR1. Using Islamic FinTech helps me in various transactions.	0.779			
Output quality (OQ)	OQ1. My performance is affected by Islamic FinTech services.	0.749			
Result demonstrability (RD)	RD1. I can easily assess the financial benefits of Islamic FinTech services.	0.867			

	Item	Factor Loadings (FL)	CR	AVE	Cronbach's Alpha (CA)
Perceptions of external control (PEC)	RD2. I can easily assess the non-financial benefits (time and energy) which I get from Islamic FinTech services.				
	PEC1. I have full control of the Islamic FinTech service account such as username and password to log in.	0.789			
	PEC2. Islamic FinTech application is compatible with the software (operating system) which I use.				
	Computer anxiety (CA)	CA1. I'm not worried about a transaction failure if I use the Islamic FinTech application.	0.655		
	Computer playfulness (CP)	CP1. I spontaneously operate a system or technology on Islamic FinTech application.	0.800		
	Perceived enjoyment (PE)	PE1. I think that using Islamic FinTech is effective and efficient.	0.831		
Objective usability (OU)	OU1. I think that Islamic FinTech is faster and cheaper than other transaction methods (offline transactions).	0.770			
	Use of Technology		0.913	0.777	0.857
Indicators	Questionnaire statement				
Social Influence (SI)	SI1. My friends and family invite (recommend) me to use the Islamic FinTech application.	0.859			
Price Value (PV)	PV1. The cost of using the Islamic FinTech application is balanced with the benefits that I get.	0.895			
Habit (Hb)	Hb1. Using Islamic FinTech has become a part of my daily life.	0.891			

4.3 Structural Model Evaluation

The hypothesized structural relationships are between behavioral intention and the antecedents planned behavior, acceptance model, and use of technology. The hypotheses H1-H3 were assessed in Figure 2. To assess the statistical significance of the path coefficients, this study uses the path coefficient of the structural model and then performs bootstrap analysis (Table 3). Based on results, all factors affect behavioral intention positively, i.e., planned behavior has a value of $\beta = 0.089$ ($p < 0.05$), the acceptance model $\beta = 0.213$ ($p < 0.01$), and the use of technology model $\beta = 0.177$ ($p < 0.01$). Thus, H1, H2, and H3 are supported.

Therefore, planned behavior has a positive effect on the behavioral intention to use Islamic FinTech (H1) with the $\beta = 0.089$. The acceptance model has a positive effect on the behavioral intention to use Islamic FinTech (H2) with the $\beta = 0.213$. and the use of technology model has a positive effect on the behavioral intention to use Islamic FinTech (H3) with $\beta = 0.177$. All the variables have positive effect on the behavioral intention. The results also show that H2 has the largest t-statistic value (3.716); therefore, the acceptance

model is the most important variable affecting the behavioral intention to use Islamic FinTech services.

Table 3. The results of the structural model (direct relationships)

Hypothesized paths	Estimate	T-statistic (sig. >1.96)		Result
H1. Planned Behavior → Behavioral Intention	0.089	2.215	0.027	Supported
H2. Acceptance Model → Behavioral Intention	0.213	3.716	0.000	Supported
H3. Use of Technology → Behavioral Intention	0.177	3.431	0.001	Supported

4.4 *The Behavioral Intention for Three Groups of Islamic FinTech*

This study uses the loading factors, AVE, CR and Cronbach's alpha to assess convergent validity. The factor loading results and AVE values support convergent validity and the CR and Cronbach's alpha values also support convergent validity. Table 4 compares the Islamic FinTech types, i.e., payments, P2P and crowdfunding. The CR (> 0.70), Cronbach's alpha ($\alpha > 0.70$), LF (> 0.50), and AVE (> 0.50) values are higher than the recommended 0.7 and 0.5, showing that all constructs support convergent validity. The results show that, of the three types of Islamic FinTech, only crowdfunding users in the acceptance model indicator question the image (IM1) with FL an value of 0.469 (< 0.05). This shows the image does not support convergent validity. Figure 3 and Table 5 shows evaluation of the hypothesized paths for the three groups. Based on the results, in payment group, all factors affect behavioral intention positively, i.e., planned behavior has a value of $\beta = 0.095$ ($p < 0.05$), the acceptance model $\beta = 0.190$ ($p < 0.01$), and the use of technology model $\beta = 0.158$ ($p < 0.01$). In P2P lending group, only use of technology model affect behavioral intention to use Islamic FinTech ($\beta = 0.497$ ($p < 0.01$)), while in crowdfunding group only acceptance model supported the behavioral intention to use Islamic FinTech ($\beta = 0.650$ ($p < 0.01$)).

5. **Conclusion**

The objective of this study was to provide an improved understanding of the influential factors for behavioral intentions towards Islamic FinTech use in Indonesia for all FinTech services (Payments, P2P and Crowdfunding) both simultaneously and for each service. Three hypotheses were tested by the SEM-PLS approach. Based on the results, all hypotheses were accepted. This implies that the planned behavior, acceptance model, and use of technology models have a positive, significant relationship with individuals' behavioral intentions on the use of Islamic FinTech. These results imply that the planned behavior construct, including attitude toward the behavior, perceived behavioral control and subjective norm, influence individuals' behavior. This agrees with several published studies such as Glavee-Geo *et al.* (2017), Asmy *et al.* (2018), Zhang *et al.* (2018) and shows FinTech increases the flexibility of access to financial services.

According to Glavee-Geo *et al.* (2017) and Zhang *et al.* (2018), perceived ease of use is one of the most important factors considered by users in mobile bank use. This agrees with the results of this study, and implies that increased security, prestige, user-friendliness and the aesthetics in accessing FinTech services produce higher intentions in individuals to use FinTech. The use of technology also impacts individuals' intentions positively, which indicates

increased awareness that FinTech is a part of their daily life activities enhances individuals' intentions. Asmy *et al.* (2019) reveal that social influence has a strong correlation with individuals' intentions in Pakistan on mobile banking acceptance, which indicates that in Indonesia and Pakistan, as emerging countries, social environment such as family, friendship and public figures play important roles in influencing individuals' points of view.

The acceptance model is the most important latent variable influencing individuals' intentions to use Islamic FinTech compared with planned behavior and use of technology. The acceptance model also partially plays an important role in impacting the individuals' intentions about the use of payment services. However, for the P2P lending service, the use of technology is the most influencing factor on individuals' intentions. Last, but not least, in the use of crowdfunding services, the acceptance model has a more significant impact than planned behavior and the use of technology in shaping individuals' intentions.

In a broader view, this study's results bring a comprehensive perspective for policy-makers especially banks/institution management to increase the quality of Islamic FinTech applications or websites to gain the greater intentions towards adopting Islamic FinTech. Stakeholders should consider the most influential factors which affect individuals' intentions for each Islamic FinTech type. The policies that they then implement can be more appropriate to consumers' needs. The results may become an input especially for the Indonesia Financial Services Authority (OJK), with regards to the three types of Islamic FinTech in Indonesia. Factors influence behavioral intentions to use Islamic FinTech payment is planned behavior, acceptance model, and use of technology imply that the OJK should promote Islamic FinTech as well as has coordination with Islamic FinTech providers to give best service to its potential users. The main issues that should addressed by the Islamic FinTech providers such as maximize the benefit of Islamic FinTech, values of using Islamic FinTech, non-financial benefit, and convenience to use.

In order to increase the use of Islamic FinTech P2P, the Non-Bank Financial Industries division on OJK and Islamic FinTech providers should focus on the use of technology such as price compare to values that offers to potential users and recommendation from potential users' relatives in using Islamic FinTech P2P. Finally, the behavioral intentions from crowdfunding group is significantly influence by the acceptance model, imply that the OJK and Islamic FinTech providers should focus on developing better Islamic FinTech software/application to increase the intention of potential Islamic FinTech crowdfunding. The Islamic Capital Market Division on OJK should also support the development of technology- based Islamic capital markets by involving crowdfunding and P2P islamic FinTech providers on the stock exchange list. Furthermore, for enhancing The Financial inclusion, the Non-Bank Financial Industries

and Islamic Bank Regulation and License Directorate division on OJK should simplify the requirements for technology financial companies to easily obtain permits, but with applicable regulations as the FinTech providers have potential users’.

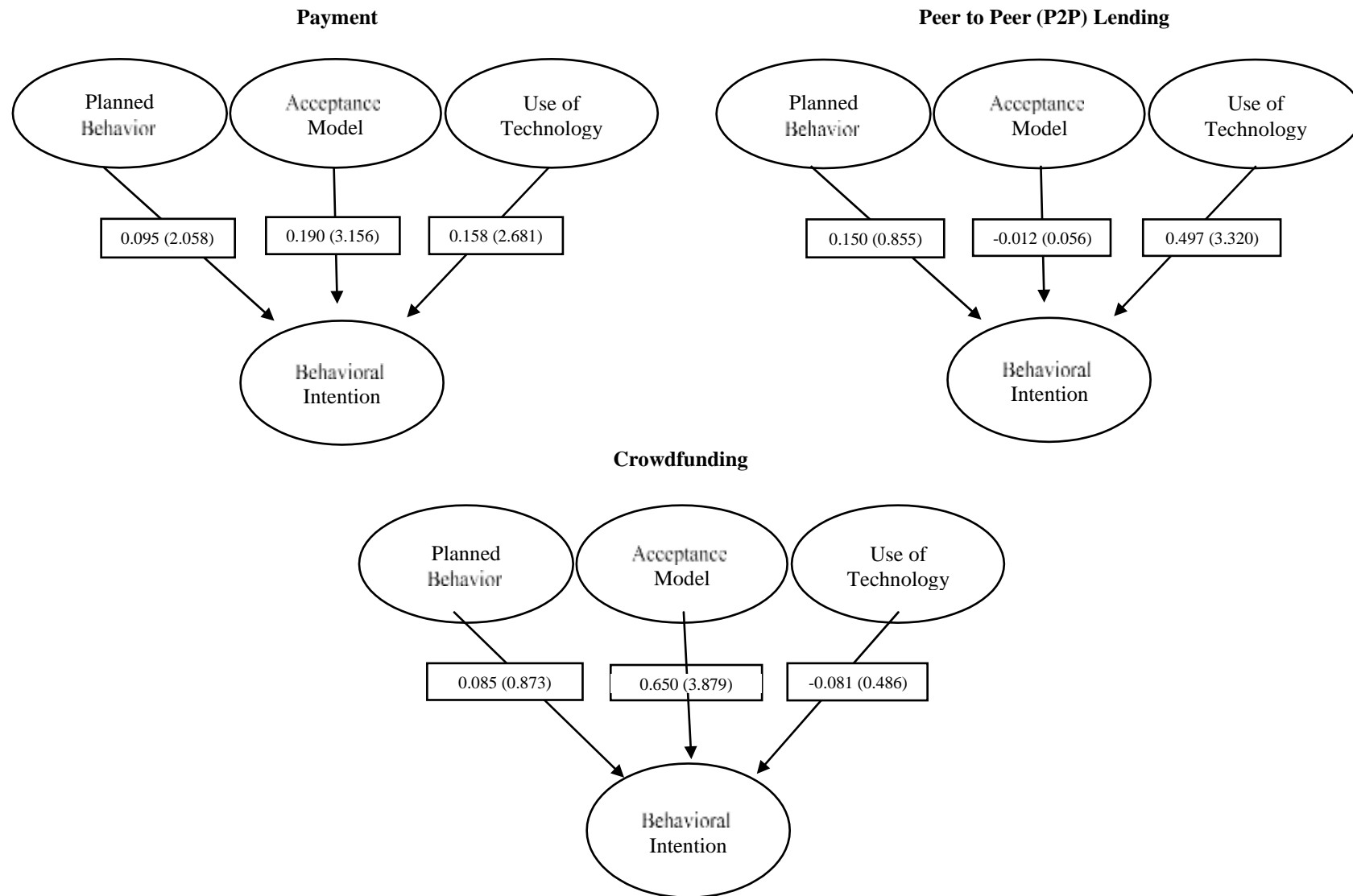


Figure 3. The SEM-PLS inner model: The interactions with three types Islamic FinTech service

Table 4. The analysis of the results of the measurement model (outer model)

Item	Payment (Pay)				Peer to Peer Lending (P2P)				Crowdfunding (Crowd)			
	FL	CR	AVE	CA	FL	CR	AVE	CA	FL	CR	AVE	CA
Planned Behavior		0.923	0.801	0.876		0.859	0.673	0.756		0.894	0.740	0.822
Indicators	Questionnaire statement											
Attitude toward behavior (ATB)		0.874			0.689				0.711			
Perceived behavior control (PBC)	ATB1. Using Islamic FinTech will provide benefits in my life.											
	PBC1. I have the resources and knowledge to use Islamic FinTech.	0.895			0.854				0.919			
Subjective norm (SN)	PBC2. I am able to use Islamic FinTech.											
	SN1. People around me believe that using Islamic FinTech is useful.	0.915			0.903				0.932			
Acceptance Model Indicators	SN2. The popular person whom I know is a user of Islamic FinTech.											
		0.925	0.581	0.909	0.937	0.629	0.923		0.946	0.688	0.933	
Image (IM)	IM1. Using Islamic FinTech increases my prestige.	0.654			0.611				0.469			
Job relevance (JR)	JR1. Using Islamic FinTech helps me in various transactions.	0.768			0.838				0.880			
Output quality (OQ)	OQ1. My performance is affected by Islamic FinTech services.	0.723			0.823				0.880			
Result demonstrability (RD)	RD1. I can easily assess the financial benefits of Islamic FinTech services.											
	RD2. I can easily assess the non-financial benefits (time and energy) that I get from Islamic FinTech services.	0.856			0.922				0.897			

Item	Payment (Pay)				Peer to Peer Lending (P2P)				Crowdfunding (Crowd)			
	FL	CR	AVE	CA	FL	CR	AVE	CA	FL	CR	AVE	CA
Computer anxiety (CA)	0.678				0.562				0.585			
Computer playfulness (CP)	0.791				0.845				0.819			
enjoyment (PE)	0.824				0.873				0.845			
(OU)	0.767				0.747				0.834			
Use of technology		0.914	0.779	0.858		0.899	0.748	0.832		0.925	0.804	0.878
Indicators												
Social influence (SI)	0.855				0.880				0.861			
Price value (PV)	0.897				0.855				0.925			
Habit (Hb)	0.896				0.860				0.904			

Table 5. The evaluation of the hypotheses using the structural model (direct relationships)

Hypothesized paths	Payment			Peer to peer lending (P2P)			Crowdfunding					
	Estimate	T-statistics	Result	Estimate	T-statistics	Result	Estimate	T-statistics	Result			
H1. Planned Behavior						Not			Not			
➤ Behavioral Intention	0.095	2.058	0.040	Supported	0.150	0.855	0.393	Supported	0.085	0.873	0.383	Supported
H2. Acceptance Model									Not			
➤ Behavioral Intention	0.190	3.156	0.002	Supported	-0.012	0.056	0.955	Supported	0.650	3.879	0.000	Supported
H3. Use of Technology Behavioral Intention												Not
➤	0.158	2.681	0.008	Supported	0.497	3.320	0.001	Supported	-0.081	0.486	0.627	Supported

References

- Aaron, M., Rivadeneyra, F. and Sohal, S. (2017). Fintech: Is This Time Different? A Framework for Assessing Risks and Opportunities for Central Banks. *Bank of Canada*, 1–32. Retrieved from www.bank-banque-canada.ca
- Aguirre-Urreta, M. and Rönkkö, M. (2015). Sample size determination and statistical power analysis in PLS using R: An annotated tutorial. *Communications of the Association for Information Systems*, 36, 33–51. <https://doi.org/10.17705/1cais.03603>
- Ajzen, I. (1985). From Intentions to Action: A Theory of Planned Behavior. *Action-Control: From Cognition to Behavior*, 11–39.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I. (2012). Attitudes and Persuasion. *The Oxford Handbook of Personality and Social Psychology*, (January 2012). <https://doi.org/10.1093/oxfordhb/9780195398991.013.0015>
- Akhtar, S., Irfan, M., Sarwar, A., Asma, Initial? and Rashid, Q. U. A. (2019). Factors influencing individuals' intention to adopt mobile banking in China and Pakistan: The moderating role of cultural values. *Journal of Public Affairs*, 19(1), 1–15. <https://doi.org/10.1002/pa.1884>
- Asmy, M., Mohd, B., Thaker, T., Amin, F. Bin, Bin, H., Thas, M. and Pitchay, A. (2018). *What keeps Islamic mobile banking customers loyal?* <https://doi.org/10.1108/JIMA-08-2017-0090>
- Asmy, M., Mohd, B., Thaker, T., Bin, A., Pitchay, A., Bin, H. and Thas, M. (2019). *Factors influencing consumers' adoption of Islamic mobile banking services in Malaysia*. <https://doi.org/10.1108/JIMA-04-2018-0065>
- Asosiasi Fintech Indonesia. (2019). *FinTech Landscape di Indonesia*. Retrieved from <https://klcfiles.kemenkeu.go.id/2019/08/4-Reynold-Wijaya-Fintech-Landscape-di-Indonesia.pdf>
- Beyene Fanta, A. and Makina, D. (2019). The Relationship Between Technology and Financial Inclusion. In *Extending Financial Inclusion in Africa*. <https://doi.org/10.1016/b978-0-12-814164-9.00010-4>
- Chuttur, M. (2009). Technology Acceptance, Information System Deployment, TAM, Information System Theory. *Sprouts*, 9(2009), 9–37. Retrieved from <http://sprouts.aisnet.org/9-37>
- Davis, F. D. (1985). A technology acceptance model for empirically testing new end-user information systems: Theory and results. *Management, Ph.D.*(January 1985), 291.

<https://doi.org/oclc/56932490>

- Davis, F. D. (1989). Davis 1989.pdf. *Information Technology*. <https://doi.org/10.2307/249008>
- Dubai Islamic Economy Development Centre. (2018). *Islamic Fintech Report 2018: Current Landscape & Path Forward*. 1–38. Retrieved from <https://www.dinarstandard.com/wp-content/uploads/2018/12/Islamic-Fintech-Report-2018.pdf>
- Fintechnews. (2018). *Fintech Landscape Report 2018 Indonesia*. (May).
- Glavee-Geo, R., Shaikh, A. A. and Karjaluoto, H. (2017). Mobile banking services adoption in Pakistan: are there gender differences? *International Journal of Bank Marketing*, 35(7), 1088–1112. <https://doi.org/10.1108/IJBM-09-2015-0142>
- Gupta, A. and Xia, C. (2018). A paradigm shift in banking: Unfolding Asia’s fintech adventures. In *International Symposia in Economic Theory and Econometrics* (Vol. 25). <https://doi.org/10.1108/S1571-038620180000025010>
- Hamdollah, R. and Baghaei, P. (2016). Partial least squares structural equation modeling with R. In *Practical Assessment, Research and Evaluation* (Vol. 21). <https://doi.org/10.1108/abr-10-2013-0128>
- Hamzah, H. and Mustafa, H. (2019). Exploring consumer boycott intelligence towards Israel-related companies in Malaysia: An integration of the theory of planned behaviour with transtheoretical stages of change. *Journal of Islamic Marketing*, 10(1), 208–226. <https://doi.org/10.1108/JIMA-06-2017-0070>
- Hendratmi, A., Ryandono, M. N. H. and Sukmaningrum, P. S. (2019). Developing Islamic crowdfunding website platform for startup companies in Indonesia. *Journal of Islamic Marketing*, ahead-of-p(ahead-of-print). <https://doi.org/10.1108/jima-02-2019-0022>
- Huei, C. T., Cheng, L. S., Seong, L. C., Khin, A. A. and Leh Bin, R. L. (2018a). Preliminary study on consumer attitude towards fintech products and services in Malaysia. *International Journal of Engineering and Technology(UAE)*, 7(2), 166–169. <https://doi.org/10.14419/ijet.v7i2.29.13310>
- Huei, C. T., Cheng, L. S., Seong, L. C., Khin, A. A. and Leh Bin, R. L. (2018b). Preliminary study on consumer attitude towards fintech products and services in Malaysia. *International Journal of Engineering and Technology(UAE)*. <https://doi.org/10.14419/ijet.v7i2.29.13310>
- KPMG. (2019). Pulse of Fintech. *KPMG-Fintech-Report*, (February), 1–85.
- Lee, Y., Kozar, K. A. and Larsen, K. R. T. (2003). The Technology Acceptance Model: Past, Present, and Future. *Communications of the Association for Information Systems*, 12(January 2003). <https://doi.org/10.17705/1cais.01250>

- Marszk, A. and Lechman, E. (2018). New technologies and diffusion of innovative financial products: Evidence on exchange-traded funds in selected emerging and developed economies. *Journal of Macroeconomics*. <https://doi.org/10.1016/j.jmacro.2018.10.001>
- Mehmetoglu, M. (2012). Partial Least Squares Approach to Structural Equation Modeling for Tourism Research. *Advances in Hospitality and Leisure* (Vol. 8). [https://doi.org/10.1108/S1745-3542\(2012\)0000008007](https://doi.org/10.1108/S1745-3542(2012)0000008007)
- Milian, E. Z., Spinola, M. de M. and Carvalho, M. M. d. (2019). Fintechs: A literature review and research agenda. *Electronic Commerce Research and Applications*, 34, 100833. <https://doi.org/10.1016/j.elerap.2019.100833>
- Miniard, P. W. and Cohen, J. B. (1979). Isolating Attitudinal and Normative Influences in Behavioral Intentions Models. *Journal of Marketing Research*. <https://doi.org/10.2307/3150881>
- Momani, A. M. and Jamous, M. M. (2017). The Evolution of Technology Acceptance Theories. *International Journal of Contemporary Computer Research (IJCCR)*, 1(1), 51– 58. <https://doi.org/10.1002/anie.201003816>
- Narayan, P. K. and Phan, D. H. B. (2019). A survey of Islamic banking and finance literature: Issues, challenges and future directions. *Pacific Basin Finance Journal*, 53, 484–496. <https://doi.org/10.1016/j.pacfin.2017.06.006>
- Nistor, N., Stanciu, D., Lerche, T. and Kiel, E. (2019). “I am fine with any technology, as long as it doesn’t make trouble, so that I can concentrate on my study”: A case study of university students’ attitude strength related to educational technology acceptance. *British Journal of Educational Technology*, 0(0), 1–15. <https://doi.org/10.1111/bjet.12832>
- Raza, S. A., Shah, N. and Ali, M. (2019). Acceptance of mobile banking in Islamic banks: evidence from modified UTAUT model. *Journal of Islamic Marketing*, 10(1), 357–376. <https://doi.org/10.1108/JIMA-04-2017-0038>
- Raza, S. A., Shah, N., Ali, M., Raza, S. A., Shah, N. and Ali, M. (2018). *Acceptance of mobile banking in Islamic banks: evidence from modified UTAUT model*. <https://doi.org/10.1108/JIMA-04-2017-0038>
- Reuters, T. (2018). State of Global Islamic Economy Report 2018/2019. *Dubai International Financial Centre*. Retrieved from <https://haladinar.io/hdn/doc/report2018.pdf>
- Ryu, H. S. (2018). What makes users willing or hesitant to use Fintech?: the moderating effect of user type. *Industrial Management and Data Systems*, 118(3), 541–569. <https://doi.org/10.1108/IMDS-07-2017-0325>

- Solomon, O., Shamsuddin, A. and Wahab, E. (2013). Identifying factors that determine intention to use electronic banking: A conceptual study. *Middle East Journal of Scientific Research*, 18(7), 1010–1022. <https://doi.org/10.5829/idosi.mejsr.2013.18.7.11810>
- Tenenhaus, M., Vinzi, V. E., Chatelin, Y. M. and Lauro, C. (2005). PLS path modeling. *Computational Statistics and Data Analysis*, 48(1), 159–205. <https://doi.org/10.1016/j.csda.2004.03.005>
- Venkatesh, V. and Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, 39(2), 273–315. <https://doi.org/10.1111/j.1540-5915.2008.00192.x>
- Venkatesh, V. and Davis, F. D. (2000). Theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science*. <https://doi.org/10.1287/mnsc.46.2.186.11926>
- Venkatesh, V., Morris, M. G., Davis, G. B. and Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly: Management Information Systems*.
- Venkatesh, V., Thong, J. Y. L. and Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly: Management Information Systems*.
- Zhang, T., Lu, C. and Kizildag, M. (2018). Banking “on-the-go”: examining consumers’ adoption of mobile banking services. *International Journal of Quality and Service Sciences*, 10(3), 279–295. <https://doi.org/10.1108/IJQSS-07-2017-0067>