

Understanding Mobile Banking Adoption Among SMEs in Batu City: Integrating Technology Acceptance Model and Relative Advantage

*Memahami Adopsi Mobile Banking di Kalangan UMKM di Kota Batu:
Mengintegrasikan Model Penerimaan Teknologi dan Keunggulan Relatif*

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ABSTRACT

This study investigates the factors influencing SMEs' intention to adopt mobile banking by integrating the Technology Acceptance Model (TAM) and Diffusion of Innovation Theory (DOI). Specifically, the study examines the effects of Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Relative Advantage (RA) on Behavioral Intention (BI) to use mobile banking services. A quantitative research approach was employed using a survey of SME owners and managers in Batu City, Indonesia. Data were collected from 165 respondents and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4 software. The findings reveal that all proposed relationships are significant. Perceived Ease of Use positively influences both Perceived Usefulness and Behavioral Intention. Perceived Usefulness significantly affects Behavioral Intention and emerges as one of the strongest predictors of mobile banking adoption. Furthermore, Relative Advantage significantly influences both Perceived Usefulness and Behavioral Intention, indicating that SME owners are more likely to adopt mobile banking when they perceive clear advantages over conventional banking methods. This study contributes to the literature by extending TAM through the integration of Relative Advantage from Diffusion of Innovation Theory. The findings provide valuable insights for banking institutions and policymakers seeking to promote digital financial inclusion and accelerate the adoption of mobile banking among SMEs.

Keywords: technology acceptance model, diffusion of innovation theory, behavioral intention, Indonesia

ABSTRAK

Studi ini menyelidiki faktor-faktor yang memengaruhi niat UMKM untuk mengadopsi perbankan seluler dengan mengintegrasikan Model Penerimaan Teknologi (TAM) dan Teori Difusi Inovasi (DOI). Secara khusus, studi ini meneliti pengaruh Kemudahan Penggunaan yang Dirasakan (PEOU), Kegunaan yang Dirasakan (PU), dan Keunggulan Relatif (RA) terhadap Niat Perilaku (BI) untuk menggunakan layanan perbankan seluler. Pendekatan penelitian kuantitatif digunakan dengan menggunakan survei terhadap pemilik dan manajer UMKM di Kota Batu, Indonesia. Data dikumpulkan dari 165 responden dan dianalisis menggunakan Pemodelan Persamaan Struktural Kuadrat Terkecil Parsial (PLS-SEM) dengan perangkat lunak SmartPLS 4. Temuan menunjukkan bahwa semua hubungan yang



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diusulkan signifikan. Kemudahan Penggunaan yang Dirasakan secara positif memengaruhi Kegunaan yang Dirasakan dan Niat Perilaku. Kegunaan yang Dirasakan secara signifikan memengaruhi Niat Perilaku dan muncul sebagai salah satu prediktor terkuat adopsi perbankan seluler. Lebih lanjut, Keunggulan Relatif secara signifikan memengaruhi Kegunaan yang Dirasakan dan Niat Perilaku, menunjukkan bahwa pemilik UMKM lebih cenderung mengadopsi perbankan seluler ketika mereka merasakan keunggulan yang jelas dibandingkan metode perbankan konvensional. Studi ini berkontribusi pada literatur dengan memperluas TAM melalui integrasi Keunggulan Relatif dari Teori Difusi Inovasi. Temuan ini memberikan wawasan berharga bagi lembaga perbankan dan pembuat kebijakan yang berupaya mempromosikan inklusi keuangan digital dan mempercepat adopsi perbankan seluler di kalangan UMKM.

Kata Kunci: model penerimaan teknologi, teori difusi inovasi, keunggulan relatif, niat perilaku

1. Introduction

The rapid advancement of digital technology has transformed business financial transactions and accelerated the digitalization of small and medium enterprises (MSMEs). Digital financial services have become a crucial driver of MSME development by enabling faster, more efficient, and more accessible transactions. Among these innovations, mobile banking has emerged as one of the most widely used digital banking services due to its convenience, flexibility, and accessibility (OECD, 2021).

In Indonesia, MSMEs play a crucial role in economic development through their contribution to employment and gross domestic product (GDP). Increasing smartphone penetration and internet access have encouraged MSMEs to adopt digital financial technology, including mobile banking applications. Mobile banking allows business owners to conduct transactions anytime and anywhere, thereby improving operational efficiency and supporting business competitiveness (Rahayu & Day, 2015).

Mobile banking adoption has become increasingly important in the post-pandemic era. Mobile banking facilitates payment processing, cash flow management, supplier transactions, and access to formal financial services. Despite these benefits, mobile banking adoption among MSMEs remains uneven. Although some business owners actively use mobile banking for business operations, others still rely on conventional banking methods. This suggests that the availability of technology alone does not guarantee its adoption, making it crucial to understand the factors influencing MSMEs' intention to use mobile banking (Davis, 1989; Venkatesh & Davis, 2000).

One of the most widely used frameworks to explain technology adoption is the Technology Acceptance Model (TAM). According to the TAM, technology acceptance is primarily influenced by perceived usefulness and perceived ease of use (Davis, 1989). Perceived usefulness refers to the extent to which a technology improves user performance, while perceived ease of use reflects the extent to which the technology is perceived as easy to use. Previous studies have consistently confirmed the effectiveness of the TAM in explaining the

adoption of digital technologies, including mobile banking services (Alalwan et al., 2018; Venkatesh & Davis, 2000).

In the context of mobile banking, perceived usefulness and perceived ease of use have been identified as important predictors of behavioral intention. Users are more likely to adopt mobile banking when they perceive it increases efficiency, saves time, and supports business activities. Similarly, technology that is easy to learn and operate tends to increase users' willingness to adopt digital services (Tam & Oliveira, 2016; Siswoyo & Irianto, 2023).

Although TAM has been widely applied in technology adoption research, it may not fully explain users' adoption decisions. Therefore, researchers are increasingly integrating TAM with other theories to enhance its explanatory power (Venkatesh et al., 2003). One relevant framework is the Diffusion of Innovations (DOI) Theory, which emphasizes the role of innovation characteristics in influencing adoption behavior (Rogers, 2003). Among these characteristics, relative advantage is considered one of the strongest determinants of innovation adoption.

Relative advantage refers to the extent to which an innovation is perceived as superior to existing alternatives (Rogers, 2003). In the context of mobile banking, relative advantage can include greater convenience, faster transactions, lower operational costs, better flexibility, and better financial management. When MSME owners perceive that mobile banking offers substantial advantages compared to conventional banking services, they are more likely to recognize its usefulness and develop a stronger intention to adopt it (Oliveira et al., 2016).

Integrating TAM and DOI provides a more comprehensive framework for understanding mobile banking adoption. While TAM focuses on user perceptions of technology, DOI highlights the characteristics of innovations that influence adoption decisions. Therefore, the inclusion of relative advantage can strengthen the explanatory power of technology adoption models among MSMEs.

This study focuses on MSMEs in Batu City, East Java, Indonesia. As one of Indonesia's leading tourist destinations, Batu City has a diverse and dynamic MSME sector that is increasingly dependent on digital financial services. However, empirical studies examining mobile banking adoption among MSME owners in this context are still limited. Furthermore, research integrating TAM and Relative Advantage from DOI in explaining mobile banking adoption by MSMEs is still relatively scarce, especially in developing countries.

Therefore, this study aims to examine the influence of perceived ease of use, perceived usefulness, and relative advantage on the behavioral intention of MSMEs to use mobile banking in Batu City. By integrating TAM and DOI, this study contributes to the literature on digital financial technology adoption and provides practical insights for banks and policymakers seeking to promote digital financial inclusion among MSMEs.

2. Literature Review and Hypothesis Development

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is one of the most influential theoretical frameworks for explaining individuals' acceptance and use of information technology. Originally proposed by Davis (1989), TAM states that user acceptance of a technology is primarily determined by two key beliefs: perceived usefulness and perceived ease of use. According to this model, perceived ease of use influences perceived usefulness, and both constructs contribute to users' behavioral intentions to adopt a particular technology.

This model has been widely applied in various technology adoption contexts, including e-commerce, online learning, mobile applications, digital payment systems, and mobile banking services. Previous studies consistently show that TAM provides a robust framework for predicting user intentions and actual usage behavior toward technological innovations (Venkatesh & Davis, 2000; Venkatesh et al., 2003).

In the context of mobile banking, TAM remains highly relevant because digital banking services require users to interact directly with the technology platform. MSME owners are more likely to adopt mobile banking applications when they perceive the technology to be easy to use and beneficial for improving business operations. Therefore, perceived usefulness and perceived ease of use remain key constructs in understanding mobile banking adoption behavior among MSMEs.

2.1.1 Perceived Ease of Use (PEOU)

Perceived ease of use (PEOU) refers to the degree to which an individual believes that using a particular technology will be effortless (Davis, 1989). Technology that is easier to understand, learn, and operate is generally more likely to be accepted by users.

For MSME owners, ease of use is crucial because many business owners may have varying levels of digital literacy. Mobile banking applications that provide intuitive interfaces, simple navigation, and straightforward transaction procedures can reduce the complexity associated with digital financial services. As a result, users are more willing to use the technology in their daily business activities.

Previous studies have reported that perceived ease of use significantly influences both perceived usefulness and behavioral intention to use mobile banking. Users who perceive mobile banking applications as easy to use are more likely to recognize their benefits and develop stronger intentions to adopt them (Alalwan et al., 2018; Tam & Oliveira, 2017; Siswoyo & Irianto, 2023).

According to TAM, users are more likely to perceive a technology as useful when it is easy to use. Technology that requires less effort allows users to complete tasks more efficiently and effectively, thereby increasing perceived usefulness (Davis, 1989). Previous studies have consistently found a positive relationship between perceived ease of use and perceived usefulness in mobile banking environments (Alalwan et al., 2018; Tam & Oliveira, 2017).

H1: Perceived Ease of Use positively influences Perceived Usefulness.

Meanwhile, users tend to develop stronger intentions to adopt technology that is easy to understand and operate. Simpler systems reduce learning costs and encourage technology acceptance. Previous empirical evidence shows that perceived ease of use significantly influences behavioral intention (BI) towards mobile banking adoption (Merhi et al., 2019; Siswoyo & Irianto, 2023).

H2: Perceived ease of use has a positive effect on behavioral intention to use mobile banking.

2.1.2 Perceived Usefulness (PU)

Perceived Usefulness (PU) refers to the extent to which individuals believe that using a particular system will improve their performance (Davis, 1989). In the context of mobile banking, perceived usefulness reflects the extent to which users believe that mobile banking improves transaction efficiency, saves time, facilitates financial management, and supports business operations.

For MSMEs, perceived usefulness of mobile banking can include the ability to conduct transactions anytime and anywhere, monitor cash flow more efficiently, reduce operational costs, and improve financial decision-making. These benefits can directly contribute to business productivity and competitiveness.

A substantial body of literature has confirmed the significant influence of perceived usefulness on technology adoption behavior. Studies on digital banking consistently show that users who perceive greater benefits from mobile banking are more likely to develop favorable attitudes and stronger behavioral intentions toward adoption (Alalwan et al., 2018; Merhi et al., 2019; Safari & Riyanti, 2024).

Perceived usefulness has long been recognized as one of the strongest determinants of technology adoption. Users who believe that mobile banking improves business performance and efficiency are more likely to develop favorable adoption intentions (Davis, 1989). Numerous studies have reported a positive relationship between perceived usefulness and behavioral intention in the context of digital banking (Alalwan et al., 2018; Safari & Riyanti, 2024).

H3: Perceived usefulness positively influences behavioral intention to use mobile banking.

2.1.3 Relative Advantage (RA)

Relative advantage (RA) is one of the key attributes of innovation proposed by the Diffusion of Innovation Theory (DOI) (Rogers, 2003). Relative advantage refers to the extent to which an innovation is perceived as superior to the idea, product, or practice it replaces. In mobile banking adoption, relative advantage can be reflected in a variety of benefits, including greater convenience, faster transaction processing, greater flexibility, reduced transaction costs, and increased business efficiency. When MSME owners perceive that mobile banking offers

significant advantages over conventional banking methods, they are more likely to evaluate the technology positively and consider adopting it.

Previous studies have shown that relative advantage is one of the strongest predictors of innovation adoption. Users are more likely to adopt a technological innovation when they perceive clear benefits compared to existing alternatives. Research in the context of digital finance and mobile banking consistently demonstrates the important role of relative advantage in shaping user perceptions and adoption intentions (Oliveira et al., 2016)

Relative advantage is particularly relevant in the context of MSMEs because business owners often evaluate technology adoption decisions based on practical benefits and expected business outcomes. Therefore, greater perceptions of relative advantage are expected to increase both perceived usefulness and behavioral intentions toward mobile banking adoption.

Relative advantage represents the extent to which mobile banking is perceived as superior to traditional banking methods. Technologies that offer greater convenience, flexibility, and efficiency tend to be perceived as more useful by users. Previous innovation adoption studies have shown that relative advantage significantly influences perceived usefulness and value (Rogers, 2003; Oliveira et al., 2016).

H4: Relative Advantage positively influences Perceived Usefulness.

The greater the perceived superiority of mobile banking, the stronger the intention to adopt it. MSME owners who perceive the advantages of mobile banking over conventional banking methods are expected to exhibit higher adoption intentions. Empirical evidence supports the positive influence of relative advantage on technology adoption behavior (Oliveira et al., 2016).

H5: Relative Advantage positively influences Behavioral Intention to use mobile banking.

2.1.4 Behavioral Intention to Use (BI)

Behavioral intention (BI) refers to an individual's willingness or readiness to use a particular technology in the future (Ajzen, 1991). In TAM, behavioral intention serves as a direct antecedent of actual technology usage behavior.

In the context of MSMEs, behavioral intention reflects the extent to which business owners are willing to continue using or increase their use of mobile banking services for business-related transactions. Stronger behavioral intentions indicate a higher likelihood of future adoption and continued use.

Behavioral intention has been widely used as a dependent variable in technology adoption studies because it effectively captures user acceptance of a technological innovation before actual usage behavior occurs (Venkatesh et al., 2003).

3. Methodology

3.1 Research Design

This study uses a quantitative research approach to examine the determinants of mobile banking adoption among small and medium enterprises (MSMEs) in Batu City, Indonesia. This study integrates the Technology Acceptance Model (TAM) and the Diffusion of Innovations Theory (DOI) to investigate the influence of Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Relative Advantage (RA) on Behavioral Intention (BI) to use mobile banking.

A cross-sectional survey design was used, in which data were collected from MSME owners and managers at a single point in time using a structured questionnaire. Quantitative methods are appropriate for testing causal relationships between latent variables and validating theoretical models through statistical analysis (Hair et al., 2022).

3.1.1 Population and Sample

The population of this study consisted of MSMEs operating in Batu City, East Java, Indonesia. Batu City is known as one of Indonesia's leading tourist destinations and hosts a diverse range of MSMEs operating in the culinary, agribusiness, handicraft, hospitality, and retail sectors. Due to the lack of a complete sampling frame and the need to ensure that respondents had relevant experience with digital banking services, a purposive sampling method was used. Respondents were selected based on the following criteria:

1. Owners or managers of MSMEs located in Batu City.
2. Have been running a business for at least one year.
3. Have experience using mobile banking services for business transactions.
4. Be 18 years of age or older.

According to the minimum sample size recommendations for Partial Least Squares Structural Equation Modeling (PLS-SEM), a sample size exceeding 100 observations is generally considered adequate for models of moderate complexity (Hair et al., 2022). Therefore, this study targeted approximately 150–200 respondents.

3.1.2 Data Collection Procedure

Primary data were collected through self-administered questionnaires distributed directly to MSME owners and managers. The questionnaire was developed based on validated measurement scales from previous research and adapted to the context of mobile banking use among MSMEs.

Responses were measured using a five-point Likert scale ranging from:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree

- 5 = Strongly Agree

The questionnaire consisted of two sections:

- Respondent demographic information.
- Measurement items for the research constructs.

3.2 Data Analysis Technique

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4 software. PLS-SEM was chosen because it is suitable for exploratory and predictive research, accommodates complex models, and does not require strict assumptions regarding data normality (Hair et al., 2022). The analysis was conducted in two stages:

3.2.1 Measurement Model Evaluation

The measurement model was assessed through:

1. Indicator Reliability (Outer Loading ≥ 0.70)
2. Internal Consistency Reliability (Cronbach's Alpha ≥ 0.70 ; Composite Reliability ≥ 0.70)
3. Convergent Validity: Average Variance Extracted (AVE) ≥ 0.50
4. Discriminant Validity: Heterotrait-Monotrait Ratio (HTMT) < 0.90

3.2.2 Structural Model Evaluation

The structural model was assessed using:

1. Collinearity Assessment (VIF < 5)
2. Coefficient of Determination (R^2)
3. Effect Size (f^2)
4. Predictive Relevance (Q^2)
5. Path Coefficient
6. Bootstrapping Analysis

The hypothesis is accepted when:

1. t-value > 1.96 ; and
2. p-value < 0.05

at the 95% confidence level.

3.3 Research Model

The proposed conceptual framework integrates TAM and DOI and consists of the five hypotheses presented in the previous section.

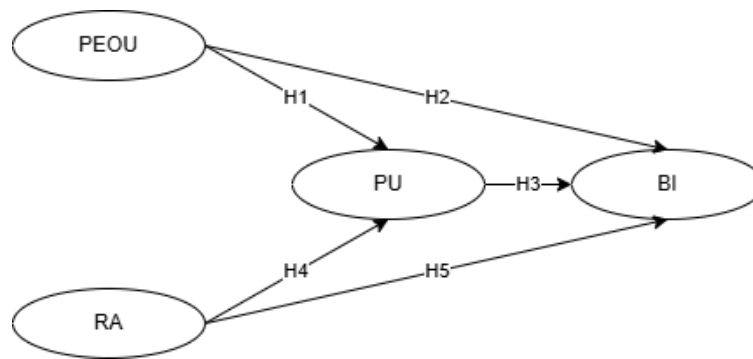


Figure 1 Research Model

The above model proposes that Relative Advantage (RA) and Perceived Ease of Use (PEOU) influence MSMEs' perceptions of usability (PU), which in turn influences their intention to adopt mobile banking (BI) services.

4. Results and Discussion

4.1 Respondent Profile

A total of 178 questionnaires were distributed to MSME owners and managers in Batu City. After data screening, 165 valid responses were retained for analysis, resulting in a response rate of 92.7%. Table 2 below presents the demographic characteristics of the respondents.

Table 1 Respondent Profile

Characteristics	Frequency	Percentage
Male	92	55.8%
Female	73	44.2%
Under 30	38	23.0%
Ages 31–40	57	34.5%
Ages 41–50	46	27.9%
Over 50	24	14.6%
Culinary	63	38.2%
Agribusiness	28	17.0%
Retail	37	22.4%
Handicrafts	21	12.7%
Other Services	16	9.7%

Source: Analysis Results

The findings indicate that the majority of respondents are actively involved in the culinary and retail businesses, reflecting the dominant MSME sector in Batu City.

4.2 Measurement Model Assessment

4.2.1 Indicator Reliability

Based on the tests conducted, all indicators demonstrated satisfactory factor loading values above the recommended threshold of 0.70.

Table 2 Outer Loading

Construct	Indicator	Loading
PEOU	PEOU1	0.812
	PEOU2	0.846
	PEOU3	0.857
	PEOU4	0.822
PU	PU1	0.874
	PU2	0.861
	PU3	0.833
	PU4	0.842
RA	RA1	0.865
	RA2	0.841
	RA3	0.872
	RA4	0.854
BI	BI1	0.883
	BI2	0.874
	BI3	0.829
	BI4	0.851

Source: Analysis Results

Based on the data above, all factor loading values exceed 0.70, confirming the reliability of the indicators.

4.2.2 Reliability and Convergent Validity

As presented in Table 4 below, all constructs achieved Cronbach's Alpha and Composite Reliability values above 0.70, and AVE values above 0.50, indicating that reliability and convergent validity met the requirements.

Table 3 Reliability and Validity Assessment

Construct	Cronbach's Alpha	CR	AVE
PEOU	0.861	0.905	0.704
PU	0.878	0.916	0.731
RA	0.881	0.918	0.738
BI	0.887	0.921	0.745

Source: Analysis Results

4.2.3 Discriminant Validity

The HTMT ratio ranged between 0.421 and 0.846, below the recommended threshold of 0.90. Therefore, discriminant validity was met.

4.3 Structural Model Assessment

4.3.1 Coefficient of Determination (R^2)

This model explains 61.2% of the variance in Perceived Usefulness and 68.3% of the variance in Behavioral Intention, indicating substantial explanatory power.

Table 4 Coefficient of Determination

Endogenous Variable	R^2
Perceived Usefulness	0.612
Behavioral Intention	0.683

Source: Analysis Results

4.3.2 Hypothesis Testing

A bootstrapping process with 5,000 subsamples was conducted to evaluate the significance of the proposed relationships. The test results are presented in Table 6 below, indicating that all proposed hypotheses are supported.

Table 5 Hypothesis Testing Results

Hypothesis	Path	β	t-value	p-value	Result
H ₁	PEOU → PU	0.326	4.876	0.000	Supported
H ₂	PEOU → BI	0.181	2.214	0.027	Supported
H ₃	PU → BI	0.389	5.921	0.000	Supported
H ₄	RA → PU	0.487	7.334	0.000	Supported
H ₅	RA → BI	0.301	4.173	0.000	Supported

Source: Analysis Results

4.4 Discussion

H₁: Perceived Ease of Use → Perceived Usefulness

The results show that perceived ease of use has a positive effect on perceived usefulness ($\beta = 0.326$, $p < 0.05$). This finding suggests that MSME owners perceive mobile banking as more useful when it is easy to learn and operate. A user-friendly interface and simple transaction procedures enable business owners to utilize mobile banking more effectively, thereby increasing perceived value. These results support the original TAM proposition proposed by Davis (1989) and are consistent with previous research conducted by Alalwan et al. (2018) and Tam and Oliveira (2016).

H₂: Perceived Ease of Use → Behavioral Intention

Perceived ease of use was found to have a significant positive effect on behavioral intention ($\beta = 0.181$, $p = 0.027$). Although the effect size is relatively smaller than the other relationships, these results indicate that ease of use remains an important consideration for MSME owners when deciding whether to adopt mobile banking. This finding implies that banks should continue to improve app usability and simplify transaction processes to encourage wider adoption among MSMEs.

H3: Perceived Usefulness $\rightarrow$ Behavioral Intention

Perceived usefulness significantly influences behavioral intention ($\beta = 0.389$, $p < 0.05$), representing the strongest TAM relationship in the model. This finding indicates that MSME owners are more likely to adopt mobile banking when they perceive it improves transaction efficiency, supports financial management, and enhances business performance. This result confirms previous research showing that perceived usefulness is one of the most important determinants of digital banking adoption.

H4: Relative Advantage $\rightarrow$ Perceived Usefulness

Relative advantage significantly influences perceived usefulness ($\beta = 0.487$, $p < 0.05$) and represents the strongest relationship in the model. These results indicate that MSME owners who perceive mobile banking as superior to traditional banking methods tend to view the technology as more beneficial. This finding supports the Diffusion of Innovation Theory (Rogers, 2003), which argues that innovations that offer greater benefits are more likely to be accepted by potential adopters.

H5: Relative Advantage $\rightarrow$ Behavioral Intention

Relative advantage also has a significant positive effect on behavioral intention ($\beta = 0.301$, $p < 0.05$). This finding suggests that MSMEs are more willing to adopt mobile banking when they perceive substantial benefits compared to conventional banking services. These results highlight the importance of communicating the practical benefits of mobile banking, including convenience, flexibility, accessibility, and efficiency.

These findings indicate that both TAM and DOI provide valuable insights into understanding mobile banking adoption among MSMEs in Batu City. Relative advantage emerged as the most influential antecedent of perceived usefulness, while perceived usefulness was the strongest predictor of behavioral intention.

These findings also suggest that MSMEs primarily adopt mobile banking because they recognize tangible business benefits, not simply because the technology is easy to use. Therefore, banks and policymakers should emphasize the practical benefits of mobile banking, including transaction speed, convenience, and business efficiency, when promoting digital financial services among MSMEs.

5. Conclusion and Recommendation

5.1 Conclusion

This study examines the determinants of mobile banking adoption among MSMEs in Batu City by integrating the Technology Acceptance Model (TAM) and the Diffusion of Innovations Theory (DIP). Specifically, this study investigates the influence of Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Relative Advantage (RA) on Behavioral Intention (BI) to use mobile banking services.

The findings indicate that all proposed relationships are statistically significant. Perceived Ease of Use (PEOU) positively influences Perceived Usefulness (PU) and Behavioral Intention (BI). Perceived Usefulness (PU) was found to have a significant positive effect on Behavioral Intention (BI), confirming its role as a key determinant of technology adoption. Furthermore, Relative Advantage (RA) significantly influences Perceived Usefulness (PU) and Behavioral Intention (BI), with the strongest effect observed in the relationship between Relative Advantage (RA) and Perceived Usefulness (PU).

These findings indicate that MSME owners are more likely to adopt mobile banking when they perceive clear advantages over conventional banking methods and realize tangible benefits for business operations. Therefore, mobile banking adoption among MSMEs is driven not only by the simplicity of the technology but also by perceived improvements in efficiency, flexibility, convenience, and overall business performance.

Overall, the integration of TAM and DOI provides a comprehensive explanation of mobile banking adoption behavior among MSMEs in Batu City. This study highlights the importance of technology-related perceptions and innovation-related characteristics in driving the use of digital financial services.

5.1 Future Research

This study has several limitations that should be acknowledged. First, the research was conducted exclusively among SMEs located in Batu City. Therefore, the findings may not be fully generalizable to SMEs operating in different regions or sectors.

Second, the study employed a cross-sectional design, which captures respondents' perceptions at a single point in time. Future studies may utilize longitudinal approaches to examine changes in mobile banking adoption behavior over time.

Third, this research focuses only on Perceived Ease of Use, Perceived Usefulness, Relative Advantage, and Behavioral Intention. Other variables such as Trust, Perceived Risk, Facilitating Conditions, Digital Literacy, Financial Literacy, and Social Influence may provide additional insights into mobile banking adoption behavior.

Future studies are therefore encouraged to integrate additional theoretical perspectives and examine more comprehensive models involving digital financial technologies, fintech applications, and broader digital banking ecosystems.

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