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Digital Bank Adoption in Indonesia: The Role of Price Value, Perceived Risk, and Intention to Use

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ABSTRACT

This study aims to explore the effect of price value and perceived risk on the intention to use digital banks and investigate the effect of intention to use on digital bank adoption. This study uses a quantitative approach by distributing questionnaires to digital bank users in Indonesia. This study used a purposive sampling technique and obtained a sample size of 296 respondents. The results of this study show that price value and perceived risk significantly affect the intention to use digital banks. This study also proved the significant influence of intention to use on adopting digital banks in Indonesia. This study can provide insight into policymaking for developing digital bank services in Indonesia.

ABSTRAK

Penelitian ini bertujuan untuk mengeksplorasi pengaruh nilai harga dan risiko yang dirasakan terhadap niat untuk menggunakan bank digital dan menyelidiki pengaruh niat untuk menggunakan terhadap adopsi bank digital. Penelitian ini menggunakan pendekatan kuantitatif dengan menyebarkan kuesioner kepada pengguna bank digital di Indonesia. Penelitian ini menggunakan teknik purposive sampling dan memperoleh jumlah sampel sebanyak 296 responden. Hasil dari penelitian ini menunjukkan bahwa nilai harga dan risiko yang dirasakan secara signifikan mempengaruhi niat untuk menggunakan bank digital. Penelitian ini juga membuktikan adanya pengaruh signifikan dari niat menggunakan terhadap adopsi bank digital di Indonesia. Penelitian ini dapat memberikan masukan dalam pengambilan kebijakan untuk mengembangkan layanan bank digital di Indonesia.

1. Introduction

The ongoing digital transformation affects almost all aspects of life, including the banking sector in Indonesia. Various factors drive digital transformation in banking: opportunity, behavior, and transaction (OJK, 2021a). Digital opportunity includes the demographic potential dominated by Generation Z, Millennials, and X, who tend to adapt faster to technology, as well as the high potential of the digital economy and finance, especially since Indonesia has the most prominent digital economic transactions in ASEAN, with transaction value reaching around USD 44 billion in 2020 (Statista, 2021). In addition, the potential for increasing internet user penetration, with 202 million internet users in Indonesia by 2023 (APJII, 2023), as well as the high number of consumers who do not have access to banking services (unbanked) or limited (underbanked) are also key drivers. Data shows that around 92 million people in Indonesia do not have a bank account, and another 47 million people face limitations in accessing financial services (World Bank, 2020). The high ownership of digital devices reflects digital behavior, with 72% of Indonesians using smartphones (APJII, 2023) and the rapidly increasing use of mobile applications. The growth in e-commerce transactions, projected to reach USD 51 billion by 2023 (Statista, 2023), along with the rise of digital banking and electronic money, reduces the reliance on physical branches, highlighting the increase in digital transactions. Banks must transform their management and operational models to adapt to these changes by embracing the "future bank" concept. This transformation involves adjusting business strategies, restructuring distribution networks, and promoting transactions through digital channels, such as mobile applications and the Internet. The goal is to enhance the customer experience with end-to-end digital solutions, one of the key outcomes of digital transformation—namely, the emergence of digital banks.

Digital banks have a different concept from conventional banks that only provide digital services such as internet banking and mobile banking. Digital banks allow all banking activities, from account opening, transfer, and deposit to account closing, to be done entirely through electronic devices without physically visiting a branch office (fully digital). In contrast, conventional banks that offer digital services can still not provide all their services digitally. Another key difference is that digital banks usually do not have physical offices other than the head office or only limited ones (OJK, 2021b), while conventional banks generally have many branch offices. A digital bank is an Indonesian-incorporated bank that conducts its business activities primarily through electronic channels without having branch offices other than the head office or using limited physical offices (OJK, 2021b). In Indonesia, government support drives the growth of digital banks, as reflected in regulations issued by the Financial Services Authority (OJK). These regulations strengthen institutional rules, including requirements for establishing new banks, simplifying licensing, regulating office networks' digital business processes, and managing the establishment and termination of digital banks (Wareza, 2021). The issuance of these regulations aims to accelerate digital transformation and emphasize the existence of digital banks in Indonesia (Bank Indonesia, 2021).

The number of digital bank app downloads in Indonesia has increased significantly, with downloads increasing by 7% from 3.8 million in 2019 to 4.1 million in 2020 (Lidwina, 2021). Active digital bank users are also increasing, reaching 78% in 2021, higher than 57% in 2017 (Iskandar, 2023). Indonesia ranks with the second highest number of digital bank account holders globally, with 25% or approximately 47.7 million people in 2021. This number is projected to increase to 31% (59.97 million people) in 2022 and 39% (74.8 million people) in 2026 (Jayani, 2021). However, a survey by Dailysocial (2021) shows that 42.8% of respondents in Indonesia are not entirely interested in using digital banking services, citing reasons such as lack of need, security issues, lack of personal interaction, difficulty in understanding the interface, limited services, and unfamiliarity with technology. In addition, Kompas (2021a) revealed various obstacles digital bank users face, such as slow applications, login difficulties, lack of responsive customer service, long verification processes, high administrative costs, transfer failures, loss of balance, and no additional balance after top-up.

The UTAUT2 (Unified Theory of Acceptance and Use of Technology 2) model, developed by Venkatesh et al. (2012), effectively analyzes factors influencing technology adoption and use. This model was selected because it integrates previous technology acceptance theories, offering a comprehensive framework to understand individual perceptions of technology. UTAUT2 has demonstrated its effectiveness in various contexts, including Internet banking (Alalwan et al., 2018), mobile banking (Kwateng et al., 2019; Thusi & Maduku, 2020), e-commerce (Maulidina & Sungkono,

2020), and mobile money (Penney et al., 2021). Given its successful application across these domains, UTAUT2 is well-suited to explain factors influencing interest in and use of digital banks.

UTAUT2 constructs can effectively analyze the challenges of using digital banks. The price value construct, for instance, highlights how high administrative and Internet costs reduce user interest. This study extends the model by incorporating perceived risk as an additional factor influencing digital bank adoption. Given the novelty of digital banking, users often perceive risks associated with application performance, such as slow response times or login issues (Kompas, 2021b). Financial risks, including transfer failures, unexpected balance deductions, or uncredited top-ups, further undermine user confidence. Data security concerns, amplified by the fully digital nature of these services, heighten fears of data breaches (Dailysocial, 2021). This perceived risk aligns with Featherman and Pavlou's (2003) definition of the uncertainty regarding potential adverse outcomes of using a product or service. Previous studies have widely studied perceived risk in technology adoption contexts, including Internet banking (Alalwan et al., 2018), mobile banking (Thusi & Maduku, 2020), and e-commerce (Maulidina & Sungkono, 2020; Penney et al., 2021). This study explores the interplay between price value and perceived risk influencing digital bank adoption.

2. Literature Review

2.1. Unified Theory of Acceptance and Use of Technology (UTAUT) and Perceived Risk

The Unified Theory of Acceptance Use of Technology (UTAUT) and its development into UTAUT2 by Venkatesh et al. (2003, 2012) provide a comprehensive framework for understanding the factors influencing technology acceptance, including digital banking. UTAUT identified four primary constructs:- performance expectancy, effort expectancy, social influence, facilitating conditions, and moderating variables such as gender, age, experience, and voluntariness of use (Venkatesh et al., 2003). UTAUT2 adds three new constructs, hedonic motivation, price value, and habit, which are more relevant in the consumer context (Venkatesh et al., 2012). Although this model improves the prediction of behavioral intention by 74% and technology use by 52%, research shows that moderating variables such as gender, age, and experience are often insignificant, especially in active user adoption studies (Maulidina & Sungkono, 2020; Oliveira et al., 2014; Respati & Mahyuni, 2022). The findings emphasize the importance of evaluating user acceptance without focusing on specific demographic factors (Alharbi et al., 2017).

In the context of digital banking, perceived risk is an important aspect that influences user behavioral intentions (Alalwan et al., 2018; Thusi & Maduku, 2020; Verkijika, 2018; Penney et al., 2021; Hidayat et al., 2020; Harseno, 2021). Perceived risk includes seven main dimensions: performance risk, financial risk, time risk, psychological risk, social risk, privacy risk, and overall risk (Featherman & Pavlou, 2003). Research by Alalwan et al. (2018) shows that concerns related to security and potential financial losses reduce customers' intention to use Internet banking. Penney et al. (2021) also revealed that Mobile Money users feel vulnerable to personal data exposure and potential fraud. Therefore, to increase the adoption of digital banking, banks need to focus on improving data security protection and reducing the risks perceived by users.

2.2. Price Value, Perceived Risk, Intention to Use, and digital bank adoption

Price value refers to the cognitive tradeoff consumers make between the perceived benefits of using technology and its associated costs. In digital banking, price value represents how well the benefits outweigh user costs. Users' interest in using digital banks increases When they perceive significant benefits compared to the costs incurred. Conversely, when the perceived benefits are minimal, user interest declines. Studies have consistently shown that price value positively impacts users' intention to adopt technology (Alalwan et al., 2018; Kwateng et al., 2019; Penney et al., 2021; Pratama & Renny, 2022). As such, price value emerges as a critical factor in shaping user intentions to adopt digital banks in Indonesia

Perceived risk is the uncertainty about potential negative outcomes of using a product or service, including performance issues, hacking, and personal data breaches in digital banking. The higher perceived risk significantly reduces users' interest in adopting digital banking, making it a critical negative factor in usage intentions. Previous studies consistently highlight the adverse impact of perceived risk on technology adoption (Alalwan et al., 2018; Thusi & Maduku, 2020; Verkijika, 2018;

Penney et al., 2021; Hidayat et al., 2020; Harseno, 2021). Addressing and mitigating perceived risk is essential to fostering greater adoption of digital banks in Indonesia.

Intention to use refers to an individual's desire to utilize technology for its intended purpose, while technology adoption measures the frequency of its actual use. In the UTAUT2 model, intention to use is the primary determinant of usage behavior. Numerous studies confirm a strong positive relationship between intention to use and actual usage behavior (Alalwan et al., 2018; Kwateng et al., 2019; Gupta & Dogra, 2017; Thusi & Maduku, 2020; Piarna et al., 2020; Penney et al., 2021; Verkijika, 2018; Yaseen & El Qirem, 2018; Lubis & Rahmiati, 2019; Maulidina & Sungkono, 2020; Hidayat et al., 2020; Pratama & Renny, 2022). Therefore, efforts to enhance users' intention to use digital banking can directly influence and increase its adoption in Indonesia.

H1: Price Value has a positive effect on Intention to Use

H2: Perceived Risk has a negative effect on Intention to Use

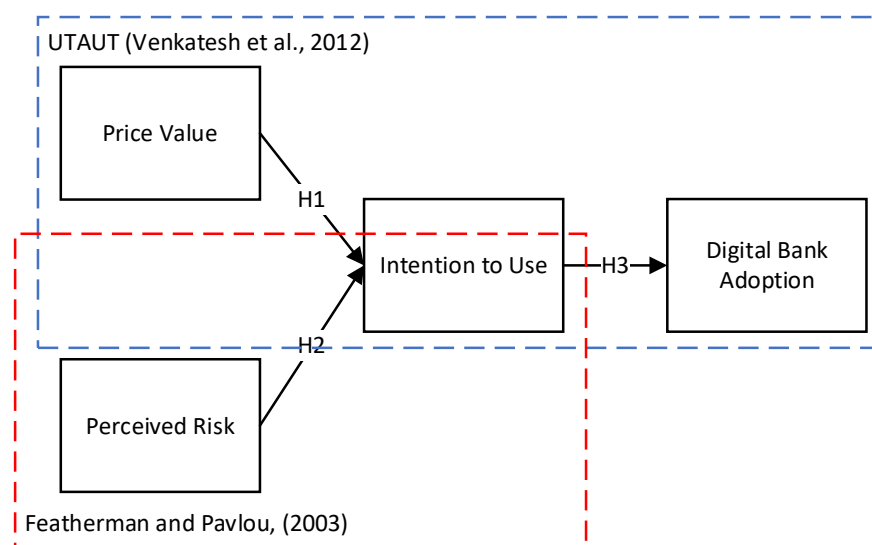H3: Behavioral Intention has a positive effect on digital bank adoption

Figure 1. Research framework

3. Research Methods

3.1. Population and sample

This research employs a purposive sampling technique, which is a method based on specific criteria to ensure that the data gathered is directly relevant to the study's focus. This technique is beneficial when information from a particular group is required, and other sampling methods may not guarantee the necessary data (Sekaran & Bougie, 2019). For this study, the sample criteria are Indonesian residents with digital bank accounts and their income. This study selected this criterion because individuals with income generally take more responsibility in financial planning, including allocating funds for necessities, savings, and investments. Digital banks play a key role in supporting these financial planning activities.

The number of samples in this study was determined based on the guidelines from Hair et al. (2019), which suggests a minimum sample size of 100 or more, depending on the number of indicators used in the study. This study calculates the minimum sample by multiplying the indicators by 5 to 10. This study included 13 indicators, so this study calculated the minimum sample size as follows: $5 \times 13 = 65$ respondents. This study uses 296 respondents to conclude that it meets the minimum sample size required.

3.2. Variable Definition and Measurement

Intention to use refers to an individual's desire to use a system or technology to achieve specific expected goals (Venkatesh et al., 2003). Digital banking adoption refers to the frequency or how often

users utilize digital banking services for their financial needs (Alalwan et al., 2017). Price value refers to consumers' cognitive balance between the perceived benefits of using technology and the costs incurred to access it (Dodds et al., 1991). Meanwhile, perceived risk describes consumers' uncertainty regarding the potential negative consequences of using a product or service (Featherman & Pavlou, 2003). All these variables are measured using a Likert scale of 1-5, where 1 indicates "strongly disagree," and 5 indicates "strongly agree".

3.3. Data analysis technique

This study used the SEM-PLS approach with the help of SmartPLS 4 software to test all proposed hypotheses (Ringle et al., 2022). SEM-PLS is considered appropriate for examining the relationship between variables, as was done in this study (Gefen et al., 2020). In addition, this method is suitable for research with small samples because of its ability to accommodate sample size limitations without reducing the validity of the analysis (Chin & Newsted, 1999; Gefen et al., 2000). In analyzing PLS, a crucial first step is to estimate the measurement model before proceeding to the structural model (Hair et al., 2017). Hulland (1999) also recommends that the measurement and structural models be analyzed separately and sequentially to ensure the reliability of the analysis results.

4. Results and Discussion

4.1. Respondent demography

The study involved 296 respondents, comprising 150 males (50.7%) and 146 females (49.3%), with an almost equal distribution between the two groups. The majority of respondents were in the age range of 17-25 years (178 respondents, 60.1%), followed by the age groups of 26-35 years (98 respondents, 33.1%), 36-45 years (17 respondents, 5.7%), and above 46 years (3 respondents, 1.0%). These findings shows the dominance of respondents from younger age groups. Based on the duration of digital banking usage, respondents who have used the service for more than 1-year dominate (156 respondents, 52.7%), followed by 6-12 months (76 respondents, 25.7%), 3-6 months (47 respondents, 15.9%), and less than 3 months (17 respondents, 5.7%). Briefly can be seen in Table 1.

Table 1. Respondent demography

Demography		
Gender		
Male	150	50,7%
Female	146	49,3%
Total	296	100%
Age (years)		
17-25	178	60,1%
26-35	98	33,1%
36-45	17	5,7%
> 46	3	1,0%
Total	296	100%
Usage (months)		
< 3	17	5,7%
3-6	47	15,9%
6-12	76	25,7%
>12	156	52,7%
Total	296	100%

4.2. Measurement model

The measurement model is used to ensure the validity and reliability of the instrument before continuing hypothesis testing on the structural model. Convergent validity is met if the loading factor value of each indicator is more than 0.7 (> 0.7) and the Average Variance Extracted (AVE) value exceeds 0.5 (> 0.5) (see Table 2) (Chin, 1998; Hair et al., 2019). In addition, discriminant validity is verified through an HTMT ratio of less than 0.9 (<0.9) or by ensuring that the square root of the AVE for each construct is greater than the correlation of that construct with other constructs (see Table 3) (Fornell & Larcker, 1981; Hair et al., 2017; Henseler et al., 2014). The instrument fulfilled the reliability if the Cronbach's Alpha (α), rho Alpha ($\rho\alpha$), and Composite Reliability (ρc) values each exceed the 0.7 thresholds (>0.7) (see Table 2) (Dijkstra & Henseler, 2015; Hair et al., 2014, 2017).

Table 2. validity and reliability

Constructs	Code	Loading	AVE	α	ρα	ρc
Intention to Use	ItU1	0.89	0.78	0.91	0.92	0.94
	ItU2	0.89				
	ItU3	0.92				
	ItU4	0.84				
Price Value	PV1	0.88	0.69	0.78	0.81	0.87
	PV2	0.90				
	PV3	0.71				
Perceived Risk	PR2	0.91	0.80	0.88	0.91	0.92
	PR3	0.91				
	PR4	0.87				
Digital Bank Adoption	DBA1	0.88	0.79	0.87	0.87	0.92
	DBA2	0.89				
	DBA3	0.89				

Table 3. Discriminant validity

	Fornell-Larcker criterion				HTMT Ratio		
	ItU	PV	PR	DBA	ItU	PV	PR
ItU	0.88						
PV	0.53	0.83			0.62		
PR	-0.13	-0.07	0.90		0.14	0.09	
DBA	0.73	0.52	-0.13	0.89	0.82	0.63	0.15

4.3. Structural Model

This study analyzes the effect of price value on intention to use, perceived risk on intention to use, and the relationship between intention to use and digital banking adoption. This study conducted hypothesis testing using the PLS method through a bootstrapping procedure with 5,000 resampling times (Henseler et al., 2014).
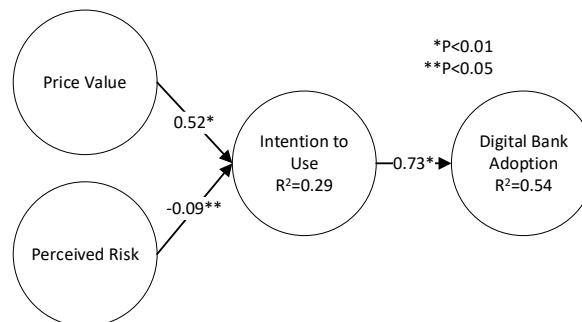
Figure 2. path model

The results of this study found that *price value* has a positive effect on *intention to use* (β = 0.52; p < 0.01) (H1 supported). Perceived risk has a negative effect on the intention to use β = -0.09; p < 0.05) (H2 supported). Furthermore, the results of this study indicate that intention to use positively influences digital bank adoption β = 0.73; p < 0.01) (H3 supported). Table 4 illustrates the test results in summary.

Table 4. Hypothesis test result

Path	β	Mean	St.Dev	t	P values
ItU➔ DBA	0.73	0.74	0.03	24.44	0.00
PV➔ ItU	0.52	0.53	0.05	11.14	0.00
PR➔ ItU	-0.09	-0.10	0.05	1.96	0.03

4.4. Discussion

The results of this study indicate that price value positively influences intention to use on digital bank users in Indonesia, supporting the first hypothesis (H1 supported). This finding is consistent with previous research (Venkatesh et al., 2012; Kwateng et al., 2019; Penney et al., 2021; Pratama & Renny, 2022), which also states that price value affects intention to use. However, these results contradict several other studies (Verkijika, 2018; Thusi & Maduku, 2020; Gupta & Dogra, 2017; Widodo et al., 2019; Maulidina & Sungkono, 2020; Piarna et al., 2020; Hidayat et al., 2020) which concluded that price value does not affect intention to use.

Sandria (2021) notes that some digital banks in Indonesia offer advantages such as free administration fees and transfer fees. However, the low public interest in using digital banks indicates that price alone cannot attract users. The tight competition in the fintech sector requires digital banks to offer more significant added value than competitors. Gupta and Dogra (2017) added that although low-cost technology and apps that are easily accessible for free through smartphones are available, users still have to bear the cost of mobile data to access the apps. This factor could be one of the reasons why price value is not always the primary determinant in shaping a person's interest in using a digital bank.

Furthermore, the results of this study indicate that Perceived Risk has a negative effect on the intention to use Digital Bank Users in Indonesia (H2 supported). The results support previous studies (Venkatesh et al., 2012; Alalwan et al., 2018; Verkijika, 2018; Thusi & Maduku, 2020; Penney et al., 2021; Hidayat et al., 2020) which show that perceived risk affects intention to use. The findings show that high perceived risk reduces the intention to use digital banking services, supporting previous findings that demonstrate perceived risk indirectly affects intention through attitudes toward the service (Baraba & Mahmudi, 2023). The significant negative relationship between perceived risk and intention to adopt digital banking services confirms that the greater the risk perceived by users, the lower their willingness to use the service (Ali et al., 2022). Moreover, the influence of perceived risk also extends to different types of digital banking services, such as mobile banking, demonstrating its impact on technology adoption in general (Tan & Lau, 2016).

The negative impact of perceived risk not only comes from individual factors but is also closely related to the level of trust in the digital banking system. Research shows that increased trust in digital banking services can reduce risk perceptions, encouraging the intention to use the service (Nguyen, 2020). Conversely, a lack of trust can worsen risk perception, increase caution, and hinder the adoption of digital banking solutions (Fawzy & Esawai, 2017; Nguyen, 2020). Pratama and Renny (2022) also identified several specific risks related to using mobile banking services, including concerns about online payment mechanisms, insecurity in using digital payments, and privacy disclosure risks. These factors significantly influenced the intention to use to adopt digital banking services. These findings highlight the importance of increasing trust and reducing risk perception to support the wider adoption of digital banking.

Furthermore, the results of this study indicate that intention to use positively influences digital bank adoption among users in Indonesia (H3 supported). This finding is consistent with previous studies (Venkatesh et al., 2012; Alalwan et al., 2018; Kwateng et al., 2019; Thusi & Maduku, 2020; Gupta & Dogra, 2017; Verkijika, 2018; Lubis & Rahmiati, 2019; Piarna et al, 2020; Maulidina & Sungkono, 2020; Hidayat et al., 2020; Penney et al., 2021; Pratama & Renny, 2022), which generally shows that intention to use contributes to the adoption of digital banking services. Users with positive intentions towards mobile banking or mobile money are likelier to adopt and use these services (Thusi and Maduku., 2020; Penney et al., 2021). Pratama and Renny (2022) reinforce this by stating that users' intention toward usage behavior reflects their frequency and consistency in utilizing mobile banking service technology in daily activities. Thus, intention to use is a key predictor in adopting digital banking services and reflects how user motivation translates into actual behavior that supports the increased adoption of digital banking technology. These findings emphasize the importance of managing factors influencing user intentions to increase the penetration and broader use of digital banking services.

4.5. Limitations and Future Research

This research was conducted following systematic scientific procedures, yet several limitations must be acknowledged, which can guide future studies to achieve better results. A key limitation is

using online questionnaires for data collection, which prevents researchers from directly controlling respondents' answers. This method introduces potential bias, as data based on respondents' perceptions may not fully reflect the actual situation, mainly if there are discrepancies between the researchers' and respondents' perceptions or differences in respondents' levels of seriousness when completing the questionnaire. Additionally, this study is confined to digital bank users in Indonesia, meaning the findings cannot be generalized to other fintech products in Indonesia or other countries. Another limitation is the inability to verify whether respondents used the digital bank when filling out the questionnaire, as no proof of use, such as a screenshot of the digital bank account profile, was required. If such proof had been requested, it could have enhanced the accuracy and validity of the data, ensuring that respondents were active users of digital banking services.

5. Conclusion

This study demonstrates that price value positively influences the intention to use digital banking services in Indonesia. However, it contrasts with other research that finds no effect of price value on usage intention. Additionally, perceived risk negatively impacts intention to use, with higher perceived risks leading to reduced user interest in adopting digital banking services. Ultimately, intention to use plays a significant role in adopting digital banking services, as users with positive intentions are more likely to use the technology consistently in their daily lives. The findings are expected to offer valuable insights to digital banks about user behavior, which can help enhance customer service, improve satisfaction, and foster growth in the digital banking user base. For future research, expanding the sample size, introducing new variables, using diverse data collection methods such as interviews, and requesting proof of use could improve data accuracy and provide more comprehensive insights.

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