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Enhancing digital financial inclusion: Adoption factors of digital accounting among MSMEs in Indonesia

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Abstract

This study investigates the factors influencing the adoption of digital accounting among Micro, Small, and Medium Enterprises (MSMEs) in Indonesia, aiming to contribute to the achievement of enhanced digital financial inclusion. A quantitative research design was employed, utilizing a questionnaire survey to gather data from 155 MSMEs partnered with Bank Indonesia in South Sulawesi. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3.0 software. The results reveal that digital financial literacy, perceived usefulness, and perceived ease of use significantly and positively influence the adoption of digital accounting among MSMEs. However, perceived ease of use was not found to have a significant effect on perceived usefulness. The study also confirms that the adoption of digital accounting contributes positively to the advancement of digital financial inclusion. The Digital Technology Acceptance Model (DTAM), extended from the Technology Acceptance Model (TAM) by incorporating digital financial literacy, proves to be a suitable framework for predicting improvements in digital financial inclusion within the context of Indonesian MSMEs. This study provides valuable insights for policymakers, financial institutions, and technology developers. By highlighting the importance of digital financial literacy, the study encourages the development of targeted training programs and user-friendly digital accounting solutions to empower MSMEs and promote financial inclusion.

Keywords: Digital accounting, Financial inclusion, Financial literacy, Technology acceptance model, MSMEs.

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1. Introduction

Government policies over the last decade have strongly emphasized the digitalization of Micro, Small, and Medium Enterprises (MSMEs). These policies include improving internet infrastructure, providing financial support, and promoting digitization to empower MSMEs [1]. This focus is justified, as MSMEs constitute 99% of business entities in Indonesia and contribute over 60% of the national GDP [2, 3]. However, achieving financial inclusion remains a persistent challenge. While formal financial services coverage has improved globally, 1.4 billion people still lack access to these services, and Indonesia struggles to meet its financial inclusion goals despite being the largest economy in ASEAN [4]. To improve financial access in Indonesia, the government enacted Presidential Decree No. 114/2020, aiming to promote financial inclusion. Moreover, the growing presence of financial technology (Fintech) companies supports the government in expediting access to financial services [5]. According to Bank Indonesia (BI), acting on behalf of the government, Fintech refers to the application of technology to enhance financial systems [6]. BI has played a pivotal role in advancing innovative products, services, technologies, and business models that impact monetary and financial stability, as well as the efficiency, security, reliability, and seamless functioning of payment systems [7].

Furthermore, BI collaborates with the Indonesian Institute of Certified Public Accountants (IAI) to provide digital accounting services for MSMEs, enhancing opportunities to obtain financial access. The digital accounting service designed by BI, known as the Financial Information Application Information System (SIAPIK), is a notable example of such efforts [8, 9]. Despite these initiatives, the adoption of digital accounting services by MSMEs has been gradual since its introduction in 2017. Effective socialization by various stakeholders, including the Ministry of Manpower and the Ministry of Tourism and Creative Economy, is essential for increasing financial literacy and encouraging the use of digital accounting [10]. These efforts aim to simplify the process for MSMEs to record business financial transactions and generate financial reports digitally [11]. Although significant socialization has been conducted, the financial inclusion rate has not yet approached the targeted 90 percent by 2024. Therefore, it is imperative to understand the factors influencing the adoption of digital accounting in Indonesia [12]. Based on the background that has been explained earlier, the national financial inclusion target has still not been achieved. It is suspected that one of the reasons is that there are still low MSME actors who manage their finances well, making it difficult to access finance [13]. One of the supports for easy and free financial management is the adoption of digital accounting provided by Bank Indonesia.

One critical issue is the slow adoption of digital financial tools by MSMEs. Studies highlight several barriers, such as low digital financial literacy and limited use of digital financial systems like the Financial Information Application Information System (SIAPIK) introduced by Bank Indonesia [1, 10]. Although SIAPIK aims to simplify financial management and enhance financial inclusion, its adoption rate has been limited since its launch in 2017, underscoring the need for further research into adoption determinants. Despite extensive research on technology adoption models, such as the Technology Acceptance Model (TAM), existing studies often overlook the role of (DFL) as a critical factor influencing the adoption of digital accounting systems. Studies by Dewi and Wiksuana [14] and Zhang et al [15] primarily focus on general fintech adoption but fail to capture the unique challenges faced by MSMEs in developing economies. Additionally, while TAM effectively explains perceived usefulness (PU) and ease of use (PEoU), it lacks the contextual factors relevant to digital literacy and localized financial barriers. This gap calls for an extended model incorporating DFL to better address the complexities of MSME technology adoption in Indonesia.

This study bridges the theoretical gap by proposing the Digital Technology Acceptance Model (DTAM), extending TAM with Digital Financial Literacy (DFL) as a critical external variable. This framework contributes to a deeper understanding of how DFL influences PU, PEoU, and digital accounting adoption, providing insights into technology acceptance in resource-constrained settings. Practically, the findings offer actionable strategies for policymakers, financial institutions, and technology developers. By emphasizing DFL, the study informs targeted training programs to needs of MSMEs, with the skills needed for effective digital tool utilization. Additionally, the results guide developers in creating user-friendly digital accounting solutions tailored to the needs of MSMEs, ultimately fostering broader financial inclusion. Thus, this study aims to examine the factors that affect the adoption of digital accounting to increase digital financial inclusion in Indonesia [16]. These factors consist of digital financial literacy, perceived usefulness, and the digital perceived ease of use, all affecting the adoption of digital accounting. Furthermore, the adoption of digital accounting is predicted to increase national financial inclusion.

The findings of this study will have several implications. First, by identifying the key drivers of digital accounting adoption, we can provide valuable insights for policymakers, financial institutions, and technology developers. These insights can be used to develop targeted interventions to promote the wider adoption of digital accounting among MSMEs. Second, the study will contribute to the existing body of knowledge on technology adoption in the context of developing economies. By incorporating digital financial literacy as a key factor, we extend the existing theoretical framework and provide a more comprehensive understanding of the factors influencing technology adoption. The following questions have been explored based on the background and objectives of this research: (1) Does digital financial literacy significantly influence the perceived usefulness of digital accounting among MSMEs; (2) Does digital financial literacy significantly influence the perceived ease of use of digital accounting among MSMEs; (3) Does the perceived ease of use of digital accounting significantly influence its perceived usefulness among MSMEs; (4) Does the perceived usefulness of digital accounting significantly influence the adoption of digital accounting among MSMEs; (5) Does the perceived ease of use of digital accounting significantly influence the adoption of digital accounting among MSMEs; (6) Does the adoption of digital accounting significantly contribute to the enhancement of digital financial inclusion among MSMEs: Following this introduction, the paper will delve into a comprehensive review of the literature surrounding digital accounting adoption, paying particular attention to the roles of digital financial literacy, perceived usefulness, and perceived ease of use.

Subsequently, the research methodology employed in this study will be elucidated, encompassing both data collection and analysis techniques. The ensuing section will present and analyze the research findings, followed by a concluding discussion that summarizes the key findings, explores their implications, and suggests avenues for future research.

2. Literature Review

Research on digital accounting adoption, such as the adoption of Fintech, has empirically examined Fintech adoption from the perspective of individual users in Indonesia [17-19]. However, this topic has not yet garnered sufficient attention from MSME actors, despite their significant contribution to Indonesia's economy. For instance, [10] investigated the factors influencing Fintech adoption among 184 SMEs in Indonesia. Their findings revealed that performance expectations, social impact, facilitation conditions, knowledge, safety perceptions, and price value all shape behavioral intentions to adopt financial technologies. In contrast, the current study focuses on identifying the key drivers behind the adoption of digital accounting by MSMEs in Indonesia. This is achieved by expanding the Technology Acceptance Model (TAM) to include digital financial literacy, forming the Digital Technology Acceptance Model (DTAM). The selection of TAM is based on the results of a literature review of 106 studies, 95 of which are based on a specific theory or an extension of that theory [20]. One of the results shows that the theory and models used in the studies reviewed using the Technology Acceptance Model (TAM), introduced by Davis [21], have provided a very important basis for analyzing digital accounting acceptance. Furthermore, the addition of digital financial literacy factors is important, and the need for the use of digital accounting is necessary if users understand the importance of knowledge, skills, and understanding needed to navigate and utilize digital services and systems effectively and safely [22].

Digital financial literacy is a critical factor in facilitating the adoption of digital financial services. It encompasses the knowledge, skills, and understanding necessary to efficiently and securely utilize such services [23]. Research has demonstrated that higher levels of digital financial literacy are associated with greater adoption of digital financial services. For instance, a study by Amnas et al. [24] and Venkatesh et al. [25] revealed that digital financial literacy significantly affects the adoption of Fintech services among users in developing countries. Additionally, the perceived usefulness and ease of use of digital accounting systems play a pivotal role in their adoption. Perceived usefulness reflects the extent to which an individual believes that using a specific system will improve their job performance, while perceived ease of use indicates the degree to which an individual believes the system will be effortless to use [21]. Prior research has established that these factors have a substantial impact on the adoption of various digital technologies, including digital accounting systems [26]. Despite notable progress, the adoption of digital accounting services among MSMEs in Indonesia remains relatively low. Research indicates that obstacles such as limited awareness, low levels of digital literacy, and inadequate access to digital infrastructure are significant barriers to the widespread adoption of digital financial services [15, 27]. As a result, it is essential to identify the factors that influence the adoption of digital accounting to develop effective strategies aimed at improving financial inclusion for MSMEs in Indonesia. In conclusion, this literature review emphasizes the critical role of digital financial literacy, perceived usefulness, and perceived ease of use in the adoption of digital accounting among MSMEs. By expanding the Technology Acceptance Model (TAM) to incorporate digital financial literacy, this study seeks to provide a more holistic understanding of the factors driving the adoption of digital accounting and its implications for enhancing financial inclusion in Indonesia.

Research on digital accounting adoption, particularly within the context of Fintech, has seen a growing interest in recent years. While initial studies primarily examined Fintech adoption from the perspective of individual users in Indonesia [17, 18, 28], there is a growing recognition of the need to understand the unique challenges and opportunities faced by Micro, Small, and Medium Enterprises (MSMEs) in adopting these technologies Rawashdeh [28] and Lutfi et al. [29] investigated the factors influencing Fintech adoption among 184 SMEs in Indonesia, finding that performance expectations, social impact, facilitation conditions, knowledge, safety perceptions, and price value all contribute to shaping behavioral intentions. However, their study focused broadly on Fintech adoption, without specifically addressing the nuances of digital accounting systems. This current study aims to delve deeper into the key drivers behind the adoption of digital accounting by MSMEs, recognizing its potential to significantly contribute to Indonesia's economic growth. Furthermore, a study Lutfi et al. [29] and Gumilar, et al. [30] examined the factors affecting the adoption of digital banking services by MSMEs in rural Indonesia. They found that digital literacy, along with perceived security and trust, significantly influenced the adoption of digital banking, suggesting that addressing the knowledge gap is crucial for promoting the use of digital financial services among MSMEs.

Digital financial literacy encompasses the knowledge, skills, and understanding necessary to effectively and securely utilize digital financial services [24]. Research has consistently demonstrated a positive association between higher levels of DFL and greater adoption of digital financial services [31]. While perceived usefulness and ease of use remain central to technology adoption, recent studies have highlighted the importance of considering additional factors, such as individual characteristics, social influences, and facilitating conditions [26]. Their findings suggest that social norms and the perceived security of digital platforms can significantly influence individuals' decisions to adopt new technologies. In the context of Indonesian MSMEs, obstacles such as limited awareness, low levels of digital literacy, and inadequate access to digital infrastructure continue to hinder the widespread adoption of digital financial services [15, 32]. Therefore, understanding the interplay between DFL, PU, PEoU, and other contextual factors is crucial for developing effective strategies to promote digital accounting adoption and enhance financial inclusion among Indonesian MSMEs.

3. Research Approach and Method

3.1. Development of the Digital Technology Acceptance Model

The Digital Technology Acceptance Model (DTAM) was designed to specifically address the shortcomings of the original Technology Acceptance Model (TAM), particularly in the conceptualization of perceived usefulness (PU) and perceived ease of use (PeoU) [33-35]. The definitions of PU and PeoU in TAM are primarily focused on organizational contexts. Moreover, it has been noted that technology adoption studies often incorporate variables from other technology-related research, which can result in challenges during adoption. To address these issues, DTAM tackles common obstacles in adopting digital technologies by conducting a comprehensive analysis of prominent information technology models previously employed by researchers to understand the adoption of advanced technologies. The aim is to assess the applicability and limitations of this approach within the domain of digital accounting research. DTAM is built upon two fundamental constructs: digital perceived usefulness (DPU) and digital perceived ease of use (DPEoU), both influenced by the external variable of digital financial literacy (DFL). These three factors are expected to play a crucial role in fostering the adoption of digital accounting, ultimately contributing to enhanced digital financial inclusion (DFI).

In this study, the mediating variables Digital Perceived Usefulness (DPU) and Digital Perceived Ease of Use (DPEoU) are used to explore the relationship between Digital Financial Literacy (DFL) and Digital Accounting Adoption (DAA). The selection of these mediating variables is based on the framework of the Technology Acceptance Model (TAM), which has been proven to be a valid approach to understanding factors influencing technology adoption [21, 26]. DPU and DPEoU, as mediating variables, provide new insights into how digital financial literacy can be translated into broader technology adoption. These findings support the development of a more inclusive technology adoption model by considering the contextual limitations of MSMEs in developing countries. Practically, the results indicate that financial literacy programs should not only enhance understanding of technology but also focus on improving perceptions of its usefulness and ease of use. DPU is defined as the extent to which an individual believes that using a particular technology will improve their performance [36]. In the context of MSMEs, this perception is highly relevant as business owners often consider the direct benefits of a technology before deciding to adopt it. Previous research has shown that DPU has a significant influence on the intention to use digital technologies, including accounting systems [34]. In this study, DPU acts as a bridge between digital financial literacy and DAA, demonstrating that a better understanding of digital finance enhances the perceived usefulness of the technology, which ultimately drives digital accounting adoption.

3.2. Hypothesis Formulation

This study identifies strong relationships between Digital Financial Literacy (DFL), Digital Perceived Usefulness (DPU), Digital Perceived Ease of Use (DPEoU), Digital Accounting Adoption (DAA), and Digital Financial Inclusion (DFI). The detailed relationships between these variables are discussed as follows:

DFL plays a critical role in shaping users' perceptions of digital technology. A higher level of digital literacy enables users to better understand the benefits of technology and how to use it effectively [22]. In this study:

DFL and DPU: Users with higher digital financial literacy are more likely to recognize how digital accounting can enhance the efficiency of financial management. Thus, DFL has a direct positive impact on DPU.

DFL and DPEoU: Knowledge of digital concepts reduces perceived difficulty in using the technology, leading to a positive relationship between DFL and DPEoU.

Derived from the concept of financial literacy, digital financial literacy (DFL) refers to the knowledge, skills, and understanding necessary to effectively and securely navigate and utilize digital services and systems, such as mobile banking applications, online payment platforms, and digital accounting record-keeping systems [22]. Previous research has demonstrated a positive relationship between DFL, perceived usefulness, and perceived ease of use in mobile financial technology (m-fintech) applications [21, 34, 37]. Individuals with higher levels of digital financial literacy are more likely to recognize the advantages and efficiency of using m-fintech applications. In the context of MSMEs, however, several studies [22, 38, 39] highlight that the relationship between DFL levels and the adoption of digital accounting in developing countries is complex and challenging. Based on this, we propose the following hypotheses.

DFL has a significant positive impact on Digital Perceived Usefulness (DPU) (H1).

DFL has a significant positive impact on Digital Perceived Ease of Use (DPEoU) (H2).

DPEoU mediates the relationship between DFL and DPU (H3).

DPU directly influences the intention and decision to adopt technology [26]. In the context of MSMEs, the perception that digital accounting can enhance business efficiency is a major factor driving its adoption. Therefore, DPU has a direct impact on DAA (H4).

In addition to influencing DPU, DPEoU also directly affects DAA. MSMEs that perceive technology as easy to use are more likely to adopt it, especially if the technology does not require complex training or additional costs [34]. This supports the hypothesis that DPEoU has a direct effect on DAA (H5). According to Ooi and Tan [33]; Tew et al. [34] and Izzo et al. [35], digital perceived usefulness (DPU) stands for the increased utility perceived by potential users who adopt digital accounting. Meanwhile, DPEoU refers to the extent to which users consider learning and utilizing digital technology or services to be easy. The influence of DU and DEoU on technology adoption has been confirmed in various studies from different m-fintech contexts [35] including users in the MSMEs market. Meanwhile, concerning the original TAM [21], numerous studies have confirmed the substantial impact of DPEoU on DPU [40]. Therefore, the hypothesis is.

H₃: DPEoU has a significant positive effect on DPU.

H₄: DPU has a significant positive effect on DAA.

H₅: DPEoU has a significant positive effect on DAA.

The adoption of digital technologies, such as mobile banking, digital payment platforms, and digital financial record-keeping systems, enhances individuals' access to financial services. Through these tools, individuals can perform financial transactions, access savings and credit facilities, and efficiently manage their finances using mobile devices. This improved access to financial services plays a key role in promoting digital financial inclusion (DFI). Studies focusing on MSMEs have emphasized the critical role of various financial technologies in accelerating DFI in developing countries [41-43]. Based on these findings, the following hypothesis is proposed.

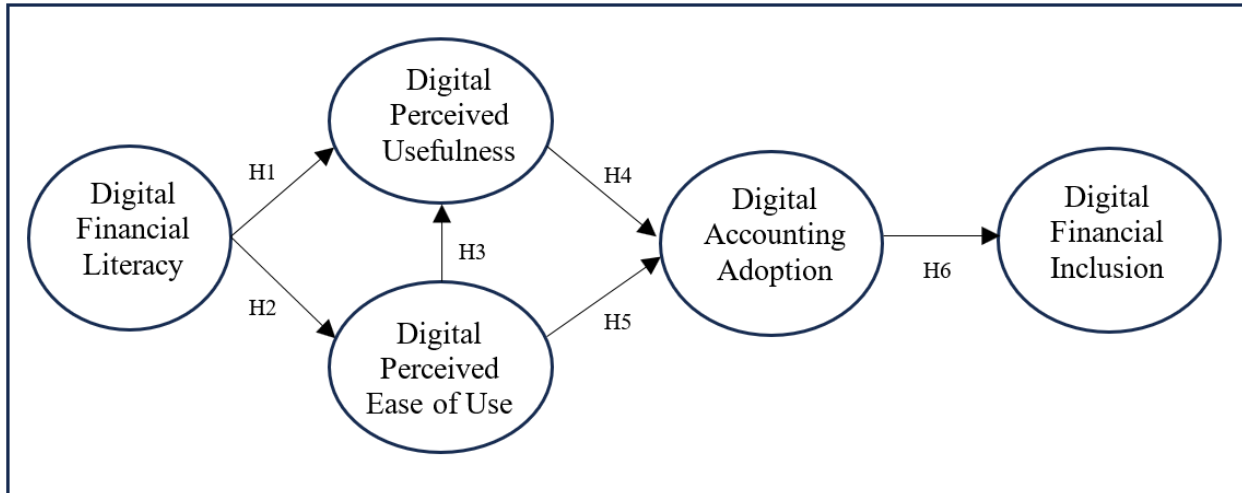


Figure 1.
Research model.

4. Research Design and Methodology

This study aims to investigate the factors influencing the adoption of digital accounting among Micro, Small, and Medium Enterprises (MSMEs) in Indonesia, ultimately contributing to a deeper understanding of how to enhance digital financial inclusion. To achieve this objective, a quantitative research approach was employed, utilizing a survey-based methodology.

4.1. Research Design

This study employs an explanatory research design. Explanatory research aims to explain the relationships between variables and provide insights into why certain phenomena occur. In this context, the study seeks to explain how various factors, such as digital financial literacy, perceived usefulness, and perceived ease of use, influence the adoption of digital accounting and subsequently contribute to digital financial inclusion. This design is deemed appropriate as it allows for the examination of causal relationships between the variables of interest within the proposed Digital Technology Acceptance Model (DTAM).

4.2. Sampling Technique

A convenience sampling method was utilized to select participants for this study. Convenience sampling is a non-probability sampling technique where participants are selected based on their accessibility and availability. While this method offers advantages in terms of efficiency and cost-effectiveness, it may introduce limitations regarding the generalizability of findings to the broader population. The research specifically targeted MSMEs partnered with Bank Indonesia located in the South Sulawesi region. This region was chosen due to its high concentration of MSMEs and its significance as a hub of economic activity in eastern Indonesia. This focus on MSMEs partnered with Bank Indonesia allowed for access to a sample with greater familiarity and experience with digital financial tools and services. The sample size was determined based on the requirements for Partial Least Squares (PLS) analysis, a statistical technique commonly used in social science research. In general, a sample size between 30 and 300 is considered adequate for conducting PLS analysis [44]. This study collected data from 185 MSMEs, which, after data verification, resulted in 155 valid responses. This final sample size of 155 falls within the acceptable range for PLS analysis and is considered sufficient for achieving reliable results.

4.3. Data Collection

The primary data were collected using self-administered online surveys created with Google Forms. Online surveys offer numerous benefits for data collection in social sciences, including broader data coverage, ease of use, and efficiency in terms of cost, time, and effort [45]. The questionnaire was developed based on established scales and instruments from prior research on technology adoption and digital financial literacy. The survey included items measuring: (1) Digital Financial Literacy: Assessed participants' knowledge, skills, and understanding of digital financial concepts and tools. (2) Perceived Usefulness: Measured participants' beliefs about the positive impact of using digital accounting on their business performance. (3) Perceived Ease of Use: Evaluated participants' perceptions of how easy it is to use digital accounting systems. (4) Digital Accounting Adoption: Measured the extent to which participants have adopted digital accounting tools

in their business operations. (5) Digital Financial Inclusion: Assessed participants' access to and usage of various digital financial services. A five-point Likert scale was employed to assess participants' attitudes, opinions, and perceptions regarding the variables under investigation. The Likert scale ranged from "Strongly Disagree" to "Strongly Agree," allowing participants to express their level of agreement with each statement. To maintain confidentiality and ensure data integrity, electronic survey links were generated and distributed directly to eligible MSMEs partnered with Bank Indonesia via email and through official MSME communication channels.

4.4. Data Analysis Technique

To analyze the data and test the research hypotheses, the study employed variance-based Structural Equation Modeling (SEM) with Partial Least Squares (PLS). PLS-SEM is a statistical technique used to examine the relationships between latent variables and their observed indicators. It is particularly suitable for this study because: (1) PLS-SEM can accommodate complex models with multiple variables and relationships, making it well-suited for analyzing the DTAM framework; (2) PLS-SEM prioritizes prediction and explanation of variance, which aligns with the study's objective of identifying key factors influencing digital accounting adoption; (3) PLS-SEM does not assume normality of data, which is beneficial for survey-based studies where data may not always meet strict parametric assumptions.

The model used in this study is an extension of the Technology Acceptance Model (TAM), incorporating digital financial literacy as an additional exogenous variable. This extension, termed the Digital Technology Acceptance Model (DTAM), aims to provide a more comprehensive understanding of technology adoption in the context of MSMEs in developing economies. This is a novel contribution as previous studies primarily focused on the original TAM framework without explicitly considering the role of digital financial literacy. Assessment of the Outer Model: This step involved evaluating the measurement model, including the reliability and validity of the measurement scales used to assess the latent variables. Assessment of the Inner Model: This step focused on evaluating the structural model, which examines the relationships between the latent variables, as hypothesized in the DTAM framework. Data calculations and processing were performed using the SmartPLS 3.0 software, a widely used tool for PLS-SEM analysis. This comprehensive approach to research design and methodology ensured that the data was collected and analyzed rigorously, enabling the study to achieve its objectives and contribute meaningfully to the understanding of digital accounting adoption and digital financial inclusion among Indonesian MSMEs.

5. Results

5.1. Respondents

This study examines the BI-partnered MSMEs located in the South Sulawesi region, emphasizing their levels of digital financial literacy. The gender distribution among respondents was fairly balanced, with 48% being male and 52% female. The majority of participants fell within the 30–45 age range and had been operating their businesses for periods ranging from 2 years to more than 10 years. Furthermore, the businesses utilizing SIAPIK and similar digital financial record applications spanned various sectors, including services, trade, manufacturing, agriculture, livestock, aquaculture, capture fisheries, and individual or ultra-micro enterprises. The insights derived from this data are critical for formulating effective strategies to enhance digital financial inclusion across Indonesia.

5.2. Outer Model Evaluation

This study applies four practical procedures and evaluations recommended by Hair et al. [43] to assess reflective measurement models using PLS-SEM estimation. First, indicator reliability was evaluated by analyzing the loading factor values. The findings revealed that the factor loadings surpassed the minimum threshold of 0.708, demonstrating that the constructs could explain at least 50% of the variance in their respective indicators. The second step, as presented in Table 2, involved assessing internal consistency reliability through composite reliability (CR) and Cronbach's alpha (CA) measurements.

Table 1.
Outer model results.

Construct	Statement	Loadings	CA	rho_A	CR	AVE
DFL [46, 47]	1 I know digital payment methods such as ShopeePay, Ovo, Go-pay, Amazon, and the like.	0.753	0.739	0.742	0.836	0.561
	2 I know about online trading of financial securities.	0.710				
	3 I am familiar with digital lending methods such as peer-to-peer lending, application-based lending, supply chain financing, and so on.	0.747				
	4 I know about digital financial records.	0.784				
DPU [46]	1 Using digital accounting can meet my financial preparation service needs.	0.722	0.757	0.761	0.845	0.577
	2 Digital accounting services can save time.	0.809				
	3 Digital accounting services can improve efficiency.	0.759				
	4 Overall, digital accounting services have benefited me.	0.747				
DPEoU [46]	1 It's easy for me, to learn on my own using digital accounting applications.	0.722	0.780	0.788	0.857	0.602
	2 It is easy to use digital accounting apps.	0.840				
	3 In my opinion, the display of the menu of the digital accounting application is friendly and easy to understand.	0.819				
	4 It is easy for me to have a device to use digital accounting services (mobile phone, APP, WIFI, etc.).	0.713				
DAA [48]	1 If I have the opportunity, I will use digital accounting.	0.882	0.926	0.929	0.944	0.772
	2 I am willing to use digital accounting in my financial records.	0.898				
	3 I believe that the use of digital accounting will develop in the future.	0.857				
	4 When I use digital accounting for financial decision-making, I will be able to secure my assets better.	0.885				
	5 When I use digital accounting for financial decision-making, I will be able to facilitate my financial decisions.	0.869				
DFI [48]	1 I see that digital accounting makes it easier to increase access to financial services, because of the simplified presentation of financial information and recording procedures.	0.867	0.910	0.911	0.936	0.786
	2 I believe that access to financial services through digital accounting will make it easier to improve our economic conditions through the development of income-generating activities.	0.891				
	3 I argue that with the use of digital accounting, access to basic financial services gradually increases user performance over time.	0.893				
	4 I argue that using digital accounting to do record-keeping is a flexible, affordable, convenient, and available financial offering that can increase the level of access to financial services (business capital loans).	0.896				

The results confirm that all latent variables have CR and CA values exceeding the minimum threshold of 0.7. The third step involved assessing convergent validity by examining the AVE values for each construct. The criteria were satisfied, as all AVE values exceeded 0.5. Subsequently, discriminant validity was evaluated using the Fornell-Larcker criterion. The analysis revealed that the AVE values for all constructs were greater than the squared correlations with other constructs, thereby establishing discriminant validity. A summary of the outer model measurements is presented in Table 1.

5.3. Inner Model Evaluation

Multicollinearity is a statistical phenomenon in which two or more independent variables or exogenous constructs are highly correlated, thereby reducing the model's predictive accuracy. To address this issue, the Variance Inflation Factor (VIF) is examined prior to hypothesis testing to ensure the absence of multicollinearity. According Hair et al. [43], a VIF value above 5 suggests collinearity between constructs, so maintaining VIF values below five is essential. In this study, no multicollinearity issues were detected, as all VIF values were below 5, as confirmed by the test results. Additionally, hypothesis testing was conducted using the bootstrapping technique with the SmartPLS 3.0 software. The t-statistic was used to determine significance at the 95% confidence level, with degrees of freedom (df) = n - 2 = 200 - 2 = 198, and a critical value of 1.96. The hypothesis testing outcomes for the relationships among latent variables are detailed in Table 2 and illustrated in Figure 2. Table 2 presents the hypothesis testing results, including the direct effects, original sample, sample mean, standard deviation, T statistics, P values, and the support status for each hypothesis.

Table 2.
Summary of Hypothesis Test.

Hypotheses	Direct Effect	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Conclusion
H1	DFL -> DPU	0.814	0.815	0.048	16.823	0.000***	Accepted
H2	DFL -> DPEoU	0.706	0.709	0.038	18.596	0.000***	Accepted
H3	DPEoU -> DPU	0.084	0.086	0.055	1.511	0.131	Rejected
H4	DPU -> DAA	0.350	0.365	0.112	3.129	0.002***	Accepted
H5	DPEoU -> DAA	0.223	0.227	0.096	2.313	0.021*	Rejected
H6	DAA -> DFI	0.811	0.803	0.051	15.856	0.000***	Accepted

Note: *** at 0.01 significance level, 99% confidence level, 2-tailed test.

Source: Data Processed, 2024.

Table 2 presents the results of the hypothesis tests examining the impact of government debt (DFL) and public expenditure (DPU) on economic growth. The findings indicate a significant positive relationship between government debt and economic growth (H1), as well as between public expenditure and economic growth (H4). This suggests that increasing government debt and public expenditure can stimulate economic growth. However, the hypothesis that there is a significant difference between the effects of domestic and external public debt (H3) is not supported by the data. Overall, these results provide robust evidence that digital financial literacy, perceived usefulness, and perceived ease of use are critical factors influencing the adoption of digital accounting among MSMEs. The adoption of digital accounting, in turn, significantly contributes to enhancing digital financial inclusion. These findings underscore the importance of promoting digital financial literacy and designing user-friendly digital accounting systems to achieve broader financial inclusion goals.

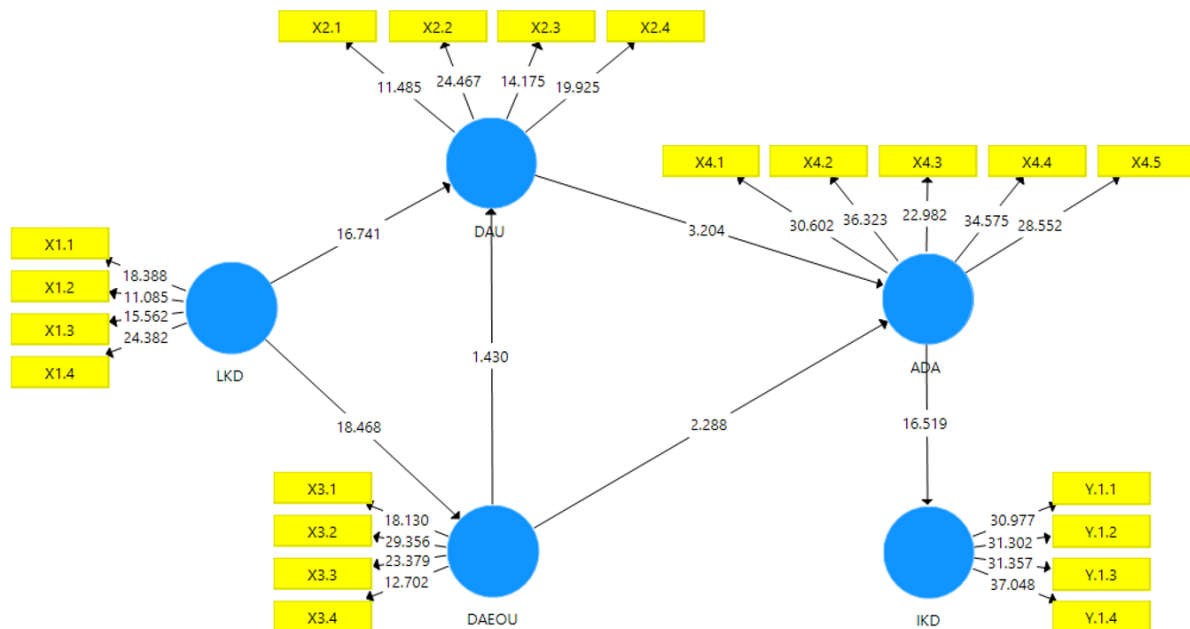


Figure 2.
Structural Model.

The proposed structural model shows that the latent variable digital perceived usefulness (DPU) has a positive and significant influence on the latent variable Digital Accounting Adoption (DAA). This indicates that users' subjective assessment of certain digital technologies or systems can improve their performance or work. This proves how useful it is to adopt digital accounting for business actors. This finding is supported by the path coefficient value of 0.75 ($p < 0.01$) and

high factor loading values for all indicators of both latent variables. In addition, this model also shows that the Digital Accounting Adoption (DAA) latent variable has a positive and significant influence on the Digital Financial Inclusion (DFI) latent variable, with a path coefficient value of 0.82 ($p < 0.01$). This result is consistent with previous theories which state that the more people or businesses that use digital accounting systems (DAA), the more their level of digital financial inclusion (DFI) will increase. In other words, the use of digital accounting encourages people to be more involved in various digital financial services. This study was conducted due to the growing interest in the adoption of digital technologies and their impact on digital financial inclusion among MSME actors. The findings demonstrate statistical support for the majority of the proposed hypotheses.

The analysis indicates that digital financial literacy (DFL) has a positive and statistically significant effect on digital perceived usefulness (DPU) ($O = 0.814$, $P\text{-Value} = 0.000 < 0.05$) and on digital perceived ease of use (DPEoU) ($O = 0.706$, $P\text{-Value} = 0.000 < 0.05$), leading to the acceptance of H1 and H2. However, the influence of DPEoU on DPU was found to be positive but not statistically significant ($O = 0.084$, $P\text{-Value} = 0.131 > 0.05$), resulting in the rejection of H3. This finding differs from prior studies Ooi and Tan [33]. This divergence may occur among MSME actors who are driven to enhance financial inclusion, where the perceived usefulness of digital tools is no longer significantly impacted by ease of use, as observed in earlier research [49]. The two DTAM constructs, digital perceived usefulness (DPU) and digital perceived ease of use (DPEoU), were found to have a positive and statistically significant effect on Digital Accounting Adoption (DAA) ($O = 0.350$, $P\text{-Value} = 0.002 < 0.05$; $O = 0.223$, $P\text{-Value} = 0.021 < 0.05$), thereby supporting hypotheses H4 and H5. These findings align with previous research on the original TAM and DTAM frameworks [33, 34, 50]. This suggests that MSME users of digital accounting perceive easy-to-use technology as beneficial. Interestingly, respondents from MSME actors view applications like SIAPIK and similar digital tools as user-friendly, intuitive, and easy to operate, which helps them overcome hesitation and adopt the technology. In essence, the more advantageous these tools are perceived to be, the more enjoyable and likely it is for users to adopt digital accounting systems, such as SIAPIK. The benefits include time-saving, particularly in reducing the effort required to record financial transactions, allowing MSME actors to focus on other tasks. Lastly, the test results show that Digital Accounting Adoption (DAA) positively and significantly affects Digital Financial Inclusion (DFI) ($O = 0.811$, $P\text{-Value} = 0.000 < 0.05$), confirming hypothesis H6. This implies that MSME actors who adopt digital accounting are more likely to gain improved access to financial services and achieve digital financial inclusion.

Additional Notes: PU: Perceived Usefulness, PEoU: Perceived Ease of Use, DPU: Digital Perceived Usefulness, DPEoU: Digital Perceived Ease of Use, DFL: Digital Financial Literacy, DFI: Digital Financial Inclusion, DAA: Digital Accounting Adoption.

6. Discussion

This study uses the Technology Acceptance Model (TAM) as the primary theoretical framework to explain the factors influencing MSMEs' adoption of digital accounting, extended by integrating Digital Financial Literacy (DFL). TAM, introduced by Davis [21], posits that the decision to adopt technology is determined by perceived usefulness (PU) and perceived ease of use (PEoU). This study extends TAM by incorporating Behavioral Intention Theory as the grand theory, which emphasizes the importance of behavioral intention in driving technology adoption [44]. The results demonstrate significant associations between digital financial literacy, perceived usefulness, perceived ease of use, and digital accounting adoption. In line with previous research Sivakami and Suresh [4]; Ooi and Tan [33] and Tew et al. [34], digital financial literacy is shown to positively influence both perceived usefulness (H1) and perceived ease of use (H2). This supports the idea that individuals with higher levels of digital financial literacy are better able to understand the advantages and user-friendliness of digital financial tools [35]. Furthermore, the positive impact of digital perceived ease of use on perceived usefulness (H3) supports the assertion that ease of use enhances user perceptions of utility [21, 33]. The significant positive effects of both perceived usefulness (H4) and perceived ease of use (H5) on digital accounting adoption align with the foundational concepts of the Technology Acceptance Model [50], demonstrating that MSMEs are more likely to adopt digital accounting technologies when they perceive them as useful and easy to use.

The adoption of digital accounting, in turn, shows a significant positive effect on digital financial inclusion (H6), underscoring the critical role of digital tools in enhancing financial accessibility for MSMEs [17, 45]. These relationships emphasize the interconnectedness of digital literacy, technology adoption, and financial inclusion, reinforcing the importance of comprehensive digital education and user-friendly technology solutions. The study's findings are highly relevant to the fields of information technology, finance, and economic development. By validating the extended DTAM, this research offers a robust model for understanding technology adoption in the digital era, particularly in the context of MSMEs in developing countries. The insights gained can inform the development of policies and technologies that foster digital financial inclusion, contributing to broader socio-economic development goals. This supports TAM's fundamental assumption that external variables, such as digital literacy, can shape individuals' perceptions of technology. These findings align with Sun and Zhang [8] who emphasized the importance of digital literacy in increasing technology acceptance. This reflects the pressing need for MSMEs to enhance their financial efficiency rather than focusing on other aspects. The findings show that DPU and DPEoU directly influence DAA, which, in turn, improves digital financial inclusion (DFI). This supports the notion that perceived usefulness and ease of use are key drivers of technology adoption, as outlined in TAM. Furthermore, the integration of DFL as an exogenous variable highlights that digital literacy is a critical catalyst in accelerating the digital transformation of MSMEs in developing economies [22]. Digital Accounting Adoption (DAA) is a key element in driving digital financial inclusion for MSMEs. In the context of this study, DAA demonstrates a significant relationship with improved access to digital financial services, as evidenced by the strong path coefficient value ($O = 0.811$, $P\text{-Value} = 0.000$). The adoption of digital accounting tools, such as the Financial Information Application System (SIAPIK) developed by Bank Indonesia, not

only enhances financial transparency but also enables MSMEs to maintain credible financial records, ultimately improving their access to formal financing.

This study is relevant to Behavioral Intention Theory [44] which emphasizes that behavioral intention is the primary determinant of adopting specific behaviors, including technology use. In the context of this study, DPU and DPEoU act as determinants of the intention to adopt digital accounting; DFL, as an external factor, helps shape individuals' perceptions and intentions toward digital technologies. The integration of TAM and Behavioral Intention Theory reflects a holistic approach to understanding technology adoption, especially among MSMEs with varying levels of digital literacy. This study makes a significant contribution by extending the Digital Technology Acceptance Model (DTAM) with the integration of digital financial literacy (DFL) as a key external factor. The findings reveal that DFL positively and significantly influences perceived usefulness (PU) and perceived ease of use (PEoU). These results align with previous studies, such as those by Ooi and Tan [33] and Tew et al. [34] which emphasize the importance of digital literacy in enhancing the perceived benefits of technology. Moreover, this finding supports the work Sinha et al. [22] who demonstrated that higher levels of digital literacy enhance the adoption of digital financial services. However, this study also found that the relationship between PEoU and PU is not statistically significant, contrasting with earlier findings by Towler and Shepherd [44] and Venkatesh et al. [25] which suggested a strong linkage between the two variables. This divergence can be attributed to the specific context of MSMEs in Indonesia, where users tend to prioritize the direct benefits of technology over its ease of use, particularly in circumstances driven by the need to improve financial inclusion. Additionally, the findings support prior research demonstrating that both PU and PEoU significantly influence digital accounting adoption [33, 34]. The discovery that digital accounting adoption positively contributes to digital financial inclusion strengthens earlier studies, such as Gupta et al. [5] and Sun and Zhang [8] which highlighted the importance of digital tools in expanding access to financial services. Thus, this study not only reinforces previous findings but also provides a fresh perspective by incorporating digital financial literacy as a critical determinant within the MSME context in Indonesia. The findings of this study extend technology adoption theories by incorporating digital financial literacy as a crucial variable in the context of developing countries. The expanded TAM, combined with Behavioral Intention Theory, provides a robust theoretical framework to understand how perceptions of usefulness, ease of use, and behavioral intention drive technology adoption. Practically, these findings highlight the importance of investing in digital literacy to enhance the digital transformation of MSMEs.

7. Conclusions and Recommendations

This study makes significant theoretical and practical contributions by expanding TAM to include digital financial literacy, providing a nuanced understanding of technology adoption within resource-constrained environments. The integration of DFL into TAM addresses critical theoretical gaps, particularly within the MSME context in developing economies. The findings also offer actionable insights for policymakers, financial institutions, and technology developers. Policymakers can design targeted digital literacy programs to enhance MSMEs' ability to effectively adopt digital accounting systems. Financial institutions can identify areas needing improved user support or simplified digital tools, while technology developers are encouraged to prioritize user-friendly interfaces in digital accounting solutions.

The research highlights the transformative potential of digital accounting adoption for advancing financial inclusion. The positive relationship between digital accounting adoption and financial inclusion indicates that improved access to financial services through digital tools enables MSMEs to manage their finances more effectively, secure funding, and enhance overall economic performance. In conclusion, this research bridges significant theoretical gaps by extending the Technology Acceptance Model (TAM) with Digital Financial Literacy (DFL) and provides practical strategies for stakeholders aiming to enhance digital financial inclusion in Indonesia. The findings emphasize the interconnectedness of digital literacy, technology adoption, and financial inclusion, offering a comprehensive framework for future research and policy formulation in similar contexts. The research highlights the transformative potential of digital accounting adoption for advancing financial inclusion. The positive relationship between digital accounting adoption and financial inclusion indicates that improved access to financial services through digital tools enables MSMEs to manage their finances more effectively, secure funding, and enhance overall economic performance.

8. Limitations and Recommendations for Future Research

Despite its significant findings, this study has several limitations that should be acknowledged. The relatively small sample size of 155 respondents may affect the generalizability of the findings, especially to larger or different populations. Additionally, the study focuses on MSMEs in specific regions of Indonesia, which may not fully represent MSMEs in other areas. The use of a purely quantitative approach limits the exploration of user experiences and perceptions, which qualitative methods could provide. Future research should involve larger sample sizes and cover broader regions to enhance the external validity of the findings. Longitudinal studies can help understand changes in perceptions and the long-term impacts of technology adoption. Additionally, future research could explore additional variables, such as the influence of social, cultural, or regulatory factors on technology adoption. Combining quantitative and qualitative methods can provide a more comprehensive understanding of the barriers and drivers of technology adoption among MSMEs.

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