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TECHNOLOGICAL, ORGANIZATIONAL, AND ENVIRONMENTAL DRIVERS OF CLOUD ACCOUNTING ADOPTION AND ECONOMIC SUSTAINABILITY OUTCOMES IN MSMES

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Abstract

The sustainability of MSMEs is critically important in today's digital economy, where competitive pressures are intensifying. The adoption of technologies, such as cloud-based accounting systems, has become essential for MSMEs seeking to maintain their viability. This study investigates the determinants of cloud accounting adoption among MSMEs in Central Java and evaluates its subsequent effects on economic sustainability within the Technology–Organization–Environment (TOE) framework. Employing a purposive sampling, data were collected from MSMEs in the region and analyzed via Structural Equation Modeling–Partial Least Squares (SEM–PLS). The findings reveal that the adoption of cloud accounting exerts a significant positive effect on economic sustainability. Moreover, organizational support, perceived relative advantage, and top management commitment emerge as salient predictors of cloud accounting adoption. In contrast, environmental factors, including the bandwagon effect, competitive pressure, and technological compatibility, do not exhibit a statistically significant impact on adoption decisions.

Keywords: *Cloud accounting, MSMEs, Economics Sustainability, TOE*

Introduction

Over the past few years, the digital economy has grown rapidly in Indonesia. This development is reflected in the government's program to encourage the digitalization of Micro, Small, and Medium Enterprises (MSMEs) with a target of 30 million MSME entrepreneurs switching to the digital realm by 2024 through the level up program (PANRB, 2024). According to the Ministry of Trade, by 2023 there will be 22 million MSMEs joining the digital economy or 33.6 percent of the total MSMEs. These results suggest that most MSMEs acknowledge the critical role of digitalization in securing the long-term viability of their enterprises. Survey findings show that MSMEs digitalize chiefly to streamline financial reporting, while their leading motives for adopting online business are the practicality of online sales (79.13 %), broader market exposure (72.83 %), and faster growth prospects (69.69 %).(INDEF, 2024).

In addition, Indonesian society has begun to experience digitalization since the Covid-19 pandemic which has made the economy in Indonesia unstable. At that time, MSME actors were between two difficult choices, namely choosing to close down or maintain their business. For those who choose to survive, they will try various ways to reach a wider market. Through the tagline UMKM Goes Digital, it has changed the behavior of MSME actors and the community (djpb.kemenkeu.go.id). Several years ago, people preferred shopping activities directly to shopping places. Usually, the place will be very crowded during big celebrations. While currently, the majority of people prefer digital or online shopping activities rather than having to go directly to a shopping place.

The majority of MSMEs will use e-commerce platforms to help them run their businesses. A survey by the Institute for Development of Economics and Finance (INDEF) revealed that respondents predominantly

utilize Shopee (50.00 %), followed by Facebook Marketplace (33.46 %), Instagram Shop (28.74 %), TikTok Shop (20.87 %), and online food delivery platforms (17.32 %) (INDEF, 2024). To improve cost efficiency, timeliness, and reliability in both financial reporting and overall management, MSMEs complement digital marketing with cloud accounting, which streamlines inventory control, real-time transaction recording, cost management, and the generation of decision-ready financial reports (Kartikasary *et al.*, 2023). Several cloud accounting platforms such as MOKA POS are also connected to applications such as gojek and gofood, making it easier to record accounting. This indicates that the cloud accounting platform cannot be separated from the sustainability of the business of MSME actors. Moreover, with the development of the era that is currently heading towards the 5.0 era, indirectly the community is required to understand and update with existing technological developments.

Several previous studies have examined the use of cloud accounting in MSMEs (Hamzah et al., 2023; Rawashdeh and Rawashdeh, 2023) and its impact on sustainability performance (Al-Sharafi *et al.*, 2023). This research is a development of research from Hamzah et al., (2023) by adding the variable of economic sustainability as an impact of the adoption of cloud accounting (Al-Sharafi et al., 2023). This study aims to investigate the determinants of cloud accounting adoption among MSMEs through the lens of the Technology–Organization–Environment (TOE) framework and to assess the subsequent impact of these dimensions on economic sustainability.

Theoretical Basis and Hypothesis Development

Technology Organization Environment (TOE) Theory and TAM

Technology Organization Environment (TOE) Theory was introduced by Louis G. Tornatzky and Mitchell Fleischert in 1990. Technology Organization Environment (TOE) Theory is a theoretical framework that understands that a business can embrace technology. The Technology–Organization–Environment (TOE) framework posits that technological, organizational, and environmental contexts significantly shape the adoption and implementation of technological innovations (Rawashdeh & Rawashdeh, 2023). This study consists of a technological context with the variables Relative Advantage and Compatibility, an organizational context consisting of Top Management Support and Organizational Support, and an environmental context consisting of Competitive Pressure and Bandwagon Effect. The technological context also combines the TAM theory. The Technology Acceptance Model (TAM) posits that users' beliefs, namely an information system's perceived usefulness and ease of use, causally determine their needs, behavioral intentions, and actual system use (Hamzah et al., 2023). TAM aims to explain and predict user acceptance of an accounting information system.

The Influence of Relative Advantage on Cloud Accounting Adoption

There are many reasons why MSMEs believe that technology offers advantages over conventional methods (Hamzah et al., 2023). One of them is the ease of use of cloud accounting. As explained by the Technology Acceptance Model (TAM), the perception of the usefulness of new technology is influenced by perceived comparative advantages. By taking advantage of the benefits of using cloud accounting, MSMEs can be wiser when implementing technology to help expand and develop their business (Majstorovic et al., 2020).

H1: Relative advantage has a positive impact on the adoption of cloud accounting

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The Influence of Compatibility on Cloud Accounting Adoption

Compatibility affects two main constructs in the Technology Acceptance Model (TAM): Perceived Usefulness and Perceived Ease of Use. If Cloud Accounting fits with existing business needs and procedures, users tend to view the technology as more useful (Perceived Usefulness), because it can increase efficiency without making significant changes. In addition, the compatibility of technology with existing infrastructure will reduce technical barriers to adoption, making the system easy to use for users. In general, the level of compatibility of Cloud Accounting with existing needs, infrastructure, and processes is greater. So the following hypothesis can be formulated:

H2: Compatibility has a positive impact on the adoption of cloud accounting

The Influence of Top Management Support on Cloud Accounting Adoption

Top Management Support represents a critical determinant in the effective implementation of emerging technologies, such as cloud accounting. To determine how much cloud accounting is considered beneficial, support from top management is very important. The degree to which senior leadership endorses and facilitates the implementation of new technologies is captured by the TAM construct of top management support. Proactive, unequivocal support from top management cultivates a climate in which MSMEs view cloud accounting as performance-enhancing, thereby empowering and motivating employees to adopt the system. These findings corroborate with Koesanto et al. (2021) who demonstrated that top management support significantly facilitates the adoption of cloud accounting.

H_3: Top Management Support has a positive impact on the adoption of cloud accounting

The Influence of Organizational Support on Cloud Accounting Adoption

Organizational Support refers to the level of assistance, resource availability, and infrastructure provided by an organization to facilitate the adoption of new technologies. This support may include training, technical guidance, or the provision of facilities that enable the effective implementation of technology. When an organization actively offers training and reliable technological infrastructure, users are more likely to feel confident and capable of operating the new system, including Cloud Accounting. Strong managerial and technical support can also enhance users' perceptions of ease of use and the usefulness of the technology in their daily work activities. Therefore, adequate organizational support is believed to have a positive influence on individuals' or business units' decisions to adopt Cloud Accounting.

H4: Organizational Support has a positive impact on the adoption of cloud accounting.

The Influence of Competitive Pressure on Cloud Accounting Adoption

Competitive Pressure is the drive felt by organizations to adopt new technologies in response to competition in the market. Competitive pressure drives organizations to consider technological innovation as a strategic tool in dealing with changes in the business environment. In addition, according to TAM, competitive pressure can affect user perceptions of the usefulness of cloud accounting. Customers who are in organizations that feel compelled to compete better may be more likely to perceive cloud accounting as a useful technology because it can improve the accuracy and speed of accounting processes and provide better access to financial data.

H5: Competitive Pressure has a positive impact on the adoption of cloud accounting.

The Influence of Bandwagon Effect on Cloud Accounting Adoption

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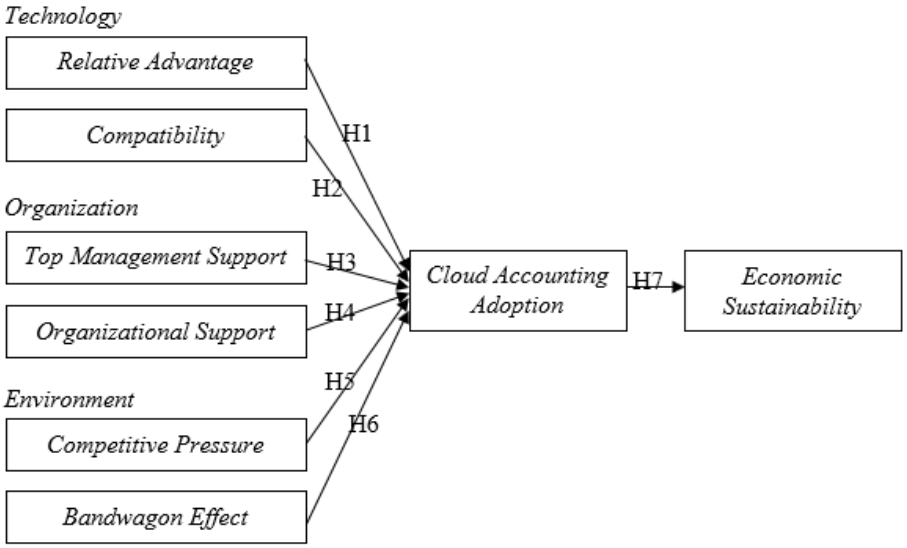
Bandwagon Effect is a phenomenon where individuals or organizations adopt a technology or practice because many others have done so, rather than because of rational consideration or in-depth analysis of the benefits of the technology. When competitors have used cloud accounting and become increasingly successful, SMEs will be encouraged to follow in their competitors' footsteps.



H6: Bandwagon Effect has a positive impact on the adoption of cloud accounting

The Impact of Cloud Accounting Adoption on Economic Sustainability

Perceived Usefulness in the Technology Acceptance Model (TAM) denotes users' belief that a technology (cloud accounting) enhances work performance. When firms recognize cloud accounting's benefits for decision-making, cost efficiency, and financial transparency, they are more inclined to invest in it. Such adoption improves operational performance, thereby bolstering long-term economic stability and sustainability. By enabling more efficient resource management, cloud accounting helps organizations adapt to market shifts, lower costs, and increase profitability, all of which underpin sustained economic viability.

H7: Cloud Accounting Adoption has a positive impact on economic sustainability.

Research methods

This research is quantitative research. The population used in this study is MSMEs in Central Java Province. Sampling using purposive sampling with the following criteria: 1) MSMEs that use cloud-based accounting applications and 2) MSMEs that have been operating for at least one year. The analysis tool used is Partial Least Squares (PLS). The analysis technique chosen is Structural Equation Modelling (SEM). This technique was chosen because SEM allows researchers to test the relationship between complex variables to get a complete picture of the model. The stages of data analysis using PLS in this study were carried out by looking at the outer and inner models. The outer model is used to evaluate the reliability and validity of the research model. Convergent and discriminant validity are two types of validity tests. Reliability is assessed through the composite reliability value and Cronbach's alpha. Analysis in the inner model is carried out for hypothesis testing through bootstrapping (Hair *et al.*, 2014).

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Figure 1. Research model

Results and Discussion

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Using purposive sampling, 222 respondents were recruited, most of whom were between 20 and 29 years old (67%), comprising 59% male (130) and 41% female (92). Moreover, 52% (116) of the sample have completed high school or vocational education. The use of cloud-based accounting information systems products used by respondents varies, with 36% (80) of them having used it for less than 6 months. The product most frequently used by respondents is Moka POS, which is used by 57 respondents (26%). The majority of respondents (56%) were MSMEs operating in the food and beverage (F&B) sector.

Table 1 indicates that all variables exhibit validity, with outer loadings ranging from 0.709 to 0.931, confirming that each measurement item accurately represents its respective construct. The reliability of the constructs is deemed satisfactory, as both Cronbach's alpha and composite reliability coefficients exceed the 0.70 threshold (Hair et al., 2022). Furthermore, convergent validity is supported by AVE values exceeding 0.60, thereby meeting the criteria for strong convergent validity (Gio, 2022).

Table 1. Outer Loading, Composite Reliability dan AVE

Variable	Item	Outer Loading	Cronbachs Alpha	Composite Reliability	AVE
Cloud Accounting Adoption	ADOP1	0,912	0,945	0,958	0,820
	ADOP2	0,899			
	ADOP3	0,931			
	ADOP4	0,908			
	ADOP5	0,876			
Bandwagon Effect	BE1	0,784	0,843	0,905	0,761
	BE2	0,899			
	BE3	0,927			

Compatibility	COM1	0,893	0,842	0,903	0,756
	COM2	0,805			
	COM3	0,907			
Competitive Pressure	CP1	0,899	0,865	0,917	0,788
	CP2	0,921			
	CP3	0,840			
Economic Sustainability	EcS1	0,795	0,898	0,924	0,710
	EcS2	0,828			
	EcS3	0,868			
	EcS4	0,880			
	EcS5	0,841			
Organizational Support	OR1	0,844	0,869	0,905	0,657
	OR2	0,863			
	OR3	0,802			
	OR4	0,709			
	OR5	0,826			
Relative Advantage	RA1	0,901	0,927	0,945	0,774
	RA2	0,888			
	RA3	0,888			
	RA4	0,905			
	RA5	0,813			
Top Management Support	TMS1	0,880	0,901	0,931	0,771
	TMS2	0,887			
	TMS3	0,902			
	TMS4	0,840			

Each construct's AVE square root exceeds its inter-construct correlations, confirming discriminant validity, and, together with other indicators, verifies that the measurement model meets reliability, convergent, and discriminant validity criteria at both construct and item levels. Cloud Accounting Adoption is explained by its predictors—Bandwagon Effect, Compatibility, Competitive Pressure, Organizational Support, Relative Advantage, and Top Management Support—with an adjusted R^2 of 0.660 (66 % of the variance). Economic Sustainability has an adjusted R^2 of 0.562, indicating that Cloud Accounting Adoption accounts for 56.2 % of its variance, with the remainder attributed to factors outside the model..

Table 2 Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
ADOP -> EcS	0,751	0,749	0,052	14,577	0,000
BE -> ADOP	0,055	0,050	0,090	0,607	0,544
CP -> ADOP	0,083	0,083	0,098	0,848	0,396
COM -> ADOP	0,042	0,035	0,072	0,582	0,561
OR -> ADOP	0,307	0,313	0,089	3,452	0,001
RE -> ADOP	0,252	0,252	0,082	3,068	0,002

TMS -> ADOP	0,259	0,249	0,083	3,108	0,002

As shown in Table 3, cloud accounting adoption (ADOP) has a highly significant positive effect on economic sustainability (EcS) ($p < .001$, $t > 1.96$), thus supporting H7. In contrast, neither the bandwagon effect (BE) ($p = .544$, $t < 1.96$), competitive pressure (CP) ($p = .396$, $t < 1.96$), nor compatibility (COM) ($p = .561$, $t < 1.96$) significantly influenced adoption, leading to the rejection of H6, H5, and H2. On the other hand, organizational support (OR) ($p = .001$, $t > 1.96$), perceived relative advantage (RE) ($p = .002$, $t > 1.96$), and top management support (TMS) ($p = .002$, $t > 1.96$) each exert a significant positive impact on adoption, thereby confirming H4, H1, and H3, respectively.

Discussion

Along with the development of the times, technological sophistication has also changed. One of these patterns of change will be used by MSMEs to help develop their businesses using cloud-based accounting. Of course, when an MSME wants to adopt new accounting, very thorough preparation is needed. However, this decision will be considered very appropriate because MSMEs can develop their businesses so that they can be economically sustainable. Overall, the adoption of cloud-based accounting by MSMEs has a positive effect on economic sustainability.

Top management support critically determines the resources allocated for cloud accounting implementation. When senior leadership prioritizes this initiative, MSMEs secure the necessary budget, personnel, and infrastructure to adopt the solution effectively. Consequently, organizations benefit from enhanced technical assistance, expert guidance, and tailored training, facilitating optimal utilization of cloud-based accounting platforms. Moreover, robust executive backing streamlines the resolution of deployment challenges and promotes seamless integration of cloud accounting systems into existing IT environments. Collectively, our findings underscore that top management support serves as a pivotal driver of cloud-based accounting adoption within MSMEs. By securing robust internal and external organizational backing, enterprises are more inclined to commit to new technological implementations. Consequently, organizational support emerges as a significant positive determinant of cloud accounting uptake among MSMEs.

Currently, people tend to follow existing trends. When associated with the pattern of cloud-based accounting adoption, MSMEs do not tend to adopt a trend. Relative advantage is the main reason behind new adoptions by MSMEs. Relative advantage has a positive effect on the adoption of cloud-based accounting. By using cloud accounting, MSMEs feel many benefits such as operational cost efficiency and ease in preparing financial reports. Competitive competition is not the main factor that drives MSMEs to adopt cloud-based accounting. Sometimes before making a new adoption, MSMEs will adjust to their business needs and employee capabilities, not just following their competitors.

Conclusion

This study empirically tests and analyzes the factors that influence MSMEs in using cloud accounting and its impact on Economic Sustainability, especially MSMEs in Central Java. This study found empirical evidence that Cloud Accounting Adoption has an effect on Economic Sustainability. In addition, Organizational Support, Relative Advantage, and TMS influence Cloud Accounting Adoption. However, Bandwagon Effect, Competitive Pressure, and Compatibility do not influence Cloud Accounting Adoption.

This study provides a practical contribution that the support of MSME owners and the resources they have are key factors in encouraging the adoption of cloud accounting. The government can formulate policies that support changes in the mindset of MSME owners and managers to always be technology literate because it will affect the sustainability of MSME businesses.

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