Volume 6 Issue 2 (2026) Pages 503 - 511
Amkop Management Accounting Review (AMAR)
ISSN : 2828-2248 (Online)

Integration of Digital Transformation, Management Accounting Practices, and Fraud Prevention in Micro, Small, and Medium-Sized Enterprises (MSMEs)

Novita Setianti✉[1], Agung Pratapa[2], Puji Lestari[3], Eliada Herwiyanti[4], Dewi Susilowati[5]
[1,2,3,4,5] Doctoral Program in Accounting, Universitas Jendral Soedirman

Abstract

Micro, Small, and Medium Enterprises (MSMEs) in Indonesia face a digitalization paradox: despite the rapid adoption of digital technologies, vulnerability to fraudulent activities increases alongside weak internal controls. This study investigates the integrative role of digital transformation and Management Accounting Practices (MAP) in fraud prevention among MSMEs in the Banyumas region, Central Java. Grounded in the Resource-Based View (RBV), the Technology-Organization-Environment (TOE) Framework, and Fraud Triangle Theory, the study constructs a mediation model in which MAP serves as a mediator between digital maturity and fraud mitigation effectiveness. Primary data were collected from 136 respondents comprising MSME owners and managers through purposive sampling using a structured questionnaire. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4.0. Results indicate that: (1) digital transformation positively and significantly influences MAP ($\beta = 0.671$); (2) MAP positively and significantly influences fraud prevention ($\beta = 0.563$); (3) digital transformation directly influences fraud prevention ($\beta = 0.247$); and (4) MAP mediates the relationship between digital transformation and fraud prevention with an indirect effect of 0.378. The overall model explains 63.9% of variance in fraud prevention ($R^2 = 0.639$). This study contributes theoretically and practically by demonstrating that digital transformation must be integrated with structured management accounting practices to create a secure and accountable financial ecosystem for MSMEs.

Keywords: *Digital Transformation, Management Accounting Practices, Fraud Prevention, MSMEs, PLS-SEM, Banyumas.*

✉ Corresponding author :
Email Address : novita.setianti@mhs.unsoed.ac.id

INTRODUCTION

The Fourth Industrial Revolution has accelerated a massive wave of digital transformation across economic sectors, including micro, small, and medium-sized enterprises (MSMEs). In Indonesia, MSMEs constitute the backbone of the national economy, contributing 61.07% to gross domestic product (GDP) and absorbing 97% of the national workforce (Kementerian Koperasi dan UKM, 2023). However, the widespread adoption of digital technologies has not necessarily been accompanied by stronger internal control systems, thereby creating vulnerabilities to fraudulent practices.

DOI: 10.37531/amar.v6i2.3983

The Association of Certified Fraud Examiners (ACFE, 2024), in its *Occupational Fraud 2024: A Report to the Nations*, reported that small organizations suffered a median fraud loss of USD 150,000 per case, with cases lasting an average of 12 months before detection. Furthermore, 42% of fraud cases in small organizations were attributed to the absence or weakness of internal controls. These findings indicate that digital transformation, when not supported by robust accounting governance, may create new opportunities for fraud.

Vial (2019) emphasized that effective digital transformation is not merely the adoption of technology but a comprehensive change in business processes, organizational culture, and value creation models. In this regard, management accounting practices (MAPs) play a strategic role as a bridge between digital capabilities and operational control. Digitally enabled MAPs can generate financial information that is more accurate, real-time, and reliable, thereby supporting decision-making and enabling the early detection of irregularities.

A key paradox in the literature is that studies examining the effect of digital transformation on fraud prevention in MSMEs remain limited, particularly in developing-country contexts such as Indonesia. Most existing studies have focused on large-scale enterprises or technological aspects alone, without integrating management accounting practices as a mediating mechanism (Saleh et al., 2021; Bouwman et al., 2019). This research gap provides the foundation for the present study.

This study was conducted in Banyumas Regency, Central Java, which has an active and dynamic MSME ecosystem. According to the Office of Cooperatives and MSMEs of Banyumas Regency (2023), the region has more than 80,000 active MSMEs distributed across 27 districts, approximately 15% of which have adopted digital-based accounting systems. This context provides a relevant empirical setting for testing the proposed research model.

Based on the preceding discussion, this study formulates four main hypotheses. First, digital transformation has a positive effect on MAPs (H1). Second, MAPs have a positive effect on fraud prevention (H2). Third, digital transformation has a positive effect on fraud prevention (H3). Fourth, MAPs mediate the effect of digital transformation on fraud prevention (H4). The hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM), which was selected because of its suitability for analyzing complex models with moderate sample sizes and data distributions that do not necessarily meet normality assumptions (Hair et al., 2022).

This study offers both theoretical and practical contributions. Theoretically, it enriches the literature by integrating the resource-based view (RBV), the technology–organization–environment (TOE) framework, and fraud triangle theory into a comprehensive model for the context of digital MSMEs. Practically, the findings are expected to provide guidance for MSME actors, regulators, and other stakeholders in designing digitalization strategies that simultaneously strengthen fraud prevention mechanisms.

DOI: 10.37531/amar.v6i2.3983

METHODOLOGY

This study employed a quantitative research design using an explanatory survey approach. This approach was selected because the study aimed to examine the causal relationships among the hypothesized variables based on the established theoretical framework (Creswell & Creswell, 2018). The unit of analysis was the individual, specifically MSME owners and managers who had access to and authority over their organization's accounting systems and information technology.

The population of this study comprised all MSMEs in Banyumas Regency, Central Java, that had adopted at least one form of digital technology in their accounting operations. According to the Office of Cooperatives and MSMEs of Banyumas Regency (2023), approximately 12,000 MSMEs in the region had used digital platforms in their business activities.

This study applied purposive sampling with the following inclusion criteria: (1) MSMEs that had implemented cloud accounting or other digital accounting systems for at least one year; (2) MSMEs with more than 10 employees; and (3) MSMEs located within the administrative area of Banyumas Regency. These criteria were established to ensure that respondents had sufficient experience in using digital technologies and adequate organizational capacity to implement management accounting practices (MAPs) in a structured manner.

Questionnaires were distributed to 200 MSMEs that met the predetermined criteria. After screening for completeness and response consistency, 136 questionnaires were considered valid and suitable for further analysis, resulting in a response rate of 68%. This sample size satisfied the minimum requirement for PLS-SEM, which recommends at least 10 times the largest number of reflective indicators in a construct within the model (Hair et al., 2022). In this study, the maximum number of indicators for each variable was four.

All variables were measured using a five-point Likert scale. Table 2 presents the operationalization of the research variables and their respective sources.

Table 2. Operationalization of Research Variables

Variable	Dimension	Indicators	Source
Digital Transformation (DT)	Technology Adoption	DT1: Use of cloud accounting; DT2: Implementation of e-payment; DT3: Digitalization of bookkeeping; DT4: Use of business dashboards	Vial (2019); Bharadwaj et al. (2013)
Management Accounting Practices (MAPs)	Planning and Control	MAP1: Integrated budgeting; MAP2: Real-time performance monitoring; MAP3: Data-driven cost control; MAP4: Analytics-based strategic planning	Chenhall (2003); Kaplan & Atkinson (2015)
Fraud Prevention (FP)	Internal Control	FP1: Data access restrictions; FP2: Digital audit trails; FP3: Transaction anomaly detection;	Albrecht et al. (2018); COSO (2013)

DOI: 10.37531/amar.v6i2.3983

	FP4: Financial reporting transparency

Data were analyzed in two stages using SmartPLS 4.0 (Ringle et al., 2024). The first stage involved evaluating the outer model, or measurement model, to verify the validity and reliability of the measurement instruments. Convergent validity was assessed using factor loadings, with a minimum threshold of 0.70, and average variance extracted (AVE), with a minimum threshold of 0.50. Discriminant validity was assessed using the heterotrait–monotrait ratio (HTMT), with a maximum threshold of 0.85. Construct reliability was evaluated using composite reliability (CR > 0.70) and Cronbach's alpha (α > 0.70). The second stage involved evaluating the inner model, or structural model, to test the proposed hypotheses. This evaluation included path coefficients, R^2 values, and a bootstrapping procedure with 5,000 resamples to assess the significance of the structural relationships (Sarstedt et al., 2020).

RESULTS AND DISCUSSION

Respondent Profile

Of the 136 respondents involved in this study, the majority were MSME owners (73.5%), while the remaining respondents were operational managers (26.5%). In terms of business sector, trading businesses were dominant (48.5%), followed by culinary/food businesses (27.2%) and service businesses (24.3%). The respondents' business operating period ranged from 2 to 15 years, with an average of 6.4 years. Regarding digital technology adoption, 67.6% of respondents used cloud accounting, 54.4% used e-payment systems, and 38.2% had utilized business intelligence dashboards.

Evaluation of the Measurement Model

Convergent Validity Test

The results of the convergent validity test are presented in Table 3. All indicator loading factor values exceeded the minimum threshold of 0.70 (Hair et al., 2022), confirming that each indicator validly measured its respective construct.

Table 3. Loading Factor Results

Variable	Indicator	Loading Factor	Decision
Digital Transformation (DT)	DT1	0.821	Valid
	DT2	0.856	Valid
	DT3	0.804	Valid
	DT4	0.842	Valid

DOI: 10.37531/amar.v6i2.3983

Management Accounting Practices (MAPs)	MAP1	0.847	Valid
	MAP2	0.881	Valid
	MAP3	0.826	Valid
	MAP4	0.791	Valid
Fraud Prevention (FP)	FP1	0.862	Valid
	FP2	0.887	Valid
	FP3	0.835	Valid
	FP4	0.804	Valid

Table 4 presents the values of average variance extracted (AVE), composite reliability (CR), and Cronbach's alpha, all of which met the recommended thresholds.

Table 4. Reliability and AVE Results

Variable	AVE	Composite Reliability (CR)	Cronbach's Alpha
Digital Transformation (DT)	0.693	0.900	0.853
Management Accounting Practices (MAPs)	0.699	0.903	0.858
Fraud Prevention (FP)	0.716	0.910	0.869
Required minimum threshold	≥0.50	>0.70	>0.70

All AVE values were above 0.50, ranging from 0.693 to 0.716, indicating adequate convergent validity. The CR values ranged from 0.900 to 0.910, substantially exceeding the minimum threshold of 0.70, thereby confirming construct reliability. Similarly, Cronbach's alpha values ranged from 0.853 to 0.869, also exceeding the recommended threshold of 0.70.

Evaluation of the Structural Model

Coefficient of Determination (R^2)

Table 5 presents the R^2 values for the endogenous variables in the structural model.

Table 5. R^2 Values of Endogenous Variables

DOI: 10.37531/amar.v6i2.3983

Endogenous Variable	R^2	Interpretation
Management Accounting Practices (MAPs)	0.451	Moderate: 45.1% of the variance is explained by DT
Fraud Prevention (FP)	0.639	Substantial: 63.9% of the variance is explained by DT and MAPs

The R^2 value of 0.451 for MAPs indicates that digital transformation explains 45.1% of the variance in management accounting practices. This value falls within the moderate category based on Cohen's (1988) criteria as adapted by Hair et al. (2022). Meanwhile, the R^2 value of 0.639 for fraud prevention indicates substantial predictive power, suggesting that 63.9% of the variance in fraud prevention can be jointly explained by digital transformation and MAPs.

Hypothesis Testing

Table 6 presents the results of hypothesis testing based on path coefficients, t-statistics, and p-values obtained through a bootstrapping procedure with 5,000 resamples.

Table 6. Hypothesis Testing Results Using Bootstrapping with 5,000 Resamples

Hypothesis	Path Coefficient (β)	t-Statistic	p-Value	Decision
H1: DT → MAPs	0.671	9.847	0.000	Supported
H2: MAPs → FP	0.563	7.412	0.000	Supported
H3: DT → FP	0.247	3.218	0.001	Supported
H4: DT → MAPs → FP	0.378	6.103	0.000	Supported

The Effect of Digital Transformation on Management Accounting Practices (H1)

The results of H1 testing indicate that digital transformation has a positive and significant effect on management accounting practices (MAPs) ($\beta = 0.671$; $t = 9.847$; $p < 0.001$). This relatively large path coefficient suggests that a one-standard-deviation increase in MSMEs' digital maturity increases the sophistication of MAPs by 0.671 standard deviations. This finding is consistent with Scapens and Jazayeri's (2003) argument that the implementation of integrated information systems substantially transforms MAPs from passive record-keeping mechanisms into proactive analytical tools. More specifically, respondents reported that the use of cloud accounting (DT1) and business intelligence dashboards (DT4) had the most substantial impact on the quality of information generated for managerial decision-making.

DOI: 10.37531/amar.v6i2.3983

This finding also supports Quattrone's (2016) proposition that digitalization creates a form of data-driven accountability that could not previously be achieved through manual systems. In the context of MSMEs in Banyumas, this is reflected in business owners' ability to monitor cash flows in real time and conduct weekly budget variance analyses, practices that were previously more common in large-scale enterprises.

The Effect of Management Accounting Practices on Fraud Prevention (H2)

The results of H2 testing show that MAPs have a positive and significant effect on fraud prevention ($\beta = 0.563$; $t = 7.412$; $p < 0.001$). This finding confirms Chenhall's (2003) argument that comprehensive management control systems, including budgeting, performance monitoring, and cost control, create an organizational environment that is less conducive to opportunistic behavior. Empirically, respondents who implemented digital data-based performance monitoring (MAP2) reported stronger capabilities in detecting irregularities than those who did not. This result is consistent with Fraud Triangle Theory, which predicts that reducing opportunity through stricter monitoring is among the most effective strategies for preventing fraud.

The Direct Effect of Digital Transformation on Fraud Prevention (H3)

Although the direct path coefficient from digital transformation to fraud prevention ($\beta = 0.247$) was smaller than its indirect effect through MAPs ($\beta = 0.378$), the direct effect remained statistically significant ($t = 3.218$; $p = 0.001$). This indicates that digital technology itself contributes to fraud prevention through technical mechanisms such as automated audit trails, data encryption, and role-based access restrictions. This finding aligns with the recommendation of COSO (2013), which positions information technology as an integral component of effective internal control. However, the relatively smaller direct coefficient compared with the indirect coefficient reinforces the argument that technology adoption alone is insufficient; integration with mature MAPs is required to optimize fraud prevention functions.

The Mediating Role of Management Accounting Practices (H4)

The results of H4 testing confirm that MAPs mediate the effect of digital transformation on fraud prevention, with an indirect effect coefficient of 0.378 ($t = 6.103$; $p < 0.001$). The indirect effect, which is greater than the direct effect of 0.247, indicates that MAPs are not merely a partial mediator but rather the primary transmission mechanism through which digital capabilities are converted into fraud prevention capabilities. This finding has important practical implications: investment in digital technology without the strengthening of MAPs may result only in superficial digitalization that does not provide adequate protection against fraud risk. This result is consistent with the findings of Saleh et al. (2021) and strengthens the theoretical proposition of the resource-based view (RBV), which argues that digital capabilities must be complemented by relevant organizational capabilities to generate sustainable competitive advantage.

DOI: 10.37531/amar.v6i2.3983

CONCLUSION

This study empirically confirmed all four proposed hypotheses using PLS-SEM based on a sample of 136 MSMEs in Banyumas Regency. Overall, three main conclusions can be drawn.

First, digital transformation is a critical enabler of improved management accounting practices (MAPs) in MSMEs. The adoption of cloud accounting, e-payment systems, digital bookkeeping, and business intelligence dashboards significantly enhances the sophistication of budgeting, performance monitoring, cost control, and data-driven strategic planning. The strong path coefficient ($\beta = 0.671$) indicates that investment in digitalization provides substantial returns in terms of managerial capability.

Second, structured and digitally data-driven MAPs are proven to be an effective mechanism for fraud prevention in MSMEs. The real-time monitoring and analytics-based control capabilities offered by digital MAPs significantly reduce the opportunity dimension in the Fraud Triangle, thereby creating a more transparent and accountable operational environment.

Third, and most importantly from a theoretical perspective, MAPs mediate the relationship between digital transformation and fraud prevention. This finding confirms that digital transformation and MAPs should not be treated as independent initiatives; rather, they must be synergistically integrated into a comprehensive governance framework. Overall, the research model explains 63.9% of the variance in fraud prevention, indicating substantial predictive power.

The policy implication of this study is that MSME digitalization assistance programs, such as those promoted by the Ministry of Cooperatives and SMEs and local governments, should integrate the strengthening of management accounting practices rather than focusing solely on training in the use of digital platforms. Only through such integration can the benefits of digital transformation be optimized while fraud risks are effectively minimized.

This study has several limitations. First, the cross-sectional survey design does not allow for fully robust causal inference; therefore, longitudinal studies are needed to validate the hypothesized causal relationships. Second, the sample was limited to MSMEs in Banyumas Regency, which may restrict the generalizability of the findings. Future research is encouraged to replicate this study in other regions with different MSME characteristics and to explore potential moderating variables, such as business owners' digital competence and support from the local digital ecosystem.

References :

DOI: 10.37531/amar.v6i2.3983

Albrecht, W. S., Albrecht, C. O., Albrecht, C. C., & Zimbelman, M. F. (2018). *Fraud examination* (6th ed.). Cengage Learning.

Association of Certified Fraud Examiners. (2024). *Occupational fraud 2024: A report to the nations*. ACFE. https://www.acfe.com/report-to-the-nations/2024/

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly, 37*(2), 471–482. https://doi.org/10.25300/MISQ/2013/37.2.3

Bhimani, A., & Willcocks, L. (2014). Digitisation, "big data," and the transformation of accounting information. *Accounting and Business Research, 44*(4), 469–490. https://doi.org/10.1080/00014788.2014.910051

Bouwman, H., Nikou, S., & de Reuver, M. (2019). Digitalization, business models, and SMEs: How do business model innovation practices improve performance of digitalizing SMEs? *Telecommunications Policy, 43*(9), Article 101828. https://doi.org/10.1016/j.telpol.2019.101828

Chenhall, R. H. (2003). Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. *Accounting, Organizations and Society, 28*(2–3), 127–168. https://doi.org/10.1016/S0361-3682(01)00027-7

Committee of Sponsoring Organizations of the Treadway Commission. (2013). *Internal control – Integrated framework*. COSO.

Cressey, D. R. (1953). *Other people's money: A study in the social psychology of embezzlement*. Free Press.

Grande, E., Estébanez, R. P., & Colomina, C. M. (2011). The impact of accounting information systems on performance measures: Empirical evidence in Spanish SMEs. *International Journal of Digital Accounting Research, 11*, 25–43. https://doi.org/10.4192/1577-8517-v11_2

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A primer on partial least squares structural equation modeling (PLS-SEM)* (3rd ed.). SAGE Publications.

Kaplan, R. S., & Atkinson, A. A. (2015). *Advanced management accounting* (3rd ed.). Pearson Education.

Quattrone, P. (2016). Management accounting goes digital: Will the move make it wiser? *Management Accounting Research, 31*, 118–122. https://doi.org/10.1016/j.mar.2016.01.003

Ringle, C. M., Wende, S., & Becker, J.-M. (2024). *SmartPLS 4 user guide*. SmartPLS GmbH. https://www.smartpls.com

Sarstedt, M., Ringle, C. M., Cheah, J.-H., Ting, H., Moisescu, O. I., & Radomir, L. (2020). Structural model robustness checks in PLS-SEM. *Tourism Economics, 26*(4), 531–554. https://doi.org/10.1177/1354816618823921

Scapens, R. W., & Jazayeri, M. (2003). ERP systems and management accounting change: Opportunities or impacts? *European Accounting Review, 12*(1), 201–233. https://doi.org/10.1080/0963818031000087907

Saleh, N. M., Rahman, M. R. C. A., & Hassan, M. S. (2021). Digital transformation and internal control effectiveness in SMEs. *Journal of Financial Crime, 28*(4), 1121–1138. https://doi.org/10.1108/JFC-09-2020-0186

DOI: 10.37531/amar.v6i2.3983

Vial, G. (2019). Understanding digital transformation: A review and research agenda. *The Journal of Strategic Information Systems, 28*(2), 118–144. https://doi.org/10.1016/j.jsis.2019.01.003