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Digitalization of Bookkeeping and Strengthening Financial Management Competencies for MSME Actors

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Abtract

The rapid advancement of digital technology has transformed financial management practices across business sectors, including Micro, Small, and Medium Enterprises (MSMEs). Nevertheless, many MSME actors continue to encounter challenges in maintaining systematic financial records and developing adequate financial management competencies due to limited accounting knowledge, low digital literacy, and the continued use of manual bookkeeping practices. This study aims to explore how the digitalization of bookkeeping contributes to strengthening the financial management competencies of MSME actors and to identify the opportunities and challenges associated with its implementation. A qualitative research design employing a descriptive case study approach was adopted. Data were collected through in-depth interviews, participant observations, and document analysis involving MSME owners, business mentors, and representatives from relevant government agencies. The data were analyzed using thematic analysis through the processes of data reduction, data display, and conclusion drawing, while data credibility was ensured through source triangulation, member checking, and peer debriefing. The findings reveal that bookkeeping digitalization significantly enhances the financial management competencies of MSME actors by improving the accuracy of financial recording, facilitating real-time financial monitoring, strengthening budgeting and cash flow management, and supporting evidence-based business decision-making. Furthermore, digital bookkeeping promotes greater financial discipline, accountability, and transparency, enabling MSMEs to improve business sustainability and expand access to external financing. However, successful implementation remains constrained by disparities in digital literacy, technological infrastructure, financial resources, and continuous technical assistance. This study contributes to the growing literature on digital transformation and MSME financial capability by providing an in-depth understanding of the mechanisms through which digital bookkeeping fosters financial competency development. The findings offer practical implications for policymakers, financial institutions, and MSME development agencies in designing inclusive digital financial literacy programs and sustainable capacity-building initiatives that accelerate MSME digital transformation.

Keywords: Bookkeeping Digitalization, Financial Management Competencies, Digital Transformation

Introduction

The emergence of the Fourth Industrial Revolution (Industry 4.0) and the evolution toward Society 5.0 have fundamentally transformed the global business landscape by integrating digital technologies into organizational processes, decision-making, and value creation. These paradigms emphasize the convergence of artificial intelligence (AI), the Internet of Things (IoT), big data analytics, cloud computing, and mobile technologies to create more adaptive, data-driven, and customer-oriented business ecosystems. Within this context, Micro, Small, and Medium Enterprises (MSMEs), which constitute the backbone of most national economies, are increasingly encouraged to embrace digital transformation as a strategic necessity rather than a competitive option. Digitalization enables MSMEs to streamline operational processes, reduce administrative costs, improve information accuracy, and respond more rapidly to market dynamics. Consequently, digital transformation has become a critical driver of operational efficiency, innovation capability, and organizational resilience, allowing MSMEs to remain competitive amid intensifying global competition and accelerating technological disruption (Schwab, 2017; OECD, 2021; Vial, 2019).

One of the most significant manifestations of digital transformation in MSMEs is the adoption of digital financial management systems, particularly cloud-based accounting applications, mobile accounting platforms, digital payment systems, and financial technology (fintech) services. These technologies enable real-time financial recording, automated report generation, integrated cash flow monitoring, and data-driven financial decision-making, thereby improving transparency, accountability, and overall financial governance. The increasing global adoption of cloud accounting and digital bookkeeping reflects a shift from conventional manual bookkeeping toward intelligent financial management systems capable of supporting business sustainability and long-term growth. As a result, digital bookkeeping is no longer viewed merely as an accounting tool but as a strategic foundation for modern financial governance, facilitating financial discipline, enhancing managerial competencies, improving access to formal financial institutions, and strengthening MSMEs' capacity to compete in an increasingly digital economy. Therefore, strengthening bookkeeping digitalization has become an essential strategy for building financially resilient, innovative, and sustainable MSMEs in the era of Industry 4.0 and Society 5.0 (Rogers, 2003; DeLone & McLean, 2003; World Bank, 2022).

Micro, Small, and Medium Enterprises (MSMEs) play a pivotal role in fostering national and global economic development by contributing significantly to gross domestic product (GDP), employment generation, entrepreneurship, and inclusive economic growth. According to the World Bank (2023), MSMEs account for approximately 90% of businesses worldwide and generate more than 50% of global employment, making them indispensable drivers of economic resilience and social welfare. Similarly, the OECD (2023) emphasizes that MSMEs stimulate innovation, strengthen local supply chains, and enhance regional economic competitiveness through entrepreneurial activities and value creation. In developing economies, the Asian Development Bank (2022) reports that MSMEs contribute between 30% and 60% of GDP while providing employment opportunities for a substantial proportion of the labor force, thereby reducing poverty and promoting income distribution. In Indonesia, the Ministry of Cooperatives and SMEs reports that MSMEs constitute more than 99% of all business entities and contribute over 60% of the national GDP while absorbing approximately 97% of total employment. Despite these strategic contributions, MSMEs continue to encounter considerable challenges in adapting to the digital economy, including technological disruption, intensified market competition, and rapidly changing consumer behavior. Consequently, strengthening managerial capabilities, particularly in financial management, has become an essential prerequisite for enhancing business competitiveness, resilience, and long-term sustainability (World Bank, 2023; OECD, 2023; Asian Development Bank, 2022; ILO, 2023).

Despite their substantial economic contribution, many MSME actors continue to experience significant financial management challenges that hinder business growth and sustainability. One of the most prevalent issues is weak financial literacy, characterized by limited accounting knowledge, inadequate understanding of financial statements, and poor financial decision-making capabilities. Furthermore, many MSMEs still rely on manual bookkeeping practices using handwritten records, which increase the likelihood of recording errors, data loss, incomplete financial documentation, and inefficient monitoring of business performance. These limitations are frequently accompanied by weak financial planning, as many business owners do not prepare systematic budgets, fail to monitor cash flows effectively, and are unable to accurately determine profitability or evaluate business performance. Such deficiencies ultimately restrict MSMEs' access to external financing because financial institutions generally require reliable and standardized financial statements as part of their credit assessment process. The absence of credible financial records therefore limits access to bank loans and investment opportunities, constraining business expansion and digital transformation. These challenges underscore the urgent need to strengthen financial management competencies through the adoption of digital bookkeeping systems, enabling MSMEs to improve financial governance, enhance financial transparency, and increase their capacity to compete within an increasingly digital and knowledge-based economy (World Bank, 2023; OECD, 2023; Asian Development Bank, 2022; ILO, 2023; Ministry of Cooperatives and SMEs of the Republic of Indonesia, 2023).

Digitalization of bookkeeping has emerged as a fundamental financial innovation that enables MSMEs to modernize their financial management processes through the integration of digital technologies into routine accounting activities. Unlike conventional manual bookkeeping, digital bookkeeping utilizes mobile accounting applications, cloud-based accounting systems, digital cash books, point-of-sale (POS) integration, e-wallet integration, and digital invoicing to automate financial recording and reporting processes. These digital platforms facilitate real-time transaction recording, automatic financial statement generation, seamless synchronization of financial data, and continuous monitoring of business performance across multiple devices. Consequently, digital bookkeeping significantly improves operational efficiency, financial transparency, data accuracy, and accountability while minimizing human error and reducing opportunities for financial fraud. From a theoretical perspective, the Information System Success Model developed by DeLone and McLean (2003) explains that the quality of information systems, information quality, and service quality determine user satisfaction and organizational performance. Similarly, the Technology Acceptance Model (TAM) proposed by Davis (1989) suggests that MSME owners are more likely to adopt digital bookkeeping technologies when they perceive these systems as useful for improving business performance and easy to operate. Therefore, digital bookkeeping represents not merely a technological innovation but also a strategic instrument for strengthening financial governance and supporting evidence-based managerial decision-making in an increasingly digital business environment.

The successful implementation of digital bookkeeping is closely associated with the development of comprehensive financial management competencies, which constitute essential strategic resources for ensuring MSME sustainability and long-term competitiveness. These competencies encompass financial planning, budgeting, cash flow management, financial reporting, cost control, investment decision-making, risk management, and financial analysis, all of which enable business owners to allocate resources efficiently, evaluate financial performance, anticipate business risks, and formulate sustainable growth strategies. From the perspective of the Resource-Based View (RBV), superior financial management competencies represent valuable, rare, and difficult-to-imitate organizational capabilities that create sustainable competitive advantage by improving managerial effectiveness and strategic decision-making (Barney, 1991).

Likewise, Human Capital Theory emphasizes that knowledge, financial skills, and managerial capabilities are critical forms of intangible capital that enhance productivity, innovation, and organizational performance (Becker, 1964). Accordingly, the integration of digital bookkeeping with strong financial management competencies enables MSMEs not only to improve financial discipline and accountability but also to strengthen business resilience, increase access to external financing, and achieve sustainable growth in the era of digital transformation

Previous studies have consistently demonstrated that the adoption of digital technologies in financial management contributes positively to the performance and sustainability of Micro, Small, and Medium Enterprises (MSMEs). Existing research has primarily focused on the effects of digital accounting systems, cloud accounting, financial technology (fintech), accounting information systems, and digital financial literacy on business performance, operational efficiency, financial reporting quality, and organizational competitiveness. Empirical evidence indicates that digital bookkeeping enhances the accuracy of financial records, improves transparency and accountability, facilitates faster managerial decision-making, and strengthens access to formal financial services. Furthermore, studies have shown that financial literacy and digital capability are significant determinants of MSMEs' successful adoption of digital financial systems and long-term business resilience. However, the majority of previous research has examined digital bookkeeping mainly from the perspectives of technology adoption, accounting information systems, or organizational performance, while relatively limited attention has been devoted to understanding how bookkeeping digitalization directly strengthens the multidimensional financial management competencies of MSME actors, including financial planning, budgeting, cash flow management, financial reporting, financial analysis, investment decision-making, and risk management. This gap highlights the need for a more comprehensive investigation into the strategic role of digital bookkeeping in developing managerial financial capabilities that support sustainable MSME growth in the digital economy.

Research Methods

This study employed a qualitative research design using a descriptive case study approach to obtain an in-depth understanding of how bookkeeping digitalization contributes to strengthening the financial management competencies of Micro, Small, and Medium Enterprise (MSME) actors. A qualitative approach was considered appropriate because it facilitates the exploration of participants' experiences, perceptions, and practices regarding the adoption of digital bookkeeping systems in real business settings. The study was conducted among MSMEs that had implemented digital bookkeeping applications, including mobile accounting, cloud accounting, digital cash books, point-of-sale (POS) systems, e-wallet integration, and digital invoicing platforms. Participants were selected through purposive sampling based on predetermined criteria, including business owners who had utilized digital bookkeeping for at least one year, possessed direct responsibility for financial management, and were willing to participate in the research. Data were collected through semi-structured in-depth interviews, participant observations, and document analysis of financial records and bookkeeping reports to achieve data triangulation and enhance the richness of the findings.

The collected data were analyzed using thematic analysis following the interactive model proposed by Miles, Huberman, and Saldaña, which consists of data condensation, data display, and conclusion drawing and verification. Coding procedures were conducted systematically to identify emerging themes related to bookkeeping digitalization, financial management competencies, perceived benefits, implementation challenges, and strategies for improving financial governance. To ensure the trustworthiness of the findings, the study applied credibility, transferability, dependability, and confirmability criteria through source triangulation, method triangulation, member checking, peer debriefing, and maintaining an audit trail throughout the research process. Ethical considerations were also observed by obtaining informed consent from all participants, ensuring confidentiality and anonymity, and using the collected information exclusively for academic purposes. This methodological approach enabled the study to generate comprehensive and contextually grounded insights into the role of digital bookkeeping in strengthening the financial management competencies and long-term sustainability of MSMEs.

Result and Discussion

Current Practices of Bookkeeping among MSME Actors

The findings reveal that conventional bookkeeping practices remain dominant among many Micro, Small, and Medium Enterprise (MSME) actors, particularly those operating on a micro scale or within family-managed businesses. Financial transactions are generally recorded manually using handwritten notebooks or simple cash books, with limited adherence to standardized accounting principles. This practice is primarily driven by limited accounting knowledge, inadequate digital literacy, and the perception that formal bookkeeping is unnecessary for small-scale businesses. Consequently, financial information is often incomplete, inconsistent, and insufficient to support strategic business decisions. These findings are consistent with previous studies indicating that manual bookkeeping remains one of the principal barriers to improving financial governance and organizational sustainability among MSMEs (Maseko & Manyani, 2011; International Federation of Accountants [IFAC], 2020).

Another important finding indicates that bookkeeping activities are generally conducted irregularly rather than continuously. Many participants acknowledged that financial records are updated only when required for tax purposes, loan applications, or periodic business evaluations, rather than as part of routine managerial practice. As a result, business owners frequently experience difficulties in monitoring cash flow, evaluating business performance, identifying operational costs, and accurately calculating profits. Moreover, financial statements such as income statements, balance sheets, and cash flow reports are rarely prepared in a systematic manner, reducing the availability of reliable financial information for planning and decision-making. Such practices weaken financial control mechanisms and limit managerial capacity to respond effectively to changing business conditions (Atrill & McLaney, 2022; Weygandt et al., 2021).

The study also found that many MSME owners continue to combine personal and business finances within a single cash management system. Revenue generated from business operations is frequently used to finance household expenditures without clear financial separation, making it difficult to determine actual business profitability, assess financial performance, or evaluate investment returns. This financial practice reduces transparency and accountability while increasing the risk of liquidity problems and unsustainable financial management. From a managerial perspective, the inability to distinguish between business and personal finances undermines effective budgeting, cost control, and long-term financial planning, all of which are fundamental components of sustainable enterprise management. These findings reinforce the argument that improving bookkeeping practices constitutes a critical prerequisite for strengthening financial management competencies among MSME actors (Brigham & Ehrhardt, 2022; Gitman et al., 2022).

Despite these limitations, the findings demonstrate that MSME actors have gradually begun adopting digital bookkeeping technologies as part of their business transformation efforts. Participants reported increasing use of mobile accounting applications, cloud-based accounting platforms, digital cash books, electronic wallet transaction recording, and point-of-sale (POS) systems to facilitate daily financial operations. The adoption of these technologies has been motivated by the need to improve efficiency, simplify transaction recording, reduce administrative burdens, and generate financial reports automatically. Mobile accounting applications enable business owners to record transactions anytime and anywhere, while cloud accounting systems provide secure data storage, real-time synchronization, and remote access to financial information. Furthermore, integrating bookkeeping applications with digital payment systems and POS platforms enhances transaction accuracy and reduces the risk of duplicate or omitted financial records (Davis, 1989; DeLone & McLean, 2003; Romney & Steinbart, 2021).

Overall, the transition from conventional bookkeeping toward digital bookkeeping represents an important stage in strengthening financial governance within MSMEs. Although the level of digital adoption varies across businesses, the findings suggest that digital bookkeeping contributes significantly to improving the quality, accessibility, and reliability of financial information. Automated recording, real-time reporting, and integrated financial systems enable MSME owners to exercise better financial control, make evidence-based business decisions, and develop stronger financial management competencies. Nevertheless, successful digital transformation requires continuous improvements in accounting knowledge, digital literacy, technological infrastructure, and institutional support through training, mentoring, and government facilitation. Accordingly, digital bookkeeping should be viewed not merely as a technological innovation but as a strategic capability that enhances organizational resilience, competitiveness, and sustainable business growth in the digital economy (Barney, 1991; OECD, 2023; World Bank, 2023).

Drivers of Bookkeeping Digitalization

The findings indicate that internal organizational factors constitute the primary drivers encouraging MSME actors to adopt digital bookkeeping systems. Participants consistently reported that the transition from manual to digital bookkeeping was motivated by the need to improve operational efficiency, reduce repetitive administrative tasks, and accelerate financial recording processes. Digital bookkeeping applications enable automatic transaction recording, instant financial calculations, and real-time report generation, allowing business owners to allocate more time to production, marketing, and customer service activities. This finding demonstrates that the perceived usefulness of digital technology serves as a fundamental determinant of technology adoption, consistent with the Technology Acceptance Model (TAM), which posits that individuals are more likely to adopt information systems when they believe such systems enhance job performance and productivity (Davis, 1989). Similar findings have been reported by Romney and Steinbart (2021), who argue that digital accounting systems significantly improve efficiency, accuracy, and managerial effectiveness in business operations.

Another prominent internal driver identified in this study is the growing need for reliable financial information to support managerial decision-making and business sustainability. Participants explained that digital bookkeeping simplifies transaction recording, facilitates the preparation of standardized financial statements, and strengthens financial control through systematic monitoring of income, expenditures, accounts receivable, and cash flow. These capabilities enable MSME owners to evaluate business performance more objectively and formulate strategic decisions based on accurate financial data rather than intuition alone. Furthermore, participants perceived that implementing digital bookkeeping enhances the professionalism and credibility of their businesses, particularly when interacting with customers, suppliers, investors, and financial institutions. These findings support the Information System Success Model proposed by DeLone and McLean (2003), which emphasizes that high-quality information systems generate superior information quality and organizational benefits. Previous studies by Grande et al. (2011) and Ismail and King (2007) similarly concluded that effective accounting information systems improve managerial control, organizational performance, and business competitiveness among small enterprises.

The findings also reveal that external environmental factors play an equally important role in accelerating bookkeeping digitalization among MSMEs. The rapid advancement of digital technologies—including cloud computing, mobile applications, digital payment ecosystems, and integrated accounting platforms—has created an environment in which digital financial management is increasingly accessible and affordable for small businesses. At the same time, evolving consumer preferences and market demands require businesses to provide faster, more transparent, and digitally integrated financial transactions. Consequently, many MSME owners perceive digital bookkeeping not merely as an operational improvement but as a strategic necessity for maintaining competitiveness in the digital economy. This finding aligns with the Technology–Organization–Environment (TOE) framework, which argues that technological readiness and environmental pressures significantly influence organizational technology adoption (Tornatzky & Fleischer, 1990). Comparable evidence has been reported by Vial (2019), who identified digital transformation as a critical strategic response to technological disruption and changing competitive environments.

Another significant external driver identified in this research is institutional support provided by governments, financial institutions, and business development organizations. Participants acknowledged that government initiatives promoting MSME digitalization, digital literacy training, bookkeeping assistance, and financial management mentoring have substantially increased their willingness and confidence to adopt digital bookkeeping systems. In addition, collaborations with banks, fintech companies, cooperatives, and business incubators have expanded MSMEs' understanding of digital financial management while providing access to affordable digital accounting applications. Importantly, many participants emphasized that financial institutions increasingly require standardized financial statements as a prerequisite for business financing, making digital bookkeeping an essential tool for improving financial credibility and loan eligibility. These findings are consistent with OECD (2023) and World Bank (2023) reports, which emphasize that institutional support and enabling digital ecosystems are indispensable for accelerating digital transformation and strengthening MSME resilience.

Overall, this study demonstrates that bookkeeping digitalization is influenced by the dynamic interaction between internal motivations and external environmental pressures. Internal drivers—such as improving operational efficiency, simplifying transaction recording, strengthening financial control, fulfilling financial reporting needs, and enhancing business professionalism—operate synergistically with external drivers, including technological advancement, market competition, government digitalization programs, financial institution assistance, and financing requirements. While previous studies have primarily emphasized the technological and operational benefits of digital accounting adoption (Grande et al., 2011; Romney & Steinbart, 2021), the present study extends existing knowledge by showing that bookkeeping digitalization also functions as a strategic mechanism for strengthening financial management competencies and organizational capability development. This finding reinforces the Resource-Based View (Barney, 1991), which posits that technological capabilities and managerial competencies become valuable strategic resources that enable MSMEs to achieve sustainable competitive advantage and long-term business sustainability.

Strengthening Financial Management Competencies

The findings demonstrate that the adoption of digital bookkeeping significantly strengthens the financial management competencies of MSME actors by improving their ability to perform essential financial management functions systematically and accurately. Participants reported substantial improvements in financial planning, budgeting, cash flow management, financial reporting, cost control, financial analysis, investment decision-making, and financial risk management after implementing digital bookkeeping applications. The availability of real-time financial information enabled business owners to develop more realistic financial plans, allocate resources efficiently, monitor business performance continuously, and make evidence-based managerial decisions. Rather than relying solely on personal intuition, participants increasingly utilized digital financial reports to evaluate profitability, forecast future business conditions, and formulate sustainable growth strategies. These findings indicate that digital bookkeeping serves not only as a technological innovation but also as an important learning mechanism that enhances managerial competence through continuous interaction with financial information. This finding supports the Resource-Based View (RBV), which considers managerial capabilities and organizational knowledge as valuable strategic resources that generate sustainable competitive advantage (Barney, 1991).

Another important finding reveals that digital bookkeeping contributes significantly to improving financial discipline and accountability among MSME actors. Participants explained that automated transaction recording, integrated financial reporting, and continuous monitoring of cash inflows and outflows encouraged them to separate personal and business finances, maintain complete financial documentation, and evaluate operational costs more consistently. Consequently, business owners became more capable of preparing systematic budgets, controlling unnecessary expenditures, and identifying areas requiring financial improvement. These improvements strengthened internal financial governance while simultaneously increasing the credibility of financial statements presented to investors, suppliers, and financial institutions. From the perspective of Human Capital Theory, these findings suggest that digital technologies facilitate the development of financial knowledge, accounting skills, and managerial competencies that enhance individual productivity and organizational performance (Becker, 1964). Previous studies by Romney and Steinbart (2021) and Weygandt et al. (2021) likewise reported that digital accounting systems improve financial control, reporting quality, and decision-making effectiveness within small and medium-sized enterprises.

The findings further indicate that strengthened financial management competencies improve MSMEs' strategic capacity to respond to increasingly dynamic and competitive business environments. Participants acknowledged that access to accurate and timely financial information enabled them to evaluate investment opportunities, anticipate financial risks, manage working capital more effectively, and formulate adaptive business strategies during periods of market uncertainty. Furthermore, improved financial reporting enhanced business transparency and facilitated access to external financing because standardized financial statements fulfilled the documentation requirements imposed by banks and other financial institutions. These results corroborate previous research by Grande et al. (2011), which demonstrated that accounting information systems positively influence organizational performance and managerial effectiveness, and by Vial (2019), who argued that digital transformation strengthens organizational resilience by improving information quality and strategic decision-making capabilities. Thus, digital bookkeeping

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not only enhances operational efficiency but also supports long-term business sustainability through stronger financial competencies.

Overall, this study extends previous research by demonstrating that the value of bookkeeping digitalization extends beyond improvements in accounting efficiency toward the broader development of financial management competencies among MSME actors. While earlier studies primarily emphasized the technological, operational, and financial reporting benefits of digital accounting adoption (Ismail & King, 2007; Romney & Steinbart, 2021), the present findings reveal that continuous interaction with digital financial information fosters higher-order managerial capabilities, including strategic financial planning, analytical thinking, financial risk assessment, and evidence-based decision-making. These competencies represent critical intangible assets that enhance organizational adaptability, competitiveness, and sustainable business growth in the digital economy. Accordingly, digital bookkeeping should be regarded as a strategic capability-building instrument that integrates technological innovation with human capital development, thereby enabling MSMEs to strengthen financial governance and achieve long-term organizational sustainability.

Conclusion

This study concludes that the digitalization of bookkeeping plays a strategic role in strengthening the financial management competencies of Micro, Small, and Medium Enterprise (MSME) actors by transforming conventional financial recording into an integrated, efficient, and data-driven financial management system. The findings demonstrate that the adoption of digital bookkeeping applications—including mobile accounting, cloud accounting, digital cash books, point-of-sale (POS) integration, e-wallet recording, and digital invoicing—significantly improves financial planning, budgeting, cash flow management, financial reporting, cost control, financial analysis, investment decision-making, and financial risk management. The study further reveals that bookkeeping digitalization is driven by both internal factors, such as the need to enhance operational efficiency, financial control, and business professionalism, and external factors, including technological advancement, market demands, government digitalization initiatives, institutional support, and financing requirements. Although challenges related to digital literacy, technological infrastructure, and organizational readiness remain, digital bookkeeping has proven to strengthen financial transparency, accountability, and evidence-based managerial decision-making, thereby enhancing business resilience, competitiveness, and long-term sustainability. Accordingly, this study emphasizes that bookkeeping digitalization should be recognized not merely as a technological innovation but as a strategic capability-building mechanism that integrates digital transformation with the development of financial management competencies to support sustainable MSME development in the digital economy.

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