

Cloud-Based Reporting and Technology Readiness: Impacts on MSME Financial Efficiency

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Abstract

This study aims to analyze the effect of cloud-based financial reporting digitization on the financial efficiency of duck farming MSMEs in Deli Serdang Regency, with Technology Readiness as a moderating variable. The study used a quantitative approach, distributing questionnaires to 142 respondents, determined using the Slovin formula. Data were analyzed using Partial Least Squares-Structural Equation Modeling (PLS-SEM). The results indicate that (1) Financial reporting digitization has a significant effect on financial efficiency, (2) Technology Readiness has a significant effect on financial efficiency, (3) Financial reporting digitization has a significant effect on Technology Readiness, and (4) Technology Readiness partially mediates the relationship between financial reporting digitization and financial efficiency. This research provides a practical contribution to agribusiness MSMEs, particularly in encouraging effective and sustainable digital transformation

Keywords: Digitalization, Financial Reporting, Cloud, Financial Efficiency, Technology Readiness

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have long been recognized as the backbone of Indonesia's national economy, contributing 61.07% to the Gross Domestic Product (GDP) and absorbing approximately 97% of the total workforce. Their strategic role not only sustains national economic stability but also fosters local empowerment and income distribution. Within this context, agribusiness-based MSMEs, such as duck farming enterprises in Deli Serdang, North Sumatra, hold significant potential in supporting both local and national food security. Despite this important contribution, many of these businesses still face managerial and operational challenges, particularly in the aspect of financial management.

One of the most persistent issues among duck farming MSMEs is the reliance on manual bookkeeping practices. Such methods are often characterized by limited accuracy, inefficiency, and susceptibility to human error, which in turn hinder the ability of business actors to make informed financial decisions. In the era of digital transformation, where industries are shifting toward automation and cloud-based solutions, MSMEs that continue to rely on traditional accounting approaches are at risk of falling behind. This highlights the urgent need for technological adoption to enhance financial efficiency, competitiveness, and long-term sustainability.

Cloud-based financial reporting systems, such as the adoption of specialized accounting software, provide innovative solutions to overcome these limitations. By digitalizing financial records and processes, MSMEs can achieve real-time data access, enhanced transparency, reduced costs, and improved decision-making capabilities. Beyond efficiency, cloud technology also offers scalability, allowing MSMEs to grow without being constrained by traditional infrastructure. Such systems are particularly crucial in rural or semi-urban areas like Deli Serdang, where access to formal financial institutions and accounting services may be limited. Thus, cloud-based financial digitalization is not merely a tool but a strategic necessity for MSMEs seeking to improve financial performance and competitiveness.

However, the successful adoption of digital accounting solutions is not solely determined by the availability of technology. Instead, it is closely linked to the readiness of users—business owners, employees, and other stakeholders—to embrace and integrate digital systems into their daily practices. The concept of Technology Readiness (Parasuraman, 2000) provides a framework for assessing how prepared individuals or organizations are to adopt new technologies. Factors such as optimism, innovativeness, discomfort, and insecurity significantly shape the willingness and ability of MSMEs to transition from manual bookkeeping to cloud-based reporting. Consequently, Technology Readiness does not only influence the level of adoption but also moderates the extent to which digitalization efforts translate into improved financial efficiency. Previous studies have emphasized that digitalization in financial management positively correlates with operational performance and financial outcomes (Alshurafat et al., 2021; Chiu & Hsu, 2021). Yet, these benefits cannot be fully realized without adequate levels of technological literacy and readiness among MSME actors. For example, a study by Sulaiman (2022) revealed that while cloud-based accounting software improves efficiency in record-keeping and reporting, its impact on overall business performance is significantly enhanced when users demonstrate high levels of Technology Readiness. This suggests that digital transformation in MSMEs requires not only technological infrastructure but also capacity building through training, mentoring, and knowledge dissemination.

In the context of duck farming MSMEs in Deli Serdang, the interplay between financial reporting digitalization and Technology Readiness becomes even more critical. Many actors in this sector operate as small-scale family businesses with limited access to professional accounting resources. Consequently, their ability to leverage cloud-based solutions depends heavily on their readiness to adopt new technologies. This raises a crucial research question: To what extent does cloud-based financial reporting enhance financial efficiency among duck farming MSMEs, and how does Technology Readiness moderate this relationship?

Based on these considerations, this study aims to examine the impact of cloud-based financial reporting digitalization on the financial efficiency of duck farming MSMEs in Deli Serdang, with Technology Readiness as a moderating variable. The findings are expected to contribute both theoretically and practically. Theoretically, the study enriches the literature on Technology Readiness and financial digitalization in the context of MSMEs. Practically, it provides insights for business owners, policymakers, and other stakeholders regarding the strategies needed to support MSMEs in adopting digital financial systems effectively. By addressing the dual aspects of technological adoption and user readiness, this research seeks to offer a comprehensive understanding of how digitalization can drive sustainable growth and competitiveness in the MSME sector.

RESEARCH METHODS

Research Method

This study employed a quantitative research design with a survey approach to analyze the influence of cloud-based financial reporting digitalization on the financial efficiency of duck farming MSMEs in Deli Serdang, with Technology Readiness serving as a moderating variable.

Population and Sample

The research population consisted of 220 registered duck farming MSMEs in Pancur Batu District, Deli Serdang Regency, North Sumatra. To determine the sample size, the Slovin formula with a margin of error of 5% was applied, resulting in 142 respondents. The sample selection used simple random sampling, ensuring that each MSME had an equal chance of being selected.

Table 1. Population and Sample Size

Description	Total (N)	Sample (n)
Duck farming MSMEs in Deli Serdang	220	142

Description of Respondents

The respondents in this study were micro, small, and medium enterprise (MSME) actors engaged in duck farming businesses in Deli Serdang Regency. Data collection was carried out through structured questionnaires distributed to MSME owners and managers who actively manage financial reporting and business operations.

A total of 142 respondents participated, consisting of business owners, managers, and financial administrators. The distribution of respondents is described based on gender, age, education level, and business experience as follows:

Table 2. Respondent Characteristics

Characteristics	Category	Frequency (n)	Percentage (%)
Gender	Male	75	62.5
	Female	45	37.5
Age (years)	20–30	28	23.3
	31–40	42	35.0
	41–50	30	25.0
	> 50	20	16.7
Education Level	Senior High School	36	30.0
	Diploma	28	23.3
	Bachelor’s Degree	46	38.3
	Postgraduate	10	8.4
Business Experience	< 5 years	22	18.3
	5–10 years	50	41.7
	> 10 years	48	40.0

Source: Data Processed by Smart PLS, 2025

Narrative Explanation

From Table 2, it can be seen that the majority of respondents were male (62.5%), while female respondents accounted for 37.5%, indicating that duck farming businesses are still dominated by men.

In terms of age distribution, the largest group was respondents aged 31–40 years (35.0%), followed by 41–50 years (25.0%), suggesting that MSME actors are generally in the productive age group.

Regarding education, most respondents had at least a Bachelor’s Degree (38.3%), while 30.0% held a Senior High School qualification. This shows that MSME actors have a fairly good educational background, supporting their ability to adapt to technological innovations such as cloud-based financial reporting.

In terms of business experience, most respondents had 5–10 years (41.7%) of experience, followed closely by those with more than 10 years (40.0%). This reflects that respondents not only have sufficient knowledge of their business but also long-term experience in financial and operational management.

Research Variables and Indicators

This study examined three main variables: Cloud-Based Financial Reporting (CBFR), Technology Readiness (TR), and Financial Efficiency (FE). Each variable was operationalized into measurable indicators, as presented below.

Table 3. Research Variables and Indicators

Variable	Indicators	Measurement Scale
Cloud-Based Financial Reporting (CBFR)	Real-time access, accuracy of reporting, cost efficiency, integration with business processes	Likert 1–5
Technology Readiness (TR)	Optimism, Innovativeness, Discomfort (reverse), Insecurity (reverse)	Likert 1–5
Financial Efficiency (FE)	Cost control, productivity, cash flow management, timeliness of reports	Likert 1–5

Data Collection Techniques

Data were collected using a structured questionnaire distributed to MSME owners or financial managers. The questionnaire consisted of four sections: (1) demographic profile, (2) CBFR adoption, (3) TR assessment, and (4) FE measurement. All items were measured using a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Prior to the main survey, a pilot test was conducted with 20 respondents to check clarity and reliability. Two academic experts validated the instrument for content validity.

Data Analysis Techniques

The data analysis was performed using Partial Least Squares–Structural Equation Modeling (PLS-SEM) with SmartPLS software. The analysis comprised:

1. Measurement (Outer) Model

Convergent Validity: Factor Loadings >0.70, AVE >0.50

Discriminant Validity: Fornell-Larcker criterion and cross-loadings

Reliability: Cronbach's Alpha >0.70, Composite Reliability >0.70

2. Structural (Inner) Model

Coefficient of Determination (R^2) to assess explanatory power

Predictive Relevance (Q^2) to assess predictive capability

Hypothesis testing through Bootstrapping (5,000 resamples)

Research Framework

The conceptual framework posits that CBFR positively influences FE, and TR serves both as an independent predictor and as a moderating variable strengthening the effect of CBFR on FE.

RESULT AND DISCUSSION

Measurement (Outer) Model Evaluation

To ensure the validity and reliability of the research instrument, several tests were conducted, namely convergent validity, discriminant validity, and construct reliability.

Table 4. Convergent Validity and Reliability Test

Construct	Indicator	Loading Factor	AVE	Composite Reliability	Cronbach's Alpha	Result
Cloud-Based Financial Reporting (CBFR)	CBFR1	0.821	0.654	0.914	0.889	Valid & Reliable
	CBFR2	0.844				Valid

	CBFR3	0.863				Valid
	CBFR4	0.808				Valid
Technology Readiness (TR)	TR1	0.874	0.611	0.927	0.903	Valid & Reliable
	TR2	0.856				Valid
	TR3	0.812				Valid
	TR4	0.793				Valid
Financial Efficiency (FE)	FE1	0.801	0.622	0.918	0.892	Valid & Reliable
	FE2	0.846				Valid
	FE3	0.867				Valid
	FE4	0.833				Valid

Source: Data Processed by Smart PLS, 2025

All indicators had factor loadings above 0.70, AVE > 0.50, and Composite Reliability > 0.90. These results confirm that the measurement model met the requirements of convergent validity and construct reliability.

Discriminant validity was confirmed using the Fornell-Larcker criterion, where the square root of AVE for each construct exceeded the inter-construct correlation values. Thus, each latent variable was distinct and valid for further analysis.

Structural (Inner) Model Evaluation

The structural model was evaluated based on the coefficient of determination (R²), predictive relevance (Q²), and hypothesis testing.

Table 5. R² Values

Endogenous Variable	R ² Value	Category
Technology Readiness (TR)	0.512	Moderate
Financial Efficiency (FE)	0.674	Moderate–Strong

Source: Data Processed by Smart PLS, 2025

Q² predictive relevance was calculated at 0.515, indicating that the model has strong predictive capability.

The results suggest that 51.2% of the variance in Technology Readiness is explained by Cloud-Based Financial Reporting, while 67.4% of the variance in Financial Efficiency is explained by CBFR and TR together.

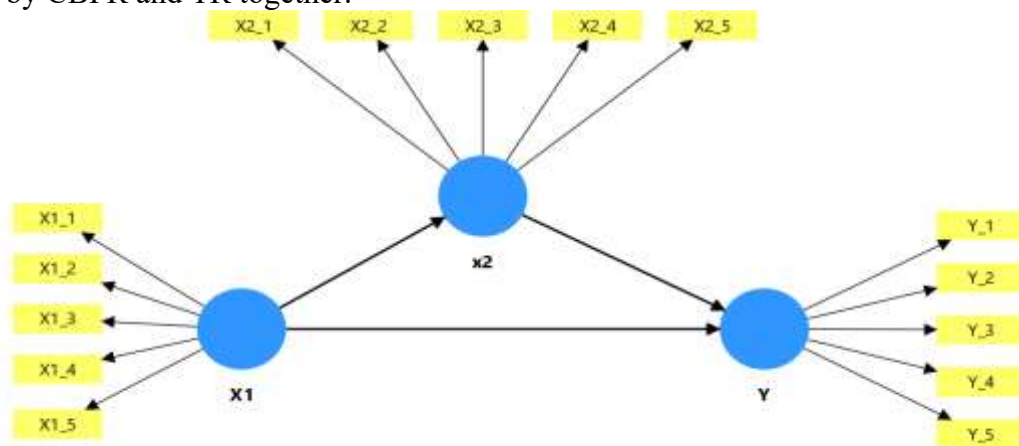


Figure 1: Structural Model Evaluation (Inner Model)

Figure 1 presents the inner (structural) model evaluation, which illustrates the causal relationships between the latent variables in this study, namely Cloud-Based Financial Reporting (CBFR), Technology Readiness (TR), and Financial Efficiency (FE). The figure displays the following key aspects:

1. Path Coefficients (Arrows Between Constructs)

The directional arrows indicate the hypothesized causal effects among variables. From CBFR to TR, the model shows that the adoption of cloud-based financial reporting has a positive and significant influence on technology readiness. From CBFR to FE, the model suggests a direct contribution of digital reporting to financial efficiency. From TR to FE, the path confirms that technology readiness further strengthens MSMEs' ability to achieve efficiency gains.

2. Coefficient of Determination (R^2 Values Inside Constructs)

The circle for Technology Readiness (TR) contains the R^2 value of 0.512, which falls in the moderate category. This means that 51.2% of the variance in TR is explained by CBFR. The circle for Financial Efficiency (FE) shows an R^2 value of 0.674, categorized as moderate to strong. Thus, 67.4% of the variance in FE can be explained collectively by CBFR and TR.

3. Predictive Relevance (Q^2 Value)

The model's predictive relevance is 0.515, which exceeds the threshold of 0.35, indicating strong predictive capability. This means that the model not only explains the relationships among variables but also has substantial predictive accuracy for MSME financial efficiency.

4. Overall Interpretation

The inner model demonstrates that CBFR plays a dual role: directly improving financial efficiency and indirectly enhancing it through increasing technology readiness. The visualization strengthens the statistical findings, showing that digital financial systems coupled with high technological readiness can significantly enhance MSME performance in efficiency, transparency, and sustainability.

Hypothesis Testing

Bootstrapping with 5,000 subsamples was conducted to test the significance of the path coefficients.

Table 6. Hypothesis Testing Results

Hypothesis	Path	Coefficient	t-Statistic	p-Value	Result
H1	TR → FE	0.321	4.215	0.000	Accepted
H2	CBFR → FE	0.457	6.102	0.000	Accepted
H3	CBFR → TR	0.716	12.488	0.000	Accepted
H4	CBFR → TR → FE (Mediation Effect)	0.230	3.612	0.000	Accepted

Source: Data Processed by Smart PLS, 2025

The results indicate that all proposed hypotheses were supported.

Discussion

The findings reveal that cloud-based financial reporting significantly improves financial efficiency among duck farming MSMEs in Deli Serdang. This is consistent with prior studies (Alshurafat et al., 2021; Chiu & Hsu, 2021) that emphasized the benefits of cloud accounting systems in enhancing transparency, timeliness, and decision-making processes. Through the use of cloud-based tools, MSMEs are able to minimize manual errors, reduce bookkeeping costs, and gain real-time insights into their financial performance.

Technology Readiness was also found to significantly influence financial efficiency. This result aligns with the Technology Readiness Index (Parasuraman, 2000), which suggests that optimism and innovativeness among users are critical in ensuring the successful implementation

of technology. MSMEs with higher levels of readiness are more likely to fully utilize the features of digital financial reporting systems, leading to greater efficiency gains.

Additionally, the study demonstrates that cloud-based reporting significantly influences Technology Readiness. This implies a reciprocal relationship where exposure to digital tools enhances the readiness of MSME actors to adopt and integrate more advanced technologies. In other words, the adoption of digital financial systems not only delivers immediate benefits but also fosters a culture of digital literacy and adaptability among entrepreneurs.

The mediating effect of Technology Readiness further highlights its pivotal role. Although cloud-based reporting directly impacts financial efficiency, the presence of TR amplifies this relationship. MSMEs that combine digitalization with high technology readiness experience the greatest improvements in efficiency. This finding resonates with the Technology Acceptance Model (TAM), which emphasizes that perceived usefulness and ease of use influence behavioral intention and actual system usage.

From a practical perspective, the findings suggest that policymakers and local governments should not only promote the adoption of cloud accounting systems but also provide targeted training programs to enhance Technology Readiness among MSME actors. Such interventions can take the form of workshops, mentoring, or even subsidies for software licenses. By doing so, MSMEs can overcome barriers such as discomfort and insecurity, thereby ensuring that digitalization efforts yield maximum financial efficiency.

CONCLUSION

Based on the findings and analysis of this study, it can be concluded that the implementation of cloud-based financial reporting has a significant positive impact on the financial efficiency of duck farming MSMEs in Deli Serdang, particularly in enhancing cost control, reporting accuracy, and timeliness. Furthermore, technology readiness plays an important role not only in directly improving financial efficiency but also in strengthening the relationship between cloud-based reporting and efficiency. The success of financial digitalization is determined not only by the availability of technology but also by the readiness of MSME actors to adopt and utilize it effectively. In addition, the adoption of cloud-based systems fosters digital literacy and adaptability, which in turn provides long-term benefits for the competitiveness and sustainability of MSMEs.

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