

Customer Acceptance Analysis of Islamic Bank of Indonesia Mobile Banking Using Technology Acceptance Model (TAM)

Raju Wandira*¹, Ahmad Fauzi², Fauzan Azim³, Firdaus Annas⁴

^{1,2} Faculty of Science and Technology, UIN Imam Bonjol Padang, West Sumatra, Indonesia

³ Universitas Muhammadiyah, Riau, Indonesia

⁴ Institut Agama Islam Negeri Bukittinggi, West Sumatra, Indonesia



Abstract—This takes a look at goals to observe the elements that affect clients in the use of BSI's cellular banking service. These elements are visible from perceived ease of use the software, the perceived usefulness through clients, and the safety supplied on attitudes and intentions in the use of cellular banking applications. The facts became received from a survey that became dispensed to 183 BSI clients with numerous financial and academic levels. The data have been analyzed with the use of Structural Equation Modeling (SEM) with AMOS software. So that effective consequences are received with a full-size impact of the perceived ease and advantages of the use of the BSI cellular banking software at the attitudes and intentions proven through clients. In addition, in phrases of security, it additionally has an effective impact on attitudes in adopting BSI cellular banking. However, the work environment, buddies, and administrative center doesn't have any full-size impact on the advantages of BSI cellular banking.

Keywords— *Mobile Banking, TAM, BSI.*

I. INTRODUCTION

Technological developments will affect various fields of human life. Especially with the development of cellular technology that can support various software. Cellular technology does not only include making calls or sending SMS, but various things can already be done in the context of increasingly complex community mobility. The development of cellular technology seeks to meet the needs of people who want to carry out various activities using only one device. Besides being easy to carry, it can be accessed anywhere and what is quite important is the ease of use.

Along with the development of technology and an increasingly dynamic and mobile society [1] forces banking institutions to seek new strategies in attracting customers to use the facilities provided by the bank. Offering various information conveniences, new technologies and facilities for the convenience of customers in online transactions[2] at lower costs [3]. Thus increasing the effectiveness and efficiency of customer satisfaction and preventing them from switching to other banks. One of the conveniences and facilities in business competition is the Mobile Banking service which can be accessed by customers with various conveniences[4]. Mobile banking allows customers to access banking services, transactions, and perform other services remotely using mobile devices[5][6] and can be accessed anywhere and anytime. The use of mobile banking will increase in the future along with the increasing quality of people's lives and their education[7].

In addition to the benefits and conveniences offered to customers, the use of mobile banking will also bring benefits to the bank. Data processing will be faster, service will be faster, there will be reduced costs in bank operations but improve service quality[4]. During the 2014-2018 period, banks with mobile banking systems have high performance with lower financial risks

and will certainly play an important role in maintaining financial stability.

In Indonesia, there are many banking institutions that provide mobile banking services, one of which is Indonesian Islamic Bank (BSI). BSI is a combination of several state-owned Islamic banks in Indonesia on February 1, 2021, namely: Mandiri Sharia, BNI Sharia and BRI Sharia [8]. Therefore, this merger will provide more complete services, more reach, and more capital. Islamic banks are financial institutions that apply Islamic principles to their services as one of the pillars of the economy of a country where its citizens are dominated by Muslims[9]. BSI offers a variety of products and services to improve service to customers. Among them are individual services such as savings, pilgrimage to Mecca, umrah, financing, and gold. There are also corporate services in the form of trade finance and services, financing, savings, and cash management. In addition, there are digital banking products such as BSI Mobile, Open Online Account, BSI Qris, BSI net, debit, and aisha[8].

As a bank offering mobile banking services, it has a full range of clients' financial trading capabilities. Online money transfers, invoice payments, shopping, e-commerce services, opening online accounts, cash withdrawals, and much more. You need to use all these features to see how your customers will accept your use of BSI Mobile Banking. Therefore, if know what customer acceptance is, this is a good way to make decisions to improve service to customers.

This study aims to examine the acceptance factors of Indonesian Islamic Bank customers and to model user behavior in using mobile banking with the Technology Acceptance Model (TAM). Factors have been seen from the perception of the perceived usefulness, perceived ease of use, intention to use, attitude towards the application, user behavior, security, and human influences. This research will provide assistance in developing a strategy for the development of Islamic banks in Indonesia for the acceptance of the use of mobile banking services and increasing future research.

II. LITERATURE REVIEW

A. Technology Acceptance Model (TAM)

In related research, many models are used to analyze the weaknesses and strengths of IT implementations, including: Diffusion Innovation Theory[6], Theory of Planned Behaviour [10], Unified Theory of Acceptance and Use of Technology (UTAUT) [11], FITT Framework, and Technology Acceptance Model (TAM)[12]. Use of Davis' Technology Acceptance Model (TAM) in 1989[13]. It focuses on the ease of use and usefulness analysis of the system used. Due to its ease of implementation and simplicity, this model is widely used by researchers to predict the evolution of new technologies[14][15]. The use of TAM in the analysis of information systems can be implemented in a variety of areas. Starting from the field of education as done by Fauzi et al.(2021)[16], Wandira and Ikwana(2021)[17], health sector by Holden and Karsh (2010)[18], business and e-commerce from Fayad and Paper (2015)[19] and much more.

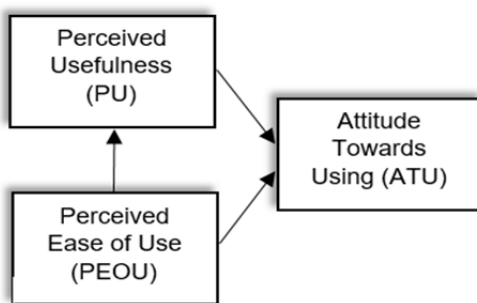


Fig. 1. The basic concept of TAM (F.D.Davis 1985)

When analyzing the acceptability and usability of an applied system, TAM has three basic concepts. That is, the perceived usefulness- PU, the perceived ease of use- PEOU, and the attitude towards the use- ATU. PU is the belief of those who use the system to improve performance can be beneficial. PEOU is easy to implement and does not burden anyone with the use of the system[20]. ATU is the user's attitude towards the perceived benefits and ease of use of the system.

Much research has been done on the use of TAM in the analysis of system usage. Survey on Attitude Analysis of Mobile Banking Users by Aboelmaged and Gebba (2013)[4] in Uni Emirat Arab (UAE). The introduction of mobile banking has had positive results in terms of user attitudes and norms, which has had a significant impact on the usability of mobile banking, but it has not been very supportive. A study by Chitungo and Munongo (2013)[21] in Zimbabwe found results that had a significant impact on the use of mobile banking. Ease of use, personal innovation, and elements of social norms have a significant impact on the use of mobile banking, but there are questions from users about its security. This will greatly help local communities restricted to mobile access to improve to make mobile banking access more convenient.

There is also a study by Mutahar et al. (2018)[22] about the intention to use mobile banking in Yemen. The results of this survey show that the benefits and perceptions of the benefits that the community feels have a positive impact on the use of mobile banking. The risks of using mobile banking negatively impact the benefits and services offered. The risks of using mobile banking negatively impact the benefits and services offered. Apart from banking, Fauzi et al. (2021)[16] conducted a survey on the use of Google Classroom during the Covid19 pandemic in West Sumatra, Indonesia. As a result, there was a positive impact on students' use of Google Classroom media at their facilities.

III. RESEARCH METHODOLOGY

A. Research Framework and Hypotheses

In this study, 10 hypotheses are used as concepts.

There are many studies showing the relationship between the benefits and the desire to use the system. A study by Hamid et al. (2016)[23] this shows a positive impact between the interests and desire to use e-government. In addition, research Suki (2011)[24] shows that the usefulness of 3G mobile services influences the intent of customers to use 3G mobile services. Therefore, a hypothesis can be made:

H1: Perceived usefulness has a positive effect on intention to use.

The benefits of an applied information system often affect users' attitudes toward using the system. A study Reny, Guritno, and Siringoringo (2013)[25] found that the usefulness of online ticket reservations had a positive effect on user attitudes. People perceive the benefits of online booking as a factor in their attitude towards using online booking systems. Therefore, in this study, the following hypotheses are proposed:

H2: Perceived usefulness has a positive effect on attitude towards using.

Ease of use of the system is very important which will increase the perceived benefit of users. For example, one study Elkaseh, Wong, and Fung (2016)[26] found that the convenience and benefits of using social media for e-learning became very important for understanding the intentions of students and teachers. Ease of use of the system should be addressed as users may come from different circles. Ease of use of a system is strongly correlated with perceived benefits by users [20]. For this reason, this study proposes the following hypotheses:

H3: Perceived ease of use has a positive effect on perceived usefulness.

System usability measures how quickly and easily people understand the system. Implementing a system that is understandable and easy to use will have a significant impact on user attitudes that do not burden them to use the system at no additional cost [27]. Therefore, the following hypothesis is proposed:

H4: Perceived ease of use has a positive effect on attitude towards using.

The attitude displayed by the user is one of the factors that indicate the intention to use the system service. Attitudes show the positive attitudes of Malaysian bank customers toward mobile banking use [28]. The ease of use of a system affects not only the user's attitude, but also the attitude they display when using the system. Then the following hypothesis is raised:

H5: Attitude Towards using has a positive effect on intention to use.

The development of the Internet is also accompanied by increasingly complex security issues. Security does not exclude the use of mobile banking as one of the factors influencing user attitudes [29]. Studies Alraja, Farooque, and Khashab (2021)[30] show that security, privacy, and convenience influence user attitudes toward the use of IoT services in the healthcare sector. Then the

following hypothesis is recommended:

H6: Security has a positive effect on attitude towards using.

Do other people influence an individual’s attitude when adopting the system? This is because research (Deutsch and Gerard 1955) shows that the social environment influences an individual’s decisions and attitudes. Taylor and Todd (1995) have also been shown to have a significant impact on attitude definition[31]. In this regard, the following hypotheses are proposed:

H7: Human Influences has a positive effect on perceived usefulness.

Differences in the circumstances of someone and another affect that person in different ways. In particular, when applying technical services, friends or colleagues significantly affect the ease of implementing technical services. For example, a study found a positive impact of the environment on the convenience of providing e-government services[32]. Therefore, the following hypothesis is proposed:

H8: Human Influences has a positive effect on perceived ease of use.

Others, friends, or colleagues often influence those who frequently interact with the environment. One study found that this had a positive effect on user attitudes toward using e-government services[32]. Also, one of the factors studied was the influence of social conditions on individuals' attitudes toward the use of technology services[33]. Then the following hypothesis is proposed:

H9: Human Influences has a positive effect on attitude towards using.

The framework design of the proposed hypothesis is as follows:

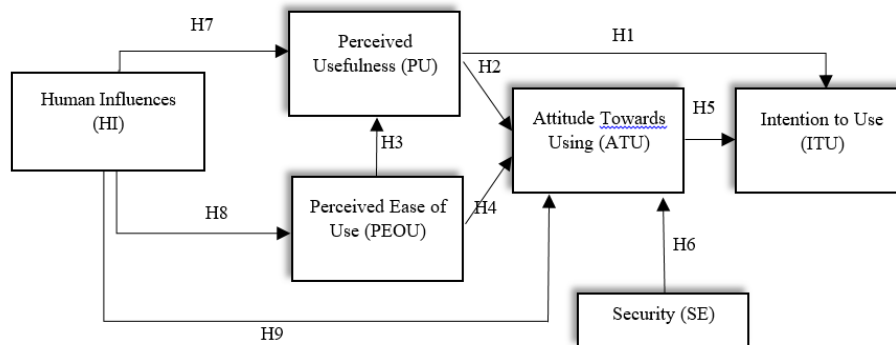


Fig. 2. Research framework

B. Data Collection and Respondents

In this study, a two-part survey was designed using Google Forms. The first part covers the demographics of respondents such as gender, age, education, and income. The second is a linker survey on five scales, where 1(one) means "strongly disagree" and 5(five) means "strongly agree", including Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Towards Using (ATU), Intention to Use (ITU), Security (SE) dan Human Influences (HI). The questionnaire questions are taken from several previous surveys that have been adapted for mobile banking usage.

The survey was distributed to 183 respondents from various clients of Islamic Bank of Indonesia. Because respondents are customers of different economic, educational, gender, and income backgrounds, a proportional stratification sampling method is used in this study. Of the 183 respondents who responded, 166 people used BSI mobile banking, and 17 people did not use it, so it was admitted that the process was not performed.

TABLE I. DEMOGRAPHICS OF RESPONDENTS

Indicator	Criteria	People
respondents	User	166
	Non User	17
Gender	Male	106
	Female	60
Age	< 20	3
	20-30	61
	31-40	66
	41-50	24
	>50	12
Education	Junior High School	2
	Senior High School	29
	Associate Degree	2
	Bachelor's Degree	71
	Graduate	58
	Postgraduate	4

TABLE II. MOTIVATION TO USE MOBILE BANKING

1	Balance check
2	Transfer of money
3	Withdraw cash without an ATM card
4	Online shopping
5	Pay bills (PLN, PDAM, Telephone, Internet, etc.)
6	Buy credit/quota/electricity tokens
7	Open an account
8	Top up e-wallet
9	Other

IV. RESULTS

In this study, the evaluation used Structural Equation Modeling (SEM) with AMOS software. SEM is a statistical method that has the ability to check and are expecting the evaluation among constructs constructed with the aid of using fixing multiregression problems [34][35]. Figure three suggests the version that has been constructed, wherein e1 to e28 is the variance. Then test the assemble that builds the version with the aid of using searching out the Average Variance Extracted (AVE) and Composite Reliability (CR) values. Determining the AVE primarily based totally at the assemble makes use of a

predetermined definition, in order that the AVE and CR values of the version may be visible in Table 4.

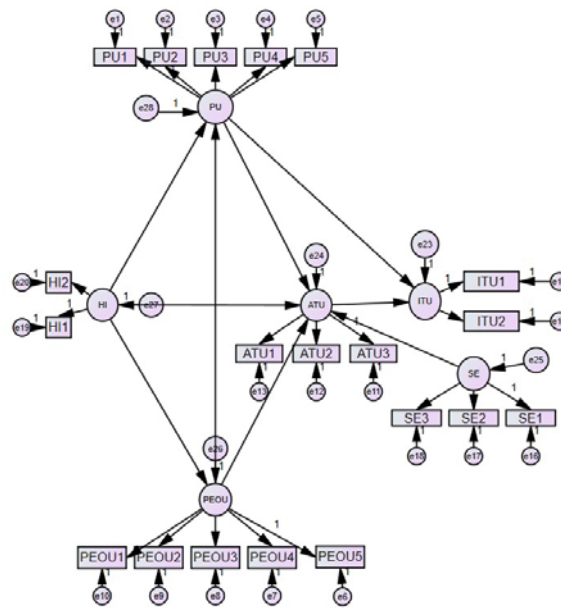


Fig. 3. Modeling with AMOS

TABLE III. REGRESSION WEIGHT

			Estimate	S.E.	C.R.	P
PEOU	<---	HI	0,422	0,079	5,351	***
PU	<---	PEOU	0,478	0,06	8,017	***
PU	<---	HI	0,041	0,05	0,828	0,408
ATU	<---	PU	0,600	0,096	6,226	***
ATU	<---	HI	0,058	0,049	1,176	0,24
ATU	<---	SE	-0,139	0,047	-2,955	0,003
ATU	<---	PEOU	0,213	0,071	3	0,003
ITU	<---	ATU	0,605	0,09	6,703	***
ITU	<---	PU	0,388	0,095	4,079	***
PU1	<---	PU	1,000			
PU2	<---	PU	1,153	0,071	16,348	***
PU3	<---	PU	1,115	0,062	18,113	***
PU4	<---	PU	1,113	0,078	14,223	***
PU5	<---	PU	1,111	0,063	17,53	***

PEOU5	<---	PEOU	1,000			
PEOU4	<---	PEOU	0,789	0,051	15,543	***
PEOU3	<---	PEOU	0,834	0,065	12,891	***
PEOU2	<---	PEOU	0,510	0,087	5,836	***
PEOU1	<---	PEOU	0,588	0,085	6,925	***
ATU3	<---	ATU	1,000			
ATU2	<---	ATU	1,053	0,062	16,9	***
ATU1	<---	ATU	1,029	0,066	15,487	***
ITU1	<---	ITU	1,000			
ITU2	<---	ITU	1,026	0,07	14,615	***
SE1	<---	SE	1,000			
SE2	<---	SE	1,133	0,104	10,881	***
SE3	<---	SE	0,891	0,09	9,929	***
HI1	<---	HI	1,000			
HI2	<---	HI	1,175	0,163	7,215	***

TABLE IV. VALIDITY AND RELIABILITY

Variable	Indikator	Estimasi	CR	AVE
PEOU	PEOU1	0,594	0,873219	0,592093
	PEOU2	0,518		
	PEOU3	0,841		
	PEOU4	0,795		
	PEOU5	1,000		
PU	PU1	1,000	1,036052	1,210068
	PU2	1,155		
	PU3	1,114		
	PU4	1,114		
	PU5	1,111		
ATU	ATU1	1,040	1,023331	1,073363
	ATU2	1,067		
	ATU3	1,000		
ITU	ITU1	1,000	1,0125	1,025313
	ITU2	1,025		

SE	SE1	1,000	1,00817	1,02467
	SE2	1,133		
	SE3	0,889		
HI	H1	1,000	0,940917	0,888816
	H2	1,134		

Based on the construction reliability (CR) and Average Variance Extracted (AVE) of Table 4, it is judged that the construction in which the model is built is valid. Mobile Banking BSI acceptance rates are considered very good when AVE is 0.5 for PEOU and AVE of 0.7 or higher for PU, ATU, ITU, SE and HI[36]. From the built model, the correlation between the constructs is obtained as shown in Table IV.

TABLE V. VALIDITY AND RELIABILITY

			Estimate	S.E.	C.R.	P	Label
PEOU	<---	HI	0,422	0,079	5,351	***	Accepted
PU	<---	PEOU	0,478	0,06	8,017	***	Accepted
PU	<---	HI	0,041	0,05	0,828	0,408	Not Significant
ATU	<---	PU	0,6	0,096	6,226	***	Accepted
ATU	<---	HI	0,058	0,049	1,176	0,24	Not Significant
ATU	<---	SE	-0,139	0,047	-2,955	0,003	Accepted
ATU	<---	PEOU	0,213	0,071	3	0,003	Accepted
ITU	<---	ATU	0,605	0,09	6,703	***	Accepted
ITU	<---	PU	0,388	0,095	4,079	***	Accepted

Table IV shows that HI had a positive and significant effect on PEOU but not PU and ATU. This means that other people, co-workers and work environment will affect the ease with which customers use the BSI mobile banking app. However, this does not affect customer attitudes toward using mobile banking. It also does not have a significant positive impact on the benefits of BSI Mobile Banking. Reputation among co-workers and friends far outweighs the benefits of various mobile banking applications. This means customers don't pay too much attention to the benefits of BSI mobile banking apps as long as they increase their reputation among friends and colleagues. In addition to this reputation, the company they work for uses Bank Syariah Indonesia as a financial service, so their employees also use BSI services for their finances.

It also can be visible that PEOU has a wonderful and substantial impact on PU and ATU. Ease of use the cellular banking utility in order that clients sense the advantages at once and impact patron attitudes to apply it. And that reasons clients to apply the capabilities of the cellular banking utility to the fullest. PU has a positive impact on the ITU and ATU, which means that the usefulness of the BSI mobile banking application affects customers' intentions and attitudes toward their use. Customers have found that the versatile use of the BSI mobile banking app is a great idea for a variety of financial transactions. According to a customer survey, the BSI mobile banking menu uses a variety of services for financial services, including electricity, telephone, water, credit and other services. Therefore, the ease of use of the application raises interest in using BSI mobile banking as a financial service, as the different uses of BSI mobile banking affect their attitude.

SE also has a positive impact on ATU, which customers consider the BSI mobile banking app to be a secure app they can use

for a variety of financial transactions. Mobile banking apps use a different PIN than the ATM PIN and this is due to the complexity of smartphones with fingerprint protection. The ATU has a significant positive impact on the ITU. This means that customers' attitudes influence their intention to use BSI mobile banking. An open attitude towards the use of technology shows the very good intentions of customers using mobile banking.

V. CONCLUSION

This study links perceived usefulness and perceived ease of use influencing customers' decisions about using BSI Mobile Banking. Contributing factors analyzed included perceived usefulness, perceived ease of use, attitude towards use, intent to use, human influence and security. This will complement our understanding of the factors that influence customers who use mobile banking for financial services. Data from 166 respondents were analyzed using the AMOS application. The work environment, the influence of friends and co-workers have a positive effect on the ease of use of the BSI mobile banking app. This is because the company they work for uses BSI for their financial services, so they use the same service. The convenience of using mobile banking applications with the help of friends or colleagues is also affected. However, this does not significantly affect PUs and ATUs. Customers don't really see the benefits of the BSI mobile banking app. Because they see more fame among colleagues and friends. The PEOU then has a significant impact on perceived benefits and customer attitudes. SE and PU also have a positive effect on ATU. Customers perceive the security and benefits of mobile banking as factors influencing their attitude towards financial services. My confidence in the safety of my data and money led me to use BSI Mobile Banking. This research is very helpful for BSI to improve financial services for its clients. Both in terms of service quality and service menu additions. So you can conduct all your clients' financial transactions with the help of one BSI mobile banking application.

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