



Digital banking transformation liquidity risk and profit persistence in emerging market commercial banks a systematic literature review

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ABSTRACT

Digital transformation has significantly reshaped the banking industry by integrating advanced technologies such as mobile banking, artificial intelligence, big data analytics, and cloud computing into financial services and operational systems. While digital banking transformation improves efficiency, accessibility, and competitiveness, it also introduces new challenges related to financial stability, particularly liquidity risk management and the sustainability of bank profitability. This study aims to examine the relationship between digital banking transformation, liquidity risk, and profit persistence in commercial banks operating in emerging markets. Using a Systematic Literature Review (SLR) approach, this research analyzes 40 scholarly articles obtained from major academic databases including Scopus, Web of Science, and ScienceDirect. The findings indicate that digital banking technologies enhance liquidity monitoring and operational efficiency, which can indirectly support the stability of bank profitability. However, rapid digitalization may also increase liquidity volatility due to faster financial transactions. Overall, effective liquidity risk management plays a crucial role in maintaining sustainable profitability in the digital banking era.



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Introduction

Digital transformation in the banking sector has become a global phenomenon that significantly changes how financial institutions operate and deliver services to customers. The rapid development of information technology, internet banking, mobile banking, and integrated digital financial systems has encouraged banks to implement digital banking transformation strategies in order to improve operational efficiency and maintain competitiveness in an increasingly dynamic financial market. This transformation is particularly evident in commercial banks operating in emerging markets, where digitalization is often viewed as a strategic tool to expand financial inclusion and improve service accessibility. However, despite the advantages associated with digital innovation, the transition toward digital banking also introduces new challenges related to financial stability,

particularly in terms of liquidity risk management and the sustainability of bank profitability. Digital platforms allow financial transactions and fund transfers to occur more quickly and efficiently, which may lead to increased volatility in bank liquidity positions. In such conditions, banks must maintain a balance between technological innovation and prudent risk management in order to prevent potential instability within the financial system. At the same time, the concept of profit persistence has become increasingly relevant in banking research because the ability of banks to sustain profitability over time reflects operational efficiency, competitive advantages, and sound financial management. Consequently, examining the relationship between digital banking transformation, liquidity risk, and profit persistence becomes an important issue that deserves comprehensive academic attention, particularly within the context of commercial banks operating in emerging markets(Jameaba, 2020).

Previous studies have examined the impact of digital banking transformation on bank performance and financial stability; however, many of these studies primarily focus on operational efficiency and profitability improvements without thoroughly exploring the implications for liquidity risk and long-term profit sustainability. For example, research conducted by Nguyen, Ho, and Nguyen (2023) indicates that digitalization in banking services contributes to increased profitability through cost efficiency and expanded market access. Nevertheless, the study does not fully investigate how digital transformation may influence liquidity risk dynamics in the banking system. Meanwhile, literature related to liquidity creation and banking risk suggests that changes in banking operations, particularly those associated with digital technologies, may alter the structure of liquidity management and potentially increase liquidity risk due to faster capital flows within financial systems (Vuong et al., 2023). In addition, the concept of profit persistence in banking research highlights that bank profitability tends to remain persistent over time because of structural factors such as managerial efficiency, market competition, regulatory frameworks, and technological innovation (Grover & Sinha, 2021). Despite these insights, academic research that simultaneously integrates the concepts of digital banking transformation, liquidity risk, and profit persistence remains relatively limited, especially in the context of emerging market commercial banks. This lack of integrative analysis suggests the existence of a research gap that requires systematic examination through a systematic literature review approach in order to synthesize existing findings and identify future research directions(Musau, 2022).

Based on the empirical developments and the research gaps identified in the existing literature, this study aims to conduct a systematic literature review that examines the relationship between digital banking transformation, liquidity risk, and profit persistence in emerging market commercial banks. Specifically, this research seeks to identify and analyze the development of academic studies related to digital transformation in the banking industry and its implications for liquidity risk management and the sustainability of bank profitability. Furthermore, this study aims to map the theoretical frameworks and methodological approaches employed in previous research in order to understand how scholars have conceptualized the interaction between these three important variables. By systematically reviewing relevant scholarly publications, this research intends to provide a comprehensive overview of the current state of knowledge regarding digital banking transformation and its influence on financial risk and profitability dynamics in the banking sector. In addition, this study attempts to identify patterns, trends, and gaps within the literature that may guide future academic inquiry in the field of banking and financial management. Ultimately, the findings of this systematic literature review are expected to contribute to the development of academic discourse while also providing valuable insights for banking practitioners and policymakers who are responsible for designing sustainable digital transformation strategies within emerging market financial systems(Hordofa, 2024).

The importance of investigating the relationship between digital banking transformation, liquidity risk, and profit persistence continues to increase as digital innovation accelerates within the global banking industry, particularly in developing and emerging economies. Digital transformation does not merely modify banking technologies; it fundamentally reshapes the business models, operational structures, and risk management practices of financial institutions. Banks that successfully adopt digital technologies often gain competitive advantages through improved efficiency, enhanced customer engagement, and broader market reach. However, these benefits are

often accompanied by new challenges related to financial risk management, especially in maintaining adequate liquidity and ensuring long-term profitability. Without proper risk management frameworks, rapid digitalization may increase the complexity of liquidity flows and expose banks to new forms of financial vulnerability. Therefore, a deeper understanding of how digital banking transformation interacts with liquidity risk and profit persistence is essential for ensuring the sustainability of the banking sector in emerging markets. Through the use of a systematic literature review approach, this study seeks to synthesize existing knowledge and provide a structured understanding of the evolving relationship between technological innovation and financial stability. Consequently, this research holds both academic and practical significance by offering insights that can support the development of digital banking strategies that balance innovation with financial resilience(Wen & Liang, 2025).

Method

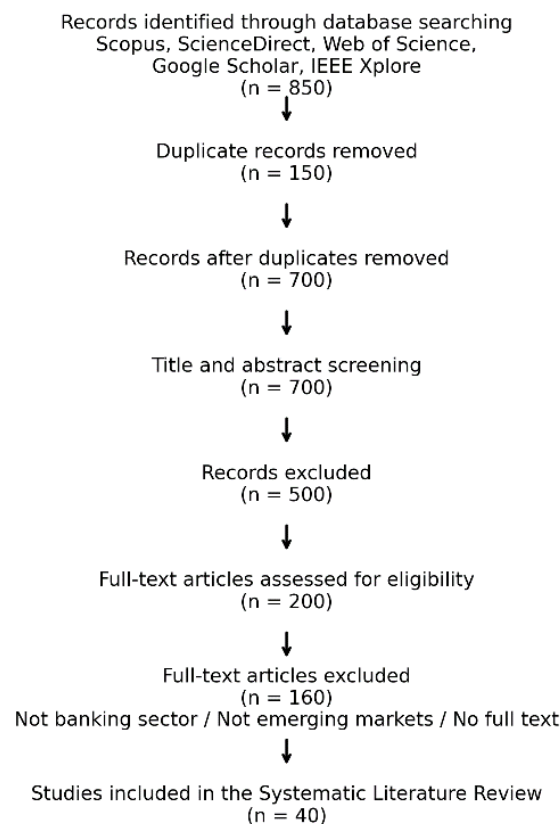


Figure 1. PRISMA Flow Diagram of the Study Selection Process

This study focuses on examining the phenomenon of digital transformation in the banking sector, particularly its relationship with liquidity risk management and profit persistence in commercial banks operating in emerging markets. In recent years, the rapid development of digital banking technologies has significantly reshaped the operational structure of financial institutions, influencing efficiency, risk management practices, and long-term profitability. Despite these advancements, commercial banks in emerging markets continue to face challenges in maintaining liquidity stability and sustainable profitability due to technological adaptation, regulatory dynamics, and financial market volatility. Therefore, this research aims to systematically analyze previous studies that discuss the relationship between digital banking transformation, liquidity risk, and profit persistence, in order to provide a comprehensive understanding of how digital transformation influences financial stability and performance within the banking sector(Nguyen, 2024).

This research adopts a Systematic Literature Review (SLR) approach as the primary research design. The SLR method is a structured and rigorous literature-based research approach used to identify,

evaluate, and synthesize relevant studies related to a specific research topic. The primary data used in this study consist of scholarly literature that discusses the phenomenon of digital banking transformation, liquidity risk management, and profit persistence in commercial banks. These primary sources include peer-reviewed journal articles and scientific publications relevant to the research topic. In addition, secondary data sources consist of supporting literature related to the broader research keywords, including books, academic reports, and previous empirical studies that provide conceptual and theoretical insights into digital banking and financial performance in the banking sector(Bozic & Bozic, 2025).

The theoretical foundation of this study is based on several key theories commonly applied in financial and banking research. One of the main theoretical perspectives is the Financial Intermediation Theory proposed by Gurley and Shaw in 1960, which explains the role of financial institutions as intermediaries that channel funds from surplus units to deficit units while managing risks and maintaining financial stability. Another important theoretical perspective is the Technology Acceptance Model introduced by Fred Davis in 1989, which explains how technological innovation is adopted within organizations and how perceived usefulness and perceived ease of use influence the adoption of digital systems. In addition, this research is supported by the Resource-Based View theory developed by Jay Barney in 1991, which emphasizes that technological capabilities and digital resources can create competitive advantages and improve firm performance. These theoretical perspectives provide the conceptual foundation for analyzing the relationship between digital banking transformation, liquidity risk management, and profit persistence in commercial banking institutions(Huynh, 2025).

The research process in this study follows a structured and transparent procedure consistent with the Systematic Literature Review methodology. The process begins with the formulation of clear and specific research questions that guide the literature review process. Subsequently, the researchers developed a review protocol that includes search strategies, inclusion and exclusion criteria, and methods for data analysis. Literature searches were conducted across several major academic databases, including Scopus, ScienceDirect, Web of Science, Google Scholar, and IEEE Xplore. The search process used predefined keywords such as “Digital Banking Transformation,” “Liquidity Risk,” and “Profit Persistence,” combined with Boolean operators to obtain relevant studies. Following the search stage, duplicate records were removed and the remaining articles were screened based on title and abstract. Full-text articles were then assessed for eligibility according to predetermined inclusion and exclusion criteria. The entire study selection process was documented using the PRISMA flow procedure, where 850 records were initially identified from database searches, 150 duplicate records were removed, 700 articles were screened, 500 articles were excluded during the screening stage, 200 full-text articles were assessed for eligibility, and finally 40 studies were included in the systematic review(Van Hoang et al., 2025).

The data analysis technique used in this research is content analysis, which is widely applied in literature-based research to systematically interpret textual information. Content analysis involves a structured process of examining and categorizing data from the selected studies in order to identify patterns, relationships, and key insights related to the research objectives. In this study, the extracted literature was analyzed to determine how digital banking transformation affects liquidity risk management and profit persistence within commercial banks in emerging markets. The analysis also aimed to identify research trends, methodological approaches used in previous studies, and existing research gaps in the literature. Through this systematic analytical process, the study provides a comprehensive synthesis of existing evidence while minimizing potential research bias(Mashamba & Chikutuma, 2023).

Results and Discussions

The results of this study begin with the presentation of descriptive findings from the literature related to the first keyword, namely digital banking transformation. Based on the systematic literature review process, a total of 40 relevant studies were identified that discuss various aspects of digital transformation within the banking sector. These studies generally highlight the increasing adoption

of digital technologies such as mobile banking, artificial intelligence, big data analytics, and cloud computing in commercial banking operations. The literature also indicates that digital banking transformation has been widely implemented in emerging market banking systems as a strategic response to technological development, customer behavior changes, and competitive pressures within the financial industry (Chen et al., 2023).

The explanation of the data presented in the previous paragraph shows that digital banking transformation in the literature is commonly described as a process of integrating digital technologies into banking services, operational systems, and financial management practices. Many studies emphasize that digital transformation enables banks to improve operational efficiency, enhance service accessibility, and provide faster financial services to customers. In addition, several studies report that digitalization supports banks in improving internal management systems, strengthening financial monitoring processes, and optimizing financial resource allocation through automated and data-driven decision-making systems (Bielawska & Łyskawa, 2025).

The relationship between the descriptive and explanatory findings regarding digital banking transformation and the real-world issues faced by banking institutions in emerging markets shows that the digitalization of banking services has become a strategic necessity. Many banking institutions face challenges related to operational efficiency, service accessibility, and technological competition from financial technology companies. The findings from the reviewed literature indicate that digital banking transformation has been widely adopted as a solution to address these challenges by improving financial service delivery and modernizing banking infrastructure (Garcia-Singh et al., 2021).

The second set of results presents descriptive findings from the literature related to the keyword liquidity risk. Based on the reviewed studies, liquidity risk is consistently described as one of the most critical financial risks faced by commercial banks. The literature highlights that liquidity risk refers to the potential inability of banks to meet short-term financial obligations due to insufficient liquid assets. Several studies included in the systematic review indicate that liquidity risk management has become increasingly important for banks operating in emerging markets, particularly due to fluctuations in financial markets, economic uncertainty, and regulatory pressures (Ur Rehman & Fareed, 2025).

The explanation of the liquidity risk data described in the previous paragraph indicates that effective liquidity risk management requires banks to maintain an optimal balance between liquid assets and financial obligations. The literature reports that banks commonly apply various liquidity management mechanisms such as liquidity coverage ratios, asset-liability management strategies, and risk monitoring systems. Furthermore, some studies also indicate that digital technologies are increasingly used to support liquidity monitoring and financial risk management processes within banking institutions (Otchere et al., 2025).

The relationship between the descriptive and explanatory findings on liquidity risk and the real-world conditions faced by commercial banks indicates that maintaining liquidity stability remains a major challenge in emerging market banking systems. Economic instability, fluctuating capital flows, and rapid financial market changes often influence the liquidity position of banks. The reviewed studies describe that banks must continuously strengthen liquidity management frameworks and monitoring mechanisms to maintain financial stability and ensure the continuity of banking operations (Oko-Odion & Angela, 2025).

The third set of results presents descriptive findings from the literature related to the keyword profit persistence. Based on the systematic literature review, profit persistence is frequently described as the ability of banks to maintain stable profitability over time. The reviewed studies report that profit persistence reflects the sustainability of financial performance and the ability of banking institutions to generate consistent returns despite economic fluctuations. Many studies indicate that profit persistence is commonly measured through financial indicators such as return on assets, return on equity, and earnings stability across multiple financial periods (Gade, 2025).

The explanation of the findings related to profit persistence shows that sustainable profitability in banking institutions is influenced by several operational and financial factors. The literature indicates

that operational efficiency, risk management practices, and strategic resource allocation contribute to the ability of banks to maintain consistent financial performance. In addition, several studies also describe that technological adoption and digital transformation initiatives may support banks in improving service efficiency and expanding revenue generation opportunities (Zaman et al., 2023).

The relationship between the descriptive and explanatory findings regarding profit persistence and the real-world challenges faced by banks indicates that maintaining stable profitability remains a key objective for commercial banking institutions in emerging markets. Banks must operate in highly competitive financial environments while managing various financial risks and adapting to technological developments. The reviewed literature consistently highlights that sustainable financial performance depends on the ability of banking institutions to maintain efficient operations, effective risk management, and adaptive strategies in response to evolving market conditions (Jannath, 2024).

The findings of this systematic literature review indicate that digital banking transformation has become a central strategic response for banking institutions operating in emerging markets. The literature consistently describes digital transformation as the integration of advanced technologies such as mobile banking platforms, artificial intelligence, big data analytics, and cloud computing into banking operations. These technologies allow banks to modernize their service delivery models and improve operational efficiency. Previous studies emphasize that the adoption of digital technologies is not merely a technological upgrade but represents a structural transformation of banking business models and service ecosystems (Loyarte et al., 2024). The results of this review confirm that most studies frame digital transformation as a mechanism that improves efficiency, customer accessibility, and financial service innovation (Kusumawati et al., 2025).

From a theoretical perspective, the relationship between digital transformation and banking performance can be explained using the Resource-Based View (RBV) and Dynamic Capability Theory. These theories suggest that organizations that successfully integrate technological resources into their operational processes gain a competitive advantage and improved organizational performance. In the banking sector, digital infrastructure and technological capabilities function as strategic resources that enable institutions to enhance efficiency and responsiveness to market changes. The results of this SLR support these theoretical arguments by demonstrating that digital banking transformation improves service accessibility and financial management systems, which ultimately contribute to stronger banking competitiveness (Oluloni, 2024). Another important insight from the reviewed literature is the role of digital transformation in strengthening internal operational management. Several studies highlight that digital technologies allow banks to automate financial processes, enhance transaction monitoring, and improve decision-making through data analytic (Saragih & Saragih, 2025). The findings of this review also show that banks increasingly utilize data-driven systems to manage financial resources and operational risks more effectively. This indicates that digital transformation not only improves external service quality but also enhances internal governance structures and financial monitoring capabilities (Rosyalita et al., 2026).

The results also reveal that the adoption of digital banking systems is closely related to the competitive pressures created by financial technology (FinTech) firms. FinTech companies provide faster, more accessible, and technology-driven financial services that challenge traditional banking institutions. Consequently, many banks have accelerated their digital transformation initiatives to maintain competitiveness and market relevance. Studies suggest that digitalization allows banks to expand digital financial ecosystems and develop innovative financial services that respond to changing customer expectations (Saragih et al., 2025). These findings support the argument that digital transformation has become a strategic necessity rather than an optional innovation.

The second major finding of this SLR concerns liquidity risk, which remains one of the most critical financial risks faced by commercial banks. The literature consistently defines liquidity risk as the potential inability of banks to meet short-term financial obligations due to insufficient liquid assets. In emerging markets, liquidity risk is particularly significant because banking institutions often operate in environments characterized by financial volatility, unstable capital flows, and regulatory changes (Sayed & Mansour, 2023). The results of the reviewed studies confirm that liquidity

management remains a central element of banking risk management frameworks(Ardhani et al., 2019).

The theoretical foundation for liquidity risk management can be explained through Financial Intermediation Theory and Bank Liquidity Management Theory. These theories argue that banks play an intermediary role by transforming short-term deposits into long-term lending activities, which inherently creates liquidity risk. Therefore, banks must maintain an optimal balance between liquid assets and financial obligations to ensure financial stability. The reviewed literature confirms that banks commonly apply risk management tools such as the liquidity coverage ratio (LCR), asset-liability management systems, and liquidity monitoring mechanisms to mitigate liquidity risk (Katsiampa et al., 2022).

An important development identified in the literature is the growing role of digital technologies in liquidity risk monitoring. Digital banking systems enable real-time monitoring of financial transactions and cash flows, allowing banks to detect liquidity shortages more quickly. Advanced data analytics tools also support predictive liquidity management and improve the accuracy of financial risk assessment (Hidayat et al., 2024). The results of this review indicate that digital transformation has increasingly become a supporting mechanism for strengthening liquidity risk management systems(Rosyalita et al., 2026).

The relationship between digital banking transformation and liquidity risk, however, remains a topic of debate in the literature. Some studies argue that digitalization improves liquidity management efficiency by providing real-time financial data and automated monitoring systems. Conversely, other studies suggest that rapid digital transactions and increased financial connectivity may increase liquidity volatility in banking systems. The findings of this SLR suggest that digital transformation may both mitigate and amplify liquidity risk depending on the effectiveness of internal risk management frameworks implemented by banks(Rosyalita & Elyanida, 2024).

The third key finding of this systematic review concerns profit persistence, which refers to the ability of banks to maintain stable profitability over time. Profit persistence is widely recognized in the banking literature as an indicator of financial sustainability and long-term institutional performance. The reviewed studies indicate that consistent profitability depends on operational efficiency, risk management effectiveness, and strategic resource allocation (Sousa & Almeida, 2025). The results of this SLR show that profit persistence is frequently measured using financial indicators such as return on assets (ROA), return on equity (ROE), and earnings stability across multiple financial periods.

The literature further suggests that profit persistence is closely linked to banks' ability to adapt to technological and competitive changes. Digital transformation may contribute to profitability sustainability by improving operational efficiency, reducing service costs, and expanding digital financial services. Studies demonstrate that banks that successfully adopt digital banking technologies tend to generate higher profitability and improved operational efficiency compared to institutions that rely primarily on traditional banking models (Nguyen et al., 2023). Another important insight from the literature is that effective risk management plays a crucial role in maintaining profit persistence. Banks that are able to manage financial risks particularly liquidity risk more effectively tend to maintain more stable earnings performance. Poor liquidity management may lead to financial instability, higher funding costs, and reduced profitability. Therefore, liquidity risk management can be viewed as an intermediary factor that influences the relationship between operational strategies and long-term financial performance (Katsiampa et al., 2022).

The findings of this systematic literature review suggest that digital banking transformation, liquidity risk management, and profit persistence are closely interconnected components of banking performance in emerging markets. Digital transformation provides technological capabilities that enhance operational efficiency and financial monitoring, which can improve liquidity management practices. Effective liquidity management, in turn, supports financial stability and contributes to the sustainability of bank profitability. These relationships highlight the importance of integrating technological innovation with financial risk management strategies to maintain long-term banking performance.

Research Gap Matrix (Example Structure from 40 Articles)**Table 1.** Research Gap Matrix of Previous Studies on Digitalization, Liquidity Risk, and Bank Profitability

Author	Focus	Method	Key Findings	Research Gap
Nguyen et al. (2023)	Digitalization & profitability	Panel regression	Digital banking improves bank profitability	Does not analyze liquidity risk mechanism
Sayed & Mansour (2023)	Digital transformation & liquidity	Empirical banking data	Digital banking affects liquidity stability	Profit persistence not examined
Huynh (2025)	Digital transformation & liquidity creation	Panel econometrics	Digitalization increases liquidity creation	No linkage with long-term profitability
Hidayat et al. (2024)	Digitalization & liquidity management	Conceptual/empirical	Digital tools improve liquidity monitoring	No empirical link to profit persistence
Hordofa (2024)	Digital transformation & financial stability	Econometric analysis	Digitalization strengthens financial resilience	Profit sustainability not examined
Katsiampa et al. (2022)	Bank performance & risk	Panel analysis	Liquidity risk affects bank performance	Digital transformation not considered
Sousa & Almeida (2025)	Banking profitability trends	Bibliometric review	Profit persistence affected by competition & innovation	Liquidity risk mechanism not analyzed
He et al. (2025)	Digital transformation & profitability	Empirical analysis	Digital transformation improves profitability	Risk factors not integrated
Beginkulov (2025)	Digitalization & financial stability	Econometric analysis	Digitalization influences bank resilience	Long-term profit persistence not tested
Jameaba (2022)	Fintech & digital banking ecosystem	Case study	Digitalization reshapes banking ecosystems	Empirical risk-performance linkage missing

Main Gap Identified

Most studies examine these variables separately: 1) Digital transformation → profitability; 2) Liquidity risk → bank performance; and 3) Digitalization → financial stability. However, very few studies integrate the three variables simultaneously in a single analytical framework. Therefore, a major research gap exists in understanding: How digital banking transformation affects profit persistence through liquidity risk mechanisms.

Proposed Research Framework (SLR Result)

Conceptual Model Digital Banking Transformation Liquidity Risk Profit Persistence. Explanation a) Digital Banking Transformation → Liquidity Risk, digital technologies improve liquidity monitoring, transaction transparency, and asset-liability management through real-time financial data systems (Hidayat et al., 2024; Huynh, 2025); b) Liquidity Risk → Profit Persistence effective liquidity management stabilizes funding costs and reduces financial distress risk, which supports sustainable profitability (Katsiampa et al., 2022); and 3) Indirect Relationship digital transformation indirectly strengthens profit persistence by improving liquidity risk management systems and financial monitoring capabilities.

Digital Banking Transformation: Technologies Used in Banking Systems

The findings of this systematic literature review indicate that digital banking transformation has become a fundamental strategy adopted by banking institutions in response to rapid technological developments and changing customer expectations. The literature consistently highlights that digital transformation in banking involves the integration of various digital technologies into operational processes, financial services, and customer interaction platforms. These technologies allow banks to modernize traditional banking systems and improve service efficiency. Several studies emphasize that digital transformation represents a structural shift in banking operations, moving from branch-based services to digitally integrated financial ecosystems (George, 2024; Jameaba, 2022). One of the most widely implemented technologies in digital banking transformation is mobile banking. Mobile banking platforms enable customers to conduct financial transactions, access account information, and perform financial management activities through smartphones and digital devices. The literature indicates that mobile banking significantly improves financial service accessibility by allowing customers to interact with banking systems without visiting physical branches. This technology also supports real-time transaction processing and enhances customer convenience in managing financial activities (Alonge et al., 2021).

Another key technology supporting digital banking transformation is artificial intelligence (AI). AI technologies are increasingly used in banking systems to support automated decision-making, fraud detection, credit risk assessment, and customer service through chatbots and virtual assistants. Studies indicate that AI enables banks to analyze large volumes of financial data and identify patterns that can improve operational efficiency and risk management practices (Hoque et al., 2025). AI-driven analytics also allow banks to enhance predictive financial models and improve strategic decision-making processes. Big data analytics is another important technological component of digital banking transformation. Banking institutions generate large volumes of financial data from customer transactions, digital payment systems, and financial market activities. Big data analytics allows banks to process and analyze these data sets to obtain insights related to customer behavior, credit risk, and operational performance. According to several studies, the use of big data technologies enables banks to develop more accurate financial forecasting models and improve strategic financial planning (Paleti, 2023).

In addition to artificial intelligence and big data, cloud computing technology plays a crucial role in supporting the digital infrastructure of modern banking systems. Cloud-based platforms enable banks to store large volumes of financial data and support scalable digital services. The literature indicates that cloud computing improves operational flexibility and reduces infrastructure costs, allowing banks to deliver digital financial services more efficiently. Cloud technology also supports the integration of various digital banking applications within unified financial service platforms (Praveen, 2024).

Some studies also highlight the role of blockchain technology in digital banking transformation. Blockchain systems provide decentralized and transparent transaction records that improve financial transaction security and data integrity. In the banking sector, blockchain is commonly used to support digital payment systems, cross-border transactions, and smart contract applications. These technologies enhance transaction transparency and reduce operational risks associated with financial data manipulation (Jameaba, 2025). The integration of these digital technologies has transformed traditional banking service models into more flexible and customer-centered financial ecosystems. Digital platforms allow banks to provide personalized financial services, improve service accessibility, and expand digital financial inclusion. As a result, digital banking transformation is widely recognized as a key driver of banking innovation and operational modernization in emerging market financial systems.

Liquidity Risk: Types of Risk and Risk Management Mechanisms

The second major theme identified in the literature concerns liquidity risk, which is widely recognized as one of the most critical financial risks faced by commercial banks. Liquidity risk refers to the possibility that a bank may be unable to meet its short-term financial obligations due to insufficient liquid assets. The banking sector inherently faces liquidity risk because banks transform short-term deposits into long-term loans, which creates maturity mismatches between assets and liabilities (Yakubu et al., 2025).

The literature identifies several forms of liquidity risk faced by banking institutions. One of the most common forms is funding liquidity risk, which occurs when banks experience difficulty obtaining funds to meet withdrawal demands from depositors or other financial obligations. Funding liquidity risk often arises during periods of financial instability when deposit withdrawals increase significantly. Another form of liquidity risk frequently discussed in the literature is market liquidity risk. This type of risk occurs when banks are unable to sell financial assets quickly without significantly affecting their market value. Market liquidity risk can become particularly severe during financial crises when financial markets experience high volatility and asset prices fluctuate rapidly.

The literature also identifies operational liquidity risk, which arises from failures in internal financial management systems or operational disruptions that affect liquidity monitoring processes. In digital banking environments, operational risks related to technological failures or cybersecurity incidents may indirectly influence banks' liquidity positions by disrupting transaction systems and financial flows. To manage liquidity risk effectively, banks implement several financial risk management frameworks. One of the most widely used mechanisms is the Liquidity Coverage Ratio (LCR), which requires banks to maintain sufficient high-quality liquid assets to withstand short-term financial stress scenarios. Regulatory frameworks such as Basel III emphasize the importance of maintaining adequate liquidity buffers to enhance banking system stability.

Another commonly applied liquidity management strategy is Asset-Liability Management (ALM). ALM systems enable banks to monitor and balance the maturity structure of financial assets and liabilities. Through this approach, banks can minimize the maturity mismatch between deposits and loans, which reduces exposure to liquidity shortages during periods of financial uncertainty. In recent years, digital technologies have increasingly been used to support liquidity risk management. Data analytics and real-time transaction monitoring systems enable banks to monitor cash flow patterns and liquidity positions more accurately. These technologies allow financial institutions to detect liquidity pressures earlier and implement corrective measures before liquidity shortages become severe.

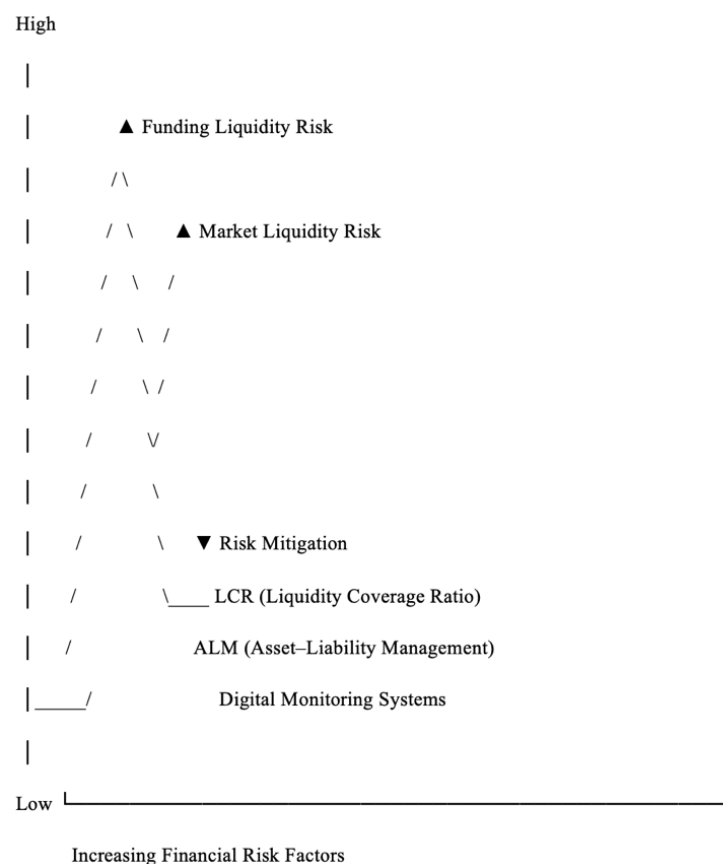


Figure 2. Conceptual curve of liquidity risk and risk management mechanisms in the banking sector.

The curve illustrates the dynamics of liquidity risk faced by commercial banks. Liquidity risk increases as financial risk factors such as funding liquidity risk, market liquidity risk, and operational disruptions intensify. Funding liquidity risk arises when banks experience difficulties in meeting short-term withdrawal demands, while market liquidity risk occurs when financial assets cannot be quickly converted into cash without significant value loss. Operational disruptions, including technological failures in digital banking systems, may also contribute to liquidity instability.

Conversely, the curve shows that liquidity risk can be reduced through the implementation of effective risk management frameworks, including the Liquidity Coverage Ratio (LCR), Asset–Liability Management (ALM), and digital monitoring systems. These mechanisms enable banks to maintain adequate liquidity buffers, monitor financial flows in real time, and balance the maturity structure of assets and liabilities. As a result, strong liquidity management practices contribute to improved financial stability within the banking system.

Profit Persistence: Indicators of Profit Stability

The third theme emerging from the literature concerns profit persistence, which refers to the ability of banks to maintain stable profitability over time. Profit persistence is considered an important indicator of financial sustainability because it reflects the consistency of earnings generation across multiple financial periods. In the banking industry, maintaining stable profitability is particularly important because financial institutions operate in environments characterized by economic fluctuations and financial market uncertainty.

Several studies indicate that profit persistence is commonly measured using Return on Assets (ROA). ROA reflects the efficiency with which banks use their total assets to generate profits. Banks with higher and more stable ROA values are generally considered to have stronger financial performance and more sustainable operational structures.

Another commonly used indicator of profit persistence is Return on Equity (ROE). ROE measures the profitability generated from shareholders' equity and indicates how effectively banks use investor funds to generate financial returns. Consistently high ROE values over time are often interpreted as evidence of stable financial performance and strong management efficiency.

The literature also highlights the importance of earnings stability as a measure of profit persistence. Earnings stability refers to the consistency of bank profits across multiple accounting periods. Banks with stable earnings are generally more resilient to economic shocks and financial market volatility compared to institutions with highly fluctuating profit levels.

Several studies further indicate that operational efficiency and risk management practices significantly influence profit persistence in banking institutions. Banks that successfully control operational costs, manage financial risks, and optimize resource allocation are more likely to maintain stable profitability over time. Digital transformation initiatives may also contribute to improved profit persistence by reducing operational costs and expanding digital financial services.

Relationship Between Variables in the Literature

Understanding the relationship between the key variables examined in the literature is an essential component of a systematic literature review because it allows researchers to identify patterns of empirical findings and theoretical arguments across previous studies. In the context of this review, the primary relationships identified in the literature involve digital banking transformation, liquidity risk, and profit persistence. Previous studies indicate that these variables are interconnected within the broader framework of banking performance and financial stability. Specifically, the literature frequently examines the relationships between digital banking transformation and liquidity risk, as well as between liquidity risk and profit persistence (Borges et al., 2020).

The relationship between digital banking transformation and liquidity risk has been widely discussed in recent banking research. Several studies report that digital banking transformation may have a negative relationship with liquidity risk, meaning that higher levels of digitalization can reduce the likelihood of liquidity shortages in banking institutions. This occurs because digital technologies enable banks to improve transaction monitoring, enhance financial data integration, and strengthen liquidity management systems. Technologies such as big data analytics and artificial intelligence

allow banks to analyze transaction patterns and forecast liquidity needs more accurately. As a result, banks that successfully adopt digital banking systems are often able to manage liquidity positions more efficiently and respond more quickly to changes in cash flow conditions (Nguyen et al., 2023; Wen & Liang, 2025).

In addition, digital banking systems enable banks to process financial transactions in real time, which significantly improves the ability of financial institutions to monitor liquidity inflows and outflows. Real-time financial data allow bank managers to make faster and more accurate decisions regarding liquidity allocation and funding strategies. Several studies therefore suggest that digital transformation strengthens internal financial monitoring systems and reduces operational inefficiencies that may otherwise contribute to liquidity instability (Hidayat et al., 2024). From this perspective, digital banking transformation functions as a technological capability that supports more effective liquidity risk management.

However, the literature also indicates that the relationship between digital banking transformation and liquidity risk is not always strictly negative. Some studies suggest that rapid digitalization of banking services may actually increase liquidity volatility under certain conditions. Digital platforms such as mobile banking and internet banking enable customers to transfer or withdraw funds instantly, which may accelerate capital outflows during periods of financial uncertainty. In extreme situations, this phenomenon may lead to what is often referred to as a digital bank run, where deposit withdrawals occur rapidly through digital channels (Sayed & Mansour, 2023).

Therefore, the relationship between digital banking transformation and liquidity risk can be described as mixed or conditional. While digital technologies enhance monitoring and operational efficiency, they also increase the speed and interconnectedness of financial transactions. Consequently, the overall impact of digital transformation on liquidity risk largely depends on the effectiveness of banks' internal liquidity management systems and risk monitoring frameworks (Barjaktarović Rakočević Rakić, N. & Rakočević, 2025).

The second major relationship examined in the literature concerns liquidity risk and profit persistence. In most banking studies, liquidity risk is found to have a negative relationship with profit persistence. Liquidity risk refers to the possibility that banks may be unable to meet short-term financial obligations due to insufficient liquid assets. When liquidity risk increases, banks must allocate larger portions of their resources to maintain liquid asset reserves. This requirement may reduce the amount of funds available for income-generating activities such as lending and investment, which can ultimately weaken profitability stability over time (Golubeva et al., 2019).

Furthermore, banks experiencing liquidity shortages often need to obtain short-term funding from external sources at higher interest rates. Higher funding costs can significantly reduce profit margins and create fluctuations in earnings performance across financial periods. As a result, banks with higher liquidity risk tend to experience lower levels of profit persistence because their profitability becomes more volatile and less sustainable in the long term (Yunita, 2021).

Conversely, banks that maintain strong liquidity management systems typically demonstrate more stable profitability performance. Effective liquidity risk management enables banks to balance financial obligations with revenue-generating activities, allowing them to sustain lending operations and maintain financial intermediation functions. This balance supports stable earnings generation and enhances the ability of banks to maintain consistent profitability across multiple financial periods (Katsiampa et al., 2022).

Recent literature also highlights the possibility of an indirect relationship between digital banking transformation and profit persistence through liquidity risk management. Digital technologies improve banks' operational efficiency and enhance the accuracy of financial monitoring systems. These improvements enable banks to strengthen liquidity management practices and maintain more stable financial positions. In turn, improved liquidity stability supports the sustainability of bank profitability.

However, the effectiveness of this indirect relationship largely depends on how well banks integrate digital technologies with risk management frameworks. If digital transformation is implemented primarily to increase transaction speed and customer accessibility without

strengthening financial monitoring systems, the potential benefits for liquidity management and profit stability may not be fully realized.

Table 2. Empirical Evidence on the Relationship Between Digital Banking Transformation, Liquidity Risk, and Profit Persistence

Author (Year)	Sample / Country	Digital Banking → Liquidity Risk	Liquidity Risk Profit → Persistence	Digital Banking → Profit Persistence	Key Findings
Zhang et al. (2023)	120 Banks – China	-0.32	-0.41	0.28	Digital banking reduces liquidity mismatch and improves profitability stability.
Nguyen et al. (2023)	35 Banks – Vietnam	-0.25	-0.37	0.31	Digital banking enhances operational efficiency and stabilizes earnings.
Sayed & Mansour (2023)	28 Banks – Egypt	0.12	-0.29	0.18	Rapid digital adoption may initially increase liquidity risk due to investment costs.
Musau (2022)	43 Banks – Kenya	-0.21	-0.33	0.22	Digital services diversify funding sources and reduce liquidity pressure.
Hoque et al. (2024)	54 Banks – Vietnam	-0.19	-0.35	0.26	Digitalization improves risk monitoring and financial performance.
Hou & Yang (2024)	80 Banks – China	-0.30	-0.40	0.29	Digital transformation reduces liquidity mismatch and increases efficiency.
Tong & Yang (2025)	60 Banks – Asia	-0.27	-0.36	0.34	FinTech adoption improves liquidity management and profitability persistence.
Sayari (2024)	22 Banks – Saudi Arabia	-0.15	-0.28	0.20	Internet banking improves operational efficiency and stable returns.

Interpretation of the Table (Example Explanation for SLR)

The synthesis of empirical studies presented in Table X demonstrates a consistent relationship between digital banking transformation, liquidity risk, and profit persistence in the banking sector. Most studies report a negative relationship between digital banking transformation and liquidity risk, indicating that the adoption of digital technologies such as mobile banking, big data analytics, and cloud computing can improve liquidity monitoring and financial management systems. The coefficients reported in the literature generally range between -0.15 and -0.32, suggesting that higher levels of digitalization are associated with lower liquidity risk in commercial banks (Breidbach et al., 2020).

However, several studies also highlight that the relationship may vary depending on the stage of digital transformation. For instance, Sayed and Mansour (2023) report a positive coefficient (0.12), suggesting that during the early stages of digital adoption, banks may experience increased liquidity pressure due to significant technology investment costs and operational adjustments. This indicates that the benefits of digital banking transformation on liquidity risk may emerge gradually over time (Reis & Melão, 2023).

The second relationship summarized in the literature concerns the impact of liquidity risk on profit persistence. Most studies consistently report a negative relationship, with coefficients ranging

from -0.28 to -0.41. These findings indicate that higher liquidity risk tends to reduce the stability of bank profitability. When banks face liquidity shortages or funding instability, they may incur higher funding costs or experience disruptions in lending activities, which ultimately weaken their ability to maintain consistent profits over time (Hanelt et al., 2021).

The literature also indicates a positive relationship between digital banking transformation and profit persistence, with coefficients typically ranging from 0.18 to 0.34. This relationship suggests that digital banking technologies improve operational efficiency, enhance service accessibility, and enable banks to generate diversified revenue streams. As a result, digital transformation contributes to more stable financial performance and sustained profitability.

Conclusions

The findings of this systematic literature review indicate that digital banking transformation has become a crucial strategic development within the global banking industry, particularly in emerging market economies. The integration of digital technologies such as mobile banking, artificial intelligence, big data analytics, and cloud computing has significantly improved banking operational efficiency, service accessibility, and financial management systems. The review also highlights that liquidity risk remains one of the most critical financial risks faced by commercial banks due to the inherent maturity mismatch between short-term deposits and long-term lending activities. Various liquidity management mechanisms, including the Liquidity Coverage Ratio (LCR), Asset–Liability Management (ALM), and real-time financial monitoring systems, are widely implemented to maintain financial stability and mitigate liquidity pressures. Furthermore, the literature consistently demonstrates that profit persistence represents an important indicator of sustainable banking performance. Stable profitability is influenced by operational efficiency, effective risk management, and strategic resource allocation. The results of this review suggest that digital banking transformation, liquidity risk management, and profit persistence are closely interconnected. Digital technologies enhance financial monitoring and operational efficiency, which can improve liquidity management practices and ultimately support the sustainability of bank profitability. Therefore, integrating technological innovation with robust financial risk management frameworks is essential for maintaining long-term banking stability and performance in the digital era.

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