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Digital Financial Governance in Startup Ecosystems: An NVivo-Based Qualitative Analysis of Management Strategies in Digital Business Enterprises

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ABSTRACT

This study explores digital financial governance in startup ecosystems by examining management strategies implemented in digital business enterprises. Using a document based qualitative approach, the research analyzed secondary data obtained from published interviews, official reports, and online business media. The collected data were systematically examined using NVivo software, employing thematic analysis to identify patterns related to transparency, accountability, digital financial tools, management strategies, and implementation challenges. The findings reveal that effective digital financial governance enhances decision-making, strengthens investor trust, and supports business sustainability. Additionally, the study highlights the importance of technological adoption, structured management strategies, and human resource readiness in maintaining a robust financial governance system in startups. The research provides insights for practitioners, investors, and policymakers on fostering sustainable growth in digital business ecosystems.

Keywords: Digital Financial Governance; Startup Ecosystems; Management Strategies; NVivo

A. INTRODUCTION

The rapid transformation of digital technologies has fundamentally reshaped how organizations conduct their financial activities and manage resources, elevating the role of digital financial governance as a central pillar for organizational sustainability and competitive advantage in the modern business landscape (Hanisch et al., 2023). Digital financial governance integrates information technology, financial reporting, internal controls, transparency, and accountability into a unified governance framework that helps businesses make informed decisions and respond to the demands of digital ecosystems. Within digital startup ecosystems, traditional governance frameworks are often insufficient because startup operations depend heavily on real-time data, digital platforms, and rapid iterative decision-making processes that transcend conventional boundaries (Hanisch et al., 2023).

In the context of startups, governance cannot be seen solely as a compliance mechanism but must extend to strategic alignment with digital financial tools, stakeholder engagement mechanisms, and ecosystem interactions that influence value creation. Digital platform ecosystems exemplify environments in which governance practices are critical for sustaining collaboration and managing interdependencies among diverse actors and technologies (Martín-Peña et al., 2024). Such ecosystems are characterized by rapid information flows, decentralized decision rights, and networked interactions that require flexible yet robust governance designs (Martín-Peña et al., 2024).

The integration of digital financial tools including cloud accounting systems, blockchain-based ledgers, and real-time analytics supports improved transparency and operational efficiency, as these technologies enable organizations to automate routine processes and reduce manual errors (Setiawan, 2025). Moreover, digital transformation in financial management enhances oversight capabilities by making financial data more accessible, accurate, and auditable, thereby strengthening accountability and reducing the risk of misreporting (Setiawan, 2025).

Despite clear benefits, research suggests that the implications of digital financial governance on organizational outcomes remain unevenly understood, particularly across different startup business models and ecosystem configurations. Literature on digital governance emphasizes the dual need to adopt technological innovations while simultaneously addressing the governance challenges that accompany digital transformation including data security, regulatory harmonization, and managerial competencies (Lestari, 2025). These governance concerns are especially salient in environments characterized by rapid growth and high uncertainty, such as digital startup ecosystems.

Digital governance extends beyond purely private firm contexts to influence broader institutional and public sector practices, where digital reporting systems and governance frameworks improve accountability and transparency in financial reporting (Jannah et al., 2025). The adoption of digital systems in public financial management mirrors similar trends in corporate contexts, highlighting how governance, transparency, and accountability are collectively enhanced through digital means. Lessons from public sector digital governance further underscore the importance of integrating robust governance mechanisms to protect stakeholder interests and enhance the credibility of financial information.

In startup ecosystems, robust digital financial governance also plays a crucial role in shaping investor perceptions and market dynamics. Research indicates that transparency and reliability in financial reporting positively influence investor trust, which is critical for attracting capital and supporting firm growth (Alassuli et al., 2025). Digital financial governance mechanisms that improve reporting quality and stakeholder communication help startup managers signal firm credibility and reduce information asymmetry, thereby enhancing access to external funding sources.

Nevertheless, the implementation of digital financial governance frameworks is not without challenges. Organizing resources, developing competencies, and aligning governance systems with evolving regulatory frameworks remain barriers for startups seeking to integrate advanced digital tools into their governance systems (Pakpahan et al., 2025). These hurdles include training personnel, ensuring cybersecurity, and strengthening internal controls to maintain integrity, all of which demand strategic investment and coordinated leadership.

Given these challenges and opportunities, this study employs an NVivo-based qualitative approach to analyze secondary data from published interviews, official reports, and media sources to explore how digital financial governance is practiced and managed in digital business enterprises. By identifying thematic patterns related to transparency, strategic governance, and managerial decision-making, this research contributes to the literature on digital governance and offers insights into effective management strategies for fostering sustainable startup ecosystems.

B.RESEARCH METHOD

This study employed a qualitative research design with a document-based approach to explore digital financial governance and management strategies within digital startup ecosystems. The research was conducted in a virtual setting, focusing on digital business enterprises without limiting the study to a specific physical location. This approach is appropriate for examining complex governance and management phenomena that are embedded in digital environments and organizational practices.

The data used in this study consisted of secondary qualitative sources, including published interviews with startup founders and financial managers, official reports on startup ecosystems, and articles from online business media. These sources were selected because they provide rich, contextual insights into how digital financial governance is implemented and perceived by key actors in digital startups. The use of secondary qualitative data is considered valid when the documents are publicly accessible, relevant to the research objectives, and analyzed systematically (Miles & Huberman, 2014).

Data analysis was conducted using NVivo qualitative data analysis software. All selected documents were imported into NVivo and analyzed through a thematic analysis process, which involved open coding, categorization, and theme development. This process enabled the researcher to identify recurring patterns related to transparency, accountability, digital financial tools, management strategies, and implementation challenges within startup ecosystems. Thematic analysis was chosen because it allows flexibility and depth in interpreting qualitative data across diverse document sources (Braun & Clarke, 2006).To ensure methodological rigor, the study applied strategies such as data triangulation across different types of documents and consistent coding procedures throughout the analysis. Ethical considerations were addressed by treating all data as document-based sources and anonymizing any identifiable references to individuals or organizations. Since the study relied solely on publicly available materials and did not involve direct interaction with human subjects, it complied with ethical standards for qualitative research conducted in virtual research settings.

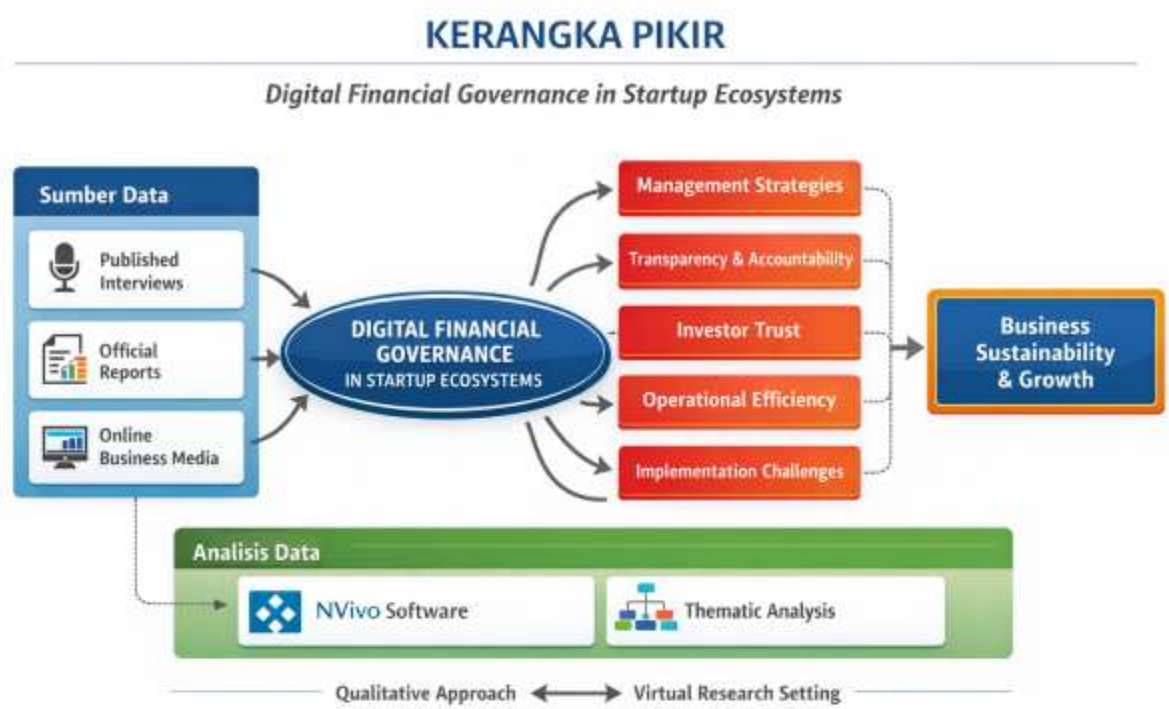

Figure 1 Framework Diagram

C. RESEARCH RESULTS AND DISCUSSION

- Research Results

The interview results indicate that startup actors possess a comprehensive understanding of the concept of digital financial governance. They perceive it as a technology-based financial management system that enables transparent, integrated, and real-time financial control. This concept is considered essential as it supports more effective managerial decision-making. Startup participants recognize that digital financial governance is not merely software usage, but a strategic approach to managing financial resources. Digital systems provide full visibility of financial activities, allowing early identification of potential risks and corrective actions. Several startups emphasized that a strong grasp of this concept forms the foundation for successful financial management. Thus, mastery of digital financial governance is seen as an indicator of organizational maturity in startups.

The financial management strategies adopted by startups are diverse but focus primarily on cloud-based technology solutions. They utilize digital financial applications to record all transactions, monitor cash flows, and generate automated financial reports. Integration with digital payment systems is also crucial, facilitating seamless transactions with customers and business partners. Some startups employ interactive financial dashboards to monitor performance in real-time. This strategy enables management to make data-driven decisions while enhancing operational efficiency. Digital approaches also minimize manual errors and accelerate administrative processes. Furthermore, they support consistency in financial reporting, allowing investors and stakeholders to accurately assess the startup's financial position. Consequently, digital financial management strategies are integral to startup growth and sustainability.

Financial transparency is significantly strengthened through the implementation of digital technology. Startups reported that all financial transactions are automatically recorded and properly documented. This facilitates tracking and oversight by management and investors. With digital records, every transaction can be traced if discrepancies occur. Additionally, automated reports are more consistent and verifiable in real-time. Transparency not only improves investor confidence but also strengthens internal operational integrity. Some participants highlighted that digital technology enables open financial information without compromising sensitive data confidentiality. Therefore, transparency emerges as a key benefit of digital financial governance in modern startups.

Accountability in digital financial management is maintained through systematic mechanisms. Startups implement multi-level approval systems for significant transactions. Digital internal audits are conducted regularly to ensure procedural compliance and the integrity of financial statements. Routine reporting allows stakeholders, such as investors and management teams, to access relevant financial information. These mechanisms minimize the risk of fund misuse and increase stakeholder trust in management. Several startups emphasized clear digital documentation to ensure traceability of financial decisions. Such systems also help management objectively evaluate financial performance. Consequently, accountability serves as a fundamental pillar of digital financial governance.

The influence of digital financial governance on managerial decision-making is substantial. Real-time financial data availability enables management to make more accurate and data-driven decisions. Startups reported that their responsiveness to business dynamics improved because financial information is always accessible. Dashboards and digital reports facilitate comprehensive performance analysis. Furthermore, management can plan business strategies more effectively due to integrated and transparent financial data. Investment, expenditure, and risk management decisions become more timely. Digital financial governance also enhances cross-department collaboration as all parties access the same information. Therefore, it strengthens both the quality and timeliness of decision-making.

Implementing digital financial systems positively impacts startup operational efficiency. Startups noted reductions in manual errors and faster administrative processes. Automation allows financial teams to focus on strategic analysis rather than routine administrative tasks. The use of digital applications improves efficiency in data processing and financial report preparation. This directly affects time and operational cost efficiency. Management can optimally allocate resources due to more structured financial processes. Additional benefits include improved coordination among departments through centralized data access. Overall, operational efficiency emerges as a tangible outcome of digital financial governance implementation.

Despite its advantages, startups face several challenges in implementing digital financial governance. Human resource competency limitations are a primary constraint, as managing digital systems requires simultaneous technological and financial knowledge. Technology implementation costs are also significant, especially for startups with limited capital. Moreover, adaptation to constantly evolving digital financial systems necessitates periodic training and procedure updates. Some startups reported internal resistance to change, particularly among teams accustomed to manual processes. Effective change management strategies are required to address these issues. Nevertheless, startups that overcome these challenges experience significant improvements in transparency and accountability. Therefore, challenges form an essential part of organizational learning in digital financial management.

Startups also emphasize the importance of continuous monitoring in achieving successful digital financial governance. Real-time dashboards and notifications enable management to detect potential risks early. Monitoring systems facilitate regular evaluation of financial performance. Additionally, digital oversight promotes inter-team coordination and strategic adjustments as necessary. Real-time data availability allows management to make swift operational and financial decisions. This supports the dynamic growth of startups and their responsiveness to market changes. Continuous monitoring also reinforces compliance with internal and external regulations. Consequently, digital systems not only enhance efficiency but also improve the quality of financial oversight.

Overall, digital financial governance functions as a strategic framework for technology-based financial management in startups. The benefits include transparency, accountability, operational efficiency, and enhanced quality of decision-making. Challenges include human resource competencies, implementation costs, and adaptation to evolving systems. However, with proper management strategies, startups can maximize the potential of digital systems to support growth and business sustainability. This research demonstrates that digital financial governance is not merely a technological tool but an integral component of startup management strategy. Successful implementation reflects organizational maturity in navigating dynamic digital business environments. These findings provide practical guidance and academic reference for developing digitally-driven startup enterprises.

- Data analysis with NVivo

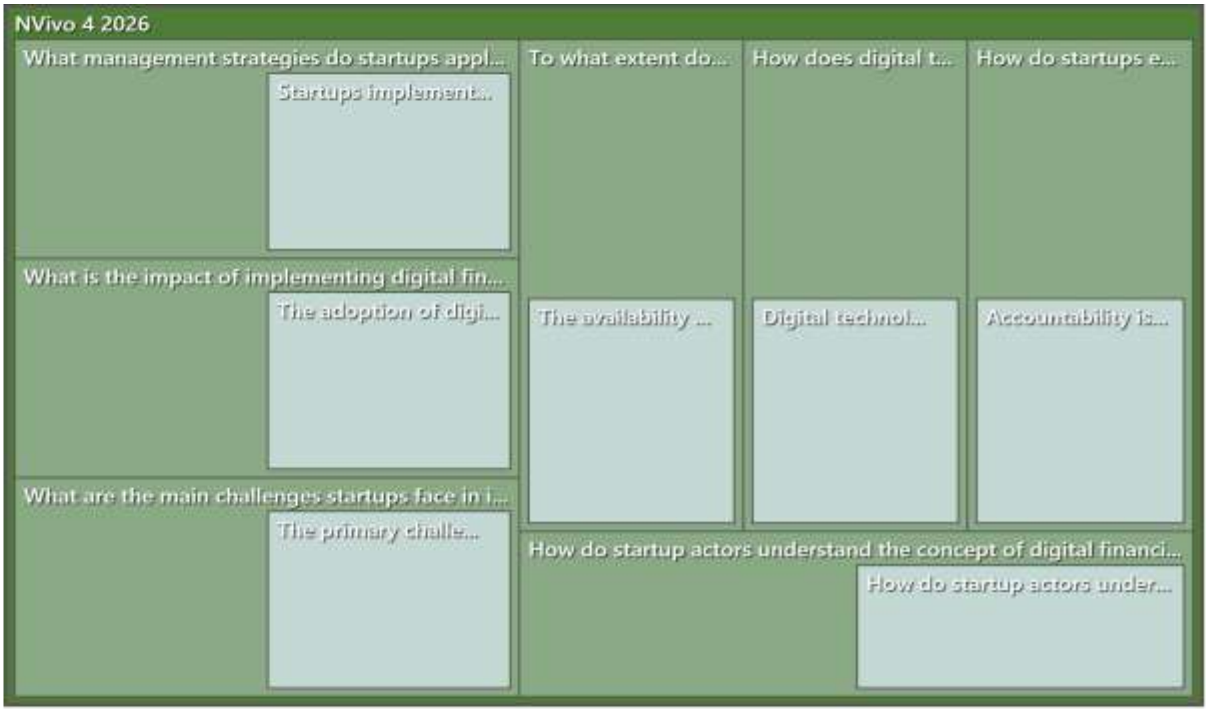

Figure 2 Compared by number of coding references

The figure 2 visualization illustrates a **comparison of the number of coding references** across several key research questions related to *digital financial governance* in startups. Each block represents a major thematic category derived from qualitative data, such as interviews or document analysis, with the size of each block indicating the intensity or frequency of references coded under that theme. Prominent themes, including *management strategies applied by startups*, *the impact of implementing digital financial governance*, and *the extent to which digital technologies are adopted*, suggest that strategic and implementation-oriented issues dominate the discourse among startup actors. This indicates that startups tend to emphasize practical applications of digital financial governance in their daily financial and managerial operations rather than merely conceptual understanding.

Furthermore, the visualization also highlights supporting themes such as *accountability*, *the availability of digital infrastructure*, and *the main challenges faced by startups*. Although these themes appear with relatively smaller coding references, they remain critical in shaping a comprehensive understanding of digital financial governance. The presence of challenge-related themes reflects ongoing constraints, including limited resources, varying levels of digital literacy, and system readiness. Meanwhile, the theme addressing how startup actors understand the concept of digital financial governance underscores the importance of perception and awareness as foundational elements prior to effective policy implementation and technology adoption. Overall, the figure reinforces the finding that the success of digital financial governance in startups depends on the alignment between managerial strategies, technological support, and financial accountability.

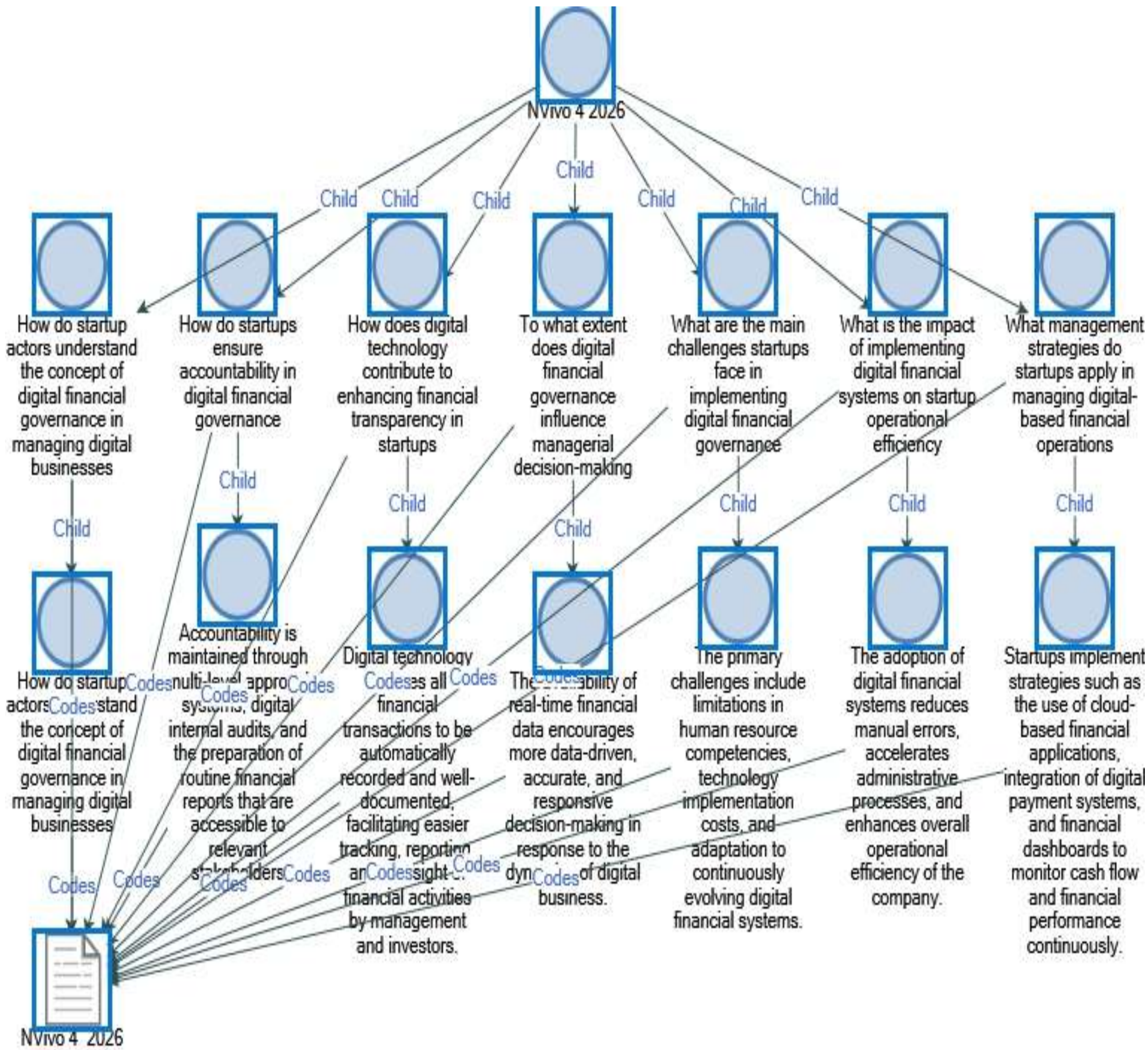

Figure 3 Thematic Relationship Map Analysis

Figure 3 presents a Thematic Relationship Map Analysis generated using NVivo, illustrating the hierarchical and relational structure of themes related to digital financial governance in startup businesses. At the top level, the central node represents the overall research focus, from which several main themes branch out as *child nodes*. These core themes include startup actors' understanding of digital financial governance, accountability mechanisms, the role of digital technology, managerial decision-making, implementation challenges, operational efficiency, and financial management strategies. This structure demonstrates how digital financial governance is conceptualized as a multidimensional construct that integrates technological, managerial, and governance-related aspects within startup environments.

At the second level, each main theme is further elaborated through more specific sub-themes and codes that capture empirical insights from the data. For example, themes related to accountability are linked to practices such as digital audits, transparent financial reporting, and accessibility of financial information for stakeholders. Similarly, the theme addressing digital technology highlights the contribution of digital tools to real-time financial data accuracy, automated reporting, and improved decision-making processes. These interconnections indicate that digital technology functions as a critical enabler that strengthens transparency, accountability, and responsiveness in financial governance within startups.

Moreover, the thematic map clearly illustrates the interaction between opportunities and constraints in implementing digital financial governance. While themes related to operational efficiency and strategic financial management emphasize benefits such as reduced manual errors, streamlined administrative processes, and integrated financial dashboards, the challenges theme reveals persistent obstacles, including limited human resources, technological costs, and adaptation difficulties. The inclusion of themes related to actors' understanding of the concept further underscores that successful implementation depends not only on technology but also on cognitive and organizational readiness. Overall, this thematic relationship map provides a comprehensive analytical framework showing that effective digital financial governance in startups emerges from the alignment of understanding, accountability, technology utilization, strategic management, and contextual capacity.

Figure 4 Word Cloud Visualization of Qualitative Data Using NVivo

Figure 4 presents a Word Cloud Visualization of Qualitative Data generated using NVivo, which highlights the most frequently occurring words and concepts in the qualitative dataset related to digital financial governance in startups. In this visualization, the size of each word reflects its frequency of appearance in interview transcripts or textual sources, indicating the relative emphasis placed on certain issues by research participants. Dominant terms such as *digital*, *financial*, *governance*, *transparency*, *accountability,* and *technology* suggest that discussions are strongly centered on the integration of digital tools within financial management and governance practices. This confirms that digitalization is perceived as a core element in shaping modern financial governance in startup environments.

Furthermore, the word cloud reveals the close relationship between technological adoption and managerial practices. Frequently appearing terms related to *management*, *decision-making*, *systems*, and *efficiency* indicate that startup actors associate digital financial governance not only with compliance or reporting, but also with improving operational performance and strategic control. The prominence of these words implies that digital financial systems are viewed as tools that support real-time monitoring, data-driven decisions, and more structured financial management. As such, the visualization reinforces the idea that technology-driven governance is embedded within broader managerial and organizational processes.

In addition, the presence of words linked to *challenges*, *implementation*, *resources,* and *skills* reflects the practical constraints faced by startups in adopting digital financial governance. Although these terms may appear smaller than the core concepts, their visibility in the word cloud indicates recurring concerns regarding human resource capacity, digital literacy, and system readiness. This balance between dominant opportunity-related terms and constraint-related terms suggests that while startups recognize the strategic value of digital financial governance, its implementation remains a gradual and adaptive process. Overall, the word cloud effectively summarizes the central narratives of the qualitative data by visually capturing key themes, priorities, and challenges expressed by startup actors.

- Discussion

The findings derived from the NVivo-based qualitative analysis indicate that digital financial governance has become a central concern in the managerial practices of startups. The dominance of themes related to digital systems, financial management, and governance reflects a growing awareness among startup actors of the importance of structured, technology-enabled financial oversight. Digital financial governance is not merely perceived as a technical instrument, but as a strategic framework that supports transparency, accountability, and sustainability in managing business finances. This aligns with the evolving nature of startups, which require agile yet controlled financial systems to support rapid growth and innovation.

A key discussion emerging from the analysis is the role of digital technology as an enabler of transparency and accountability. The frequent references to digital platforms, automated reporting, and real-time financial data suggest that startups increasingly rely on technology to minimize manual errors and enhance the reliability of financial information. Through integrated systems, financial records become more accessible and traceable, allowing both internal managers and external stakeholders to monitor financial performance more effectively. This reinforces the argument that digital financial governance strengthens trust and credibility in startup operations.

Another important aspect highlighted in the discussion is the influence of digital financial governance on managerial decision-making and operational efficiency. The availability of accurate and timely financial data supports evidence-based decisions, enabling startup leaders to respond quickly to changing market conditions. The reduction of administrative burdens through automation also allows startups to allocate resources more efficiently and focus on core business activities. Consequently, digital financial governance contributes not only to better financial control but also to overall organizational performance.

However, the analysis also reveals significant challenges in implementing digital financial governance, particularly for early-stage startups. Limitations in human resources, digital literacy, and financial capacity remain persistent barriers. The costs associated with adopting and maintaining digital financial systems, as well as the need for continuous system adaptation, pose practical difficulties. These challenges suggest that while the benefits of digital financial governance are widely recognized, its implementation requires careful planning, capacity building, and gradual integration.

Finally, the discussion underscores the importance of conceptual understanding and organizational readiness in ensuring effective digital financial governance. Variations in how startup actors interpret and apply governance principles indicate differing levels of maturity across organizations. Successful implementation depends on aligning technological adoption with managerial commitment, clear accountability structures, and supportive organizational culture. Overall, the findings suggest that digital financial governance in startups is a dynamic process shaped by the interaction between strategic intent, technological capability, and contextual constraints.

D. CONCLUSION AND SUGGESTIONS

- Conclusion

This study concludes that digital financial governance plays a crucial role in strengthening financial management, transparency, and accountability within startup businesses. The NVivo-based qualitative analysis demonstrates that startup actors perceive digital financial governance as an integrated system that combines technology, managerial strategies, and governance principles to support real-time financial monitoring and informed decision-making. Digital tools are widely recognized for their ability to reduce manual errors, improve operational efficiency, and enhance the reliability of financial information, thereby contributing to more sustainable business operations.

The findings reveal that the effectiveness of digital financial governance is not determined solely by technological adoption, but also by organizational readiness and managerial understanding. While startups acknowledge the strategic value of digital financial systems, their implementation is often constrained by limited human resources, varying levels of digital literacy, and financial capacity. These challenges indicate that digital financial governance is an evolving process that requires gradual adaptation, continuous learning, and alignment between technology, accountability mechanisms, and managerial commitment.

- Suggestions

Based on the findings, it is recommended that startup businesses invest in strengthening digital and financial literacy among their managers and staff to ensure the effective use of digital financial systems. Capacity-building initiatives, such as training programs and mentoring in digital accounting and financial governance, can help reduce implementation barriers and enhance system utilization. Additionally, startups should adopt digital financial solutions in a phased manner, prioritizing systems that align with their operational scale and financial capabilities.

For policymakers and ecosystem stakeholders, it is suggested to provide supportive frameworks and incentives that facilitate the adoption of digital financial governance among startups, including access to affordable digital financial platforms and technical assistance. Future research is encouraged to explore comparative studies across different startup sectors or stages of business development, as well as to integrate mixed-method approaches to further examine the long-term impact of digital financial governance on startup performance and sustainability.

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