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## From Offline to Cloud: Uncovering the Factors Driving Solo MSMEs to Adopt Cloud-Based AIS to Enhance Competitiveness in the Digital Era

Annida Rizky Putri<sup>1</sup>, Frank Aligarh<sup>2</sup>

<sup>1,2</sup> Departement of Islamic Accounting, Faculty of Islamic Economics and Business, Raden Mas Said State Islamic University Surakarta, Indonesia

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### ABSTRACT

This study aims to analyze the influence of performance expectancy, effort expectancy, anxiety, perceived risk, and self-efficacy on attitudes toward behavioral intention in the use of cloud-based AIS, particularly point-of-sale applications, among MSMEs in Solo. In the context of cloud accounting adoption, these factors play a crucial role in shaping users' behavioral intentions. The research employs a quantitative approach using a survey method, with questionnaires distributed to 123 MSMEs in the Solo area, and the data analyzed through path analysis using SmartPLS. The results indicate that performance expectancy, effort expectancy, and self-efficacy have a significant positive effect on attitudes. In contrast, anxiety does not influence attitudes, while perceived risk has a negative impact. The findings also show that attitudes significantly affect users' intentions to adopt cloud-based AIS. This study provides important insights into understanding the factors that influence users' intentions to adopt new financial record-keeping technologies for MSMEs. The practical implications highlight the importance of enhancing performance expectancy and effort expectancy, while reducing anxiety and perceived risk in the use of cloud-based AIS. Furthermore, efforts to boost users' self-efficacy are essential in encouraging their intention to adopt cloud-based AIS.

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### *Corresponding Author:*

Annida Rizky Putri,

Department of Islamic Accounting

Faculty of Islamic Economics and Business

Raden Mas Said State Islamic University Surakarta,

Email: [annidap39@gmail.com](mailto:annidap39@gmail.com)

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## 1. INTRODUCTION

The development of digital technology in the era of Industry 4.0 poses a challenge for the growth of MSMEs in Indonesia (Saputro & Haryanto, 2023). Along with technological advancements, many organizations or companies become vulnerable to the influence of business digitalization, the strong potential of the internet, the implications of big data, and the increasing importance of data mining (Ria & Susilo, 2023). One of the obstacles, particularly from a financial aspect, is the lack of a culture of bookkeeping in Indonesia. The number of MSMEs that engage in formal bookkeeping is still minimal due to several factors. There are two main factors that explain why this is the case. First, the limited

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management skills of MSME actors, particularly regarding bookkeeping and accounting aspects. Second, the cost of implementing a standard bookkeeping system is still too high (Zuliyati et al., 2022).

To address the accelerated digital transformation of global business, efforts are being made to digitalize MSMEs to facilitate adaptation to changes, improve network ease, and enhance technology exchange, enabling MSMEs to withstand rapid business competition (Pradesa et al., 2023). MSMEs play a vital role in the national economy, contributing to economic growth, job creation, community empowerment, and the reduction of economic disparities. According to BKPM data from 2020, MSMEs contributed 61.97% to GDP (approximately Rp8,500 trillion) and absorbed 97% of the workforce. However, MSMEs often face challenges in financial management, which is a key success factor. Many MSME actors struggle to distinguish between personal and business needs and lack understanding of financial reporting due to non-economic educational backgrounds. Although technology has provided accounting applications, most MSMEs still rely on ineffective manual record-keeping (Saputri et al., 2023). Additionally, many MSMEs have not utilized technology in accounting bookkeeping, so they are not fully aware of their income and expenses (Miswaty et al., 2022).

Cloud computing is a new technology that offers attractive benefits and features for business providers, such as no initial investment, reduced operational costs, high scalability, easy access, lower business risk, and reduced maintenance costs (Pallathadka et al., 2022). Virtual computing services can be delivered to clients in three types of services: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). IaaS provides hardware components as a service, such as Microsoft Azure, Apple iCloud, and Google Drive (Shukur et al., 2020).

Cloud computing has significantly transformed the business landscape, including in the field of accounting. By providing access to computing resources over the internet, cloud computing enables accounting firms to adopt more flexible and collaborative web-based solutions. This has driven the modernization of accounting practices and offers benefits such as efficiency, scalability, and enhanced data security (Akoh Atadoga et al., 2024). Additionally, the integration of AI and ML technology with cloud-based accounting has the potential to improve accuracy, automate operations, and provide valuable insights for decision-making processes (Rawashdeh et al., 2023).

In the world of cloud computing, cloud accounting has garnered significant attention due to its ability to transform financial management practices. This accounting service is accessed via the Internet, allowing users to access financial data in real time and collaborate effortlessly (Rawashdeh et al., 2023). It is a form of cloud computing that allows online access from anywhere at any time without reliance on specific accounting software (Zuliyati et al., 2022; Musyaffi, 2020). This solution transforms how accounting applications are used and modernizes the business environment (Dimitriu & Matei, 2015), allowing accountants or business owners to connect with their finances from any location using the Internet. The technology makes accounting more effective and efficient (Musyaffi, 2020).

Globalization and technological advancements have created new business models, such as Cloud Accounting, which enables flexible storage, management, and processing of data through the internet (Al-Samarraie & Saeed, 2018; Cheng, 2019). Cloud accounting is an accounting system that leverages cloud technology to provide easy and secure access to a company's financial data. With comprehensive features and the capability to integrate with various systems, cloud accounting helps MSMEs enhance efficiency, make better decisions, and meet increasingly complex business demands (Amir Hamzah et al., 2023; Altin & Yilmaz, 2022; ELDALABEEH et al., 2021). Competitive

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pressures, regulations, and support from various stakeholders are the main drivers for adopting this technology.

Technology like “POS applications” can be used to record transactions, prevent errors, and generate accurate financial reports. Consequently, businesses can make better decisions. However, many entrepreneurs are still not using POS applications to their full potential. It’s worth noting that there are many benefits to using a POS system, including: 1) Preventing financial report discrepancies. POS applications can help prevent fraud or mismatches between received and spent funds. 2) Transaction reports are stored in an organized, easily accessible way, allowing accurate transaction records to be viewed at any time. 3) Simplifying business analysis due to the availability of business reports, which can be downloaded from the Google Play Store (Budiharto & Andayani, 2022).

According to accounting literature, the success of MSMEs can be achieved through the use of cloud accounting, which reduces the risk of failure by providing extensive and cost-effective accounting information management. This system can handle numerous transactions quickly, store and process large data sets, reduce mathematical errors, and generate timely reports in various formats (Miswaty et al., 2022). Competitive pressure, pressure from business partners, regulatory pressure, government support, and service provider support all encourage the adoption of cloud accounting. MSMEs may adopt cloud accounting if they know that their competitors have done so and are benefiting from increased productivity and improved decision-making. Customers or suppliers may also encourage MSMEs to use cloud accounting for real-time access to financial information or to integrate accounting systems (Amir Hamzah et al., 2023).

The relationship between cloud accounting and behavioral intentions toward using information systems is crucial because behavioral intentions influence the acceptance and use of technology. This factor supports the development of theories that examine individual acceptance of technology, including the Technology Acceptance Model (TAM), which was later expanded by Venkatesh into the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT has four main constructs considered essential in influencing the use of information systems: performance expectancy, effort expectancy, social influence, and facilitating conditions. These four constructs form the basis for determining usage intentions, which ultimately lead to actual usage behavior (Miswaty et al., 2022). Venkatesh et al., (2003) developed UTAUT as a combination of eight existing acceptance models: Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT), Motivational Model (MM), and Model of PC Utilization (MPCU).

Research by Altin & Yilmaz (2022) shows that performance expectancy positively influences attitude, while Altin & Yilmaz (2022) and Indah et al. (2024) found that perceived risk negatively affects attitude. Studies by Shao et al. (2024), Altin & Yilmaz (2022), Chen et al. (2024), and Mensah et al. (2023) reveal that self-efficacy positively impacts attitude. Additionally, research by Mensah et al. (2023), Jain & Sidhu (2013), and Chen et al. (2024) indicates that anxiety negatively affects attitude.

Several studies have investigated the factors influencing cloud accounting adoption. Research by Al-Okaily et al. (2023) shows that performance expectancy significantly impacts user intentions, while effort expectancy does not significantly affect behavioral intentions. Conversely, studies by Lutfi (2022), Kwarteng et al. (2022), and Mujalli et al. (2022) demonstrate that both performance expectancy and effort expectancy significantly impact behavioral intentions. Mujalli et al. (2022) and Tian et al. (2022), along with studies by Khayer et al. (2019), Chang & Chen (2008), and Xie et al. (2017) indicate

that risk negatively affects behavioral intentions to adopt cloud accounting, while risk has a positive impact on the intent to adopt. Research by Khayer et al. (2019), Mujalli et al. (2022), and Lutfi (2022) shows that self-efficacy positively influences behavioral intentions. Finally, studies by Wu & Chen (2005), Altin & Yilmaz (2022), Xie et al. (2017), and Zuliyati et al. (2022) indicate that attitude positively impacts the behavioral intention to adopt cloud accounting.

Based on the background described above, which highlights inconsistent results due to differences in location, research timing, and other influencing factors, the researchers are interested in conducting a study titled “From Offline to Cloud: Unveiling the Factors Driving MSMEs in Solo to Adopt Cloud-Based AIS to Enhance Competitiveness in the Digital Era.” This study focuses on the transition of Micro, Small, and Medium Enterprises (MSMEs) in Solo from traditional methods to a more modern system: cloud-based AIS applications. The research aims to identify various factors influencing the adoption of this technology, especially amid previously observed discrepancies in results that may be attributed to location, research timing, and other relevant factors. By uncovering these factors, the study aims to provide valuable insights for MSMEs in enhancing their competitiveness in an increasingly digital landscape and addressing the challenges faced during the technology adoption process. The research involves the collection and analysis of data to gain a deeper understanding of entrepreneurs’ decisions, rather than merely describing the phenomenon. This will be achieved using questionnaires as a tool to gather structured data directly from respondents, specifically entrepreneurs.

## **Literature Review**

### ***Cloud Computing***

Cloud Computing (CC), as defined by the National Institute of Standards and Technology (NIST), refers to a framework that provides broad, easy, and on-demand network access to a pool of customizable computing resources (such as networks, servers, storage, applications, and services), which can be rapidly deployed and adjusted with minimal management involvement or service provider interaction. This cloud concept has five main characteristics: on-demand self-service, broad network access, resource pooling, rapid elasticity, and usage-based service measurement. Service models, including PaaS, SaaS, and IaaS, enable service delivery to users. Cloud services can be hosted in a public cloud (from a CSP data center), within an organization's own data center (private cloud), or through a combination of both (hybrid cloud) (Al-Okaily et al., 2023).

Additionally, cloud computing enables access to applications and data storage across multiple locations, and is described as the provision of infrastructure and software applications via the internet. A specific type of cloud computing is cloud accounting, which is specifically designed to process financial data (Altin & Yilmaz, 2022).

### ***Cloud Accounting***

Cloud accounting is a form of cloud-based computing application (service) specifically designed for processing financial data. There are no installed applications; users access an online solution that consistently stores data securely, keeping it up-to-date on cloud servers. This approach presents the entire desktop accounting process while shifting the same functions to a cloud-based environment (Saad et al., 2022). Cloud accounting services are also referred to as "virtual accounting

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systems," "web accounting," "online accounting," "SaaS accounting software," or "cloud-based accounting" (Al-Okaily et al., 2023). The functions of cloud accounting include fast data access, reduced maintenance costs, and increased mobility (Michael Musyafii & Muna, 2021). Cloud accounting transfers processing, installation, and data storage activities from traditional (on-premises) accounting systems to online (remote) servers owned and managed by suppliers and cloud computing providers (Saad et al., 2022).

#### ***Micro, Small, and Medium Enterprises (MSMEs)***

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in driving Indonesia's economy. MSMEs are one of the primary sources of goods and service providers, offering opportunities for entrepreneurs in this sector to develop their businesses and achieve their business goals (Marlia et al., 2024). MSMEs are regulated under Indonesian Law No. 20 of 2008, which defines business types from small to medium scale, allowing individual rights-based enterprises to operate productively or commercially, with a total company asset range of Rp. 0 to Rp. 50,000,000 and annual sales up to Rp. 300,000,000, categorized as micro enterprises (Rahmat & Diyani, 2024).

The growth of MSMEs has greatly impacted Indonesia's economy, supported by various stakeholders, including the government, financial institutions, and the broader community. As a backbone of the people-centered economic system, MSMEs are not only meant to reduce gaps between income groups, business actors, and poverty, but also to prioritize job creation in the national economic development (Isnaurokhmah et al., 2024). Surakarta, commonly known as Solo, is one of the cities in Central Java, Indonesia, with a strong potential in the MSME industry. The number of MSMEs in Solo has shown positive growth in recent years (Fagustina & Supriyanto, 2024). In 2023, the number of MSMEs in Solo reached 13.203, marking an increase of approximately 18.33% compared to 2022 ([Esposin, SOLO, 2024](#)).

However, in Indonesia, the culture of bookkeeping is still limited, which is a key reason why the adoption of cloud accounting applications among MSMEs remains low, with many yet to implement structured financial recordkeeping. During the COVID-19 pandemic, various MSMEs encountered technological challenges, including digitalization, new business practices, and remote work. In these unpredictable conditions, MSMEs worldwide, especially in developing countries, need to focus on digitalization and IT as a response to change. MSMEs can advance their digital transformation by outsourcing back-office functions to affordable cloud computing solutions or Software-as-a-Service (SaaS) vendors (Saad et al., 2022).

#### ***Point-of-Sale Application (POS)***

According to the Online KBBI Dictionary (2016), an application can be defined as a computer program or software designed to perform specific tasks. Therefore, a point-of-sale (POS) application can be understood as a computer program or software specifically created to handle tasks like receiving and disbursing money. It can also be described as a cloud- or online-database-based POS program intended to support sales transaction processes (Farhana & Sumadi, 2023). It's worth noting that there are several advantages to using a POS application: (1) It can help prevent financial report discrepancies. By using a POS application, discrepancies or mismatches between received and dispensed funds can be minimized, reducing the potential for fraud. (2) Sales transaction reports are neatly and securely stored and can be accessed anytime automatically, ensuring accurate transaction records. (3) It simplifies business analysis, as sales reports can be downloaded via the Google Play Store (Budiharto & Andayani, 2022).

A point-of-sale system is crucial for a business as it encompasses various functions, such as recording transactions, payments, price checking, stock tracking, sales reporting, and integration. Without a POS system, even a small error can lead to significant business losses, as manual work involving numbers is susceptible to calculation mistakes or human error (Isnaurokhmah et al., 2024).

### ***Cloud Accounting Adoption Theory***

Several studies have focused on examining the factors influencing cloud-based accounting adoption, with research models developed based on various technology adoption theories, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), Social Cognitive Theory (SCT), Risk Theory, and the Theory of Planned Behavior (TPB). Relevant research models highlight key factors of interest in this study. However, based on available knowledge, there is no comprehensive research model that includes the factors within a cloud accounting model to provide in-depth insights into the significance of these factors and their relation to cloud-based accounting adoption among MSMEs in Solo.

#### ***2.1. Unified Theory of Acceptance and Use of Technology (UTAUT)***

The Unified Theory of Acceptance and Use of Technology (UTAUT), introduced by Venkatesh and his colleagues in 2003, is an integration of eight theories that form a new model. These theories include the Theory of Reasoned Action (TRA), the Technology Acceptance Model (TAM), the Motivational Model (MM), the Theory of Planned Behavior (TPB), the Combined TAM and TPB (C-TAM-TPB), the Model of PC Utilization (MPCU), the Innovation Diffusion Theory (IDT), and the Social Cognitive Theory (SCT) (Ilma & Muid, 2023). The UTAUT model consists of four main constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions, all of which affect individuals' intentions to use technology and the actual use of technology. In this context, performance expectancy is defined as the extent to which technology provides benefits to users in carrying out specific activities, while effort expectancy relates to the perceived ease of use of the technology by consumers.

#### ***2.2. Social Cognitive Theory***

Social Cognitive Theory (SCT) is a framework that explores human behavior by integrating behavioral and cognitive perspectives to understand how people act. According to this theory, three primary factors influence individual behavior: personal factors, behavioral factors, and environmental factors. These three elements interact with and impact each other, forming the concept of triadic reciprocal determinism. SCT includes two main constructs: self-efficacy and anxiety. Self-efficacy emphasizes an individual's belief in their ability and competence to complete tasks. This belief is shaped by various factors, including emotions such as anxiety, and influences outcomes such as persistence in task completion, effort, and achievement (Mensah et al., 2023). Self-efficacy perceptions have been shown to affect decisions regarding which behaviors to pursue (Compeau & Higgins, 1995). Anxiety, according to various psychological theories related to emotions and behavior, involves feelings of worry or emotional reactions when engaging in certain behaviors.

#### ***2.3. Theory of Risk***

The theory of perceived risk has been applied to explain the decision-making behavior of business actors since the 1960s. Initially, perceived risk was primarily associated with fraud (Chang & Chen, 2008). Perceived risk is defined as a business actor's belief regarding the potential uncertainty of negative outcomes arising from the use of cloud accounting. Concerns such as data breaches, disrupted access, and data loss are perceived risks that can hinder the adoption of cloud accounting services. This perceived risk is closely linked to the level of trust business actors have in cloud services

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and their security systems. The higher the perceived risk, the lower the level of confidence business actors have in adopting cloud accounting services.

#### ***2.4. Theory of Planned Behavior (TPB)***

The Theory of Planned Behavior (TPB) explains the components of attitude, subjective norms, and perceived behavioral control, broadening the understanding of the intention to adopt technology and the subsequent actual acceptance. Supporting the efforts of the Theory of Reasoned Action (TRA), TPB has proven effective in predicting and explaining human behavior in information technology. Thus, this theory is applied in this research to identify the factors influencing individuals' intentions and behaviors in adopting the technology being studied (Indah et al., 2024). Behavioral intention measures a person's willingness to try and make an effort to engage in a specific behavior, while attitude reflects a positive or negative evaluation of that behavior (Wu & Chen, 2005). In the context of cloud accounting, perceived behavioral control may include factors such as system usability, availability of technical support, and implementation costs. The higher a person's perception of the control they possess, the more likely they are to adopt cloud accounting. This theory provides a valuable foundation for understanding and predicting human social behavior and can be applied in various contexts.

### **Hypotheses Development**

#### ***Performance Expectancy (PE)***

According to (Venkatesh et al., 2003), PE refers to an individual's belief that using a certain technology will enhance the effectiveness and efficiency of their task performance (Mujalli et al., 2022). People with high performance expectancy are more likely to adopt cloud accounting services. Performance expectancy is a significant determinant that influences an individual's attitude towards adopting a cloud accounting system. In the context of cloud-based services, performance expectancy is the belief that these services will improve efficiency, performance, and job quality (Altin & Yilmaz, 2022). Previous studies have shown that PE significantly affects individuals' attitudes toward using cloud accounting services. Based on this, the following hypothesis is to be tested:

H1: Performance Expectancy has a positive influence on users' attitudes towards using cloud-based accounting services.

#### ***Effort Expectancy (EE)***

According to (Venkatesh et al., 2003), EE refers to the ease of use of the system. Specifically, EE is explained through three basic concepts: complexity, ease of use, and perceived ease of use. Ease of use refers to an individual's perception that using the system is free of mental and physical effort, while complexity refers to the user's perception that using the technology is not easily understandable (Altin & Yilmaz, 2022). In relation to this study, EE refers to users' attitudes in perceiving the use of cloud-based accounting services. Based on this, the following hypothesis is to be tested:

H2: Effort Expectancy has a positive influence on users' attitudes towards using cloud-based accounting services.

### ***Anxiety (ANX) dan Self-Efficacy (SE)***

Anxiety and self-efficacy are significant direct determinants of intentions within Social Cognitive Theory (SCT). Previous research by Venkatesh et al. (2020) suggested that anxiety and self-efficacy act as indirect determinants of intention. Confidence in the ability to operate cloud accounting can reduce concerns among small business owners about adopting cloud accounting. Consequently, higher levels of self-efficacy lead to lower anxiety levels, although findings remain inconclusive (Mensah et al., 2023). However, some studies have shown a weak correlation between these two variables, such as research indicating that self-efficacy has a positive effect on attitude (Shao et al., 2024; Altin & Yilmaz, 2022; Chen et al., 2024; and Mensah et al., 2023). Conversely, high anxiety tends to hinder the acceptance of new technology, negatively affecting attitude, as found in studies by Mensah et al. (2023), Jain & Sidhu (2013), and Chen et al. (2024). Unsurprisingly, people are expected to avoid behaviors that trigger anxious feelings. Based on this, the following hypothesis will be tested:

H3: Anxiety has a negative influence on users' attitudes towards using cloud-based accounting services.

H4: Self-Efficacy has a significantly positive influence on users' attitudes towards using cloud-based accounting services.

### ***Perceived Risk (PR)***

According to Ho et al. (2020) in Indah et al. (2024), perceived risk relates to an individual's subjective assessment of the likelihood of negative consequences associated with using specific technology. In a cloud environment, a primary challenge is concern over privacy and security when resources are shared with third parties. This anxiety further elevates the perceived risk of utilizing cloud services within organizations, thereby hindering cloud technology adoption. Many potential risks concern MSMEs, including fraud, lack of data security in the cloud, unauthorized use of cloud data, and other illegal activities (Khayer et al., 2019). In studies on cloud-based accounting service adoption, perceived risk is recognized as a key factor with a significant negative effect on attitudes. The research also shows that individuals are less likely to adopt cloud-based accounting services when they perceive a high level of risk. (Altin & Yilmaz, 2022) argue that reducing perceived risk can improve user attitudes toward adopting e-services. Based on this, the following hypothesis will be tested:

H5: Perceived risk has a negative influence on users' attitudes towards using cloud-based accounting services.

### ***Attitude (ATT)***

An individual's intention to perform a behavior depends on their attitude and the expectations of others. Ajzen and Fishbein (1972), as cited in Altin & Yilmaz (2022), propose that beliefs are influenced by attitudes toward actions. According to research by Akinwale and Kyari (2022), as cited

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in Indah et al. (2024), users' attitudes toward utilizing services have a positive and significant impact on their willingness to use those services. Therefore, it can be assumed that there is a strong relationship between behavioral intention and attitudes toward using the system. Based on this statement, we hypothesize that users' attitudes toward the adoption of cloud-based AIS will positively influence their behavioral intentions. Thus, the hypothesis is proposed as follows:

H6: Attitude has a positive influence on users' behavioral intention to use cloud-based accounting information systems.

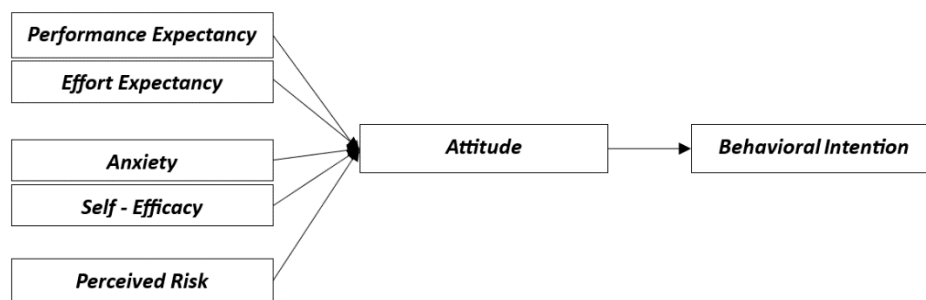


Figure 1: Schematic Diagram of the Study

## 2. METHOD

### Research Design

The research was conducted using a quantitative approach with a survey method, distributing questionnaires both offline and online using Google Forms in Solo. The survey method involves research conducted on a large or small population, but the data analyzed comes from a sample taken from that population. In other words, this research was conducted by taking a specific sample to represent the entire research population.

### Participants/Sample Selection and Data Sources

In this study, the population consists of Micro, Small, and Medium Enterprises (MSMEs) located in Solo. The sample was selected using purposive sampling, where the researcher set specific criteria for sample selection. The criteria used are as follows:

1. The respondent must be the owner or employee of an MSME located in the study area.
2. Respondents may include those who have or have not used a point-of-sale application.
3. MSMEs must have maintained financial records.

A total of 123 respondents were obtained through this method. Data analysis was conducted using the PLS-SEM technique to examine the relationships between latent variables. One of the main challenges in PLS-SEM is determining the minimum sample size, and the "10-times rule" (Hair et al.,

2011) method is often used as a rough guideline to address this issue. However, statistical power analysis provides more precise results in determining sample adequacy.

### **Instrumentation/Data Collection**

The data used in this study is primary data. Primary data is also known as original or new data that is up to date and collected directly by the researcher from the source. In this study, the primary data source was obtained directly from MSME business actors residing in Solo through the distribution of questionnaires both online via Google Forms and offline by directly handing them to the MSMEs.

### **Data Analysis/Estimating Model/Variable Measurement**

The data analysis method used in this study is multiple regression analysis with PLS-SEM (Partial Least Square - Structural Equation Model). This study utilizes the SmartPLS application (version 3.2.9). The use of PLS is employed because it can build and test the research model. The stages of using PLS include testing the outer model, the inner model, and the model fit test. The final stage involves hypothesis testing (Michael Musyafii & Muna, 2021). The PLS analysis method can be applied to all data scales without requiring many assumptions and can be used with relatively small sample sizes, making it a powerful analysis method. PLS is often useful for confirming theories and explaining whether there are relationships between latent variables for prediction purposes (Ilma & Muid, 2023). The independent variables in this study are performance expectancy, effort expectancy, perceived risk, anxiety, and self-efficacy.

## **3. RESULTS AND DISCUSSION**

### **Results**

#### **Respondent's Profile**

Table 1 presents the demographic data of respondents in this study. The data shows that the majority of MSMEs (93%) have maintained financial records compared to those who have not (7%), and are predominantly owned by MSME owners (51%) compared to employees (49%). However, in terms of using a point-of-sale application, a larger percentage (54%) currently do not use it compared to those who have or previously used it (46%).

Table 1. Respondent Data

Characteristics	Category	Total	Percentage
Status	Owner	63	51%
	Employees	60	49%
Financial Records	Yes	115	93%
	No	8	7%
Using Kasir Application	Yes	57	46%
	No	66	54%

(Source: Data analysis)

#### **Measurement Model (Outer Model) Result**

This study tested validity and reliability with results showing that all items were valid and met the criteria. As shown in Table 2, the factor loadings for all items were above 0.7. Meanwhile, reliability tests yielded Cronbach's Alpha values above 0.7, indicating that the constructs used in this study are reliable. Additionally, the Average Variance Extract (AVE) values for all variables were above 0.5, indicating that each indicator is sufficiently reliable to measure the related variables.

Table 2. Convergent Validity and Reliabilitas

Variable	Indicator	Cross Loading	Cronbach Alpha	rhoa_A	Composite Reliability	AVE
Performance Expectancy (PE)	PE1. A kasir application is a useful tool for recording business finances	0.840	0.881	0.884	0.918	0.738
	PE2. Using a kasir application will increase productivity in recording business finances	0.854				
	PE3. Using a kasir application makes transactions faster and saves time	0.835				
	PE4. Using a kasir application makes transactions more convenient	0.905				
Effort Expectancy (EE)	EE1. I will easily understand how to use a kasir application	0.887	0.914	0.915	0.940	0.796
	EE2. I am confident I can quickly master the use of a kasir application	0.902				
	EE3. My interaction with the kasir application will be smooth and easy to understand	0.893				
	EE4. I am confident I can easily learn how to operate the kasir application	0.887				
Anxiety (AN)	AN1. I hesitate to use a kasir application to record business transactions because I fear making uncorrectable mistakes	0.919	0.910	0.923	0.938	0.791
	AN2. I feel worried about using a kasir application to record business transactions	0.951				
	AN3. I am afraid that I might lose a lot of information by pressing the wrong button on the kasir application	0.887				
	AN4. I feel incapable of using a kasir application	0.793				

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Self-Efficacy (SE)	SE1. I feel confident that I have enough time to complete my tasks using this kasir application	0.790	0.807	0.813	0.873	0.633
	SE2. I feel confident that I can complete the tasks of the kasir application independently without help from others	0.793				
	SE3. If I encounter difficulties in using the kasir application, I can easily ask for help from others	0.762				
	SE4. I feel confident that I can rely on the support provided by the kasir application	0.853				
Perceived Risk (PR)	PR1. Using a kasir application will pose greater financial risks compared to manual methods	0.836	0.838	0.844	0.903	0.756
	PR2. Using a kasir application is risky because it can cause financial losses for me	0.911				
	PR3. Using a kasir application is risky because it takes up my time	0.861				
Attitude (ATT)	ATT1. I am interested in using a kasir application	0.841	0.870	0.876	0.911	0.720
	ATT2. I feel happy when using a kasir application	0.833				
	ATT3. I feel comfortable using a kasir application	0.906				
	ATT4. I believe that using a kasir application is a good idea	0.811				
Behavioral Intention (BI)	BI1. I intend to use a kasir application	0.956	0.931	0.933	0.956	0.879
	BI2. It is very likely that I will use a kasir application	0.934				
	BI3. I hope to use a kasir application	0.923				

(Sources: Data analysis)

Another analysis conducted is discriminant validity testing. Table 3 indicates that all constructs meet the Fornell-Larcker criterion and the correlations between variables are as expected. The AVE values of each variable are higher than the AVE values of other variables, and the correlation between a variable and itself is not smaller than the correlation with other variables. Therefore, discriminant validity has been achieved.

Tabel 3. Discriminant Validity

Variable	AVE	AN	ATT	BI	EE	PR	PE	SE
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<b>AN</b>	0.791	<b>0.889</b>						
<b>ATT</b>	0.720	-0.434	<b>0.848</b>					
<b>BI</b>	0.879	-0.437	0.675	<b>0.938</b>				
<b>EE</b>	0.796	-0.506	0.637	0.579	<b>0.892</b>			
<b>PR</b>	0.756	0.540	-0.369	-0.370	-0.220	<b>0.870</b>		
<b>PE</b>	0.738	-0.392	0.670	0.636	0.596	-0.305	<b>0.859</b>	
<b>SE</b>	0.633	-0.451	0.598	0.490	0.656	-0.177	0.543	<b>0.796</b>

(Sources: Data analysis)

#### Structural Model Testing (Inner Model) Result

Tabel 4. Structural Model Test

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	p-values	Result
<b>H1:</b> PE→ATT	0.355	0.351	0.082	4.345	0.000	Supported
<b>H2:</b> EE→ATT	0.260	0.255	0.098	2.651	0.008	Supported
<b>H3:</b> AN→ATT	0.034	0.034	0.107	0.316	0.753	Rejected
<b>H4:</b> SE→ATT	0.217	0.228	0.084	2.570	0.010	Supported
<b>H5:</b> PR→ATT	-0.183	-0.185	0.092	1.993	0.047	Supported
<b>H6:</b> ATT→BI	0.675	0.679	0.061	11.054	0.000	Supported

(Sources: Data analysis)

Based on the hypothesis testing results, it is found that 5 out of 6 hypotheses are significantly supported. H1 and H2 indicate that performance expectancy and effort expectancy have a positive influence on attitude. Meanwhile, H3 shows that anxiety does not affect attitude. Additionally, H4 states that self-efficacy has a positive influence on attitude. Moreover, perceived risk in H5 shows a positive influence on attitude. There is also H6, which indicates that attitude positively impacts behavioral intention.

#### Discussion

Digital transformation is an evolutionary process that leverages digital technology to enhance business models, operations, and customer experiences, often leading to the creation of new business models and marked by the use of big data, artificial intelligence, analytics, cloud, mobile platforms, and social media (Barba-Sánchez et al., 2024). To address the accelerated digital transformation of global businesses, efforts are being made to digitize MSMEs, making it easier for them to adapt to changes, improve networking efficiency, and enhance technology exchange, enabling MSMEs to remain competitive in fast-paced business environments (Pradesa et al., 2023). MSMEs play a crucial role in the national economy, but many struggle to distinguish between personal and business needs and lack an understanding of financial reporting. Although accounting applications are available, most MSMEs still rely on manual record-keeping (Saputri et al, 2023) and have not yet fully utilized technology, resulting in a lack of awareness of their income and expenses (Miswaty et al., 2022).

With the advent of cloud computing technology and the emergence of cloud-based accounting applications, known as cloud accounting software, accounting systems can be transformed, and entire business processes modernized (Ilma & Muid, 2023). Cloud computing is a new technology that offers appealing benefits and features to attract business providers, such as no initial investment, reduced operational costs, high scalability, easy access, reduced business risks, and lower maintenance costs

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(Pallathadka et al., 2022). Globalization and technological advancements have created new business models like Cloud Accounting, which allows for flexible storage, management, and data processing through the internet (Al-Samarraie & Saeed, 2018); Cheng, 2019). Cloud accounting enables online access from anywhere and at any time, without dependence on specific accounting software (Zuliyati et al., 2022; Musyaffi, 2020).

Cloud-based accounting has proven to be a highly effective learning tool for users, especially for aspiring accountants. With cloud accounting, users can easily and securely learn accounting concepts in a comprehensive manner (Michael Musyaffi & Muna, 2021). This is evidenced by the results of this study, which investigates the influence of factors such as performance expectancy, effort expectancy, anxiety, self-efficacy, and perceived risk on determining individuals' attitudes towards the intention to use cloud accounting, specifically in point-of-sale applications. Various modifications have been proposed, resulting in six hypotheses defined. Table 4 presents the hypothesis testing results, indicating that out of the six proposed hypotheses, only one hypothesis was not supported.

H1 confirms a significant positive influence of performance expectancy on the attitude towards the intention to use cloud accounting, evidenced by a p-value of  $0.000 < 0.05$ . Thus, when owners and employees of MSMEs find cloud accounting useful, they tend to have a better perception of using technology for financial transactions (Al-Okaily et al., 2023). This means that MSMEs in Solo feel that using the POS applications can enhance the performance of its users in completing business tasks, from recording transactions to processing financial data, thereby generating an interest in adopting cloud accounting applications like POS.

To begin with, EE it is used to refer to the ease of system use (Venkatesh et al., 2003); specifically, EE is explained through three fundamental concepts: complexity, ease of use, and perceived ease of use. From the hypothesis testing conducted, H2 is supported with a p-value of  $0.008 < 0.05$ , showing that effort expectancy positively and significantly influences the attitude towards the intention to use cloud accounting. Referring to the ease of system use (Venkatesh et al., 2003), this ultimately means the ease with which users can skillfully use cloud accounting applications (Lutfi, 2022). This indicates that when using technology requires little effort and is not difficult, users perceive the use of such technology as more advantageous and useful in their lives (Alalwan et al., 2017).

The analysis of the research results indicates that anxiety does not influence user attitudes. With a p-value of  $0.753 > 0.05$ , hypothesis H3 is not supported, showing that the level of anxiety does not significantly impact attitudes toward the use of the technology studied. This finding contrasts with several previous studies, such as those conducted by Mensah et al. (2023), Jain & Sidhu (2013), and Chen et al. (2024), which found that high anxiety tends to hinder the acceptance of new technology, thus creating a negative impact on attitudes.

H4 indicates that self-efficacy has a significant and positive impact on attitudes, with a p-value of 0.010, which is less than 0.05. These findings are consistent with previous research by Shao et al. (2024), Altin & Yilmaz (2022), Chen et al. (2024) and Mensah et al. (2023), highlighting the importance of self-efficacy in shaping behavioral intentions. Researchers, such as Lutfi, 2021, also found a strong relationship between self-efficacy and the intention to adopt systems or technologies, where individuals with higher self-efficacy are more likely to have greater confidence in achieving desired outcomes.

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High self-efficacy helps reduce anxiety towards new technology, as users feel more confident in their ability to use the system. This leads to a more positive attitude towards new technologies, such as cloud-based accounting, which helps simplify financial record-keeping.

On the other hand, H5 indicates that risk perception has a significant and negative impact on attitudes, with a p-value of 0.047, which is less than 0.05. This finding aligns with previous research Altin & Yilmaz (2022), Indah et al. (2024), and Khayer et al. (2019), which shows that individuals' attitudes toward technology use are significantly influenced by their perceptions of hazards and concerns. When individuals perceive a high level of risk, they are likely to develop attitudes that do not support the use of that technology, such as cloud-based accounting systems, particularly point-of-sale applications.

When individuals perceive a high risk associated with the use of new technology, such as data loss, system disruptions, or security issues, they tend to be more cautious and avoid using that technology. Based on the results of this hypothesis test, it can be concluded that MSMEs actors demonstrate that users with a high perception of risk develop negative attitudes toward the use of cloud-based accounting services.

The results of H6 indicate that attitudes play a positive role in shaping users' intentions to adopt cloud-based accounting information system (AIS). Specifically,  $p = 0.000$  (which is less than 0.05). This statement can be understood as follows: the more positive an individual's attitude towards technological services, the greater their intention to use it in business operations, particularly in commerce. This assertion involves perceptions of benefits, ease of use, and the belief that the technology can enhance efficiency and accuracy in financial management.

The influence of attitudes on behavioral intentions has been well-documented in research. For instance, a study by Altin & Yilmaz (2022) on cloud-based accounting demonstrated that a positive attitude toward this technology enhances users' intentions to adopt it, as they believe that these systems can simplify financial data recording and management. Similar trends were observed in the studies by Wu & Chen (2005) regarding online tax systems and by Xie et al. (2017) on e-government adoption, where positive attitudes formed by the ease of access and security of the systems encourage users' intentions to utilize the technology.

The findings of this study indicate a growing interest among MSMEs in adopting and using cloud accounting. This is due to the increasing awareness among MSMEs to continuously improve their current systems and applications in a user-friendly manner and to inform their staff about information security measures (Al-Okaily et al., 2023). Users agree that cloud accounting can offer significant benefits, especially in terms of data processing speed. Data from the field also shows a high level of confidence among MSMEs actors in adopting cloud accounting compared to user anxiety.

## 4. CONCLUSION

### Findings

This study was conducted to investigate the adoption of cloud-based AIS practices among MSMEs in the Solo region. The findings indicate that performance expectations, effort expectations, and self-efficacy have a significant positive impact on attitudes, while anxiety does not significantly

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influence attitudes. Additionally, perceived risk has a significant negative effect on attitudes. However, attitudes do have a significant positive effect on the behavioral intention to adopt cloud-based AIS. Therefore, it can be concluded that the intention to adopt cloud-based AIS is most influenced by users' attitudes. This study aims to encourage MSMEs practitioners to adopt cloud-based AIS technology for financial record-keeping. Furthermore, the study can serve as a foundation for decision-making and further research on the adoption of cloud-based AIS technology by users.

### **Limitations**

This study faced limitations in data collection, particularly regarding the reluctance of MSMEs to complete the questionnaire. This reluctance stemmed from concerns about data privacy and perceptions that cloud accounting has yet to show a direct impact on their business. While purposive sampling was effective in reaching specific target respondents, it also limited the number of willing participants, which may affect the generalizability of the findings.

### **Theoretical and Practical implications**

This study successfully identified factors influencing MSMEs in Solo to adopt cloud accounting, contributing significantly to both theoretical and practical perspectives. Theoretically, it supports the UTAUT theory by demonstrating that performance and effort expectancy affect attitudes toward technology. Additionally, this study offers new insights into the role of anxiety in technology adoption and highlights the importance of considering local contexts when understanding technology adoption among MSMEs.

Practically, the results provide a foundation for policy-making to support cloud accounting adoption by MSMEs. This research also offers guidance for developing more effective training programs, aids service providers in creating products better suited to MSME needs, and equips consultants with more accurate recommendations based on study findings.

### **Future Research Directions**

Previous studies have provided insights into factors influencing cloud accounting adoption among MSMEs, but there are several aspects for further research to obtain a more comprehensive view. Recommendations include a deeper examination of the impact of company size, business experience, and owner education level on cloud accounting adoption, as well as studies in other regions of Indonesia to enhance understanding of unique and common adoption factors. Additionally, long-term studies are needed to evaluate the impact of cloud accounting on the financial and operational performance of MSMEs, along with in-depth case studies to understand the challenges of cloud accounting implementation and effective strategies for overcoming them. Future research is also encouraged to further explore factors influencing MSMEs' willingness to adopt cloud accounting and to develop more effective communication strategies to address data privacy concerns.

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