Gen-Z Acceptance of Mobile Banking for Sharia Bank: Do TAM-Model, Religiousity Intention, and Security Variables Matter?

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Abstract. This research aims to obtain empirical evidence regarding the acceptance and use of mobile banking at Bank Syariah Indonesia (BSI) by Generation Z, as well as proving what factors encourage Generation Z customers to adopt mobile banking in BSI. This research collected data from 100 BSI customers by Generation Z in Bogor, Indonesia. The research adopts Structural Equation Model-Partial Least Square (SEM-PLS) to link perceived usefulness, perceived ease of use, religiosity, satisfaction, security, intention to use and adoption of mobile banking. The results of this research reveal that the integration of the Technology Acceptance Model (TAM), Religious Intention Model and security variables in the Technology Based Factor (TBF) provides a more comprehensive explanation regarding the adoption of mobile banking by Generation Z customers of BSI. In addition to perceived usefulness and perceived ease of use, the results of this study emphasize the importance of security in mobile banking adoption. This research provides implications for BSI managers to improve their adoption of mobile banking services. Bank management needs to place special emphasis on security aspects in the development and promotion of Mobile Banking, as well as *identify and implement effective security measures to protect customer data and transactions.* This research is the first attempt to integrate the TAM model, Religious Intention Model and security variables in TBF to assess BSI mobile banking adoption.

Keywords: Mobile banking Adoption, Religiosity Intention, Security Variable, Sharia Banking, Technological Acceptance Model

Abstrak. Penelitian ini bertujuan untuk mendapatkan bukti empiris tentang penerimaan dan penggunaan mobile banking di BSI oleh Generasi Z, serta membuktikan faktor-faktor apa saja yang mendorong nasabah Generasi Z mengadopsi mobile banking di BSI. Penelitian ini mengumpulkan data dari 100 nasabah BSI oleh Generasi Z di Bogor, Indonesia. Metode yang digunakan adalah Structural Equetion Model-Partial Least Square (SEM-PLS) untuk menghubungkan antara persepsi kegunaan, persepsi kemudahan kegunaan, religiusitas, kepuasan, keamanan, niat menggunakan dan adopsi mobile banking. Hasil penelitian ini mengungkapkan bahwa integrasi model Technology Acceptance Model (TAM), Religiousity Intention Model dan variabel keamanan pada Technology Based Factor (TBF) memberikan penjelasan yang lebih komprehensif mengenai adopsi mobile banking oleh nasabah Generasi Z Bank Syariah Indonesia (BSI). Selain persepsi kegunaan dan persepsi kemudahan penggunaan, hasil penelitian ini menekankan pentingnya keamanan dalam adopsi mobile banking. Penelitian ini memberikan implikasi terhadap manajer Bank Syariah Indonesia (BSI) untuk meningkatkan adopsi layanan mobile banking mereka. Manajemen bank perlu memberikan penekanan khusus pada aspek keamanan dalam pengembangan dan promosi Mobile Banking,

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serta mengidentifikasi dan mengimplementasikan langkah-langkah keamanan yang efektif untuk melindungi data dan transaksi nasabah. Penelitian ini merupakan upaya pertama untuk mengintegrasikan TAM model, Religiousity Intention Model dan variabel keamanan pada TBF untuk menilai adopsi mobile banking BSI.

Kata Kunci: Adopsi Mobile-Banking, Bank Syariah, Religiosity Intention, Security Variable, Technological Acceptance Model

Introduction

The development of information and communication technology has brought about significant transformation in various sectors, including the banking industry (Nam et al., 2016). This phenomenon encourages all bank financial institutions to create digital banking bases, where banks digitize all traditional transactions (Nguyen, Lan, & Dang, 2017). One of the innovations that emerged from this phenomenon is mobile banking (Sudarsono et al., 2022) . Mobile banking is present as an innovation that offers various conveniences of information and convenience for customers in online transactions.

One of the advantages of using mobile banking is that users can obtain real time information about their accounts and can pay for transactions from anywhere and at any time (Suhartanto et al., 2020) . Thus, along with the increasing number of banks in Indonesia that offer mobile banking services, this creates tight competition in the banking industry. In this competitive environment, finding strategies to encourage customers to adopt mobile banking is very important for every bank (Malaquias & Hwang, 2019) . In particular, this issue is very important for Islamic banks which are new entrants to the banking market and are considered less experienced than conventional banks.

Internet banking began to be implemented in Indonesia in 1998 by Bank Internasional Indonesia (BII) and mobile banking was implemented by BCA in 2001. It was then implemented by BCA Syariah in 2014 and was followed by other banks and continues to develop to this day. Mobile banking has become a revolutionary technology that has changed the way the banking system operates (Baabdullah et al., 2019). M-banking has changed the nature of the industry. Rogers (2003) noted five key characteristics of innovation: relative advantage, compatibility, complexity, observability, and trialability. They influence people's decisions to accept innovations. In addition, customers' intention to adopt bank service innovations is influenced by attitudes, beliefs, awareness and uncertainty (Ananda et al., 2020; Thambiah et al., 2010; Tiwari et al., 2021). In addition, religiosity, image, visibility, and volunteerism (Yusuf & Derus, 2013) and risk (Al-Jabri & Sohail, 2012)

At the same time, Generation Z, or what is often referred to as the digital native generation , is a consumer group that plays an important role in market development. Generation Z consists of individuals born between 1997 and 2012. Generation Z grew up as individuals who are responsive to the internet and mobile devices. According to the Central Statistics Agency (2023), Generation Z makes up more than 50% of the population in Indonesia, with the majority of Generation Z choosing smartphones as a transaction medium. The convenience offered by transactions via smartphone will increase demand for mobile banking use now and in the future.

Quoting from databoks.katadata.co.id data from Bank Indonesia (BI), from January to April 2023 the value of digital banking transactions in the country reached 4.3 trillion (Mulya & Yuhertiana, 2023) . As many as 53% of transactions are carried out by Generation Z via mobile banking . This number indicates that the role of Generation Z is quite significant in the development of mobile banking technology (Mulya & Yuhertiana, 2023) .

In Indonesia, many sharia banking institutions provide mobile banking services, one of which is Bank Syariah Indonesia (BSI). BSI is the largest sharia bank in Indonesia which is a combination of several sharia banks, namely Mandiri Syariah, BNI Syariah and BRI Syariah. Digital banking products provided by BSI include BSI Mobile, Open Account Online, BSI Qris, BSI Net, and Debit (Wandira, 2022). BSI as the largest sharia bank in Indonesia has great growth potential. As stated by the President Director of Bank Syariah Indonesia, sharia banking assets in May 2023 grew by 15.52% on an annual basis. In addition, financing grew by 20% and third party funds grew by 15.02% on an annual basis. This growth has led Bank Syariah Indonesia to become the 6th largest bank in the banking industry in Indonesia in general and the 14th in the world.

However, on May 8 2023, BSI experienced a cyber attack from the LockBit ransomware group which resulted in disruption to their banking services. According to Antara's report, after successfully hacking the system, LockBit announced that they had stolen 1.5 Terabytes of data from BSI. This hacker group from Russia then submitted negotiations to BSI, offering to return the data they stole if BSI agreed to send a ransom of IDR 295.6 billion. LockBit gave BSI a deadline of May 15, 2023 at 21:09:46 UTC. However, after passing the specified deadline, LockBit again announced that BSI had not responded to their negotiations. As a result, LockBit decided to sell the data they had stolen on the internet black market (kompas.id, 2023).

After this incident, on May 16 2023, BSI issued an official statement through BSI Corporate Secretary Gunawan A. Hartoyo, confirming that customer data and funds remained safe. BSI also ensures that transactions at the bank can still be carried out safely. Furthermore, Gunawan explained that BSI would work together with the relevant authorities to deal with the data leak problem they were experiencing. This incident shows the importance of security in mobile banking services and the impact that cyber attacks can have on financial institutions (kompas.id, 2023). Cyber security is a crucial factor to consider in developing and managing technology-based banking services.

Top of Form

Several empirical studies have examined the adoption of mobile banking including some in the context of Islamic banking and the debate that drives adoption to the forefront (Malaquias & Hwang, 2019; Raza et al., 2019; Singh and Srivastava, 2018) . Related literature on technology adoption shows that the Technology Acceptance Model (TAM) is one of the best and most widely accepted models (Jamshidi & Hussin, 2016) . On the other hand, the complexity of the technology adoption process is found so that researchers (Malaquias & Hwang, 2019b; Raza et al., 2019) recommends continuing efforts to systematically research the mobile banking adoption phenomenon. In the case of Islamic banking, researchers (Ali et al., 2018; Ateeq-ur-Rehman & Shabbir, 2010; Suhartanto & Leo, 2018a) proposed a model that shows religiosity as an important factor determining customer behavioral intentions. In addition, related literature shows that poor security perceptions in mobile banking lead to low trust and reduce customers' intention to adopt mobile banking services (Suhartanto et al., 2020; Yousafzai et al., 2010)

Of these studies, no research has been found that specifically integrates the TAM model, religiosity intention model and security as additional variables. Of course, the security variable is added based on cyber -related issues crime which specifically befell Bank Syariah Indonesia. Therefore, the novelty of this research lies in the addition of security variables due to the phenomenon of cyber crime at Bank Syariah Indonesia in 2023. Apart from that, the sample of respondents for this research focuses on Generation Z in Indonesia for several reasons. First, the number of Generation Z currently reaches 75 million people, (BPS, 2023)making them the majority of bank consumers in Indonesia. Second, in the next 5 to 10 years, Generation Z is predicted to reach a higher income level compared to other generations, making them a potentially profitable market.

Furthermore, based on reports, Generation Z tends to be technology adopters and likes to use mobile banking platforms to meet their needs for banking services (Suhartanto et al., 2022). Therefore, analysis of the acceptance of sharia mobile banking technology, especially at Bank Syariah Indonesia by Generation Z, is an interesting research topic to study using the two models used and the addition of security variables, especially this research was carried out after cyber crime occurred in BSI mobile banking.

This research aims to obtain empirical evidence regarding the acceptance and use of mobile banking at BSI by Generation Z, as well as proving what factors encourage Generation Z customers to adopt mobile banking at BSI. It is hoped that the results of this research can provide theoretical and practical contributions. Theoretically, this research will enrich the literature regarding Generation Z's acceptance of technology in the context of comprehensive BSI mobile banking by using the TAM model, intention religiosity model and security variables. Practically, the results of this research will provide insight into sharia banks, especially BSI, in developing effective marketing strategies to attract and retain Generation Z as customers.

The next part of this research includes literature review and hypothesis formation, which is then followed by a description of the research method, findings and discussion. This research is concluded with a summary, implications, identifying limitations, and providing suggestions for further research.

Literature Review

Theory of Planned Behavior (TPB) and Technology Acceptance Model (TAM)

The Theory of Planned Behavior (TPB) is a theory that proposes that a person's behavior is influenced by attitudes, subjective norms, and perceived behavioral control . (Ajizen, 1991) . The existence of this behavioral control variable is a form of development of the previous model, namely *the Theory of Reasoned Action (TRA)*. This variable is useful for controlling individual actions that are limited due to the lack of resources used to act TPB) shows that human actions are directed by three types of beliefs. Overall, behavioral beliefs give rise to an attitude *of* liking and disliking behavior, normative *beliefs* produce social pressure or subjective norms , *and control* beliefs (*control beliefs*) will provide perceived behavioral control (Pangastuti & Riza, 2023)

The literature regarding consumer behavior related to mobile banking mostly refers to a conceptual perspective based on technology acceptance or innovation diffusion (Suhartanto et al., 2020). These behavioral concepts explore decision making primarily using the Technology Acceptance Model, the *Reasoned Action model*, and the *Planned Behavior model*. This is in line with previous research stating that TAM is the most influential method for researching user acceptance of technology because it has received considerable support from previous research on various technology adoptions such as technology-based services such as *mobile banking*. (Malaquias & Hwang, 2019b). The use of TAM aims to explain the determinants of global acceptance of information-based technology and explain the behavior of end users of information technology with a wide variety and user populations (Pangastuti & Riza, 2023).

Along with its popularity, subsequent studies have tried to expand the scope of the TAM model by including more predictor factors. However, among the various factors that influence user adoption, previous research emphasizes that aspects such as perceived usefulness and ease of use are the main factors in the adoption process (Suhartanto et al., 2020). Therefore, this research chose to focus on these two aspects, namely perception of usefulness *and* perception of ease *of use*.

According to Malaquias & Hwang (2019b) perception refers to the benefits that a technology can provide. This understanding is in line with the view that perceived usefulness reflects an individual's belief in the ability of a technology to meet their needs. The perceived usefulness of a technology is also related to value, which is a relative comparison between the cost of acquiring the technology and the benefits obtained (Suhartanto et al., 2020) . As a consequence, any perceived benefit is thought to increase the level of use and interconnectedness. In the context of *mobile banking*, the greater the perceived value of the service, the higher the likelihood that individuals have the intention to adopt it. On the other hand, if mobile banking is considered to have low value, the likelihood of adopting the technology is small. In addition, users' lifestyles are also a factor that influences their assessment of the benefits of technology.

Mobile Banking

Mobile banking is a technology on mobile phones or smartphones that is designed to provide functional convenience for banking institutions in interacting with their customers practically, with the aim of providing efficient benefits for both parties. According to Riswandi, *mobile banking* is the latest service introduced by banks, enabling customers who use it to carry out various banking transaction activities via their *smartphone devices* (Sari et al., 2022).

There are two variants of mobile banking, namely SMS- *banking* which is accessed by sending text messages via mobile phone, and WAP- *banking*, a service which is accessed via a GPRS (internet) connection using an application on *a smartphone*. By using *mobile banking services*, banking transaction activities that were previously carried out manually by visiting the bank can now be carried out using only a mobile phone, allowing customers to save time and costs (Sodik et al., 2022).

Generation Z

Several analyzes state that Generation Z, born between 1997 and 2012, has traits and characteristics that are very different from previous generations. They are often referred to as the boundary *-less generation*. For example, in an article entitled "*Four Reasons Generation Z will be the Most Different Generation* " Ryan Jenkins (2017) states that Generation Z has different expectations, preferences and views of work, which is considered a challenge for organizations (kemdikbud, 2021). The characteristics of Generation Z are more diverse, global in nature, and have a significant influence on the culture and attitudes of society in general. One striking characteristic is Generation Z's ability to adopt technological changes in all aspects of their lives, where technology becomes a natural part of their existence as they breathe.

Hypothesis Development

Perceived Usefulness

Suhartanto et al. (2020) stated that users will consider a technology to be valuable if the user believes that the technology suits their lifestyle. In mobile

banking, the effectiveness of technology is related to the comparison between services with mobile technology and services without mobile technology (with conventional services only). If the *mobile banking service* performs as expected, adoption behavior is likely to occur; conversely, if service performance is not as expected, then intention to adopt is unlikely. Previous research by Suhartanto et al. (2020) who examined this construct found that perceived usefulness is the main factor for adopting a technology.

H1: Perceived usefulness has a significant and positive effect on users' intention to use **Perceived Ease of Use**

The literature notes that perceived ease of use is a construct in the TAM model that refers to users' feelings of being free from problems when using technology. The concept of perceived ease of use also indicates the adopter's belief that using a technology will not cause difficulties (Suhartanto et al., 2020). The perceived ease of use of a technology means that its operation is not complicated and requires minimal effort, that is, it is easy to access both mentally and physically. This shows that users believe they are able to operate the technology without difficulty. If a potential user feels that a technology is not easy to use, then the possibility of him adopting the technology is small even though the technology is affordable.

Previous research studies by Priya et al. (2018) stated that perceived ease of use is a valid and reliable construct when tested in many technological contexts and supports its predictive power on users' technology adoption. On the other hand, when using technology, prospective users, especially mobile banking, users must know well how to support the use of this technology.

For these customers, the adoption of *mobile banking* is carried out because of the benefits obtained from the ease of use. This convenience was created and minimized, which is usually characterized by shortcomings in the form of a small *keypad and screen size, making browsing and using several services on mobile banking devices* tedious. Therefore, a user-friendly interface with appropriate graphical layout and content, a visible interface and clear commands are needed to encourage users to adopt mobile banking (Suhartanto et al., 2020). This can be interpreted to mean that there is expected to be a positive relationship between perceived ease of use and intention to use, and perceived usefulness of mobile banking.

H2: Perceived ease of use has a significant and positive effect on users' intention to use H3: Perceived ease of use has a significant and positive effect on perceived usefulness

Religious Intention Model

Religiosity is the belief and level of personal obedience to religion and the principles followed by an individual. Differences in individual levels of religiosity can internally guide individuals in making choices and meeting special needs (Sudarsono et al., 2022) . The religiosity model argues that religiosity is a driving factor in customer satisfaction and customer intentions towards a product and service, as well as a driving factor in influencing a person's consumption of a product or service (Suhartanto et al., 2020).

Several previous antecedents argued that beliefs represent the information a person has about something (Suhartanto et al., 2020). Apart from that, previous research (Suhartanto & Leo, 2018b; Abd Rahman et al., 2015; Suhartanto & Leo, 2018a) stated the significant impact of religiosity on customer satisfaction and willingness to repurchase and to recommend halal products and services (Suhartanto 2019).

H4. Religiosity has a significant and positive effect on users' intention to use H5. Religiosity has a significant and positive influence on user satisfaction

User Satisfaction

The literature discusses a lot about the importance of customer satisfaction in the banking services sector. In the context of *mobile banking adoption*, user satisfaction plays an important role in influencing customers' intentions to continue using this service (Priya et al., 2018). In addition, customers who are satisfied with a product or service tend to share their experiences with other potential customers, more importantly fostering good behavioral intentions. *Mobile banking* can increase overall customer satisfaction with the bank if it provides added value to customers and facilitates the sharing of knowledge and benefits through mobile banking (Suhartanto et al., 2020).

- H6. User satisfaction has a significant and positive effect on the user's intention to use.
- H7. Perception of usability has a significant and positive effect on user satisfaction.
- H8. Perceived ease of use has a significant and positive effect on user satisfaction.

Religiosity and Perceived Usefulness

Religiosity and its impact on customers' perceptions of the value of a product is an issue often discussed in relation to culture. Recent studies only focus on how religiosity influences customer acceptance of products or services, especially in the context of product usability, but attention to this aspect is still limited. Religiosity is an important factor in customer consumption behavior and has the ability to influence how customers view the value of a product. Previous research has summarized the role played by religiosity in influencing customer preferences for banking services, with previous findings showing that religiosity directly influences customer adoption of products such as Islamic bank credit cards (Suhartanto et al., 2020).

H9. Religiosity has a significant and positive effect on perceived usefulness.

Technology-Based Factor

The various financial service products provided by a bank to its clients include mortgages, loans, insurance, and banking services via mobile devices. *Mobile banking* services that utilize artificial intelligence (AI) and algorithm-based interaction technology stand out as one of the innovative financial services. This service operates independently, relying on technology to meet the needs of bank customers. In previous literature, several technological factors were identified that influence *mobile banking services* that support the use of AI (Suhartanto et al., 2022).

Security

The literature notes that security is a factor described by Yousafzai et al., (2010) as how customers perceive security threats when using *online services*, such as the risk of their personal information being hacked. In the literature on

mobile banking services, previous research shows that poor perceptions of security in the context of mobile banking can reduce customer trust in the service, which in turn can reduce customer interest in using it (Sudarsono et al., 2022; Suhartanto et al., 2020; Suhartanto & Leo, 2018). In other words, the more customers perceive a higher level of security, the more confidence they have in using *mobile banking* (Suhartanto et al., 2020) apart from that, the greater the security of the *mobile banking features*, the greater the user satisfaction with the mobile banking application. Previous research also summarizes a positive relationship between security factors and customers' intention to use banking services in the future (Suhartanto et al., 2022)

H10. Security has a significant and positive effect on user satisfaction

H11. Security has a significant and positive effect on users' intention to use

Intention to Use

It is an individual's tendency to behave in a certain way towards a product, which reflects customer behavior that can be projected in the future in relation to the consumption of that product (Suhartanto et al., 2020). In post-purchase analysis, customer behavioral intent is generally used to predict the likelihood of repeat purchase, as it is a relatively accurate method for anticipating future consumer behavior. Furthermore, intention has also been proven to be a fairly accurate indicator in understanding customer retention in the context of financial services in Islamic banks (Suhartanto & Leo, 2018). Previous research has considered intention as the main element in customers' acceptance decisions for certain technologies (Al-Thuneibat & SA Al-Saad, 2016; Suhartanto et al., 2022). Other experts (Sudarsono et al., 2022) argue that customer intentions also have an important role in determining technology adoption. Regarding the adoption of mobile banking services, previous studies have reported that customer intent is a key factor in customers' decisions to choose banking services (Suhartanto & Leo, 2018).

H12. User intention to use has a significant and positive effect on mobile banking adoption

Research Methods

Data

This type of research is quantitative descriptive. Quantitative methods are a type of research approach that uses numbers and is used to explain and discover knowledge (Sodik et al., 2022) . The data used in this research is primary data obtained from questionnaires that were distributed to respondents. To facilitate the data collection process for this research, a Google form was used which was filled in by respondents. The respondent criteria used in this research include respondents born 1997-2012 who use BSI mobile banking.

The data used in this research is primary data, namely data collected directly by researchers to answer research problems or objectives. The technique for selecting this research method using the convient sampling method is included in the *non-probability sampling technique category*. *Convient sampling* is a sampling process based on the availability of elements and ease of access. The number of samples in this study was determined in accordance with data collection rules. To analyze the relationship between variables, a questionnaire with a five-point Likert scale was used, ranging from (1) Strongly Disagree to (5) Strongly Agree (Pragusto Sumarsono et al., 2020). The Likert scale is a type of scale used to collect information to understand or measure qualitative and quantitative information.

Method

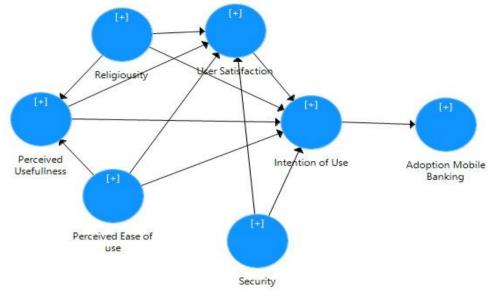
This research used the SEM-PLS method using SmartPLS 3 software. Research data was collected using a random sampling method, namely random data collection from Generation z who use BSI mobile banking. The random sampling method is an approach commonly used in research and surveys. The minimum number of valid respondents required in SEM-PLS research is 100 people (Kock & Hadaya, 2018).

SEM-PLS (*Structural Equation Modeling - Partial Least Squares*) is a multivariate statistical method used to test the relationship between variables

in the measurement model and the structural model. This method allows researchers to analyze and model relationships between complex variables in a robust statistical framework. In SEM-PLS, analysis is carried out by paying attention to the causal relationship between latent variables and observed variables, as well as taking into account the effects of influence between these variables (Leguina, 2015).

This method is used to test complex models with many variables and relationships between variables. In SEM-PLS, the relationship between variables is measured using the correlation between these variables, then dimensionality reduction is carried out using the principal component principle, so that only the main factors are formed that explain the variability of the data. The measurement model was then tested using a partial regression model, and finally the structural model was tested to test the cause-and-effect relationship between variables. SEM-PLS also has high flexibility in testing models and is able to handle data that is not normally distributed. This method does not pay too much attention to the normality assumption of the data, so it is suitable for use in situations where the data does not meet the normality assumption. In addition, this method can also be used for predictive analysis in various fields, such as marketing and finance, providing valuable insights in decision making and strategic planning. According to Hair et al (2014), SEM-PLS is one of the most commonly used methods for analyzing complex data and having diverse variables.

Model



The model and variables of the research as follows:

Figure 1. Framework of Thought

Referring to these variables, they can be developed into several indicators which are explained in the following table:

Table 1. Research V	ariables and Indicators
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Perceived Usefulness	Helps in my daily life	Suhartanto, 2019
	• Flexible	
	Saves me time	
	Increase my productivity	
Perceived ease-of-use	It's not difficult to learn	SUhartanto, 2019
	Clear features	
	• Easy to use	
	Can be learned quickly	
Religiosity	Believe there is only one God, Allah	Suhartanto, 2019
	 Commit to avoiding sin 	
	 Have knowledge about my religion 	
	• Respect the rights of followers of other	
	religions	
	• Having a feeling of fear of committing	
	sin	
User Satisfaction	Overall satisfaction	Suhartanto, 2019
	 Conformity to expectations 	
Intention to use	Continue using mobile banking	Suhartanto, 2019
	• Does not replace mobile banking services	
Security	Check account balances safely	Suhartanto, 2022
	Manage accounts safely	
	Make transfers safely	
	• It's safe to make check deposits	

Results And Discussion

This research involved 100 respondents whose average age was between 20 and 23 years, representing Generation Z. Of the total respondents, 35% were men, while 65% were women. The profile characteristics of the respondents can be seen in Table 1. After ensuring that the overall measurement model was acceptable, a structural equation model analysis was carried out to test the relationship between constructs using the entire sample.

Demographic Variables	Ν	%
Gender		
Woman	65	65%
Man	35	35%
Age		
<19	2	2%
20 - 23	95	95%
24 - 28	3	3%
Last education		
Secondary school	69	69%
Bachelor	25	27%
Postgraduate	3	3%
Academy/D3	3	1%
Work		
Student/i	93	97%
Transportation services	1	1%
Instructor	2	2%

Table 2. Demographic Data Table

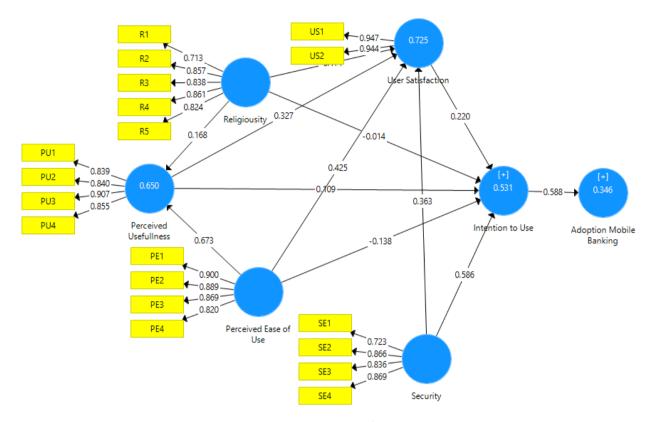


Figure 2. SEM-PLS results

Evaluation of sample adequacy, sample size plays an important role in estimating and interpreting research results (Rachbini & Rachbini1, 2018). According to Hair et al., (2010), the results of statistical tests are very sensitive to the size of the sample size. The appropriate size of sample size in most scientific studies ranges from 30 to 500 respondents (Henseler et al., 2015). Meanwhile, the minimum number of valid respondents required in SEM-PLS research is 100 people (Kock & Hadaya, 2018). Researchers distributed questionnaires as an instrument for this research and took a sample of 100, which means the sample met the minimum number.

Validity and Reliability Test

This research uses two types of validity tests, namely convergence validity tests and discriminant validity tests. The convergence validity test is determined using *Average Variance Extracted (AVE)* and *Loading Factor*. From the convergent validity test (Table III), if the AVE is higher than 0.5 and *the*

loadings are higher than 0.6, then both criteria are met. Meanwhile, the discriminant validity test is seen by comparing the AVE of one construct with another construct, which is usually called the *Fornell-Larcker criterion*. (Suhartanto et al., 2020) . Based on Table IV, *the AVE's square root* of all constructs is greater than the correlation value between constructs, which indicates that the discriminant validity of the variable constructs is acceptable.

The next test is a reliability test which shows internal consistency for measuring the instruments used. This reliability test uses composite reliability values and *Cronbach's Alpha* in its testing. If the *Composite Reliability* (*CR*) value and *Cronbach's Alpha value* are more than 0.7, then this reliability test is considered trustworthy (Hair et al., 2014) . This means that the higher the *Composite Reliability* (*CR*) value and *Cronbach's Alpha value* and *Cronbach's Alpha value*, the more consistent the measurement instrument is in providing similar results when tested on the same sample. In Table III, it is found that the *Composite Reliability* (*CR*) value and *Cronbach's Alpha value* meet the test limits, except for the *Intention to Use variable*. For this variable, a value of 0.675 which indicates that this value does not meet the test limits in this reliability test.

The next step is testing using a bootstrapping procedure which is used to evaluate the level of significance of all indicators and path coefficients (Suhartanto et al., 2020) . In this study, data analysis noted that *Perceived Usefulness*, *Perceived Ease of Use, Security* and *Religiosity* explained 0.725 (72.5%) of *User Satisfaction*. Meanwhile, *Perceived Ease of Use* and *Religiosity* explained 0.650 (65.0%) of the variance in *Perceived Usefulness*. Then *Perceived Usefulness*, *Perceived Ease of Use*, *Security*, *Religiosity*, and *User Satisfaction* explain 0.531 (53.1%) of the variance *in Intention of Use*. In this study, all the determining factors in *Mobile Banking adoption* were explained by 0.346 (34.6%). This means that these determining variables have a significant impact on *Mobile Banking adoption* construct. According to Suhartanto et al. (2019), the R2 classification is divided into three groups, namely weak (R2 = 0.19), moderate (R2 = 0.33), and

substantial (R2 = 0.76). Based on this classification, the R2 value is classified into the substantial group, which shows that the construct value of *Mobile Banking adoption* exceeds the second classification, namely moderate.

Table 3 below illustrates the results of convergent validity and construct reliability.

Items	Loadings		Alpha	CR
Intention to use		0.755	0.675	0.860
I1 : I have a strong intention to continue using mobile banking services in the future	(0.876)			
I2 : I have no plans to replace BSI mobile banking services with another provider.	(0.861)			
Perceived Ease of Use		0.757	0.893	0.926
PE1 :I found that mobile banking is not difficult to learn	(0.900)			
PE2 : Each feature has a description that is				
easy to understand, making it easier for me	(0.889)			
to know the use of each feature.				
PE3 : Mobile banking is really easy to use in my daily activities.	(0.869)			
PE4 : I realized that mobile banking can be learned quickly	(0.820)			
			0.000	0.010
Perceived Usefulness		0.740	0.883	0.919
PU1 : The mobile banking application helps in my daily life	(0.839)			
PU2 : The mobile banking application				
provides easy access anytime and	(0.840)			
anywhere I am				
PU3 : Speed and ease of access via mobile				
banking effectively increases my time efficiency.	(0.907)			

Table 3. Convergent validity and construct reliability

PU4 : I feel more productive and efficient	
in my banking activities since using mobile	(0.855)
banking	

Religiosity		0.673	0.878	0.911
R1 : I believe that there is only one God,				
namely Allah,	(0.713)			
R2 : I have a strong commitment to avoid				
committing sins, including using mobile	(0.857)			
banking				
R3 : I look for compatibility between my				
religious values and the features provided	(0.838)			
by mobile banking				
R4 : Diversity of beliefs is respected and is				
part of the positive values that I instill in	(0.861)			
every financial transaction.				
${\bf R5}$: The feeling of fear of committing a sin	(0.824)			
is a reminder for me to use mobile banking	(0.024)			
Security		0.682	0.842	0.895
SE1 : I feel confident and safe when				
checking my account balance via mobile	(0.723)			
banking				
SE2 : The account management process via				
mobile banking is carried out with a high	(0.866)			
level of security.				
SE3 : I am confident that every transfer I				
make via mobile banking is safe from	(0.836)			
security threats.				
SE 4 : I feel confident and safe when				
depositing checks via mobile banking	(0.869)			
services.				
User Satisfaction		0.894	0.882	0.944
US1 : I am very satisfied with the overall	(0.947)			
mobile banking service	· /			

mobile banking service

US2 : Every feature and service presented (0.944) is in line with my expectations as a user.

Construct	Intention to Use	Perceived Ease of Use	Perceived Usefulness	Religiosity	Security	User Satisfac- tionn
Intention to use	0.869					
Perceived Ease of Use	0.427	0.870				
Perceived Usefulness	0.433	0.799	0.860			
Religiousness	0.286	0.746	0.671	0.820		
Security	0.710	0.548	0.482	0.375	0.826	
User Satisfaction	0.592	0.758	0.727	0.502	0.690	0.946

Table 4. Construct Discriminant Validity (Fornell Lacker)

Hypothesis Testing Results

Table 5. Hypothesis Testing Results

Hypothesis	Path C	PValue	Remark
H1: Perceived Usefulness →Intention to Use	0.327	0.392 ns	Unsupported
H2: Perceived Ease of Use \rightarrow Intention to Use	-0.138	0.402 ns	Unsupported
H3: Perceived Ease of Use \rightarrow Perceived	0 (72	<0.000*	
Usefulness	0.673	<0.000*	Supported
H4: Religiosity \rightarrow Intention to Use	-0.014	0.929 ns	Unsupported
H5: Religiousness \rightarrow User Satisfaction	-0.171	0.040*	Supported
H6: User Satisfaction \rightarrow Intention to Use	0.220	0.236 ns	Unsupported
H7: Perceived Usefulness \rightarrow User Satisfaction	0.228	<0.000*	Supported
H8: Perceived Ease of Use \rightarrow User Satisfaction	0.425	<0.000*	Supported
H9: Religiousness \rightarrow Perceived Usefulness	0.168	0.906 ns	Unsupported
H10: Security \rightarrow User Satisfaction	0.363	0.004*	Supported
H11: Security \rightarrow Intention to Use	0.586	0.001*	Supported
H12: Intention to Use \rightarrow Mobile Banking	0.588	<0.000*	
Adoption	0.000	\U.UUU	Supported

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Notes : *P-value <0.05 (significant); <sup>ns</sup> = not significant
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Next, hypothesis testing, there are seven hypotheses that are significant at p < 0.05, and five hypotheses that are not significant at (p > 0.05). There are seven significant hypotheses, namely *Perceived Ease of Use* towards *Perceived Usefulness* with (p<0.000), *Religiousness* to *User Satisfaction* with (p 0.040), *Perceived Usefulness* towards *User Satisfaction* with (p<0.000), *Perceived Ease of Use* towards *User Satisfaction* with (p<0.000), *Security* towards *User Satisfaction* with (p 0.004), *Security* towards *Intention to Use* with (p 0.001) and *Intention to Use* towards *Mobile Banking Adoption* with (p <0.000).

Furthermore, the five hypotheses that were not significant were *Perceived Usefulness* towards *Intention to Use* with (p 0.392), *Perceived Ease of Use* towards *Intention to Use* with (p 0.402), *Religiousness* towards *Intention to Use* with (p 0.929), *User Satisfaction* towards *Intention to Use* with (p 0.236) and *Religiousness* on *Perceived Usefulness* with (p 0.906).

Findings and Discussion

This research aims to obtain empirical evidence regarding the acceptance and use of mobile banking at BSI by Generation Z, as well as proving what factors encourage Generation Z customers to adopt mobile banking at BSI. This research uses *the Theory of Planned Behavior (TPB*) as its theoretical basis, *the Theory Acceptance Model (TAM)*, *Religious Intention Model* and *Technology Based Factor*. Of the 12 hypotheses above, there are 7 hypotheses that are significant and 5 hypotheses that are not significant. Following are some of the findings in this research as follows.

First, based on the value of the R2 assessment, this study confirms that the TAM Model (including the variables of perceived usefulness, perceived ease of use, and intention to use), the *Religiosity-Intention* Model (including the variables of religiosity, user satisfaction, and intention to use), and the *Technology-Based Factor* (involving the underlying technological variable, namely security) explains the adoption of BSI *mobile banking* among Generation Z. When the three models are integrated, compared with the TAM model, *Religiosity-Intention* Model, and *Technology-Based Factor* individually, the model that combined demonstrated the ability to explain more of the variance in intention to adopt. This indicates the robustness of the proposed integrated model, which includes key aspects of technology perception, religious values, and intention to use *mobile banking services* (Suhartanto et al., 2020).

This integrated model is theoretically suitable, this research suggests that the integration of the TAM model, *Religious Intention* Model and *Technology Based Factor* can significantly increase the extrapolation power of the new model in predicting mobile banking adoption by Islamic bank customers. The new integration model of TAM, *Religious Intention* Model and *Technology-Based Factor* is an important contribution in the context of this research, as far as the author understands, because no previous research has demonstrated the suitability of a comprehensive integrated model to rationalize mobile banking adoption in the Islamic banking environment. *Technology-Based Factor* integration is a key element in strengthening the research framework and recognizing the important role of technology as a determining factor in the adoption of *mobile-based sharia banking services* (Suhartanto et al., 2020).

Second, this research shows that *Perceived Usefulness, Perceived Ease of Use, Religiosity, User Satisfaction* do not have a significant effect on *Intention to Use* except *Security.* On the other hand, the existence of security *is* actually a determining factor that has a big chance of adopting BSI *mobile banking*. This explains that these four variables are not factors that can influence the majority of people's intentions, especially Generation Z, in adopting BSI *Mobile Banking*. Generation Z, who grew up in the era of digital technology, will place a higher priority on digital security factors as the main consideration in influencing their intention to use *Mobile Banking*. High awareness of digital security risks, personal experiences or influencing security cases, as well as the need to maintain the privacy of their data can make *Security* a dominant factor

influencing user intent among Generation Z. As a result, other factors such as usability and user satisfaction not very significant in making decisions to adopt *mobile banking* for Generation Z.

This is different from research by Jamshidi & Hussin (2016) that the factor that has a big influence on *Intention to Use* is the *Religiosity factor* in using a sharia bank credit card compared to *Perceived Ease of Use* and *Perceived Usefulness*. Then research conducted by Nurahmasari et al. (2023) revealed that *perceived usefulness* has a large influence on attitudes and intentions to use digital banking services, compared to *perceived ease of use* and *self-efficacy*.

Third, *Perceived Ease of Use* and *Religiosity* on *Perceived Usefulness*. Each of these variables shows different results, where Perceived Ease of Use has a significant effect on Perceived Usefulness. This shows that Perceived Ease of Use is one of the factors influencing the adoption of BSI mobile banking among Generation Z. Generation Z, who tend to look for easy and fast solutions, sees ease of use as the main key in assessing the benefits of a technology. Relatedness to their digital lifestyle, interest in time efficiency, trust in safe technology, perception of good organizational support, and interest in innovation are important factors that strengthen the positive relationship between ease of use and perceived usefulness. Thus, Perceived Ease of Use is the main factor influencing perceived benefits in adopting BSI mobile banking among Generation Z. This finding is in line with previous research on various technology adoptions (Jin, 2014; (Owusu Kwateng et al., 2019; Suhartanto et al., 2019; Suhartanto et al., 2019; al., 2020). In addition, Malaquias & Hwang (2019); Priya et al., (2018); Raza et al., (2019) also stated that Perceived Ease of Use and Perceived Usefulness are strong factors of intention to adopt mobile banking.

Meanwhile, *Religiosity* has no significant effect on *Perceived Usefulness*. This indicates that religion is not a determining factor for Generation Z in using BSI Mobile Banking. This is in accordance with Generation Z who tend to emphasize practicality, individualistic values, and technological experience, more inclined to prioritize functional and practical aspects rather than religious considerations in evaluating the benefits of services. In addition, trust factors in financial services and influences from the social and cultural environment also play a greater role in shaping their perceptions of *mobile banking use*. Therefore, it can be concluded that, in this context, religiosity is not the main determining factor in assessing *the usefulness* of BSI *mobile banking services* for Generation Z. This finding contradicts research by Jamshidi & Hussin (2016) which revealed that religiosity has a large influence on intentions. customers for sharia credit cards. One possible explanation for this finding is that Generation Z does not view BSI mobile banking as compliant with religious standards and principles.

Fourth , the variables *Perceived Usefulness* , *Perceived Ease of Use* , *Religiousness* and *Security* on *User Satisfaction* show a significant influence. This shows that these four variables are factors that influence Generation Z's level of satisfaction in using BSI *Mobile Banking* . This has a very clear influence because these four variables show continuity with each other, namely the easier it is to use BSI *Mobile Banking* , the greater the level of use. This shows that large amounts of use will certainly affect user satisfaction. Then it is supported by the existence of Security which is of course a determining point in the use of *Mobile Banking* BSI which will influence the satisfaction of each user and is supported by the level of *Religiousness of the individual Mobile Banking BSI* user . This is in line with research by Suhartanto et al. (2019) who stated that existing knowledge on religiosity not only influences customer satisfaction and behavioral intentions, which have been well reported, but also on the use of sharia banking services, namely *mobile banking*.

Finally, in this research it was also found that *Intention to Use* has a significant effect on *Mobile Banking* adoption. This means that this research shows that the intention to use which is influenced by several other factors is the determining factor for Generation Z in adopting *Mobile Banking*. Generation Z, who are accustomed to technology from an early age, tend to form the intention to use *Mobile Banking* when they realize its practical benefits,

practicality in carrying out financial transactions, and ease of access to digital financial services. Factors such as adaptation to digital trends, interactions with peers, and previous positive experiences may also play a role in shaping these positive intentions, suggesting that psychological and social aspects also play an important role in Generation Z's decision-making regarding Mobile Banking adoption. This finding contradicts research (Ilham Hassan F., Mansour Abuzar MA, 2016; Raza et al., 2019; Wandira, 2022) which states that attitudes towards use have a significant positive influence on intention to use. This means that customer attitudes influence their intention to use BSI mobile banking. An open attitude towards the use of technology shows very good customer intentions in using mobile banking.

Conclusion, Implication, and Limitation

This research offers several relevant managerial implications for increasing the adoption of BSI *Mobile Banking* by Generation Z customers by using *the Technology Acceptance Model (TAM)* and additional variables *Security (Technology Based Factor*). First, bank management needs to place special emphasis on security aspects in the development and promotion *of mobile banking*, as well as identify and implement effective security measures to protect customer data and transactions. By improving platform security, BSI customers can build trust and acceptance among Generation Z, who tend to be sensitive to the privacy and security of their information.

Second, this research states that in addition to the *security aspect* of mobile banking services, perceived usefulness and ease of use are important factors in their satisfaction, as well as the intention to adopt mobile banking among Indonesian sharia bank customers, especially Generation Z. Thus, in developing *mobile banking*, Islamic banks need to identify and meet the expectations of Generation Z in terms of usability and operation of *mobile banking applications*.

The limitation of this research is that it only involved a sample of 100 Generation Z users of BSI *mobile banking*, which of course does not include the total population of Generation Z who use BSI *mobile banking* in Indonesia. Apart from that, research data is limited to the Generation Z perspective of BSI *mobile banking users* in the Bogor area. Therefore, the results of this research cannot be generalized to Generation Z throughout Indonesia.

This research emphasizes the influence of *Perceived Usefulness*, *Perceived Ease of Use*, *Religiosity*, and *Security* as driving factors *for User Satisfaction* and *Intention to Use* to adopt BSI *mobile banking services* among Generation Z. However, other variables such as *Trust* and *Brand* also have the potential to be significant. influence customer intentions. To formulate a more comprehensive mobile banking adoption model, further research can include these variables into the model framework.

Furthermore, there are other models such as the Diffusion of Innovation model that can provide additional insight into customer behavioral intentions. Therefore, future research can enrich understanding by integrating these models into existing adoption model frameworks, thereby providing deeper insight into the factors that influence *mobile banking adoption* among Generation Z.

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