

The impact of digitalization in accounting systems on information quality, cost reduction and decision making: Evidence from SMEs

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ABSTRACT

Accounting systems have experienced significant developments, including sophisticated software applications, automation, big data, data analytics, and so on. The purpose of this study is to examine the effect of digitalization of accounting systems on the quality of accounting information and the effectiveness of management decision making in small and medium enterprises (SMEs) in a developing country, Indonesia. Based on the innovation diffusion theory, the hypothesis states that digitalization of the accounting system can improve accuracy and timeliness, cost reduction, and decision making. Data were obtained from questionnaire surveys to SMEs who had implemented the digitalization of the accounting systems. The results showed that the digitalization of the accounting systems had a positive effect on the accuracy and timeliness of accounting information and cost reduction. Furthermore, these two variables had a positive effect on the effectiveness of SME management decision making.

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1. Introduction

Small and medium enterprises (SMEs) play an important role in the country's economy in various aspects, such as labor, number of business units, and contributions to gross domestic product (Pham & Vu, 2022; Al Hattami et al., 2022; Mahliza et al., 2017). The empowerment of SMEs is very strategic because it has the potential to drive the economy of developing countries, including Indonesia, as seen from the size of the total business unit with the absorption of labor and its contribution to GDP. However, SMEs are often characterized by lagging technology, relatively less capital and limited resources related to finance, market access, and market information (Yoshino & Taghizadeh-Hesary, 2016). In order to improve the performance of these SMEs, the Indonesian government is working to encourage the improvement of national SME performance, one of which is through a digitalization strategy with a target of 30 million SMEs go digital by 2024.

The accounting system as a business language has contributed directly by supporting management decision making. The increase in the use of computers and the rapid development of information technology have had a positive effect on accounting with advanced accounting applications and programs (Tawfik et al., 2022). SMEs often do not have an adequate accounting system even though the accounting system can mitigate the causes of crises and bankruptcies and support strategic turnaround (Kuttner et al., 2022). SMEs are often unable to implement adequate accounting systems due to resource limitations such as financial and human resources (Mitter et al., 2020; Kuttner et al., 2022). SMEs' decision-making and control are often not supported by relevant accounting information. Although the need for accounting information for SMEs management in

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decision making continues to increase, their use in SMEs is much smaller than large companies (Lavi Lopez and Hiebl, 2015; Kuttner et al., 2022).

Digitalization is "the use of digital technologies to change a business model and provide new revenue and value-producing opportunities; it is the process of moving to a digital business" (Gartner, 2022). Digitalization can form and manage accounting systems at low cost with sophisticated technology infrastructure. The development indicates that traditional accounting procedures such as paper, receipts, registration, worksheets will no longer be used. Digitalization is implemented through internet-based accounting systems such as cloud computing systems and block chain technology (Ghobakhloo et al., 2022). Digitalization makes preparation of accounts more efficient and effective, reduces errors, is more timely, accesses more detailed and updated information (Ghobakhloo et al., 2022). This development is the application of digital accounting applications such as extended business reports and database management systems. Previous research on the role of digitalization of accounting systems in supporting decision making has been widely conducted but for a sample of large and established companies, so it is still an important research question how useful it is for SMEs (Bisbe and Malagueno, 2009; Pedroso and Gomes, 2020; Kuttner et al., 2022). This study contributes to filling in the research gap by analyzing the role of digitizing the accounting system to support decision making for SMEs management with the attributes of accounting information quality; namely accuracy, timeliness, and cost reduction.

2. Literature Review

2.1 Digitalization of the accounting system

Digitalization can form and manage accounting systems at low cost with sophisticated technology infrastructure. The development indicates that traditional accounting procedures such as paper, receipts, registration, worksheets will no longer be used. Digitalization is implemented through internet-based accounting systems such as cloud computing systems and block chain technology (Ghobakhloo et al., 2022). Digitalization makes preparation of accounts more efficient and effective, reduces errors, is timelier, accesses more detailed and updated information (Ghobakhloo et al., 2022). This development is the application of digital accounting applications such as extended business reports and database management systems. Digitalization also shows the real-time processing of structured and unstructured data from numerous sources within non-relational databases or structured data memories by using intelligent algorithms (Heimel & Müller, 2019, p. 398).

Digitalization provides various benefits for accounting, including from enhanced quality, efficiency, speed, and better decision-making to value-added potentials and newly available resources (Heimel and Müller, 2019.) Digitalization in management accounting has a real impact on how companies carry out their activities, especially with the rise of the internet, mobile technologies, and digital economy tools (Bhimani, 2020).

2.2 Hypothesis Development

Fig. 1 presents this research model which is built on the innovation diffusion theory.

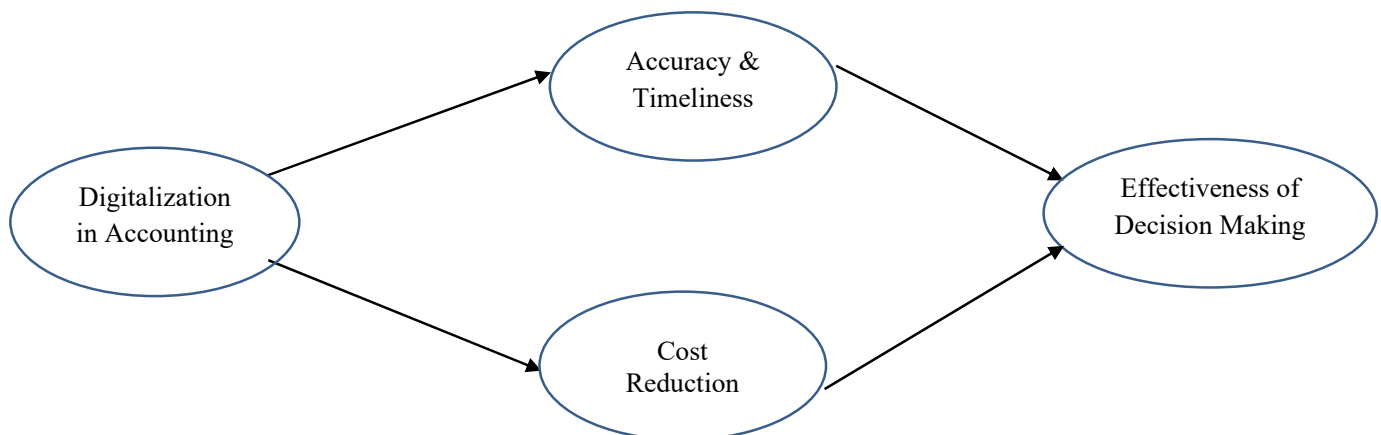


Fig. 1. Research Model

The development of technology makes online reporting feasible, making it easier for management to access and use financial information easily and quickly. Digitalization in accounting systems assists in automating financial reports and information processing. Implementation of digitalization in the accounting system represents one of the best solutions for the sustainable development of SMEs (Pham & Vu, 2022). Digitalization is an advanced form of the accounting information system (AIS) which includes automation, internet connectivity, big data, paperless process, data analytics, and artificial intelligence (Mezghani & Aloulou, 2019; Pham & Vu, 2022). By avoiding the need to manually process data from various documents, SMEs can reduce human effort to collect, calculate, review, check, and interpret financial data. Automation in the financial

reporting process can reduce the risk of human error, thereby increasing accuracy and timeliness. The results of previous studies related to the digitalization of financial reporting such as the XBRL increases the efficiency and timeliness of financial reporting due to an automated process (Amin et al., 2018; Du & Wu, 2018; Weissmueller & Johnson, 2014; Yoon & Lee, 2011). Based on the innovation diffusion theory, the digitalization of the accounting system is an innovation in the accounting field that can be used in reducing company costs. Digitalization of the accounting system helps companies in reducing production costs. This is because digitalization of the management accounting system can provide detailed and accurate budget calculations and cost information so that companies can budget, control, and evaluate company performance more effectively and efficiently (Bataineh, 2018). In line with Bataineh's (2018), the research results of Bshayreh and Hamour (2020) also show that the use of computer-based accounting systems positively and significantly affects the reduction of indirect industrial costs in Jordanian chemical industry companies.

The results of previous studies show empirical evidence that high quality accounting information can increase its usage and user satisfaction in decision making (Owusu et al., 2022; Al-Hattami et al., 2022). In the context of developing countries, the high quality of accounting information should be a major concern to encourage SMEs management in using it in business decision making. Cost reduction is an effort to regulate activities related to the production process that aim to suppress/reduce production costs by eliminating cost expenditures that are not effective or should not be incurred, resulting in minimal cost expenditures with maximum profit (Nikmatullah & Widarsono, 2014). Accounting information about cost reduction can support effective decision making, including operational efficiency and strategic choice.

H₁: *Digitalization in the accounting system has a positive effect on accuracy and timeliness.*

H₂: *Digitalization in the accounting system has a positive effect on cost reduction.*

H₃: *Accuracy-timeliness has a positive effect on the effectiveness of decision making.*

H₄: *Cost reduction has a positive effect on the effectiveness of decision making.*

3. Method

3.1. Population and Sample

This study focuses on the implementation of digitalization of the accounting system in SMEs in Semarang City, Central Java Provincial Government, Indonesia. The research setting of SMEs in Semarang City was chosen because it received the best city award in implementing sustainable development goals (SDGs) in Indonesia in 2022, including an indicator of support for SMEs. The growth of Small and Medium Enterprises (SMEs) in Semarang City is very large. Based on data obtained from the Semarang City Cooperatives and SMEs Office, the number of SMEs recorded in Semarang City is 1,177 business units. The development of SMEs in Semarang City is also inseparable from the digitalization of the economy that the Semarang City Government continues to strive for.

The target population of this study is SME-scale entities that have implemented the digitalization of the management accounting system in Semarang City. Based on initial contacts, out of 1,177 SMEs, there were 120 SMEs that had implemented DIMAS which were the targets of the questionnaire survey. This data shows that there are still low SMEs implementing digitalization in the management accounting system in Semarang City, which is the best city in support of SMEs, because only 10.20% of the total SMEs. This finding confirms the data that although the number of SMEs in Indonesia is the largest in the ASEAN region, in terms of performance it still lags other countries. The Indonesian government continues to encourage digitalization in SMEs with a target of at least 30 million SMEs will enter the digital economy by 2024.

3.2. Variable's measurement

All variables in this study were measured using a five-point Likert scale (ranging from 1 equal to strongly disagree to 5 equals to strongly agree). The digitalization in accounting system variables is measured by 4 indicators adopted from the research of Amanamah et al. (2016), Thuan et al. (2022), and Pham and Vu (2022). Accuracy-timeliness variables were measured using 3 indicators by adopting the research of Al-Hattami et al. (2022). The measurement of cost reduction used 5 indicators adopted from Taylor (2016) and Tomic et al. (2018). The effectiveness of decision-making variables was measured by 5 indicators from Butterfield (2016) and Al-Hattami et al. (2022).

3.3 Data Analysis

Data analysis in this study used a Structural Equation Model approach with Partial Least Square (PLS-SEM) method. The software used was Warp PLS 8.0. PLS is one method to implement structural equation models. The reason for using PLS is because the purpose of this study is to examine the relationship between variables that are unobserved or latent as measured by several indicators and relatively complex models with exogenous/independent, moderating, and endogenous/dependent variables (Hair et al., 2017; Nitzl, 2016; Kock, 2020).

4. Results

4.1 Sample description

The questionnaire survey was carried out directly by visiting the location of SMEs, while online survey was carried out by sending a google form link. The research respondents in this study were SME management/owners in Semarang City who had used digitalization of management accounting systems in their business processes. The questionnaires collected on time (prior to cut-off time) were 96 questionnaires, while there were 7 questionnaires collected after the cut off time. The response rate in the questionnaire distribution in this study was 85.83%, while the usable response rate in this study was 81.67%. The details of questionnaire collection are shown in Table 1.

Table 1
Questionnaire survey results

Description	Total
Questionnaire to be submitted	120
Questionnaires collected prior to <i>cut off</i> time	96
Questionnaires collected after the <i>cut off</i> time	7
Uncollected questionnaires	17
The questionnaire dropped because they were incomplete or defective	5
Questionnaire used	98
Response Rate (%)	85.83%
Usable Response Rate (%)	81.67%

4.2. Results of Hypothesis Testing

The first stage in the PLS-SEM analysis is to evaluate the measurement model to ensure that the construct reliability and validity criteria are met (Hair et al., 2017; Kock, 2020). The results in Table 2 show that construct reliability is met with composite reliability value and Cronbach alpha is in the acceptable range of more than 0.70 (Hair et al., 2017; Kock, 2020). Convergent validity was met by loading factors for all individual items in the acceptable criteria, which were more than 0.70 and significant (p-values <0.01). Likewise, the Average Variance Extracted (AVE) values are all more than 0.50 indicating acceptable convergent validity.

Table 2
Reliability and validity test results

Variables	Composite Reliability	Cronbach's Alpha	Loading range	AVE
Digitalization	0.931	0.901	0.870-0.906	0.771
Accuracy-timeliness	0.921	0.872	0.886-0.915	0.796
Cost Reduction	0.927	0.902	0.816-0.886	0.719
Decision Making	0.950	0.934	0.877-0.899	0.791

Discriminant validity testing is carried out by comparing square root AVE with the correlation between constructs (Nitzl 2016; Hair et al., 2017; Kock, 2020). The results in table 3 show that the square root AVE in the diagonal column is higher than the correlation between constructs (numbers in the same column) so that the discriminant validity criteria are met (Hair et al., 2017; Kock, 2020).

Table 3
Discriminant validity test results

Variables	DIMAS	Accuracy-timeliness	Cost Reduction	Decision Making
DIMAS	(0.878)	0.834	0.714	0.722
Accuracy-timeliness	0.834	(0.892)	0.727	0.720
Cost Reduction	0.714	0.727	(0.848)	0.775
Decision Making	0.722	0.720	0.775	(0.890)

After the results of the measurement model test met the requirements, the structural model test was then carried out for hypothesis testing. The results of the structural model test for PLS-SEM are presented in Fig. 2.

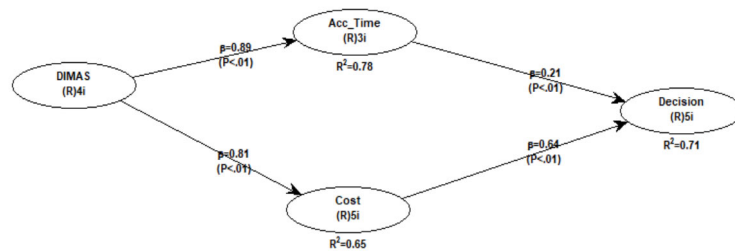


Fig. 2. Results of the structural model of PLS-SEM

Table 4 presents the results of the PLS-SEM structural model and hypothesis testing. As shown in table 4 of H1-H4 is supported. Digitalization has a positive effect on the accuracy and timeliness of the quality of accounting information with a standardized coefficient of 0.886 and significant ($p < 0.001$) so that H1 is supported. Hypothesis 2 is also supported that one standard deviation of improvement in digitalization can lead to 0.808 increase in *cost reduction* (significant with $p < 0.001$). PLS-SEM results also showed support for H3 with standardized coefficient of 0.212 and significant ($p = 0.003$). Likewise, H4 that cost reduction has a positive effect on the effectiveness of decision making is supported (coefficient 0.641 and statistically significant).

Table 4

Path coefficients and p-values results

Structural/hypothesized paths	Coefficient	p-value	Conclusion
Digitalizing → Accuracy-timeliness	0.886	<0.001	H1 supported
Digitalization → Cost reduction	0.808	<0.001	H2 supported
Accuracy-timeliness → Decision making	0.212	0.003	H3 supported
Cost reduction → Decision making	0.643	<0.001	H4 supported

The results of this study provide empirical evidence on the importance of digitizing management accounting systems for SMEs management. Digitalization can automate the process of collecting, processing, and providing accounting information and reduce errors so that quality criteria of accuracy and timeliness can be achieved (Pedroso and Gomes, 2020). The empirical evidence of this study also shows that digitalization of the accounting system can cause companies to be more effective and efficient (Bataineh, 2018). The results of this study also provide empirical evidence that accurate and timely accounting information can reduce costs for SMEs. These results support the research of Lawal et al. (2022) that an accurate and timely *accounting information system* can help companies to reduce costs and increase efficiency. The test results also show high-quality accounting information, shown accurately and timely, and can reduce costs, have a positive effect on the effectiveness of decision making for SMEs.

5. Conclusion

The results of this study contribute by providing empirical evidence of the importance of digitalization for SMEs to improve the quality of information and managerial decision making in the industrial revolution 4.0 era. This study concludes that digitalization in the accounting system in SMEs in Indonesia can improve the quality of information accuracy and timeliness as well as cost reduction. Furthermore, these two attributes can improve the effectiveness of decision making by SME management. Accurate accounting information can be used by management for efficiency and cost reduction purposes.

This study has limitations, among others, in sample size due to data sources based on surveys and interviews with 98 SMEs who have implemented the digitalization of the accounting system. For generalization purposes, a larger sample size might be more useful. However, given that this study focuses on SMEs that have implemented the digitalization of the accounting system, the results may not be significantly different from the larger sample. This research also has limitations inherent in the questionnaire survey method, personal bias and judgment error from responses. This study has sought to minimize these biases, among others, with answers that are anonymous and guaranteed confidentiality as well as reverse questions techniques.

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