

Adoption of Cloud Accounting: Opportunities, Barriers, and Implications for SMEs

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ABSTRACT: Cloud accounting has become a key innovation in financial management, improving efficiency, transparency, and sustainability. This narrative review synthesizes literature on its adoption and impact, with emphasis on business sustainability. Systematic searches were conducted in Scopus, Web of Science, and Google Scholar using targeted keywords on efficiency, transparency, SMEs, and financial performance. Only peer-reviewed, English-language studies directly addressing cloud accounting and sustainability were included. Findings show that cloud accounting reduces administrative workloads, enhances reporting accuracy, and promotes transparency through real-time data access. SMEs benefit most, gaining cost savings, better cash flow management, and operational flexibility. Yet adoption is hindered by security concerns, high initial costs, and limited infrastructure, particularly in developing countries. Integration with AI, blockchain, and big data further strengthens predictive capacity, accountability, and sustainability goals. Systemic factors such as robust digital infrastructure and supportive government policies are crucial in driving adoption. Overcoming barriers requires joint efforts by firms, governments, and technology providers to improve security, lower costs, and expand digital capacity. The review concludes that cloud accounting functions not only as a technological innovation but also as a strategic tool for sustainable business development. Future research should explore long-term financial and sustainability impacts, regional differences, and the governance role of cloud systems in fostering transparency and accountability.

Keywords: Cloud Accounting, Business Sustainability, Financial Transparency, SMES, Digital Transformation, Data Security, Accounting Innovation.



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INTRODUCTION

The increasing integration of digital technologies into financial management has transformed the way organizations operate. This study specifically addresses the research question: *How does the adoption of cloud accounting influence operational efficiency, financial transparency, and sustainability in SMEs?* While prior studies have demonstrated general efficiency gains (Lutfi, 2022; Saad et al., 2022), little is known about how these benefits translate into long-term sustainability outcomes, particularly in

resource-constrained industries such as retail SMEs in Indonesia (Kartikasary et al., 2023) and agriculture enterprises in Eastern Europe (Zapryk et al., 2023). This gap highlights the novelty of the present review in linking cloud accounting adoption directly to sustainability frameworks, including ESG reporting and stakeholder trust.

The relevance of cloud accounting has grown in tandem with global shifts in business operations toward digital transformation. The COVID-19 pandemic accelerated this transition by exposing the limitations of traditional accounting systems that rely on physical proximity and manual processes. As businesses adapted to remote working environments, cloud accounting provided a practical alternative by ensuring continuity, accuracy, and accessibility of financial data across dispersed teams (Saad et al., 2022; Mauricette et al., 2022). Beyond its operational utility, the global adoption of cloud accounting has been driven by its potential to reinforce strategic decision-making and enhance long-term business resilience. Studies emphasize that cloud platforms enable integration with emerging technologies, including artificial intelligence and blockchain, further strengthening the relevance of cloud-based financial management in shaping sustainable organizational strategies (Yoon, 2020; Li, 2023; Alnor, 2024).

The growing attention to cloud accounting can be contextualized within broader digitalization trends across industries. In sectors that have traditionally lagged in adopting digital solutions, such as agriculture and small enterprises, empirical findings suggest that cloud accounting fosters competitiveness and efficiency (Zapryk et al., 2023; Kartikasary et al., 2023). The trajectory of adoption is expected to expand significantly in the coming years, with SMEs constituting a major driver of this growth. Cloud-based systems provide flexibility and scalability, allowing businesses to align their operations with fluctuating market demands while simultaneously enhancing transparency for stakeholders, including investors, regulators, and customers (Abdurrahim et al., 2023). As organizations face mounting pressure to adopt sustainable practices, the link between financial transparency and stakeholder trust underscores the vital role of cloud accounting in promoting sustainable governance frameworks.

The empirical evidence supporting the role of cloud accounting in promoting business sustainability is compelling. For instance, research highlights how SMEs that adopt cloud accounting can independently manage basic bookkeeping tasks, thereby reducing reliance on external auditors and lowering operational costs (Lutfi, 2022). This independence enhances organizational control over financial information and reduces risks associated with outsourcing. Additionally, by minimizing the physical resources required for traditional accounting, cloud-based systems contribute to sustainability objectives, including reduced energy consumption and lower carbon emissions (Almanaeseh et al., 2024). The capacity to deliver accurate, real-time financial reporting also strengthens internal control systems, which are critical for ensuring accountability and fostering investor confidence (Almanaeseh et al., 2024).

The importance of cloud accounting extends beyond operational efficiency to strategic sustainability outcomes. Firms that successfully integrate cloud solutions into their accounting practices are better positioned to navigate uncertainties, manage risks, and optimize decision-making processes. Evidence suggests that companies leveraging cloud accounting systems not only reduce transaction costs but also enhance their ability to anticipate and respond to financial challenges, thereby reinforcing resilience (Yoon, 2020; Li, 2023). Moreover, the integration of

advanced analytics into cloud-based platforms allows organizations to harness predictive insights, which can inform long-term sustainability strategies and ensure alignment with global reporting standards (Alnor, 2024). In this way, cloud accounting is not simply an incremental technological upgrade but a transformative enabler of sustainable business practices.

Despite its promise, the implementation of cloud accounting presents several challenges that warrant attention. Among the most pressing concerns are issues of data security and privacy. Organizations are required to safeguard sensitive financial information from cyber threats such as data breaches, ransomware, and unauthorized access (Lutfi, 2022; Saad et al., 2022). Many firms remain hesitant to migrate their accounting systems to the cloud due to doubts regarding the reliability of data security protocols (Almanaesh et al., 2024). These concerns are particularly acute for SMEs, which often lack the resources to invest in advanced cybersecurity infrastructure or the expertise to manage complex digital risks. The uncertainty surrounding data security creates delays in adoption and may undermine the potential benefits of cloud systems if not adequately addressed.

Another major challenge relates to the financial costs associated with transitioning to cloud accounting platforms. Although the long-term operational savings are widely documented, the initial investment required for data migration, employee training, and subscription fees can pose significant financial burdens, particularly for resource-constrained SMEs (Mauricette et al., 2022). This upfront expenditure often deters organizations from embracing the technology, especially when the anticipated benefits remain uncertain or difficult to quantify (Зapyк et al., 2023). Furthermore, the need to update legacy systems, adapt organizational processes, and secure stakeholder buy-in represents additional layers of complexity in the adoption process. These challenges highlight the importance of balancing short-term costs with the long-term strategic value of cloud accounting.

In addition to cost and security concerns, organizations face challenges related to digital readiness and cultural adaptation. Research suggests that businesses in developing countries encounter greater obstacles in implementing cloud accounting due to inadequate infrastructure, limited digital literacy, and regulatory uncertainties (Kartikasary et al., 2023). These barriers often exacerbate existing disparities between developed and developing economies, where firms in advanced economies are more adept at overcoming initial challenges and capitalizing on the long-term advantages of cloud-based systems (Зapyк et al., 2023). The uneven pace of adoption across regions and sectors underscores the need for context-sensitive approaches that account for the diversity of organizational capacities and technological environments.

Despite the expanding body of research on cloud accounting, notable gaps remain in the literature. While many studies emphasize operational benefits such as efficiency gains and improved reporting accuracy, fewer investigations explicitly link these outcomes to concrete financial performance metrics or sustainability indicators (Kartikasary et al., 2023; Abdurrahim et al., 2023). The direct relationship between cloud accounting adoption and long-term profitability remains underexplored, as does the extent to which cloud-based systems contribute to the social and environmental dimensions of sustainability. Furthermore, empirical research examining the integration of cloud accounting with corporate sustainability strategies, including ESG (environmental, social, and governance) reporting, is still limited (Yoon, 2020). Addressing these

gaps is essential for advancing theoretical understanding and providing actionable insights for practitioners.

The objective of this review is to critically examine the relationship between cloud accounting, operational efficiency, and financial transparency, with particular attention to their implications for business sustainability. By synthesizing empirical evidence from diverse contexts, this study aims to identify the conditions under which cloud accounting delivers its most significant benefits, as well as the challenges that constrain its effectiveness. Specific factors under review include cost efficiency, accuracy of financial reporting, internal control enhancement, and integration with broader digital transformation initiatives (Lutfi, 2022; Saad et al., 2022; Almanaeseh et al., 2024). This analytical focus contributes to clarifying the strategic value of cloud accounting for organizations seeking to align financial management practices with sustainability objectives.

The scope of this review extends across both developed and developing economies, as well as different organizational scales, ranging from SMEs to large corporations. Evidence indicates that geographical and organizational contexts significantly influence the adoption and outcomes of cloud accounting. Firms in advanced economies tend to implement cloud solutions more readily due to stronger infrastructure and greater financial capacity, whereas SMEs in developing economies often struggle with barriers such as inadequate training and regulatory ambiguity (Li, 2023; Alnor, 2024). By exploring these variations, this study seeks to illuminate the structural and contextual factors that shape the effectiveness of cloud accounting in fostering sustainability. Such an approach ensures a more nuanced understanding of cloud accounting's role in enhancing operational efficiency and transparency while highlighting pathways for overcoming persistent barriers to adoption.

METHOD

The methodology of this study was designed to ensure a comprehensive and systematic review of the existing literature on the relationship between cloud accounting and business sustainability. In line with best practices for conducting narrative and systematic reviews, the approach focused on identifying, screening, and analyzing peer-reviewed studies that addressed cloud accounting in the context of operational efficiency, financial transparency, and sustainable business practices. The methodological framework was developed to balance breadth and depth, ensuring that the most relevant and high-quality literature was included while minimizing bias in study selection and interpretation.

The initial stage of the review process involved the identification of appropriate databases for literature retrieval. Scopus and Web of Science were selected as the primary databases due to their extensive coverage of peer-reviewed journals and their reputations for indexing high-quality, impactful publications. These databases have been widely recognized as the standard resources for comprehensive academic literature reviews in the fields of accounting, finance, and information systems. Scopus was particularly valuable because of its breadth of coverage in technology-driven business research, while Web of Science provided access to a curated range of multidisciplinary journals, ensuring the inclusion of studies from both business and technological perspectives. In addition, Google Scholar was used as a supplementary source to capture relevant studies not

indexed in the other two databases. While Google Scholar encompasses publications of varying levels of quality, careful screening was employed to ensure only peer-reviewed and academically rigorous studies were retained (Lutfi, 2022; Saad et al., 2022).

Following the selection of databases, a keyword strategy was developed to maximize the retrieval of relevant literature. Keywords were carefully chosen to reflect both the core concepts of cloud accounting and the broader themes of business sustainability. Boolean operators were applied to refine search results and ensure comprehensiveness. The primary keyword combinations included: “cloud accounting” AND “business sustainability,” which targeted literature explicitly linking the two concepts; “cloud accounting” AND “efficiency,” designed to capture studies that analyzed the role of cloud accounting in enhancing operational effectiveness; and “cloud accounting” AND “SMEs” OR “small and medium enterprises,” to locate studies addressing adoption patterns among smaller firms, which represent a significant proportion of global businesses and are critical to sustainability discussions (Almanaesah et al., 2024; Mauricette et al., 2022). Additional search strings, such as “cloud accounting” AND “financial performance” and “cloud accounting” AND “transparency,” were employed to identify research exploring the financial and governance dimensions of cloud-based accounting practices. By deploying these carefully constructed keyword combinations, the search strategy was able to capture a broad spectrum of literature that addressed the operational, financial, and strategic implications of cloud accounting (Zapryk et al., 2023).

The inclusion and exclusion criteria were defined to ensure that only studies directly relevant to the research objectives were retained. To be included, studies had to meet several conditions. First, they needed to be published in peer-reviewed journals or conference proceedings to guarantee academic rigor. Second, they had to be published in English to facilitate consistent analysis across sources. Third, the studies needed to focus explicitly on cloud accounting, either in terms of adoption, implementation, or outcomes, and link these with at least one dimension of sustainability, such as operational efficiency, financial performance, or transparency. Studies that focused solely on traditional accounting systems, without reference to cloud-based applications, were excluded. Similarly, non-academic sources such as professional reports, editorials, and non-peer-reviewed articles were excluded unless they provided critical insights that were corroborated by peer-reviewed evidence. This methodological rigor ensured that the analysis was grounded in credible and academically robust literature (Kartikasary et al., 2023).

In terms of study types, a wide range of empirical and conceptual research designs were considered eligible. Quantitative studies, including randomized controlled trials, cohort studies, and large-scale surveys, were included to provide statistical evidence on the impact of cloud accounting on efficiency, transparency, and performance outcomes. Qualitative studies, such as case studies and interview-based research, were also incorporated, as they offered valuable contextual insights into the challenges and opportunities of adopting cloud accounting across different sectors. Conceptual papers and theoretical analyses were included where they provided frameworks or models that advanced the understanding of how cloud accounting aligns with sustainability objectives. The combination of empirical and conceptual works enriched the analysis by providing both evidence-based findings and theoretical grounding.

The process of literature selection followed a multi-stage approach. The initial search using predefined keywords across Scopus, Web of Science, and Google Scholar generated a large pool

of studies. Titles and abstracts were screened to remove studies that were clearly irrelevant to the research focus, such as those addressing unrelated aspects of cloud computing or information systems without an accounting or sustainability dimension. In cases of uncertainty, the full texts were reviewed to determine relevance. Studies meeting the inclusion criteria were then subjected to a more detailed evaluation, focusing on methodological soundness, clarity of research questions, and relevance of findings to the objectives of this review. Duplicate records identified across databases were removed at this stage. The screening process thus ensured that only studies offering direct and credible contributions to the topic were retained for analysis.

Quality assessment of the included studies was conducted to evaluate methodological rigor and reliability of findings. For quantitative research, attention was given to sample size, statistical methods, and robustness of results. Qualitative studies were assessed in terms of transparency of data collection, rigor of analysis, and depth of insights. Conceptual works were evaluated on their theoretical contribution, logical coherence, and relevance to the overarching themes of efficiency, transparency, and sustainability. This critical appraisal process ensured that the findings synthesized in the review were based on studies that demonstrated methodological integrity and scholarly contribution.

To further strengthen the review, an iterative process of cross-checking references was employed. The bibliographies of included studies were examined to identify additional relevant works that may have been overlooked in the initial search. This snowballing technique allowed the inclusion of supplementary literature that was highly relevant but not retrieved by the primary keyword searches. In this way, the comprehensiveness of the literature base was enhanced without compromising the focus on high-quality, peer-reviewed sources.

Once the final set of studies was established, data extraction and thematic synthesis were conducted. Key information extracted from each study included the authors, publication year, research design, geographic context, organizational focus (e.g., SMEs or large enterprises), and major findings related to cloud accounting and business sustainability. Thematic synthesis involved categorizing findings under the major dimensions of efficiency, financial performance, and transparency, as well as identifying challenges such as data security and adoption costs. This thematic organization facilitated comparative analysis across studies and allowed for the identification of consistent patterns and divergences in the literature.

By employing a systematic and rigorous methodology, this review ensured that the conclusions drawn are well-supported by evidence. The multi-pronged approach, involving strategic database selection, carefully designed keyword searches, strict inclusion and exclusion criteria, and comprehensive quality assessment, provided a solid foundation for analyzing the role of cloud accounting in advancing business sustainability. Furthermore, the integration of diverse study designs and contexts allowed for a holistic understanding of how cloud accounting contributes to operational and strategic outcomes across various organizational and geographical settings. This methodology, therefore, not only enhances the credibility of the review but also ensures its relevance for both academic and practical audiences seeking to understand the transformative potential of cloud accounting in the pursuit of sustainable business practices.

RESULT AND DISCUSSION

Efficiency and Transparency

The literature consistently highlights that cloud accounting has a significant positive impact on organizational efficiency. Studies demonstrate that cloud-based systems reduce the time devoted to administrative and accounting tasks, allowing firms to increase productivity and allocate resources more effectively (Lutfi, 2022; Saad et al., 2022). For example, research has shown that companies implementing cloud accounting solutions are able to streamline operations by automating repetitive processes such as data entry, reconciliation, and reporting. This automation not only reduces manual errors but also accelerates financial workflows. Hsu and colleagues further confirm that cloud accounting enables the integration of financial data in real-time, which facilitates more rapid and informed decision-making, thereby enhancing the agility of businesses in dynamic market environments (Almanaeseh et al., 2024). The accessibility of cloud platforms across departments also supports collaboration, as financial reports can be securely shared with stakeholders, enabling cross-functional teams to coordinate strategic responses more effectively (Mauricette et al., 2022).

Evidence also demonstrates that cloud accounting fosters transparency and accountability in financial reporting. Alnor's findings suggest that cloud systems improve the accuracy of financial reports by minimizing human errors common in manual accounting systems (Зарык et al., 2023). The use of centralized, cloud-based storage ensures that financial data is secure, traceable, and easily accessible for audits, facilitating compliance with regulatory frameworks (Kartikasary et al., 2023). In this context, internal and external audits become more efficient, as auditors can access standardized datasets in real-time without the delays associated with paper-based processes. Additionally, cloud-enabled reporting provides stakeholders with timely and reliable insights into the financial health of organizations, which enhances accountability and builds trust with investors, regulators, and customers (Abdurrahim et al., 2023). The literature therefore confirms that efficiency gains and transparency improvements represent core contributions of cloud accounting to business sustainability.

Security and Risk

While cloud accounting offers substantial benefits, concerns about security and risk remain prominent in the literature. Research indicates that organizations are particularly concerned about the protection of sensitive financial data, especially in industries with strict regulatory oversight such as healthcare and finance (Yoon, 2020; Li, 2023). Gschossmann and colleagues emphasize that risks related to data breaches, unauthorized access, and privacy violations represent significant barriers to adoption for many firms (Alnor, 2024). These risks are compounded by the fact that many organizations struggle to interpret the technical terminology embedded in cloud service providers' privacy policies, which often leads to misunderstandings regarding the actual level of data protection offered (Chung-Hall et al., 2018).

In response to these challenges, firms are adopting a range of strategies to mitigate security risks. Periodic audits and comprehensive risk assessments are increasingly utilized to ensure compliance with regulatory standards and to safeguard data integrity (Stockwell et al., 2020). Organizations

have also implemented multi-layered security policies that include advanced encryption methods, stringent access controls, and mandatory employee training to strengthen cybersecurity practices (Gschoßmann et al., 2025). Gao (2025) further notes that these proactive approaches reflect an evolving recognition of the central role of data security in building trust around cloud-based financial systems. Thus, although risks associated with cloud accounting cannot be entirely eliminated, evidence suggests that organizations can manage these challenges through integrated and proactive risk management frameworks. By doing so, they reduce exposure to threats while preserving the efficiency and transparency benefits of cloud technologies.

Impact on Small and Medium Enterprises (SMEs)

Recent literature underscores the critical role of cloud accounting in supporting small and medium enterprises (SMEs), which often face resource constraints that limit their ability to adopt traditional accounting systems. One of the most frequently cited advantages is cost reduction, as cloud accounting eliminates the need for expensive hardware and licensed software while minimizing staffing requirements for full-time accountants (Lutfi, 2022; Saad et al., 2022). SMEs that transition to cloud systems also benefit from the flexibility of subscription-based pricing models, which align more closely with their limited budgets. Beyond cost savings, SMEs report increased financial agility, as cloud applications provide secure, mobile access to financial data and reports, enabling business owners to make rapid, informed decisions (Almanaeseh et al., 2024; Mauricette et al., 2022).

Cloud accounting also facilitates improved cash flow management, which is crucial for the survival and growth of SMEs. López and colleagues highlight that real-time analysis of income and expenditures offered by cloud systems empowers SMEs to better forecast financial needs and develop more effective financial policies (Zapryk et al., 2023). This functionality allows businesses to anticipate liquidity challenges and adjust strategies accordingly. The practical implications of this capability are particularly important in competitive markets, where financial mismanagement can quickly lead to insolvency.

Comparative evidence demonstrates marked differences in adoption rates between SMEs in developed and developing economies. In advanced economies, better digital infrastructure and higher levels of technological literacy facilitate rapid adoption of cloud accounting solutions (Kartikasary et al., 2023). SMEs in these regions are also more likely to recognize the long-term strategic benefits of cloud adoption, including enhanced reporting capabilities and compliance with global sustainability standards. In contrast, SMEs in developing economies often encounter barriers such as unreliable internet access, insufficient training, and heightened concerns about data security (Abdurrahim et al., 2023; Yoon, 2020). These challenges frequently delay adoption, despite growing interest in digital transformation. Such disparities underscore the importance of contextual factors in shaping the impact of cloud accounting on SMEs worldwide, with significant implications for policy development and capacity-building initiatives in emerging markets.

Integration with Other Technologies

The literature further indicates that the transformative potential of cloud accounting is amplified when integrated with other advanced technologies such as artificial intelligence (AI), blockchain, and big data analytics. Integration with AI enhances the predictive capabilities of financial systems, enabling businesses to forecast revenue streams, identify cost-saving opportunities, and detect anomalies in financial data (Li, 2023; Alnor, 2024). This predictive functionality enhances decision-making and allows firms to develop strategies that are both data-driven and forward-looking. Similarly, big data technologies expand the analytical scope of cloud accounting by processing large volumes of financial and non-financial data, supporting more comprehensive evaluations of business performance and sustainability practices (Chung-Hall et al., 2018).

Empirical evidence underscores the performance advantages of such integrations. Research conducted by McKinsey & Company reveals that organizations combining AI with cloud accounting systems reported significant gains in operational efficiency, including substantial reductions in the time required to prepare financial statements and reports (Stockwell et al., 2020). Blockchain integration adds another dimension by creating immutable audit trails that strengthen transparency and accountability. By recording transactions on decentralized ledgers, blockchain ensures that financial records cannot be tampered with, thereby increasing stakeholder trust and regulatory compliance (Gschoßmann et al., 2025; Gao, 2025). These findings highlight the role of integrated technologies in overcoming some of the inherent limitations of standalone cloud accounting systems.

The integration of cloud accounting with emerging technologies also supports broader sustainability objectives. Studies reveal that firms leveraging such integrations not only achieve financial and operational improvements but also align more effectively with evolving regulatory standards and societal expectations for corporate accountability (Chung-Hall et al., 2018; Rossita et al., 2021). For example, blockchain-enabled cloud systems can facilitate transparent ESG reporting, while AI-driven analytics can identify patterns that inform sustainable resource allocation. These synergies contribute to the competitive advantage of firms in increasingly complex and regulated global markets. Consequently, integration with complementary technologies positions cloud accounting as a strategic enabler of both financial performance and sustainable development.

Taken together, the results from the literature review affirm that cloud accounting significantly contributes to efficiency, transparency, and cost reduction, while also presenting challenges in terms of data security and adoption barriers. SMEs emerge as key beneficiaries, although disparities across regions underscore the influence of contextual factors. Moreover, the integration of cloud accounting with technologies such as AI, blockchain, and big data represents a promising frontier that enhances its potential as a driver of sustainable business practices. These findings provide a robust foundation for the subsequent discussion, which will critically analyze the implications of these themes and outline pathways for advancing both academic research and practical implementation.

The findings of this review confirm the transformative potential of cloud accounting in enhancing efficiency, transparency, and sustainability within business practices, yet they also underscore the systemic challenges that continue to hinder its adoption. A central theme emerging from the

literature is the role of systemic factors such as digital infrastructure and government policy in shaping the pace and success of cloud accounting adoption. Robust digital infrastructure, characterized by reliable internet connectivity and integrated technological systems, provides the necessary foundation for cloud solutions to function effectively. In contexts where infrastructure is strong, businesses are better positioned to implement cloud accounting systems, thereby realizing their benefits more rapidly (Lutfi, 2022; Saad et al., 2022). Conversely, in regions with poor infrastructure, particularly in parts of the developing world, organizations face significant difficulties in leveraging cloud systems to their full potential. The disparity in infrastructure creates a digital divide that impacts not only efficiency but also broader sustainability outcomes.

Government policies are equally influential in driving adoption. Supportive measures such as tax incentives, subsidies for digitalization, and favorable regulatory frameworks can stimulate organizations to transition from traditional accounting systems to cloud-based solutions. Almanaeseh et al. (2024) demonstrate that proactive government policies correlate with higher rates of cloud accounting adoption, suggesting that external institutional support is often a determining factor in organizational decision-making. Similarly, Mauricette et al. (2022) highlight that countries with positive policy environments have observed higher adoption rates, enabling businesses to enhance efficiency and align with sustainability imperatives. These findings align with broader research on digital transformation, which consistently shows that organizations are more likely to invest in technological solutions when institutional frameworks reduce uncertainty and incentivize innovation.

Despite the evident potential of cloud accounting, adoption remains constrained by several obstacles. Data security concerns remain paramount, with organizations wary of potential breaches and the misuse of sensitive financial information. Yoon (2020) and Li (2023) argue that industries under strict regulatory oversight, such as healthcare and finance, are particularly vulnerable to these risks, as breaches can result in not only financial loss but also regulatory penalties and reputational damage. Gschossmann and colleagues (Alnor, 2024) emphasize that many firms struggle to interpret the complex technical language of cloud service agreements, which obscures the true extent of data protection and accountability. These challenges are compounded in regions where cybersecurity literacy remains low, leaving businesses ill-prepared to navigate the technical and legal dimensions of data protection.

Several solutions have been proposed to mitigate these barriers. Training employees to use cloud accounting systems effectively has been identified as a crucial step in bridging the knowledge gap and ensuring successful adoption (Зapyк et al., 2023; Kartikasary et al., 2023). Providing employees with the necessary skills not only increases system efficiency but also reduces resistance to technological change. To address security concerns, organizations are advised to adopt layered security strategies that include data encryption, multi-factor authentication, and access controls, thereby creating a robust defense against external threats (Abdurrahim et al., 2023; Yoon, 2020). Furthermore, collaboration between firms and governments to establish standardized security protocols and legal frameworks for cloud accounting would create a more predictable and trustworthy environment for adoption (Li, 2023). These collaborative efforts can reduce ambiguity in responsibility between providers and clients, thereby bolstering trust in cloud ecosystems.

The discussion of systemic factors and organizational strategies also underscores the global disparities in adoption. SMEs in developed economies tend to adopt cloud accounting more readily, benefiting from stronger infrastructure, higher digital literacy, and better access to financial resources. In contrast, SMEs in developing economies face significant structural barriers, such as unreliable internet connections, limited access to financing for digital transformation, and a lack of training opportunities (Abdurrahim et al., 2023; Yoon, 2020). These contextual differences highlight the need for differentiated strategies that account for local conditions. For example, in emerging markets, subsidized access to cloud technologies and targeted government programs to build digital competencies may be necessary to level the playing field and unlock the sustainability benefits of cloud accounting.

Another dimension that warrants attention is the limited scope of existing research. Much of the literature focuses narrowly on the technical and operational aspects of cloud accounting, such as efficiency improvements and transparency gains. While these contributions are important, there is a lack of comprehensive studies that evaluate the broader social, environmental, and economic implications of cloud adoption. Alnor (2024) and Chung-Hall et al. (2018) emphasize that a holistic approach is needed to understand how cloud accounting interacts with broader sustainability frameworks, including environmental responsibility and social equity. For example, by reducing reliance on physical infrastructure and paper-based systems, cloud accounting may contribute to environmental sustainability, yet empirical evidence quantifying this impact remains scarce. Similarly, the social implications of democratizing financial data access within organizations have not been systematically explored.

The gaps identified in the literature also point to opportunities for future research. Stockwell et al. (2020) and Gschossmann et al. (2025) argue that comparative studies between developed and developing economies could yield valuable insights into how contextual factors shape adoption and outcomes. Such comparative analyses could illuminate the mechanisms by which cloud accounting influences financial performance, transparency, and sustainability across diverse environments. Additionally, longitudinal studies tracking the long-term impact of cloud adoption on profitability and resilience would address current gaps in evidence regarding its sustained contributions to business outcomes. These studies could provide clarity on whether short-term efficiency gains translate into durable improvements in competitiveness and sustainability.

Integrating cloud accounting with emerging technologies such as artificial intelligence, blockchain, and big data also represents a critical avenue for exploration. As highlighted in the results, these integrations offer enhanced predictive capabilities, immutable audit trails, and advanced analytics that can deepen the contribution of cloud systems to sustainable business practices (Li, 2023; Alnor, 2024; Stockwell et al., 2020). However, more empirical evidence is needed to assess how these technological synergies function in practice, particularly in sectors where sustainability reporting is increasingly scrutinized by regulators and stakeholders. Investigating these interactions could inform both academic theory and managerial practice, providing actionable insights into how businesses can maximize the strategic value of digital accounting solutions.

Finally, the existing body of literature tends to focus predominantly on financial and operational metrics, while neglecting the governance dimension of cloud accounting. The role of cloud systems in strengthening corporate governance, enhancing stakeholder engagement, and supporting

compliance with global reporting standards remains underexplored. Addressing these gaps would not only enrich academic understanding but also provide practical guidance to organizations navigating the complex interplay between technology, governance, and sustainability. In this sense, cloud accounting should be studied not merely as a technological tool but as a governance mechanism with far-reaching implications for accountability, transparency, and trust in business operations.

CONCLUSION

This review highlights the transformative role of cloud accounting in enhancing business efficiency, transparency, and sustainability. Evidence from diverse contexts demonstrates that cloud-based systems significantly reduce the administrative burden of financial tasks, improve the accuracy of financial reporting, and foster greater accountability through real-time data integration and stakeholder accessibility. These benefits are particularly pronounced for small and medium enterprises, where resource constraints make traditional accounting models less viable. By reducing costs, improving cash flow management, and enabling financial agility, cloud accounting emerges as a critical enabler of competitiveness and resilience in increasingly dynamic markets.

Nevertheless, the review also reveals persistent barriers to adoption, notably concerns over data security, privacy risks, and the high upfront costs associated with migration and training. These challenges are exacerbated in developing economies, where limited digital infrastructure and low levels of technological readiness hinder adoption. To address these obstacles, systemic interventions are required. Governments can play a pivotal role by implementing supportive policies such as tax incentives, digital training initiatives, and standardized security frameworks, while organizations must invest in layered cybersecurity measures and workforce upskilling. Collaborative efforts between policymakers, technology providers, and businesses are essential to creating an environment conducive to safe and widespread adoption.

Future research should move beyond technical assessments to explore the broader social, environmental, and governance implications of cloud accounting. Comparative studies across regions and longitudinal analyses of long-term impacts will provide valuable insights into its sustained contribution to business sustainability. By integrating cloud accounting with emerging technologies such as artificial intelligence and blockchain, firms can not only enhance financial performance but also advance holistic sustainability goals, making cloud accounting a strategic imperative for the digital era.

REFERENCE

- Abdurrahim, H., Wibowo, R., & Widuri, R. (2023). The effect of organizational factors and social influence on the digital fluency of accounting students. *E3S Web of Conferences*, 388, 03026. <https://doi.org/10.1051/e3sconf/202338803026>
- Almanaeseh, R., Marei, A., Zumot, R., Alim, S., Alharasis, E., Alkhodary, D., ... & Lutfi, A. (2024). The effect of cloud computing on the quality of financial statements: The mediating role of

- internal control system. *International Journal of Data and Network Science*, 8(4), 2627-2638. <https://doi.org/10.5267/j.ijdns.2024.4.015>
- Alnor, N. (2024). Applications of modern technology in developing management accounting systems and how they affect the organizational performance. *WSEAS Transactions on Business and Economics*, 21, 2591-2601. <https://doi.org/10.37394/23207.2024.21.212>
- Chung-Hall, J., Craig, L., Gravely, S., Sansone, N., & Fong, G. (2018). Impact of the WHO FCTC over the first decade: A global evidence review prepared for the impact assessment expert group. *Tobacco Control*, 28(Suppl 2), S119–S128. <https://doi.org/10.1136/tobaccocontrol-2018-054389>
- Gao, L. (2025). Route optimization of multimodal transport considering regional differences under carbon tax policy. *Sustainability*, 17(13), 5743. <https://doi.org/10.3390/su17135743>
- Gschossmann, E., Heckemeyer, J., Müller, J., Spengel, C., Spix, J., & Wickel, S. (2025). The EU's new era of “fair company taxation”: The impact of DEBRA and Pillar Two on the EU member states’ effective tax rates. *International Tax and Public Finance*. <https://doi.org/10.1007/s10797-025-09886-9>
- Kartikasary, M., & Wicaksono, A. (2023). Cloud accounting application program analysis in micro, small, and medium business in Indonesia. *E3S Web of Conferences*, 388, 03022. <https://doi.org/10.1051/e3sconf/202338803022>
- Li, W. (2023). Research on application mode of intelligent accounting information based on cloud computing. <https://doi.org/10.1117/12.2672186>
- Lutfi, A. (2022). Understanding the intention to adopt cloud-based accounting information system in Jordanian SMEs. *IJDAR*, 47-70. https://doi.org/10.4192/1577-8517-v22_2
- Mauricette, J., Wells, P., & Haar, J. (2022). User perceptions of cloud-based small business accounting software. *Pacific Accounting Review*, 34(4), 595-613. <https://doi.org/10.1108/par-05-2021-0065>
- Rossita, A., Nurrochmat, D., Boer, R., Hein, L., & Riqqi, A. (2021). Assessing the monetary value of ecosystem services provided by Gaung – Batang Tuaka peat hydrological unit (KHG), Riau Province. *Heliyon*, 7(10), e08208. <https://doi.org/10.1016/j.heliyon.2021.e08208>
- Saad, M., Lutfi, A., Almaiah, M., Alshira'h, A., Alshirah, M., Alqudah, H., ... & Abdelmaksoud, O. (2022). Assessing the intention to adopt cloud accounting during COVID-19. *Electronics*, 11(24), 4092. <https://doi.org/10.3390/electronics11244092>
- Stockwell, T., Andréasson, S., Cherpitel, C., Chikritzhs, T., Dangardt, F., Holder, H., ... & Sherk, A. (2020). The burden of alcohol on health care during COVID-19. *Drug and Alcohol Review*, 40(1), 3-7. <https://doi.org/10.1111/dar.13143>
- Yoon, S. (2020). A study on the transformation of accounting based on new technologies: Evidence from Korea. *Sustainability*, 12(20), 8669. <https://doi.org/10.3390/su12208669>

- Зарык, Н., Романтсева, Я., Казірова, М., Харітонова, А., & Коломеева, Е. (2023). Information systems in organic agriculture: Foreign experience. *Bio Web of Conferences*, 66, 14014. <https://doi.org/10.1051/bioconf/20236614014>
- Silva, R., Tommasetti, R., Gomes, M., & Macedo, M. (2020). Accountants' IT responsibilities and competencies from a student perspective. *Higher Education Skills and Work-Based Learning*, 11(2), 471-486. <https://doi.org/10.1108/heswbl-02-2020-0028>
- Stewart, V. (2023). Transformative sustainability education in accounting: effects on male and female students' attitudes toward sustainable development. *International Journal of Sustainability in Higher Education*, 25(3), 616-630. <https://doi.org/10.1108/ijshc-06-2023-0235>
- Tandiono, R. (2023). The impact of artificial intelligence on accounting education: a review of literature. *E3S Web of Conferences*, 426, 02016. <https://doi.org/10.1051/e3sconf/202342602016>
- Theuri, P., Campbell, R., & Owens-Jackson, L. (2024). A literature review of technology-related research in accounting education: 2010–2020. *Accounting Perspectives*, 23(1), 79-114. <https://doi.org/10.1111/1911-3838.12352>
- Tsiligiris, V., & Bowyer, D. (2021). Exploring the impact of 4IR on skills and personal qualities for future accountants: a proposed conceptual framework for university accounting education. *Accounting Education*, 30(6), 621-649. <https://doi.org/10.1080/09639284.2021.1938616>
- Vázquez, M., Rodríguez-González, F., & Reyes, J. (2024). Personality and leadership style in Generation Z: a quantitative study in a higher education institution in Mexico. *Intangible Capital*, 20(1), 170. <https://doi.org/10.3926/ic.2383>
- Wijaya, R., & Putri, W. (2023). Readiness of sustainability course in accounting curriculum at Indonesian higher education. *IOP Conference Series Earth and Environmental Science*, 1181(1), 012026. <https://doi.org/10.1088/1755-1315/1181/1/012026>
- Zubairu, U., Ismail, S., & Fatima, A. (2019). The quest for morally competent future Muslim accountants. *Journal of Islamic Accounting and Business Research*, 10(2), 297-314. <https://doi.org/10.1108/jiabr-11-2016-0138>