

Impact of Accounting Information Systems on Financial Transparency and Accountability of SMEs in the Industry 4.0 Era

Novta Winkey Pradana

Accounting Departement, Faculty of Economics and Business, Universitas Terbuka, Indonesia
Corresponding author e-mail: novta.winkey@ecampus.ut.ac.id

Abstract: This study examines the impact of implementing Accounting Information Systems on the financial transparency and accountability of Small and Medium Enterprises in the Industry 4.0 era. Small and Medium Enterprises in Indonesia face challenges in financial management, particularly related to transparency and accountability, which are crucial for business competitiveness and sustainability. Using a quantitative approach, data were collected through questionnaires from 350 SME practitioners in Banten Province who meet the criteria outlined in PP No. 7/2021, utilizing convenience sampling. The analysis was conducted using Structural Equation Modeling with Partial Least Squares. The results indicate that the implementation of Accounting Information Systems has a positive and significant effect on financial transparency and accountability. These findings underscore the importance of adopting Accounting Information Systems to enhance the quality of financial governance in Small and Medium Enterprises in the digitalization era.

Keywords: Accounting information systems, financial transparency, financial accountability, small and medium enterprises, Industry 4.0

1. Introduction

In the era of Industry 4.0, technological transformation is fundamentally reshaping global business operations. The integration of digital technologies—such as Artificial Intelligence (AI), the Internet of Things (IoT), big data analytics, and cloud computing—creates a more automated, intelligent, and interconnected business environment. This revolution enables companies to enhance productivity, operational efficiency, and agility in responding rapidly to market changes (Semaniuk & Melnyk, 2022; Xiao, 2023). Digital technology has evolved from supportive tools to critical factors for maintaining competitiveness in a globalized market (Bacca-Acosta et al., 2023).

Information has become one of the most valuable assets in modern business competition (Baesens et al., 2016). Effective information management is crucial for decision-making, strategic planning, and gaining competitive advantages. A critical system in managing business information is the Accounting Information System (AIS). AIS is an integrated system utilizing technology to efficiently collect, process, store, and disseminate financial data. It supports effective decision-making and enables companies to operate daily accounting activities using advanced software (Romney & Steinbart, 2017; Xu, 2020). By providing accurate and timely financial and accounting information, AIS enhances company performance and competitive advantage (Al-Hattami et al., 2022; Al-Okaily et al., 2023).

The role of AIS is increasingly important for Small and Medium Enterprises (SMEs), which require accurate and timely information to navigate intense competition and market uncertainties (Urquía Grande et al., 2011). SMEs are the backbone of Indonesia's economy, contributing over 60% of the Gross Domestic Product (GDP) and providing approximately 97% of total national employment (Julianto et al., 2020; Shaikh et al., 2022). Additionally, SMEs play a vital role in driving national exports and boosting domestic investment levels (Lopung & Rulindo, 2023). Based on Government Regulation Number 7 of 2021, SMEs are defined by thresholds of business capital and annual sales. Small enterprises have a business capital exceeding IDR 1 billion to IDR 5 billion or annual sales exceeding IDR 2 billion to IDR 15 billion, while medium enterprises have a business capital exceeding IDR 5 billion to IDR 10 billion or annual sales exceeding IDR 15 billion to IDR 50 billion. This study focuses exclusively on small and medium enterprises, excluding micro-enterprises, due to their distinct scale and technological needs.

Despite these significant contributions, Indonesian SMEs face substantial challenges in financial management, particularly regarding transparency and accountability. Transparency refers to the availability and accessibility of accurate financial information for stakeholders, while accountability ensures that financial decisions and reports can be justified and aligned with organizational goals. These aspects are crucial for enhancing stakeholder trust and attracting external funding necessary for expansion and long-term sustainability. Financial transparency and accountability can be differentiating factors determining business success or failure, especially in the context of global competition and digitalization challenges (Julianto et al., 2020).

In the digital era, SMEs that adopt financial technologies like AIS tend to gain greater competitive advantages. Halabi et al. (2019) revealed that SMEs effectively utilizing accounting information have higher chances of survival and growth compared to those neglecting this aspect. Kimani (2024) emphasized that implementing AIS improves financial reporting accuracy and operational efficiency while strengthening transaction transparency. This transparency enhances stakeholder trust and facilitates SMEs' access to external financing sources. Moreover, Mohammad (2018) & Susilowati et al. (2023) highlighted that AIS supports the completeness, timeliness, and reliability of financial reports, ensuring compliance with applicable regulations (Michael & Widjaja, 2024). Gebre & Gebremedhin (2019) affirmed that operational efficiency resulting from AIS usage can bolster SMEs' competitiveness in increasingly challenging markets.

However, despite the acknowledged benefits of AIS, its adoption rate among SMEs remains low, especially in developing countries like Indonesia (Le et al., 2018). This limited adoption is largely due to constraints such as insufficient capital, lack of technological knowledge, inadequate infrastructure, and resistance to change, which negatively impact their competitiveness and growth in an increasingly digital market (Aileen et al., 2019; Serhan, 2020). Most prior studies have focused on AIS's technical aspects or its impact on large enterprises without specifically linking it to financial governance in SMEs (Thuan et al., 2022; Trabulsi, 2018). There is a clear gap in the literature regarding how AIS implementation affects financial transparency and accountability within SMEs in the context of Industry 4.0.

To address this gap, the present study adopts the Governance Framework to explore the strategic role of AIS in enhancing financial transparency and accountability among Indonesian SMEs. Specifically, the research investigates whether the implementation of AIS positively influences these critical financial aspects, thereby contributing to SMEs' competitiveness and sustainability in the industry 4.0 era. By examining this relationship, the study seeks to provide insights into how technological adoption can improve financial governance in SMEs, offering valuable information for both practitioners and policymakers. The central research questions guiding this study are: does the implementation of AIS have a significant positive effect on the financial transparency of SMEs in the Industry 4.0 era? Furthermore, does it positively impact financial accountability? Based on these questions, it is hypothesized that the adoption of AIS positively and significantly affects both financial transparency and accountability of SMEs operating within this technological paradigm.

Using the Governance Framework, this study focuses on transparency and accountability as key outcomes of AIS implementation. By strengthening these elements, SMEs can achieve better financial governance, foster stakeholder trust, and improve decision-making processes. Additionally, the findings may inform policymakers in developing strategies to support SMEs in overcoming barriers to technology adoption, thereby contributing to a more inclusive and sustainable business ecosystem in Indonesia.

2. Research Method

This study employed a quantitative approach with convenience sampling, where 350 respondents were selected from SMEs in Banten Province, Indonesia, who were accessible and willing to provide information (Sekaran & Bougie, 2016). SMEs were included based on the criteria for business capital and annual sales outlined in Government Regulation (PP) No. 7 of 2021, as shown in Table 1. The respondents included business owners, financial managers, and financial administration staff involved in AIS implementation and financial management.

Table 1. Criteria for SMEs Based on PP No. 7 of 2021

Classification	Business Capital	Annual Sales
Micro	≤ 1 billion Rupiah	≤ 2 billion Rupiah
Small	1-5 Miliar Rupiah	2-15 billion Rupiah
Medium	5-10 Billion Rupiah	15-50 billion Rupiah

Source: PP No. 7 of 2021

Data were collected through a structured questionnaire consisting of 16 items measured on a 5-point Likert scale (1 = "strongly disagree" to 5 = "strongly agree"). The questionnaire was

divided into three sections: (1) demographic and business characteristics, such as business type and years of operation; (2) AIS implementation, with indicators assessing system quality, ease of use, and benefits for financial management; and (3) financial transparency and accountability, focusing on the accessibility of reports, reliability of information, and compliance with standards. The data collected were analyzed using Structural Equation Modeling - Partial Least Squares (SEM-PLS) to evaluate relationships between latent variables, following a two-step process to test measurement and structural models.

Construct validity was assessed using factor analysis, while reliability was confirmed with Cronbach’s alpha values above 0.7 for all constructs. Ethical approval was obtained from a university ethics committee prior to data collection. Respondents’ rights were safeguarded through confidentiality and voluntary participation, and all participants were informed about the purpose of the study with assurances of anonymity.

3. Results and Discussions

The findings of the study demonstrate the significant impact of Accounting Information Systems (AIS) on financial transparency and accountability in SMEs within Banten Province. The key results, including path coefficients, T-statistics, and R-Square values, are summarized in Table 2.

Table 2. Summary of Path Coefficients and R-Square Values

Variable Relationship	Path Coefficient	T-Statistic	P-Value	R-Square (%)
AIS → Financial Transparency	0.504	6.235	< 0.05	25.4
AIS → Financial Accountability	0.417	5.353	< 0.05	17.4

Source: Processed data, 2024

The path coefficients show a strong positive relationship between AIS and both financial transparency (0.504, T-statistic = 6.235, $P < 0.05$) and financial accountability (0.417, T-statistic = 5.353, $P < 0.05$). Additionally, the R-Square values indicate that AIS implementation explains 25.4% of the variance in financial transparency and 17.4% in financial accountability. These results confirm that AIS significantly enhances financial governance in SMEs.

AIS and Financial Transparency

AIS implementation significantly improves financial transparency by providing timely, accurate, and accessible financial information. The results align with prior studies that emphasize the role of AIS in reducing information asymmetry and increasing stakeholder trust. High path coefficients and T-statistics validate the positive perception of AIS among SMEs in Banten, particularly in enhancing report accessibility and accuracy.

AIS and Financial Accountability

AIS also strengthens financial accountability by ensuring compliance with standards and improving the reliability of financial reports. SMEs benefit from systematic financial management facilitated by AIS, which supports internal policy planning and decision-making. These findings highlight AIS as an essential tool for improving organizational governance.

Contribution to Literature

This study contributes to economic literature by providing empirical evidence on the role of AIS in SMEs within a developing region. Unlike studies that predominantly focus on large enterprises, this research emphasizes the unique challenges and opportunities faced by SMEs in adopting AIS, particularly in the context of Industry 4.0.

Practical Implications and Policy Recommendations

The findings underscore the need for targeted government support to enhance AIS adoption among SMEs. Policymakers should consider providing financial incentives and training programs to address barriers such as limited resources and technological resistance. Furthermore, SMEs should prioritize integrating AIS into their operations to improve financial governance and competitiveness.

Limitations and Future Directions

While AIS significantly impacts financial transparency and accountability, the relatively low R-Square values suggest that external factors, such as digital infrastructure and financial literacy, also play a role. Future research should explore these dimensions to develop a more comprehensive understanding of AIS adoption in SMEs.

4. Conclusions

This study demonstrates that the implementation of Accounting Information Systems (AIS) significantly enhances financial transparency and accountability among Small and Medium Enterprises (SMEs) in Banten Province. The findings confirm that AIS contributes to transparency by providing timely, accurate, and accessible financial data, enabling SMEs to meet stakeholder expectations and improve decision-making processes. Similarly, AIS strengthens financial accountability through the improved reliability of financial reports, compliance with standards, and support for systematic policy planning.

The analysis reveals that AIS implementation accounts for 25.4% of the variance in financial transparency and 17.4% in financial accountability. These results underscore the critical role of AIS in enhancing financial governance within SMEs. The remaining variance suggests the presence of additional factors beyond AIS that may influence transparency and accountability, which could be explored in future research.

In light of these findings, the study emphasizes the importance of supporting AIS adoption among SMEs. Initiatives such as providing subsidies, financial incentives, and training programs are essential to maximize the benefits of AIS implementation. This research contributes to a deeper

understanding of AIS's role in SMEs and highlights the potential of leveraging technology to enhance competitiveness and sustainability in the digital economy.

References

- Aileen, Hery, Widjaja, A. E., Purba, J. T., & Simanjuntak, K. G. (2019). Recording application with managerial prediction features for skenoo business. *IOP Conference Series: Materials Science and Engineering*, 508(1), 012133. <https://doi.org/10.1088/1757-899X/508/1/012133>
- Al-Hattami, H. M., Senan, N. A. M., Al-Hakimi, M. A., & Azharuddin, S. (2022). An empirical examination of AIS success at the organizational level in the era of COVID-19 pandemic. *Global Knowledge, Memory and Communication*, 73(3), 312–330. <https://doi.org/10.1108/GKMC-04-2022-0094>
- Al-Okaily, A., Teoh, A. P., Al-Okaily, M., Iranmanesh, M., & Al-Betar, M. A. (2023). The efficiency measurement of business intelligence systems in the big data-driven economy: A multidimensional model. *Information Discovery and Delivery*, 51(4), 404–416. <https://doi.org/10.1108/IDD-01-2022-0008>
- Bacca-Acosta, J., Gómez-Caicedo, M. I., Gaitán-Angulo, M., Robayo-Acuña, P., Ariza-Salazar, J., Suárez, Á. L. M., & Villamil, N. O. A. (2023). The impact of digital technologies on business competitiveness: A comparison between Latin America and Europe. *Competitiveness Review: An International Business Journal*, 33(7), 22–46. <https://doi.org/10.1108/CR-10-2022-0167>
- Baesens, B., Bapna, R., Marsden, J. R., Vanthienen, J., & Zhao, J. L. (2016). Transformational Issues of Big Data and Analytics in Networked Business. *MIS Quarterly*, 40(4), 807–818. <https://www.jstor.org/stable/26629677>
- Gebre, T., & Gebremedhin, Dr. B. (2019). The mutual benefits of promoting rural-urban interdependence through linked ecosystem services. *Global Ecology and Conservation*, 20, e00707. <https://doi.org/10.1016/j.gecco.2019.e00707>
- Halabi, H., Alshehabi, A., & Zakaria, I. (2019). Informal institutions and managers' earnings management choices: Evidence from IFRS-adopting countries. *Journal of Contemporary Accounting & Economics*, 15(3), 100162. <https://doi.org/10.1016/j.jcae.2019.100162>
- Julianto, I. P., Pasek, N. S., & Wiguna, I. G. N. H. (2020). *The Effectiveness of the Application of Artificial Intelligence-Based Accounting Information Systems at SMEs in Singaraja*. 212–222. <https://doi.org/10.2991/aebmr.k.201212.029>
- Kimani, B. (2024). Influence of Accounting Information Systems (AIS) on Financial Reporting Accuracy. *ResearchGate*. <https://doi.org/10.47672/ajacc.1787>
- Le, H. T. M., Tran, P. T. H., & Tran, L. D. T. (2018). Factors influencing the effectiveness of the accounting information system: A case from Vietnamese firms. *Journal for Global Business Advancement*, 11(5), 587–609. <https://doi.org/10.1504/JGBA.2018.097374>
- Lopung, T. M., & Rulindo, R. (2023). Accounting Information System and SMEs' Financial Performance in Indonesia. *Jurnal Akuntansi*, 15(2), 2. <https://doi.org/10.28932/jam.v15i2.6607>

- Michael, & Widjaja, W. (2024). *Unlocking Financial Reliability: AIS Contributions to Financial Statement Quality in Indonesian Retail Context*. <https://doi.org/10.32486/aksi.v9i2.685>
- Mohammad, A. A. (2018). An exploration of accounting information system's role in SMEs failure triangular. *International Journal of Agile Systems and Management*, 11(2), 155–178. <https://doi.org/10.1504/IJASM.2018.092546>
- Romney, M. B., & Steinbart, P. J. (2017). *Accounting Information Systems, Global Edition*. Pearson Education.
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill-building approach* (Seventh edition). John Wiley & Sons.
- Semaniuk, V., & Melnyk, N. (2022). Impact of digital technologies on the business information environment in the context of the fifth industrial revolution. *Herald of Economics*, 3, 3. <https://doi.org/10.35774/visnyk2022.03.203>
- Serhan, A. (2020). Development Of Accounting Information Systems And The Barriers Faced In Developing Nations. *Business Excellence and Management*, 10, 84–96. <https://ideas.repec.org/a/rom/bemann/v10y2020i2p84-96.html>
- Shaikh, A. A., Nasir Patel, A., Shaikh, M. Z., & Chavan, C. R. (2022). SLRA: Challenges faced by SMEs in the adoption of E-commerce and sustainability in Industry 4.0. *Acta Universitatis Bohemiae Meridionalis*, 24(3), 15–38. <https://doi.org/10.32725/acta.2021.010>
- Susilowati, D., Suyono, E., Rusmana, O., Wiratno, A., & Setyorini, C. T. (2023). Accounting information system implementation in batik small and medium-sized enterprises. *Corporate and Business Strategy Review*, 4(2, special issue), 326. <https://virtusinterpress.org/Accounting-information-system-implementation-in-batik-small-and-medium-sized-enterprises.html>
- Thuan, P. Q., Khuong, N. V., Anh, N. D. C., Hanh, N. T. X., Thi, V. H. A., Tram, T. N. B., & Han, C. G. (2022). The Determinants of the Usage of Accounting Information Systems toward Operational Efficiency in Industrial Revolution 4.0: Evidence from an Emerging Economy. *Economies*, 10(4), 4. <https://doi.org/10.3390/economies10040083>
- Trabulsi, R. U. (2018). The Impact of Accounting Information Systems on Organizational Performance: The Context of Saudi's SMEs. *International Review of Management and Marketing*, 8(2), 2. <https://www.econjournals.com/index.php/irmm/article/view/6221>
- Urquía Grande, E., Pérez Estébanez, R., & Muñoz Colomina, C. (2011). The impact of Accounting Information Systems (AIS) on performance measures: Empirical evidence in Spanish SMEs. *The International Journal of Digital Accounting Research*, 11. https://doi.org/10.4192/1577-8517-v11_2
- Xiao, C. (2023). How Has the Digital Transformation Affected the Organization and Operation of a Business. *Law and Economy*, 2(10), 10. <https://www.paradigmpress.org/le/article/view/839>
- Xu, X. (2020). Application Research of Accounting Archives Informatization Based on Big Data. In C. Huang, Y.-W. Chan, & N. Yen (Eds.), *Data Processing Techniques and Applications for Cyber-Physical Systems (DPTA 2019)* (pp. 55–62). Springer. https://doi.org/10.1007/978-981-15-1468-5_9