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Original Article

Analysis Customer Perceptions on the Acceptances of Mobile Banking-Based Services in Banking Sectors Using an Approach of Technology **Acceptance Model (TAM)**

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ABSTRACT

Technological developments require all business industries to be able to quickly adapt to technology, especially in the banking sector. This study aims to measure customer perceptions of using Mobile Banking application services in the banking sector using TAM. TAM is a model used to predict the acceptance of newly implemented technology. The case study in this study is customers at state-owned banking companies at PT X and PT Y in Malang City. This research uses quantitative descriptive research methods. The results of this study are expected to provide information on customer needs so that companies can maintain and improve their service quality.

RESEARCH BACKGROUND

Information technology plays an important role in daily life, both in the business and economic spheres, and is constantly changing and developing rapidly. This technological development requires all industries to be able to adapt quickly. The demand for digital transformation is rapidly increasing in parallel with changes in people's behavior towards digital transformation, and information technology is needed to meet this demand. An economic industry sector is defined as an industry that responds more rapidly to the effects of technological advances. This requires some large companies to be able to quickly adapt to changing market demands to become popular among enthusiasts and remain competitive in business. According to the research of Kahan (2018) and Wirtz (2021) also Rodrigues et al. (2023), companies or organizations are making information technology a strength in all aspects of business and digital-based services. According to Rodríguez et al. (2023), the banking industry is one of the companies experiencing a massive digital transformation due to the threat of fintech and innovative services that attract the attention of customers and investors can be provided. To maintain a competitive edge over competitors, banking companies typically engage with their customers by offering a variety of services that provide reliable experiences and features. Every company is trying to develop a strategy to stand out from competitors that offer the same product or service. According to Fayen et al. (2021), customer behavior trends towards digital transformation are currently driving multiple types of financial services from multiple different banking companies, considering the value of the most profitable financial services. They tend to choose financial products and services (Rodrigues et al., 2023).

According to Teece (2010) and Rodrigues et al. (2023), digital transformation can help banks gain competitive advantage, improve the quality of their products and services, adapt to current developments and it is considered one of the important aspects that banking companies should pursue in their development in order to improve the relationship between the company and its customer business. Banking companies must constantly adapt to changing times and digital transformation to create service and product innovations that provide competitive advantage. However, before defining an innovation strategy for the services and products offered, some considerations should be made that incorporate external factors in its implementation, such as customer readiness when using digital-based banking services and online-based transactions.

LITERATURE REVIEW

Customer Perception and Behaviour

Behavior is a response or reaction of an individual to a stimulus that comes from outside or from within himself (Notoatmojo, 2010), while perception according to KBBI is a response, direct reception, or process of understanding information on a stimulus, where the stimulus is obtained from the process of sensing or feeling objects, events, or relationships between symptoms received by the brain. Perceived usefulness according to Sholihah et al. (2023) is defined as a form of measurement of the use of an information technology that is believed to be able to provide benefits to its users (Davis et al., 1989). Several other studies define perception as a sense of belief in the existence of benefits to users of an information technology system so that the hope is to improve user performance. Davis et al., (1989) define perceived ease as the degree of confidence in using a technology system so that the technology can be used easily. If an information technology system is easy to use, the user will be encouraged to be interested in learning the features available and will be interested in continuing to use it (Hamid et al., 2016). In other words, if a technology system is easy to use and is able to provide benefits that are quite calculated, users will feel comfortable and are likely to be interested in continuing to use it. According to Venkatesh & Davis (1996), interest in using is represented as the user's desire to use a new technology system either consciously or unconsciously. According to Ermawati & Delima (2016) described in the research of Sholihah et al., (2023), user grouping in the implementation of using information technology includes 2 things, namely:

- 1. In terms of its usefulness, by believing that using the system can provide a benefit.
- 2. Ease of use, when someone uses a technology system, that person does not need to spend a lot of effort or effort due to its convenience.

Digital Banking

Digital transformation is the integration of digital technologies into all aspects and operations of an organization, which in turn leads to infrastructural changes in the way the organization is operated and delivers value to its customers (McGrath & Maiye, 2010). The term digital banking has entered the banking world ranging from virtual baking to internet banking so it is quite difficult to distinguish it from digital banking provided by banks. According to Windasari et al. (2022), the fundamental difference can be seen from the existence of physical branches provided by banking companies. Physical branches with digital banking will rely on an all-digital branch office infrastructure to cover all types of transactions, including teller services and customer service services that operate with virtual service integration (Fathima, 2020; Sha & Mohammed, 2017). In addition, with digital banking, it is identified that service costs are shrinking because all services that are usually carried out conventionally in branches are replaced with the help of technology. According to the Financial Services Authority (OJK), digital banking provides and carries out banking activities through electronic channels with or without physical branch offices which include specialized bank services virtually through the internet or other electronic channels.

Digital specialty banks are revolutionary in breaking away from conventional banking norms to become paperless, some even branchless. It is therefore changing the landscape of the financial ecosystem and the way businesses operate, thereby improving operational efficiency while addressing security and privacy challenges (Dharamshi, 2019). However, despite its massive implementation, empirical studies that discuss digital banking are still limited, so there is still a need for further empirical identification, especially from the customer perspective and customer experience in receiving and using digital banking-based service.

Technology Acceptance Model (TAM)

The TAM model introduced by Davis et al. (1989) is a model used to predict acceptance of a newly implemented technology. The TAM model is an adaptation of the Theory of Reasoned Action (TRA) developed by Fishbein, where TRA is defined as a theory of reasoned action with a premise that a person's reaction and perception of something will determine that person's attitude and behavior. The TAM model produces additions to the two main constructs in the TRA model, where these two main concepts are perceived usefulness and perceived ease of use. According to Jogiyanto (2007) in research Putri et al. (2023), TAM argues that a person's acceptance

of an information technology system is determined by these two main constructs.

Recent research identifies additional new external variables which are variables outside the TAM variables that were proposed at the beginning of the study by Davis et al. (1989). The aim is to modify the expansion of the research model according to different research conditions. Gangwar et al. (2013) concluded that the TAM model has strong implications for technology adoption when viewed from the theoretical and conceptual perspective of the model itself even though TAM is considered to still have certain limitations. Studies with this TAM model were identified as producing conflicting findings regarding moderate and external variables (Chen & Tan, 2004). According to research by Legris, et al. (2003) mentioned in research Putri et al. (2023) that the TAM model is less able to provide clear and consistent results so that external variables need to be identified and included in the model based on other information technology adoption. The following is the TAM model defined by Davis et al. (1989).

Instruments of Technology Acceptance Model (TAM)

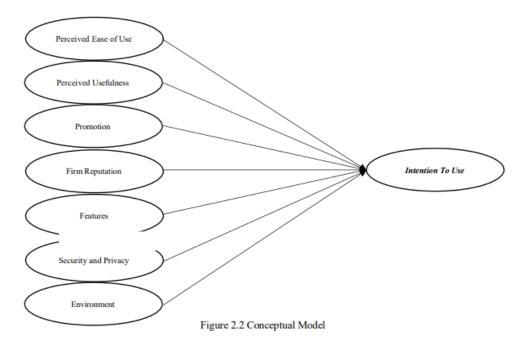
The variables used for this research were adapted from various literature sources which have also been adapted to real research conditions. The following are details of the variables used and their measurement scales for the Questionnaire questions in Bahasa.

Dimension	Indicators
Perceived Ease Of Use	Aktivitas saya lebih dimudahkan dengan adanya bantuan mobile banking
	Aplikasi mobile banking memiliki user interface yang mudah digunakan
	3. Aplikasi mobile banking mempermudah transaksi saya
Perceived Usefulness	Mobile banking meningkatkan kualitas pekerjaan saya
	2. Mobile banking membantu saya menyelesaikan transaksi keuangan dengan lebih
	cepat
	Mobile banking sangat bermanfaat bagi transaksi keuangan saya setiap hari
Another Variables	Promotion
	 Promosi pada mobile banking memberikan saya informasi tentang produk atau layanan yang akan saya beli
	Promosi pada mobile banking membantu saya menentukan keputusan penggunaan
	produk atau layanan perbankan
	Firm Reputation
	Perusahaan perbankan yang saya gunakan memiliki citra yang baik dan terkenal
	2. Perusahaan perbankan yang saya gunakan memiliki citra dapat dipercaya
	Features
	Fitur mobile banking yang disediakan beragam dan lengkap
	2. Fitur mobile banking memiliki user interface yang menarik dan praktis
	Security and Privacy
	Perbankan menjamin kerahasiaan data pribadi saya
	Saya merasa aman dalam bertransaksi dengan layanan berbasis digital
	3. Pegawai perbankan memiliki pengetahuan terkait produk dan layanan yang ditawarkan
	Environment
	Lingkungan sekitar saya menggunakan produk dan layanan perbankan yang sama
	2. Lingkungan sekitar saya mengajak saya menggunakan layanan berbasismobile
	banking
Intention To Use	Saya pasti akan terus menggunakan mobile banking di masa depan
	2. Saya ingin mengenal lebih banyak jenis produk dan layanan berbasis
	3. digital
	4. Saya sangat bersemangat mengajak orang lain untuk menggunakan produk dan
Source: Research Ans	layanan mobile banking

Source: Research Analysis, 2023

Conceptual Model and Research Methodology

Below are the conceptual models used in the study and the hypotheses that may be tested.

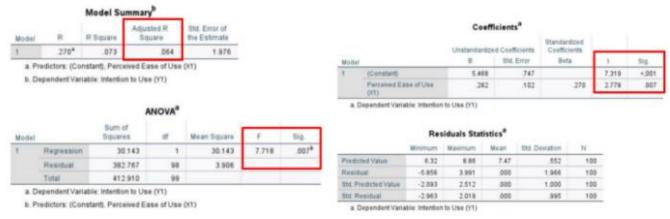


Research Methodology

The time and place of data collection will be carried out from November 2023 to completion at the two banking companies, namely PT X and PT Y (company name disguised) located in Malang City taken from November 20, 2023 to November 24, 2023 during working service hours, on 07.30 a.m. to 15.00 p.m. The types of research used in this study are descriptive quantitative with regression statistical analysis approaches with the number of samples used in the study was 100 customers consisting of 50 customers at PT X and 50 customers at PT Y from a total population of 3000.

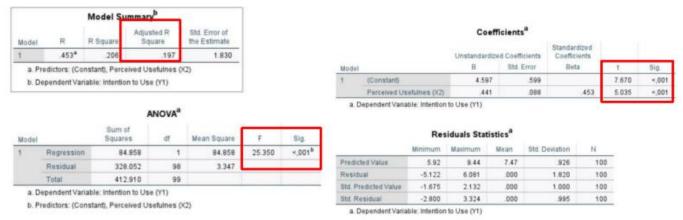
INTERPRETATION OF TEST RESULT AND HYPOTHESES

Hypotheses Testing Between Perceived Ease of Use to Intention to Use



- a. The coefficient of determination (R2) value is represented by an Adjusted R Square value of 0.064 or 6.40%. This can be represented that the perceived ease of use variable has an influence on the intention to use variable of only 6.40%.
- b. The F-test value calculated f-value of 7.718 > 2.11 (F-table with values dfN1 = 7, dfN2 = 92, alpha = 0.05), then H1a is accepted and H0a is rejected, meaning that the perceived ease of use variable has influence on the intention to use variable.
- c. The T-test value calculated t-value of 2.778 > 1.98609 (T-table (0.05/2, 100-8; 0.025, 92), then H1a is accepted and H0a is rejected, meaning that the perceived ease of use variable has an influence on the intention to use variable.

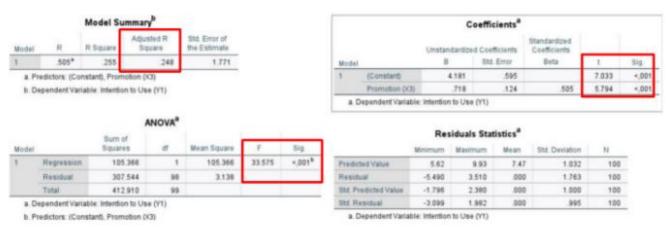
Hypotheses Testing Between Perceived Usefulness to Intention to Use



Based on the image above, several important points have been identified including:

- a. The coefficient of determination (R2) value is represented by an Adjusted R Square value of 0.197 or 19.7%. H This shows that the contribution of Perceived Usefulness to Intention to Use is only 19.7%, while the remainder (100% 19.7% = 80.3%), is a contribution from other causes not explained in this research.
- b. The F-test value calculated f-value of 25.350 > 2.11 (F-table with a value of dfN1 = 7, dfN2 = 92, alpha = 0.05), then H1b is accepted and H0b is rejected, meaning that the Perceived Usefulness variable has an influence on intention to use variable.
- c. The T-test value calculated t-value of 5.035 > 1.98609 (T-table (0.05/2, 100-8; 0.025, 92), then H1b is accepted and H0b is rejected, meaning that the perceived usefulness variable has an influence on the variable intention to use.

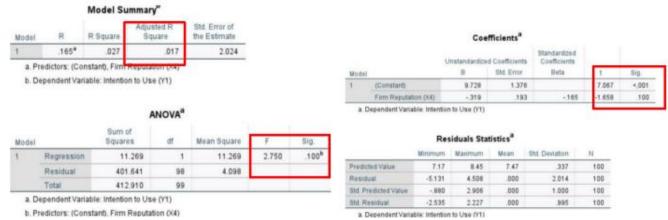
Hypotheses Testing Between Promotion to Intention to Use



Based on the image above, several important points have been identified including:

- a. The coefficient of determination (R2) value is represented by an Adjusted R Square value of 0.248 or 24.8%. This can be represented that the promotion variable has an influence on the intention to use variable of only 24.8%.
- b. The F-test value calculated f-value of 33.575 > 2.11 (F-table with a value of dfN1 = 7, dfN2 = 92, alpha = 0.05), then H1c is accepted and H0c is rejected, meaning that the promotion variable has an influence on the variable intention to use.
- c. The T-test value calculated t-value of 5.794 > 1.98609 (T-table (0.05/2, 100-8; 0.025, 92), then H1c is accepted and H0c is rejected, meaning that the promotion variable has an influence on the intention variable to use.

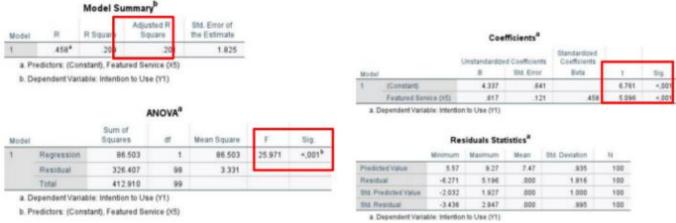
Hypotheses Testing Between Firm Reputation to Intention To Use



Based on the image above, several important points have been identified including:

- a. The coefficient of determination (R2) value is represented by an Adjusted R Square value of 0.017 or 1.7%. This can be represented that the reputation variable has an influence on the intention to use variable of only 1.7%.
- b. The F-test value calculated f-value of 2.750 > 2.11 (F-table with a value of dfN1 = 7, dfN2= 92, alpha = 0.05), then H1d is accepted and H0d is rejected, meaning that the reputation variable has an influence on the variable intention to use.
- c. The T-test value calculated t-value of -1.658 > 1.98609 (T-table (0.05/2, 100-8; 0.025, 92), then H1d is rejected and H0d is accepted, meaning that the reputation variable does not have a significant influence on the intention to use variable.

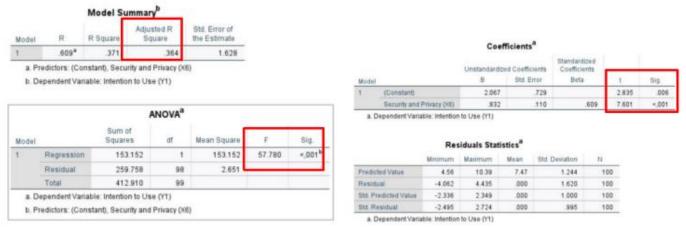
Hypotheses Testing Between Featured To Intention to Use



Based on the image above, several important points have been identified including:

- a. The coefficient of determination (R2) value is represented by an Adjusted R Square value of 0.201 or 20%. This can be represented that the service feature variable has an influence on the intention to use variable of only 20%
- b. The F-test value calculated f-value of 25.971 > 2.11 (F-table with a value of dfN1 = 7, dfN2 = 92, alpha = 0.05), then H1e is accepted and H0e is rejected, meaning that the service feature variable has an influence on intention to use variable.
- c. The T-test value calculated t-value of 5.096 > 1.98609 (T-table (0.05/2, 100-8; 0.025, 92), then H1e is accepted and H0e is rejected, meaning that the service feature variable has an influence on the variable intention to use.

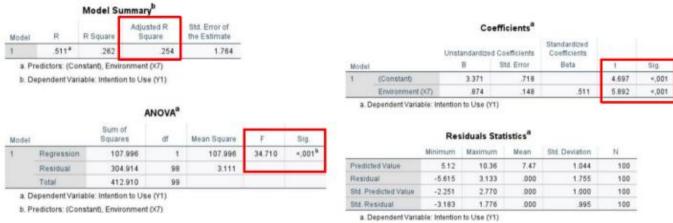
Hypotheses Testing Between Security and Privacy to Intention to Use



Based on the image above, several important points have been identified including:

- a. The coefficient of determination (R2) value is represented by an Adjusted R Square value of 0.364 or 36.4%. This can be represented that the securities and security variables have an influence on the intention to use variable of only 36.4%.
- b. The F-Test value calculated f-value of 57.78 > 2.11 (F-table with a value of dfN1 = 7, dfN2 = 92, alpha = 0.05), then H1f is accepted and H0f is rejected, meaning that the Securities and Security variable has an influence on the intention to use variable.
- c. The T-test value calculated t-value of 7.601 > 1.98609 (T-table (0.05/2, 100-8; 0.025, 92), then H1f is accepted and H0f is rejected, meaning that the Securities and Security variables have an influence on intention to use variable.

Hypotheses Testing Between Environment to Intention to Use



Based on the image above, several important points have been identified including:

- a. The coefficient of determination (R2) value is represented by an Adjusted R Square value of 0.254 or 25.4%. This can be represented that environmental variables have an influence on the intention to use variable of only 25.4%.
- b. The F-test value calculated f-value of 34.710 > 2.11 (F-table with a value of dfN1 = 7, dfN2 = 92, alpha = 0.05), then H1g is accepted and H0g is rejected, meaning that environmental variables have an influence on the variables intention to use.
- c. The T-test value calculated t-value of 5.892 > 1.98609 (T-table (0.05/2, 100-8; 0.025, 92), then H1g is accepted and H0g is rejected, meaning that environmental variables have an influence on the intention variable to use.

SUMMARY OF RESEARCH RESULT

Based on the results of hypothesis testing described above, the research conclusion is obtained that:

a. The Perceived Ease of Use variable is identified as having a relationship with the Intention to Use variable of 6.40%, so it can be concluded that in hypothesis testing, H1a is accepted and H0a is rejected. This means that the

perception of customer use has an influence on the intention to use the mobile banking application. However, the influence value between these two variables is identified as having a fairly small influence.

- b. The Perceived Usefulness variable is identified as having a relationship with the Intention to Use variable of 19.7%, so it can be concluded that in hypothesis testing, H1b is accepted and H0b is rejected. This means that if the customer feels that the mobile banking application is useful for helping daily banking transactions, it can increase the intention to use the mobile banking application or switch to transacting with mobile banking on an ongoing basis will increase.
- c. The Promotion variable is identified as having a relationship with the Intention to Use variable of 24.8%, so it can be concluded that in hypothesis testing, H1c is accepted and H0b is rejected. This can be interpreted that the promotion of the mobile banking application has an influence on the intention to use the mobile banking application on an ongoing basis. With promotion, it can provide information or facilities and features that may be useful and profitable for customers.
- d. The Company Reputation variable is identified as having a simultaneous relationship to the Intention to Use variable of 1.7%, but the t test value ftest < f table and sig> 0.05 so it can be concluded that hypothesis testing H1d is rejected and H0d is accepted. This can be interpreted that company reputation can affect the intention to use mobile banking applications on an ongoing basis. However the reputation variable has an influence on Intention to use is not significant, but if the company's has a good reputation, it has the opportunity to attract customers' attention to perceive that the company's performance by its products and services.
- e. The service feature variable is identified as having a relationship with the Intention to Use variable by 20%, so it can be concluded that hypothesis testing H1e is accepted and H0e is rejected. If the features and services provided by the mobile banking application are complete, practical and in accordance with customer needs, it can increase the intention to use the mobile banking application on an ongoing basis.
- f. The Securities and Security variable is identified as having a relationship with the Intention to Use variable of 36.4%, so it can be concluded that hypothesis testing H1f is accepted and H0e is rejected. If the security and security system in the mobile banking application is good, the customer can transact safely and comfortably without worrying, so as to increase the intention to use the mobile banking application on an ongoing basis.
- g. Environmental variables are identified as having a relationship with the Intention to Use variable of 25.4%, so it can be concluded that hypothesis testing H1g is accepted and H0g is rejected. In an environment usually has a similar habbit. If in an environment the majority have used mobile banking applications in their daily lives, it can affect a person's behavior or interest in participating in using mobile banking applications. This also caused by words of mouth factor.

CONCLUSION AND SUGGESTION

Conclusion

This study aims to determine customer perceptions of the readiness of Mobile banking-based services in banking using the Technology Acceptance Model (TAM) approach. The analysis results state that Perceived Ease of Use, Perceived Usefulness, Promotion, Company Reputation, Service Features, Security and Security, Environment have a positive influence on the Intention to Use variable. The following is an explanation of the research results in detail:

- a. Perceived Ease of Use has a positive and significant effect on Intention to Use. This shows that the higher the Perceived Ease of Use value, the higher the intention to use the mobile banking application. The higher the Perceived Ease of Use value indicates that the mobile banking application is easy to use. If the mobile banking application is considered easy to use, it can increase the intention to use the mobile banking application on an ongoing basis.
- b. Perceived Usefulness has a positive and significant effect on Intention to Use. This shows that the higher the Perceived Usefulness value, the higher the intention to use the mobile banking application. The higher the Perceived Usefulness value, it reflects that the mobile banking application is useful in helping daily banking transactions. So that if the mobile banking application is useful in helping customer transactions, it can also increase the intention to use it sustainably.
- c. Promotion has a positive and significant effect on Intention to Use. This shows that the higher the promotional value, the higher the intention to use the mobile banking application on an ongoing basis. The higher the promotion value reflects that the number of facilities and conveniences provided by the company in attracting customer attention in utilizing the mobile banking application on an ongoing basis.
- d. Company Reputation has a positive and insignificant effect on Intention to Use. This shows that the higher the value of the company's reputation, the higher the effect on Intention to Use, but the effect is not significant because the Fcount value < Ftable. The company's reputation reflects the company's performance, so if the company's reputation is good, the company's performance is also considered good. If the company's performance is good, it can attract customer attention to use mobile banking application products on an ongoing basis</p>

- e. Service Features have a positive and significant effect on Intention to Use. This shows that the more complete, practical and according to customer needs the features used can increase customer interest and intention to use mobile banking applications on an ongoing basis or even switch to using mobile banking applications.
- f. Securities and Security have a positive and significant effect on Intention to Use. This shows that the higher the level of security and security in a mobile banking application, it will increase the customer's sense of security and comfort in transacting using mobile banking. If the customer feels safe and comfortable in using mobile banking, it will increase the intention to use the mobile banking application on an ongoing basis.
- g. Environment has a positive and significant effect on Intention to Use. This shows that the higher the environment that uses the mobile banking application, the higher the influence on the intention to use the mobile banking application on an ongoing basis. This is due to the words of mouth factor which has the potential to influence one's behavior.

Suggestion

Based on the conclusions that have been conveyed previously, the following are suggestions that can be given regarding this research:

- a. For companies, it is hoped that they will be able to maintain the quality of mobile banking services, and provide services that are complete, practical and easy to use, and are always updated on technological advances and other features.
- b. For future researchers, it is hoped that researchers will add other objects and range of respondent data so that more general data is obtained. And researchers are also expected to use more complex research methods. Thus, the research becomes more complete and provides new insights.

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