Decoding the Nexus Between Credit Risk Challenges and Banks Performance: Perspectives from Commercial Banks in Jordan

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Abstract

With the increasing complexity of global financial markets, commercial banks in emerging markets face a multitude of challenges in managing credit risk, which directly impacts their performance. While the importance of credit risk management is widely recognised, comprehensive research on the connection between credit risk challenges and banks' performance, particularly in emerging markets, remains scarce. Existing literature on credit risk management often focuses on developed markets, neglecting the unique challenges faced by banks in emerging markets. As such, there is a growing need for empirical studies to explore the specific credit risk challenges encountered by commercial banks in emerging markets and their potential implications for banks' performance. This study aims to address this gap by investigating the relationship between credit risk challenges and banks' performance in emerging markets, focusing on the case of Jordan. The research adopts a literature review and administers a questionnaire to explore and assess key credit risk challenges and their implications for performance. Preliminary analysis highlights critical issues such as cybersecurity threats, fluctuations in interest rates, inadequate resources and expertise, changes in regulatory frameworks, and the lack of system integration within the banks' internal departments. This research contributes to a deeper understanding of the credit risk management landscape in emerging markets and provides valuable insights for policymakers, regulators, and banking practitioners. Addressing these challenges can enable commercial banks to enhance their credit risk management practices, improve performance, and ultimately contribute to the stability and resilience of the financial system in emerging markets.

Keywords: Emerging markets, credit risk, banks, performance, cybersecurity, interest rates, regulation, resources, integration, Jordan.

1. Introduction

The global financial landscape has become increasingly complex, presenting commercial banks with significant challenges, particularly in the area of credit risk management (AlJaloudi et al., 2024; Bi & Bao, 2024; Chen et al., 2021; Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Dacre, AlJaloudi, Thiam, et al., 2024; Saliba et al., 2023). Credit risk, defined as the potential for financial loss arising from a borrower's failure to repay a loan or fulfil contractual obligations, is a critical factor influencing banks' performance and stability (Ghosh, 2015). Recent events underscore the importance of effective credit risk management (Eggleton et al., 2023; Kou et al., 2021; Sonjit et al., 2021a). For example, in 2023, several banks including Silicon Valley Bank and Signature Bank, collapsed due to significant liquidity issues and poorly managed credit exposures, leading to substantial financial losses and market instability (Feinstein et al., 2024; Metrick, 2024; Ozili, 2024). Similarly, the failure of First Republic Bank in 2023 highlighted the consequences of inadequate risk assessment and overexposure to high-risk assets (Nobanee et al., 2023), while the collapse of Silvergate Bank, primarily serving cryptocurrency clients, highlighted weaknesses associated with concentrated exposure to volatile sectors (Warren, 2024). These instances illustrate a critical need for effective credit risk management practices in order to maintain financial stability (Chen et al., 2021; Nobanee et al., 2023; Ozili, 2024; Saliba et al., 2023).

While the importance of credit risk management is universal, its manifestation and management differ significantly between developed and emerging markets (Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Dacre, AlJaloudi, Thiam, et al., 2024; Hopper et al., 2017; Hoskisson et al., 2000; Levine, 1996). For instance, in developed economies such as the United States and the European Union, established regulatory frameworks and advanced credit scoring systems provide instruments to mitigate risks (Anderson, 2007; Claessens et al., 2024; Miller, 2003). However despite these frameworks, challenges do persist, for instance as experienced through the European sovereign debt crisis, where high-risk loans and limited oversight strained banks (De Marco, 2019; Lane, 2012; Mitchener & Trebesch, 2023). In contrast, emerging markets face distinct obstacles such as limited access to credit histories, less established institutional frameworks, and heightened exposure to external disruptions (Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Kane, 1995; Zalan & Toufaily, 2017). The case of India's Non-Banking Financial Companies (NBFCs)

crisis in 2018, driven by high defaults and inadequate governance, highlights the acute nature of these challenges in less mature financial systems (Manda & Rani, 2019).

More specifically, emerging markets are typically distinguished by rapid economic growth, financial market liberalisation, and evolving regulatory environments (Bekaert & Harvey, 2003; Dong et al., 2021b; Saeed, 2024; Singh, 1997; Stiglitz, 2003). These characteristics tend to introduce unique challenges for commercial banks, such as inadequate infrastructure and limited access to reliable data (AlJaloudi et al., 2024; Costa et al., 2014; Hawkins & Mihaljek, 2001; Mohsin et al., 2023; Simpson, 2002; Vong & Song, 2015). Consequently, credit risk management practices that prove effective in developed markets may not always seamlessly adapt to the complex and dynamic contexts of emerging economies (Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Mateev, Sahyouni, et al., 2023). Examining these challenges is essential in order to develop appropriate risk management strategies suited to these environments. However despite this mandate, the existing body of research largely focuses on credit risk management in developed markets, often overlooking the distinct challenges encountered by banks in emerging economies (Ayayi, 2012; Saleh & Abu Afifa, 2020; Van Greuning & Bratanovic, 2020). The omission is significant due to the growing integration and prominence of emerging markets in the global financial system and the potential for credit risk events in these regions to trigger broader economic consequences (AlJaloudi et al., 2024; Audi & Al-Masri, 2024; Bekaert & Harvey, 2003; Chari, 2023; Dacre, AlJaloudi, Thiam, et al., 2024; Prasad et al., 2003; Stiglitz, 2003).

Bridging this research gap is vital for several reasons. Firstly, understanding the specific credit risk challenges encountered by banks in emerging markets can inform the development of tailored risk management strategies and best practices that reflect the unique features of these markets (Bo, 2024; Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Scott et al., 2024). Secondly, identifying the potential impact of credit risk challenges on banks' performance can highlight areas where policy interventions and regulatory reforms may be required to support financial stability and economic growth (Abdou & Alarabi, 2024; Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Ezeoha, 2011; Karanja et al., 2022). Lastly, examining the relationship between credit risk challenges and banks' performance in emerging markets can contribute to the broader discourse on financial resilience and sustainability, guiding efforts to foster a more stable and inclusive global financial system

(Bekaert & Harvey, 2003; Costa et al., 2014; Dacre, AlJaloudi, Thiam, et al., 2024; Dacre, Yan, Frei, et al., 2024; Stiglitz, 2003; Vong & Song, 2015).

This study therefore seeks to bridge this gap by investigating the relationship between credit risk challenges and banks' performance in emerging markets, with a particular focus on Jordan (Al-Smadi & Al-Wabel, 2011; Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Mashhour & Zaatreh, 2008). As an emerging market economy, Jordan has witnessed significant growth and development in its banking sector over recent decades (Mazur, 2023; Moh'd AL-Tamimi et al., 2019). However, such as many other emerging markets, Jordanian banks face a number of credit risk challenges that could impair their performance and contribute to financial instability (Alzuod & Alqhaiwi, 2022; Barber et al., 2021; Kharabsheh & Gharaibeh, 2022; Kutum & Al-Jaberi, 2015; Sonjit et al., 2021b).

The remainder of this paper is structured as follows: Section 2 reviews the literature on credit risk management, highlighting its impact on banks' performance and the unique challenges in emerging markets, including economic vulnerabilities, resource constraints, regulatory issues, and evolving risks like cybersecurity and interest rate fluctuations. Section 3 outlines the research methodology, while section 4 discusses the initial findings, highlighting the key credit risk challenges identified and their potential implications for banks' performance. Finally, Section 5 concludes the paper by summarising the main insights, proposing avenues for future research, and offering recommendations for policymakers, regulators, and banking practitioners.

2. Literature Review

Studies in developed markets have consistently highlighted the pivotal role of credit risk management in ensuring financial stability and optimising banks' performance. For instance, research has demonstrated a negative relationship between Non-Performing Loans (NPLs) and profitability, showing that higher NPL ratios weaken financial performance by reducing interest income and increasing provisioning requirements (Bayar, 2019; Berger & DeYoung, 1997; Chen et al., 2021; Louzis et al., 2012). Similarly, macroeconomic factors such as GDP growth, inflation, and unemployment have been identified as critical determinants of credit risk exposure, shaping the broader economic conditions under which banks operate (Awijen et al., 2023; Ghosh, 2015; Mpofu & Nikolaidou, 2018; Reinhart & Rogoff, 2011)

Table 1: Contrasting Credit Risk Challenges in Developed and Emerging Economies

Aspect	Developed Markets	Emerging Markets
Macroeconomic Factors	Stable economic conditions with manageable inflation and low unemployment rates (Awijen et al., 2023).	High macroeconomic volatility, inflationary pressures, and higher unemployment rates (Moussa, 2015).
Regulatory Frameworks	Well-established regulations (i.e. Basel III compliance) (Frait & Tomšík, 2014).	Developing regulatory frameworks, resource-constrained (Bekaert & Harvey, 2003).
Credit Information Systems	Advanced systems for credit scoring and borrower assessment (Anderson, 2007).	Developing credit information systems, limiting accurate borrower assessments (Siddique et al., 2022).
Technological Integration	High adoption of advanced fintech and analytics tools (Serkbayeva et al., 2024).	Limited adoption of fintech solutions due to resource and infrastructure constraints (Ng & Kwok, 2017).
Bank Size and Capitalisation	Larger banks with established capitalisation and risk management frameworks (Louzis et al., 2012).	Smaller banks with emergent capitalisation, more vulnerable to credit defaults (Das & Ghosh, 2007).
Exposure to External Shocks	Less susceptible to external shocks due to diversified economies (Bayar, 2019).	Susceptible to external shocks, such as currency volatility and global interest rate changes (Hawkins & Mihaljek, 2001).
Cybersecurity Threats	Funded systems to mitigate and respond to cyberattacks (Kamiya et al., 2021).	Legacy technological infrastructure increases vulnerability to cyber risks (Ani et al., 2017).
Access to Credit Risk Tools	Advanced risk assessment tools, supported by big data and predictive modelling (Ghosh, 2015).	Limited access to advanced tools and data, hindering risk assessment capabilities (Poudel, 2012).
Loan Growth Dynamics	Moderate loan growth, closely monitored to minimise defaults (Berger & DeYoung, 1997).	Rapid loan growth, often with limited risk monitoring (Das & Ghosh, 2007).
Focus on Sustainability	Growing focus on climate-related risks and ESG considerations (Serkbayeva et al., 2024)	Limited focus on sustainability due to pressing economic challenges (Beshouri & Gravråk, 2010).

While these insights provide valuable lessons, their applicability to emerging markets is limited (Dacre, AlJaloudi, Al-Mhdawi, et al., 2024). The economic, institutional, and regulatory conditions in emerging markets differ markedly from those in developed economies, introducing unique challenges (Hawkins & Mihaljek, 2001). Developing legal frameworks, underdeveloped financial systems, and heightened susceptibility to external shocks exacerbate credit risk in these regions (Bekaert & Harvey, 2003) (Table 1). For instance, studies from South Asia and North Africa highlight how macroeconomic

volatility and inadequate credit information systems amplify default risks in emerging banking sectors (Moussa, 2015; Siddique et al., 2022)

Although the literature on credit risk management in emerging markets is less developed, some studies address this gap. In India and Pakistan, for example, bank size, loan growth, and macroeconomic conditions have been identified as significant contributors to credit risk, with smaller banks and those experiencing rapid loan growth being particularly vulnerable to credit defaults (Das & Ghosh, 2007; Manda & Rani, 2019; Siddique et al., 2022). Research in Malaysia has similarly demonstrated the importance of effective credit risk management practices in mitigating adverse effects on financial performance, highlighting the need for effective internal controls and regulatory oversight (Al-Mhdawi, O'Connor, et al., 2023; Al-Mhdawi et al., 2024; Karim et al., 2010).

Comparative studies have shown that Jordanian banks lag behind their regional counterparts in terms of risk management efficiency, though these studies have not specifically addressed credit risk or its implications for bank performance (Al-Tamimi & Al-Mazrooei, 2007; AlJaloudi et al., 2024; Alshatti, 2015; Dacre, AlJaloudi, Thiam, et al., 2024). Findings suggest a significant relationship between credit risk management practices and the profitability of Jordanian commercial banks, but they underscore the need for further research to explore the specific challenges faced by this sector (Alshatti, 2015).

The COVID-19 pandemic (Eggleton et al., 2021; Sonjit et al., 2021c) has underscored the fragility of global credit systems, with emerging markets experiencing significant surges in non-performing loans These challenges, combined with the increasing focus on climate-related risks (Dong et al., 2021a; Tite et al., 2021a), are reshaping the landscape of credit risk management, necessitating a more holistic and adaptive approach (Al-Mhdawi, Dacre, et al., 2023; Baxter et al., 2023; Dong et al., 2022; Dong et al., 2024). Additionally, emerging trends, such as the integration of fintech considerations into banking practices, are beginning to influence credit risk management (Dacre, AlJaloudi, Thiam, et al., 2024; Serkbayeva et al., 2024). For instance, the adoption of advanced analytics and risk assessment tools has been shown to enhance the accuracy of credit scoring models, particularly in emerging economies where traditional credit evaluation methods are often inadequate (Anderson, 2007; Ghosh, 2015; Serkbayeva et al., 2024). However, the digitalisation of financial services can present potential cybersecurity threats, adding a new

dimension of risk to the evolving landscape of credit risk management (Claessens et al., 2024; Gong et al., 2022; Zhang et al., 2023).

2.1 Cybersecurity Threats

Cybersecurity incidents, such as data breaches and cyberattacks, can result in significant financial losses, reputational harm, and erosion of customer trust (Kamiya et al., 2021; Mohamed et al., 2024) (Table 2).

Table 2: Notable Cybersecurity Breaches and Their Impact on Credit Risk Management

Incident	Year	Scope	Implications for Credit Risk Management	Source(s)
Bangladesh Bank Cyber Heist	2016	$81 million stolen via fraudulent SWIFT transactions.	Demonstrated vulnerabilities in financial systems; disrupted banking operations; exposed systemic risks to credit systems reliant on secure interbank transactions.	(Bukth & Huda, 2017; Mazumder & Sobhan, 2020)
Equifax Data Breach	2017	Exposed sensitive information of ~147 million individuals, including Social Security numbers and credit histories.	Compromised credit assessments; eroded trust in credit reporting systems; led to financial losses and legal penalties.	(Kenny, 2018; Novak & Vilceanu, 2019; Zou et al., 2018)
Capital One Data Breach	2019	Exposed personal data of ~100 million customers, including credit scores and payment histories.	Disrupted lending operations; damaged customer trust; heightened the need for robust cybersecurity measures in credit risk management.	(Khan et al., 2022; Novaes Neto et al., 2020)
Colonial Pipeline Ransomware Attack	2021	Caused a major disruption in fuel supply and resulted in a $4.4 million ransom payment.	Highlighted indirect risks to credit systems through operational disruptions; increased focus on operational resilience in risk management frameworks.	(Beerman et al., 2023; Dudley & Golden, 2021)
Optus Data Breach	2022	Compromised personal data, including passport numbers and Medicare IDs of 2.1 million individuals.	Raised concerns over the security of sensitive customer data; increased potential for fraud, identity theft, and inaccurate credit risk assessments.	(Analytica, 2022; Biddle et al., 2022)

Within the realm of credit risk management, cybersecurity breaches can compromise sensitive customer information, disrupt lending operations, and undermine the integrity of credit assessment processes (Eling et al., 2021; Schlackl et al., 2022). For example, the

2017 Equifax data breach exposed sensitive information of approximately 147 million individuals, including Social Security numbers and credit histories (Kenny, 2018; Zou et al., 2018). This breach not only caused substantial financial losses and legal penalties but also compromised the integrity of credit assessments (Novak & Vilceanu, 2019). Similarly, the 2019 Capital One breach affected over 100 million customers, exposing credit scores, payment histories, and other sensitive data, which disrupted lending operations and damaged customer trust (Khan et al., 2022; Novaes Neto et al., 2020). More recently, the 2022 Optus breach compromised personal information such as passport numbers and Medicare IDs of 2.1 million individuals, raising significant concerns about the security of customer data and the broader implications for credit risk management (Biddle et al., 2022).

From a credit risk management perspective, cybersecurity breaches present specific challenges (Grima et al., 2023; Scott et al., 2024). The theft of sensitive customer data, such as credit histories and financial statements can compromise the accuracy and reliability of credit evaluations (Abidin et al., 2019; Avery et al., 2004; Peretti, 2008). Disruptions to lending platforms and payment systems caused by cyberattacks can also lead to operational inefficiencies, delays, and errors in credit processing and monitoring (Youvan, 2024). These disruptions not only affect current operations but can also have long-term implications for risk assessment models and credit portfolios (Jorion, 2000).

Studies have also emphasised the growing prevalence of cybersecurity threats in the banking sector (Cele & Kwenda, 2024; Uddin et al., 2020). For instance, Aldasoro et al. (2020) analysed the frequency and severity of cyber incidents in financial institutions, finding that the number of reported incidents has increased markedly in recent years. The study also notes that the financial sector is particularly susceptible to cyber risks due to its reliance on complex, interconnected systems and the sensitive nature of the data it manages (Aldasoro et al., 2022). Kamiya et al. (2021) examined the effect of data breaches on banks' stock returns and found that the announcement of a data breach leads to a significant negative impact on stock prices (Tweneboah-Kodua et al., 2018). Findings suggests that the reputational damage and potential legal liabilities associated with data breaches can detrimentally affect banks' financial performance (Tosun, 2021).

In the context of emerging markets, cybersecurity challenges are particularly acute due to legacy technological infrastructure, which leaves systems susceptible to exploitation (Ani et al., 2017; McLennan, 2022). Financial constraints often result in insufficient investment in advanced cybersecurity tools and defences (Arcuri et al., 2017). Moreover, the rapid growth of internet penetration and mobile banking services can outpace the development of effective security measures, further intensifying vulnerabilities (Beshouri & Gravråk, 2010; Falaiye et al., 2024; Sultana, 2009). Legacy systems, compounded by a lack of staff training and awareness, amplify the risks (Huo et al., 2024). These issues, alongside the accelerated pace of digitalisation and increased reliance on fintech solutions, expose banks in these regions to significant cyber threats (Ng & Kwok, 2017). Employing structured frameworks such as the NIST Cybersecurity Framework, particularly its 'Detect' function, has been shown to enhance fraud prevention by facilitating real-time threat identification and response (Krumay et al., 2018; Shen, 2014). Strategies including multi-factor authentication, machine learning-driven transaction monitoring, and endpoint security enhancements offer tailored solutions to address these cybersecurity challenges in emerging markets (Dacre & Kockum, 2022a; Tariq et al., 2024).

2.2 Fluctuations in Interest Rates

Fluctuations in interest rates represent a considerable challenge for commercial banks in managing credit risk (Kithinji, 2010; Santomero, 1997). Shifts in interest rates influence not only borrowers' ability to repay loans but also the value of the collateral securing those loans (Cerqueiro et al., 2016). In low interest rate environments, borrowers may be inclined to take on excessive debt, increasing their likelihood of default (Krishnamurthy, 2010). Conversely, rising interest rates can strain borrowers' financial capacity, resulting in higher NPLs and greater credit losses for banks (Louzis et al., 2012; Serkbayeva et al., 2024; Siddique et al., 2022).

A considerable body of research has examined the interplay between interest rates and credit risk across different financial systems (Crouhy et al., 2000; Naili & Lahrichi, 2022; Thakor, 1996). For example, studies from developed markets, including Europe, the United States, and Canada, have found that low short-term interest rates soften lending standards for both household and corporate loans (Maddaloni & Peydró, 2011; Paligorova & Sierra, 2012). This effect is particularly pronounced in mortgage lending and is amplified by securitisation activities and weak bank capital supervision (Maddaloni &

Peydró, 2011). Banks tend to decrease credit standards and increase exposure to high-yield, high-risk loans in search of better returns (Gambacorta, 2009). This risk-taking channel of monetary policy may exacerbate the effects of traditional transmission mechanisms, potentially leading to excessive credit creation (Paligorova & Sierra, 2012). Notably, countries with softer lending standards before the 2007-09 financial crisis, associated with negative Taylor rule residuals, experienced worse economic performance in its aftermath (Maddaloni & Peydró, 2011).

In emerging markets, the challenges associated with interest rate fluctuations are often magnified. These economies are particularly susceptible to currency volatility, inflationary pressures, and limited access to effective hedging mechanisms, all of which compound the risks posed by interest rate movements (Saxena & Villar, 2008). Such vulnerabilities frequently lead firms to borrow in foreign currencies, exposing them to currency risk premia and heightening their sensitivity to global monetary shifts (Chinoy, 2002). The interest rate sensitivity of emerging market debt is also highly dynamic, exhibiting regime-dependent behaviour that shifts from positive to negative during times of crisis (Gubareva & Borges, 2022). This is shaped by factors such as the business cycle, debt maturity, and the creditworthiness of borrowers (Gubareva & Borges, 2016a, 2022). Small and medium-sized enterprises which are the pillar of many emerging market economies, are particularly vulnerable to these fluctuations, as they often lack the financial resilience and access to risk mitigation tools afforded by larger firms (Hadiat & Anjani). As such, emerging markets face both idiosyncratic and systemic risks, with external shocks such as US monetary policy narrowing triggering correlated declines in local currencies and escalating financial pressures (Wise, 2017). Additionally, real interest rate volatility exerts significant effects on key economic variables, including output, consumption, investment, and labour productivity, expanding the challenges faced by small open economies (Fernández-Villaverde et al., 2011). Evidence from Turkey further underscores these risks, in that heightened interest rate volatility has a pronounced negative impact on bank profitability, reinforcing the critical need for robust interest rate risk management frameworks (Kasman & Kasman, 2016).

2.3 Inadequate Resources and Expertise

The role of human capital in credit risk management has been consistently emphasised in academic research (Bauer et al., 2009; Dacre et al., 2015; Dacre & Kockum, 2022b;

Gkogkidis & Dacre, 2020a; John et al., 2015; Stamolampros & Symitsi, 2022). Studies indicate that banks with experienced and proficient risk managers are better equipped to navigate credit risk challenges, particularly during periods of financial instability (Aebi et al., 2012; Hazaa et al., 2021). For instance, research examining bank performance during the global financial crisis revealed that institutions with stronger risk management expertise demonstrated greater resilience (Aebi et al., 2012; Dacre, 2024c; Mateev, Usman Tariq, et al., 2023).

In addition to human expertise, technological resources and data infrastructure play a critical role in effective credit risk management (Dacre, AlJaloudi, Thiam, et al., 2024; Ng & Kwok, 2017; Nobanee et al., 2024). Advanced tools such as artificial intelligence, machine learning algorithms, big data analytics, and predictive modelling can enhance banks' ability to assess creditworthiness and monitor loan performance (Al-Mhdawi, Qazi, et al., 2023; Antonopoulou & Dacre, 2021; Bhatore et al., 2020; Corbin et al., 2024; Dacre, 2024a; Dacre et al., 2020; Hsu et al., 2021a). These technologies provide granular insights into borrower behaviour, enabling more accurate risk assessments and proactive mitigation strategies. However, the implementation of such tools relies heavily on the availability of reliable technological infrastructure and high-quality data (Brookes et al., 2020; Kockum & Dacre, 2021; Ogunmokun et al., 2023).

Emerging economies frequently encounter barriers to adopting these nascent technologies, including limited access to reliable data, emerging technological ecosystems, and financial constraints that incumber investment in modern risk management systems (Kandasamy et al., 2023). For example, a case study examining credit risk management in Nepalese banks highlights the significant impact of resource and expertise gaps on risk management practices (Poudel, 2012). The study identified critical challenges, including a shortage of skilled human resources and inadequate technological capabilities.

In contextualising these challenges, resource scarcity appears to be a recurrent concern in many emerging markets, where institutions may face difficulties in securing sufficient funding for staff development and the adoption of advanced risk management technologies (Hoskisson et al., 2000). This fragmentation of resources suggests the possibility of a classic transition, wherein banks could benefit from enhancing internal capacity while also exploring opportunities to leverage external support mechanisms.

2.4 Changes in Regulatory Frameworks

Shifts in regulatory frameworks introduce both opportunities and challenges for commercial banks in managing credit risk (Van Greuning & Bratanovic, 2020). The introduction of new regulations or amendments to existing ones often requires banks to reassess their risk management practices, operational processes, and reporting systems (Barakat & Hussainey, 2013; Dacre, Eggleton, Gkogkidis, et al., 2021). While such changes are often designed to enhance financial stability and resilience, their implementation is not without cost. Non-compliance risks include financial penalties, reputational harm, and potential disruptions to banking operations (Allen & Wood, 2006).

The impact of regulatory changes on credit risk management has been a subject of interest in the literature (Jackson & Perraudin, 2000). For example, while the Basel III regulatory framework has been lauded for strengthening global banking systems through enhanced capital requirements and liquidity standards, critics argue that its application may disproportionately burden smaller banks and those in emerging markets (Bo, 2024; Duho et al., 2023; Frait & TomŠÍk, 2014). Such measures, while theoretically beneficial, may inadvertently incentivise risk-taking in certain contexts. Banks under regulatory pressure to meet stringent capital thresholds might seek high-yield, high-risk investments to sustain profitability, potentially undermining the very stability these regulations aim to ensure (Berger & Demirgüç-Kunt, 2021; Calem & Rob, 1999).

In emerging markets, the challenge of regulatory compliance may reflect broader systemic vulnerabilities rather than isolated policy issues (Abdel-Baki, 2012; Claessens, 2010). For instance, while research from sub-Saharan Africa suggests that regulatory reforms have supported bank stability in some cases, their impact has been uneven and, at times, counterproductive (Gottschalk, 2014). Frequent policy changes or poorly calibrated reforms can create uncertainty, discouraging long-term planning and innovation among banks (Kamasa et al., 2023). Additionally, the administrative burden of compliance may divert resources away from core banking functions, such as lending, particularly in economies with constrained financial infrastructure (Asiama & Amoah, 2019).

2.5 Lack of System Integration

Efficient coordination and seamless data flow between departments, such as credit, risk, and finance, are considered essential for effective credit risk management. Studies suggest

that the lack of integration between these departments may lead to inconsistencies in data, fragmented communication channels, and delays in decision-making processes, which can increase exposure to credit risk (Alrabiah, 2018; Yanenkova et al., 2021). Research highlights the role of system integration in enabling timely and accurate risk assessments, emphasising the potential benefits of cohesive data management frameworks within banks (Moges et al., 2012; Pontin & Dacre, 2024; Simiyu, 2008).

Empirical findings underscore the significance of integrated systems in enhancing credit risk management practices. Studies have demonstrated how IT integration can improve a bank's capacity to aggregate and analyse data effectively, enabling more precise risk assessments and timely interventions (Alrabiah, 2018; Dacre, Yan, Dong, et al., 2024; Gubareva & Borges, 2016b; Hsu et al., 2021b; Xu et al., 2023). For example, research focusing on emerging markets has revealed that IT integration enhances coordination between credit and risk departments, promoting more consistent monitoring of credit exposures (Addy et al., 2024; Wagdi & Tarek, 2022). Integrated systems also support the automation of routine processes, minimising errors and inefficiencies that can heighten credit risk (Dacre et al., 2014; Dacre et al., 2022; Nahar et al., 2024; Nikolaidou & Vogiazas, 2017).

Despite these potential benefits, research also highlights the challenges associated with achieving system integration, particularly in resource-constrained environments. In emerging markets, fragmented legacy systems, data silos, and inadequate IT infrastructure are often cited as obstacles to digital transformation (Dacre et al., 2019; Dong & Dacre, 2024; Jameaba, 2024; Manh et al., 2024). Studies on emerging market banks have documented how these limitations can hinder the development of cohesive digital ecosystems, which are crucial for seamless inter-departmental coordination (Naimi-Sadigh et al., 2022). Moreover, cultural and organisational factors, such as resistance to change and a lack of technical expertise, can complicate efforts to implement integrated systems (Campino et al., 2021; Ofosu-Ampong, 2021).

2.6 Summary of Key Studies

The literature reviewed highlights the critical role of credit risk management in influencing financial stability and bank performance across various contexts. Studies in developed markets have established clear relationships between factors such as Non-Performing Loan

(NPL) ratios, macroeconomic conditions, and profitability. However, research focusing on emerging markets reveals unique challenges, including heightened exposure to external shocks, emergent financial systems, and evolving regulatory frameworks (Table 3).

Table 3: Key Contributions to Credit Risk Literature

Author(s) and Year	Key Findings	Geographical Focus
Al-Tamimi & Al-Mazrooei (2007); AlJaloudi et al. (2024); Alshatti (2015)	Jordanian banks limits in risk management, with credit risk affecting profitability.	Jordan
Anderson (2007); Ghosh (2015); Serkbayeva et al. (2024)	Fintech adoption (i.e., advanced analytics, risk assessment tools) enhances credit scoring accuracy in emerging markets.	Emerging Markets
Awijen et al. (2023); Ghosh (2015); Mpofu & Nikolaidou (2018); Reinhart & Rogoff (2011)	Macroeconomic factors (i.e., GDP growth, inflation, unemployment) are critical determinants of credit risk exposure.	Developed Markets
Bayar (2019); Berger & DeYoung (1997); Chen et al. (2021); Louzis et al. (2012)	Higher Non-Performing Loan (NPL) ratios reduce profitability and weaken financial performance.	Developed Markets
Das & Ghosh (2007); Manda & Rani (2019); Siddique et al. (2022)	Bank size, loan growth, and macroeconomic conditions are significant contributors to credit risk.	India, Pakistan
Hawkins & Mihaljek (2001); Bekaert & Harvey (2003)	Emerging markets face unique challenges such as weak legal frameworks and underdeveloped financial systems.	Emerging Markets
Kamiya et al. (2021); Mohamed et al. (2024); Novak & Vilceanu (2019)	Cybersecurity breaches compromise credit risk management through data loss and operational disruptions.	Global
Karim et al. (2010)	Effective credit risk management mitigates financial performance risks.	Malaysia
Kasman & Kasman (2016); Gubareva & Borges (2022)	Interest rate volatility negatively impacts bank profitability, with heightened sensitivity in emerging markets.	Emerging Markets
Moussa (2015); Siddique et al. (2022)	Macroeconomic volatility and lack of credit information amplify default risks in emerging banking sectors.	South Asia, North Africa

The literature underscores the importance for Jordanian banks to refine and adapt their credit risk management strategies to align with the country's unique economic, institutional, and technological realities. The challenges identified, ranging from evolving risk management practices to heightened vulnerability to external shocks, highlight the importance of strengthening internal controls, ensuring regulatory compliance, and advancing technological integration. Additionally, the specific limitations faced by

Jordanian banks, such as resource constraints, developing credit information systems, and the gradual adoption of fintech solutions, mandate tailored strategies that not only mitigate credit risk but also enhance overall bank performance within this emerging market context.

3. Methodology

Our study employs an ongoing methodological framework to investigate the credit risk challenges faced by Jordanian banks and their implications for financial outcomes. The research design integrates exploratory and descriptive elements in order to provide an iterative analysis of the phenomenon(Creswell & Clark, 2017). We combine a systematic review of existing literature with empirical data collection methods, ensuring a triangulated and adaptive approach that evolves as the research progresses. The literature review forms the theoretical foundation, identifying key credit risk challenges and contextualising them within the unique dynamics of emerging markets (Booth et al., 2021). This informs the design of our ongoing data collection strategies, which are continually refined to address emerging insights and gaps.

The empirical phase of our research began with the deployment of a structured questionnaire to banking professionals in Jordan. The questionnaire was designed to gather detailed data on the prevalence of key credit risk challenges, such as cybersecurity threats, interest rate fluctuations, resource constraints, regulatory changes, and system integration issues (Dillman et al., 2014). It also aims to capture insights into the current risk management practices employed by banks and the barriers they face in addressing these challenges. The questionnaire development process followed established practices, ensuring clarity, relevance, and reliability in the design of survey instruments (DeVellis & Thorpe, 2021; Reynolds & Dacre, 2019). The target population for the questionnaire comprises senior executives, risk managers, and credit officers from Jordanian commercial banks. A purposive sampling technique was employed to select participants with substantial knowledge and experience in credit risk management (Etikan et al., 2016). The questionnaire was distributed electronically to the selected participants, and follow-up reminders were sent to ensure a satisfactory response rate. Data collection through the questionnaire is ongoing, and responses are analysed to identify emerging trends and areas that require further investigation.

4. Results and Discussion

The preliminary analysis of the data collected reveals several key credit risk challenges faced by commercial banks in Jordan and their potential implications for banks' performance. These challenges can be broadly categorised into five main themes: cybersecurity threats, fluctuations in interest rates, inadequate resources and expertise, changes in regulatory frameworks, and the lack of system integration within banks' internal departments.

Cybersecurity threats emerge as a significant concern for Jordanian banks, mirroring the global trend highlighted in the literature (Kamiya et al., 2021; Zou et al., 2018). The increasing digitalisation of financial services has exposed banks to new types of risks, such as data breaches and cyberattacks. Respondents emphasise the need for continuous investment in effective security measures and vigilant monitoring of potential vulnerabilities. This finding underscores the importance of proactive cybersecurity risk management in the Jordanian banking sector, as the literature suggests that cybersecurity incidents can have severe consequences for banks' financial performance and reputation (Eling et al., 2021; Grima et al., 2023). Moreover, the legacy infrastructure in many Jordanian banks may exacerbate their vulnerability, highlighting the critical need for upgrading technological defences (Ani et al., 2017).

Fluctuations in interest rates are identified as another critical challenge for Jordanian banks in managing credit risk. This finding is consistent with the literature, which highlights the impact of interest rate changes on borrowers' ability to repay loans and the value of collateral (Kasman & Kasman, 2016; Louzis et al., 2012). Respondents stress the need for banks to develop effective strategies to mitigate the impact of interest rate fluctuations on their loan portfolios and overall performance. Given the potential amplification of interest rate risk in emerging markets due to factors such as currency volatility and inflationary pressures, this finding emphasises the importance of effective interest rate risk management practices in the Jordanian banking sector (Gubareva & Borges, 2022; Louzis et al., 2012).

Inadequate resources and expertise in credit risk management are identified as significant challenges by the respondents, echoing the concerns raised in the literature (Dacre, AlJaloudi, Al-Mhdawi, et al., 2024; Poudel, 2012). The lack of skilled personnel and

advanced risk management tools can hinder banks' ability to effectively assess and manage credit risk. Respondents highlight the need for investing in capacity building and technology upgrades to enhance credit risk management capabilities (Dacre et al., 2018; Gkogkidis & Dacre, 2020b, 2021, 2023). This finding suggests that addressing the resource and expertise gaps is crucial for Jordanian banks to strengthen their credit risk management practices and improve their performance (Bhatore et al., 2020; Mateev, Sahyouni, et al., 2023). As prior research highlights, resource constraints are a recurring issue in many emerging markets, where financial institutions often struggle to balance immediate operational demands with long-term investments in expertise and technology (Ng & Kwok, 2017).

Changes in regulatory frameworks, such as the introduction of new Basel standards or local regulations, are also identified as challenges for Jordanian banks. This finding is in line with the literature, which emphasises the impact of regulatory changes on banks' risk management practices, processes, and reporting systems (Abdel-Baki, 2012; Van Greuning & Bratanovic, 2020). Respondents stress the importance of proactive engagement with regulators and staying informed about upcoming regulatory changes. This finding highlights the need for Jordanian banks to adapt to the evolving regulatory landscape and ensure compliance to maintain financial stability (Frait & TomŠÍk, 2014). Moreover, frequent regulatory adjustments can introduce uncertainty and operational burdens, which are particularly challenging for smaller banks with limited resources (Gottschalk, 2014; Jackson & Perraudin, 2000).

Finally, the lack of system integration within banks' internal departments is identified as a challenge hindering effective credit risk management. This finding is consistent with the literature, which emphasises the importance of seamless data flow and coordination between various departments for timely and accurate risk assessment and decision-making (Alrabiah, 2018; Yanenkova et al., 2021). Respondents underscore the need for improving system integration to enhance credit risk management practices. This suggests that addressing the challenges related to system integration is crucial for Jordanian banks to optimise their credit risk management processes and improve their overall performance (Addy et al., 2024; Gubareva & Borges, 2016b). Enhanced IT integration has been shown to reduce operational inefficiencies and improve risk assessment accuracy, underscoring its importance in managing credit risk effectively in emerging markets (Nahar et al., 2024).

5. Conclusion

This paper has sought to examine the relationship between credit risk challenges and banks' performance in emerging markets, focusing on the case of Jordan. The preliminary findings, based on a review of the literature and an analysis of questionnaires, highlight several key credit risk challenges faced by Jordanian commercial banks, including cybersecurity threats, fluctuations in interest rates, inadequate resources and expertise, regulatory changes, and a lack of system integration (Table 4).

Table 4: Credit Risk Challenges and Mitigation Strategies

Key Credit Risk Challenge	Description	Implications for Banks	Potential Strategies for Mitigation
Cybersecurity Threats	Increased risk of data breaches and cyberattacks due to digitalisation of financial services.	Financial losses, reputational damage, erosion of customer trust, and operational disruptions.	Investment in advanced cybersecurity measures, real-time threat detection systems, multi-factor authentication, and staff training.
Fluctuations in Interest Rates	Changes in interest rates affecting loan repayment capacity and collateral value.	Higher default rates, reduced profitability, and instability in loan portfolios.	Implementation of dynamic risk management frameworks, use of stress testing and scenario analysis, and development of robust hedging mechanisms.
Inadequate Resources and Expertise	Lack of skilled personnel and advanced tools for credit risk management.	Reduced efficiency in risk assessment, increased exposure to credit risk, and lower performance.	Capacity-building programmes, adoption of advanced analytics and machine learning tools, and investment in human capital development.
Regulatory Changes	Introduction of new regulations or amendments, such as Basel standards.	Increased compliance costs, operational strain, and uncertainty for smaller institutions.	Proactive engagement with regulators, early adoption of compliance measures, and collaborative policy dialogue to align resources.
Lack of System Integration	Fragmented systems and poor coordination between internal departments, such as risk and finance.	Inefficiencies in data flow, delays in decision-making, and inconsistent risk assessments.	Integration of IT systems, adoption of collaborative workflows, and implementation of cohesive data management frameworks.

The study contributes to the existing body of knowledge by providing insights into the specific credit risk challenges encountered by banks within an emerging market context. The alignment of these identified challenges with themes discussed in the literature

underscores the relevance and significance of these issues in the broader domain of credit risk management. Therefore, by focusing on the Jordanian banking sector, this research offers a deeper understanding of the unique challenges faced by banks operating in a specific emerging market.

Moreover, the findings of this study have significant implications for practice and policymaking. The identified credit risk challenges can have profound consequences for banks' performance, as they may impede effective credit risk management and expose banks to potential losses. Addressing these challenges mandates a proactive and comprehensive approach, involving investments in technology, capacity building, and effective risk management practices. Banks should therefore prioritise investments in cybersecurity measures, interest rate risk management strategies, and capacity building programmes to enhance the skills and expertise of their risk management personnel. Additionally, banks should focus on improving system integration to optimise data flow and coordination between internal departments, thereby enhancing the efficiency and effectiveness of credit risk management processes. Policymakers should consider implementing policies and regulations that promote financial stability, encourage innovation, and foster the development of a skilled workforce (Dacre, 2024b; Dacre, Eggleton, Cantone, et al., 2021; Tite et al., 2021b). Regulators should engage in continuous dialogue with banks to ensure that regulatory requirements are well understood and that banks have the necessary resources and capabilities to comply with these requirements.

However, it is important to acknowledge the limitations of this study. The findings are based on a preliminary analysis and may not fully capture the complexity of the credit risk management landscape in Jordan. Further research is required to validate and expand upon these initial insights, incorporating a larger sample of banks and employing more advanced analytical techniques. Future research could also explore the interplay between credit risk challenges and other factors, such as corporate governance, macroeconomic conditions, and market structure, to gain a more comprehensive understanding of the determinants of banks' performance in emerging markets.

In conclusion, while our findings align with broader trends observed globally, they reveal a distinct intersection of systemic vulnerabilities and emerging risks unique to the Jordanian banking sector. For instance, the convergence of resource constraints, regulatory

evolution, and technological lag creates a compounded effect, where challenges amplify each other rather than existing in isolation. Cybersecurity vulnerabilities are not just a technological issue but are exacerbated by inadequate expertise and resource deficits, while regulatory pressures are more acutely felt in institutions already struggling with system fragmentation. This dynamic interplay of challenges underscores the critical impetus for a holistic approach to credit risk management, where solutions are integrated across dimensions rather than addressing individual issues in silos. Furthermore, the findings suggest that the Jordanian banking sector, while sharing some commonalities with other emerging markets, operates within a context shaped by unique economic, institutional, and technological factors.

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