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EFFICIENCY, COMPETITIVENESS AND RESILIENCE OF BANKING: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Purpose: This study aims to analyze and classify the literature on efficiency, competitiveness and resilience of banking systems. The banking sector remains in a state of development, contending with problems including heightened competitiveness, regulatory pressures, and technological advancements. By sustaining equilibrium among efficiency, competitiveness, and resilience, banks can persist in flourishing within a dynamic environment.

Methodology/ Approach: by conducting literature studies published between 2015-2023 in the journal listed in the Journal Citation Report. It is then analyzed according to a systematic literature review approach involving interpretation-based assessments of research methodologies and critical findings in the study.

Findings: The direction of this research is expected in the future to have implications for academics and practitioners. This study found that Resilience is essential for banks to successfully confront the difficulties and hazards that periodically emerge.

Practical Implications: Banks must consistently prioritize enhancing their resilience by formulating effective strategies and perpetually fortifying their security systems and adherence to relevant norms and regulations.

Originality/value: This study indicates various ways to analyzing the elements, tactics, and regulations necessary to achieve banking efficiency, competitiveness, and resilience.



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Keywords: Banking, Competitiveness, Efficiency, Resilience, Systematic Literature Review

934

ABSTRAK

Tujuan Penelitian: Penelitian ini bertujuan untuk menganalisis dan mengklasifikasikan literatur tentang efisiensi, daya saing, dan ketahanan sistem perbankan. Sektor perbankan tetap dalam keadaan berkembang, menghadapi masalah termasuk meningkatnya kompetisi, tekanan regulasi, dan kemajuan teknologi. Dengan mempertahankan keseimbangan antara efisiensi, daya saing, dan ketahanan, bank dapat terus berkembang dalam lingkungan yang dinamis.

Metodologi/ Pendekatan: dengan melakukan studi literatur yang diterbitkan antara tahun 2015-2023 di jurnal yang terdaftar dalam Laporan Sitasi Jurnal. Kemudian dianalisis sesuai dengan pendekatan tinjauan pustaka sistematis yang melibatkan penilaian berbasis interpretasi terhadap metodologi penelitian dan temuan kritis dalam studi tersebut.

Hasil: Arah penelitian ini diharapkan di masa depan dapat memberikan implikasi bagi akademisi dan praktisi. Studi ini menemukan bahwa ketahanan sangat penting bagi bank untuk berhasil menghadapi kesulitan dan risiko yang muncul secara berkala.

Implikasi Praktis: Bank harus secara konsisten memprioritaskan peningkatan ketahanan mereka dengan merumuskan strategi yang efektif dan terus-menerus memperkuat sistem keamanan serta kepatuhan terhadap norma dan regulasi yang relevan.

Orisinalitas/Kebaharuan: Studi ini menunjukkan berbagai cara untuk menganalisis elemen, taktik, dan peraturan yang diperlukan untuk mencapai efisiensi perbankan, daya saing, dan ketahanan.

Kata kunci: efisiensi, perbankan, daya saing, ketahanan, tinjauan literatur sistematis

INTRODUCTION

The contemporary banking sector is influenced by the interplay of macroeconomic situations, technological advancements, regulatory modifications, and shifts in consumer preferences ([Murinde et al. 2022](#)). Banks encounter escalating competition from both conventional and unconventional financial entities, alongside challenges including interest rates, heightened risk management requirements, and shifts in consumer behavior ([Omarini 2022](#)). Banks are intermediate financial institutions that gather cash from the public and

JRAK
14.4

redistribute these monies to individuals in need through loan facilities, with the objective of generating profit.

935

The banking sector remains in a state of development, contending with problems including heightened competitiveness, regulatory pressures, and technology advancements ([Palmié et al. 2020](#)). Financial institutions must prioritize efficiency through process simplification, task automation, and cost reduction ([Villar and Khan 2021](#)). Banks must concurrently enhance risk management systems and their capacity to address unforeseen occurrences to foster resilience ([Settembre-Blundo 2021](#)). Banks will maintain competitiveness and excellence by investing in breakthrough technologies, exploring new business opportunities, and delivering great customer service ([Thomas, 2020](#)). By sustaining equilibrium among efficiency, competitiveness, and resilience, banks can persist in flourishing within a dynamic environment.

Banking efficiency has attracted the interest of many researchers with various approaches. Among them, [Sari et al. \(2022\)](#) who studied the efficiency level of the 20 largest banks in Indonesia using the stochastic frontier analysis method. Their research results show that banks originating from foreign bank groups tend to be more efficient. A similar situation also occurred with the Regional Development Bank group. Another finding from their research is that several banks that calculate efficiency based on the intermediation approach model show high profits but are inefficient. This shows that those banks have not been performing their intermediary function well. As a result, they do not contribute optimally to broader economic growth. From various findings of bank efficiency studies in south east asia over different observation periods, it can be concluded that banks in Indonesia have not yet been operating efficiently. Therefore, further research is needed on the factors that can cause bank efficiency. Studies on the factors causing bank efficiency have been conducted previously, but the results showed inconsistencies in the variables. ([Villar and Khan 2021](#)). Another research examines the relationship between bank efficiency, competitiveness, and resilience. [Thomas, \(2020\)](#) in their study of 22 dual banking economies, did not find any differences regarding the impact of competitiveness and competition on bank resilience. In this research tried to seek the urgency between efficiency and competitiveness may depend on the level of the bank's ability to be resilient.

Prior research conducted by [Ruza et al. \(2019\)](#) examined the determinants affecting the resilience and stability of the banking system, while [Jiménez-Hernández et al. \(2019\)](#) investigated various factors elucidating the disparities in the efficiency of commercial banks across 17 Latin American countries. [Sari et al. \(2022\)](#) investigate the impact of competition on banking efficiency, whereas Iveta and Daniel (2014) analyze how market structure may jeopardize the effective intermediation of funds within the banking sector and hinder economic progress. [Sari et al. \(2022\)](#) assert in their research that bank size does not significantly impact performance outcomes. [Jiménez-Hernández et al. \(2019\)](#) conducted a study on efficiency and productivity within the Latin American banking sector.

This research indicates that the largest banks in the banking sector exhibit the greatest resilience throughout the crisis triggered by the COVID-19 epidemic. Nonetheless, there are distinctions in banking features between Latin America and Indonesia, necessitating the examination of grouping variables. [Ruza et al. \(2019\)](#) concentrates on an early warning system designed for policymakers and supervisors to detect indicators of vulnerability, as well as a valuable instrument for recognizing optimal resilience and stability. The notion of efficiency is a fundamental principle derived from economic theories. Efficiency aims to achieve optimal outcomes from various resources. Efficiency is a primary metric in assessing banking

performance, as it reflects the exploitation of resources to optimize output. A bank or institution is deemed inefficient if it is unable to augment output without a corresponding increase in input, or if it cannot generate the same level of output with reduced input ([Usman et al. 2010](#)). Efficiency assessments concerning input and output can be categorized into two types: technical efficiency and allocation efficiency.

The concept of efficiency is frequently encountered in the realms of finance and economics. Bank efficiency, as defined by [Berger and DeYoung \(1997\)](#), refers to a bank's capacity to minimize production costs for a certain output level or to maximize output derived from specific inputs. [Levine \(1997\)](#) characterizes bank efficiency as the optimal utilization of resources to achieve intended outcomes, considering the limitations encountered by the bank. [Beaver \(1966\)](#) defines efficiency in banking as the capacity of a financial institution to generate maximum output with minimal input, or to achieve a specific output level with the least input possible. [Barth, Caprio, and Levine \(2008\)](#) describe bank efficiency as a financial institution's capacity to generate output that satisfies customer requirements while utilizing minimal inputs. [Mikita's \(2022\)](#) findings indicate that banking efficiency, characterized by the return on equity post-tax and the ratio of bank costs to income, along with the level of concentration within the banking sector, significantly influences the stability of the banking sector in Poland.

Competitiveness, as defined by Michael Porter in his book "The Competitive Advantage of Nations," refers to the capacity of a country, region, or organization to achieve and sustain superior performance in comparison to its competitors ([Porter 1998](#)). Competitiveness is defined as a collection of traits that empower organizations to compete effectively in their target markets ([Prahalad and Hamel 2006](#)). [Nelson \(1993\)](#) defines competitiveness as the capacity of a country, region, or corporation to generate goods and services that satisfy worldwide market standards while simultaneously preserving and augmenting the real income of its populace. In the corporate context, competitiveness denotes a company's capacity to successfully compete in a certain market, encompassing both customer acquisition and profitability ([Magretta 2012](#)). Competitiveness refers to a company's capacity to strategically attain its objectives during competition. Competitiveness is crucial in the contemporary banking sector for various reasons, including client acquisition and market share preservation. Competition in the banking business has intensified considerably in recent years, necessitating that banks maintain competitiveness to attract and keep customers ([Porter 1990](#)). This is crucial given the rising accessibility of alternative financial products and services, alongside the expansion of digital and mobile banking. Competitiveness is a reaction to evolving market conditions. As financial markets and regulations evolve, it is crucial for banks to adapt and maintain competitiveness ([Brealey et al. 2020](#)). This necessitates an emphasis on innovation and the capacity to respond swiftly and efficiently to evolving market conditions.

A company's favorable performance is bolstered by its robust capacity to formulate suitable responses to external difficulties. Consequently, [Sabatino \(2016\)](#) study posits that competitive success necessitates an understanding of the circumstances that enable a corporation to create or diminish value, with a company's competitiveness mirroring its performance and enduring relationships within the industry and with rivals. Sustainable enterprises exhibit enduring success despite limitations imposed by economic, social, and environmental frameworks by formulating strategies that create and secure future value sustainably ([Putra et al., 2023](#)). Successful enterprises can leverage adverse environmental conditions by identifying necessary actions and recognizing the adaptive transformation activities essential for long-term viability, thereby enhancing their resilience in business

operations ([Lengnick-Hall, Beck, & Lengnick-Hall 2011](#)). Research by [Sari et al. \(2022\)](#) indicates that a bank's size does not significantly impact its performance. Tobit estimation results indicate that economic expansion significantly undermines the efficiency of commercial banks in Indonesia. Economic growth leads to increased demand for financial services, indicating that rivalry among private banks is more intense than that among government-owned banks, impacted by the customer demographics of the banks.

Competition between large and small banks is intensifying, necessitating that organizations sustain their advantages in products, services, and technology to remain pertinent and competitive in the market. The nature and allocation of financial goods and services to clients are influenced by the competitive landscape within the banking sector. Such environments frequently promote greater options for consumers and incentivize banks to assume increased risks ([Ramaditya and Friska, 2022](#)). In the realm of globalization and economic liberalization, competitiveness has emerged as a crucial determinant for the survival and expansion of banks. Banks that sustain or enhance their competitiveness are often more successful in acquiring clientele and producing more revenues. Consequently, nations with highly competitive financial markets typically exhibit reduced obstacles to accessing diverse financial institutions, products, and services, including banking. Conversely, the consolidation of banks' market positions may lead to the formation of monopolistic power, which can cause elevated interest rates and insufficient access to credit ([Mujianto et al. 2022](#)).

Resilience is crucial for banking because to the industry's persistent exposure to many risks and challenges, such as fluctuations in economic conditions, political instability, system failures, and other threats. Resilience is essential for banks to successfully confront the difficulties and hazards that periodically emerge. Consequently, banks must consistently prioritize enhancing their resilience by formulating effective strategies and perpetually fortifying their security systems and adherence to relevant norms and regulations ([Ramaditya & Friska, 2023](#)). Indicators for evaluating banking resilience have been extensively studied; performed a stress test on credit risk to determine a bank's resilience. [Ruza et al. \(2019\)](#) demonstrate that resilience-stability indicators for the examined set of nations exhibit markedly divergent patterns following the financial crisis. Some countries have enhanced their status, while others are regressing. Secondly, the comparative standings of nations on resilience-stability indicators enabled this study to recognize Canada and the United States as exemplars of optimal practices. Third, by examining particular nations, this research might pinpoint potential vulnerabilities and opportunities for enhancement in each instance ([Jauhara & Ramaditya, 2022](#)).

The case of Bangladesh illustrates that the COVID-19 pandemic has impeded economic progress and resulted in numerous business closures. Due to its initiation of detrimental economic occurrences, financial institutions will encounter significant repercussions from this shock. [Kozak \(2021\)](#) elucidates that the influence of COVID-19 on the economic and financial conditions of companies is heterogeneous, with a more pronounced effect in countries and regions reliant on tourism and direct customer services, as well as among micro, small, and medium enterprises owned and operated by minorities, including women. Another study offers an analysis of the resilience of the banking sector's credit exposure amid the COVID-19 pandemic in Bangladesh.

JRAK

14.4

Banks characterized by low capital adequacy, diminished liquidity ratios, elevated non-performing loan ratios, reduced profitability, and significant lending exposure to high-risk sectors are more susceptible, irrespective of their size ([Mujianto et al., 2022](#)). Numerous banks in this analysis had substantial profitability ratios yet possessed limited capital bases,

elevated non-performing loans (NPLs), and diminished short-term liquidity ratios. Certain banks exhibit poor short-term liquidity ratios (below 1) and elevated non-performing loan (NPL) ratios, which mitigate the effects of high profitability metrics. Consequently, banks must focus on sustaining a robust capital base, minimizing non-performing loans (NPLs), and ensuring elevated liquidity ratios, particularly during the COVID-19 pandemic when the demand for capital is expected to surge dramatically. A brief comprehensive review is needed to help researchers and practitioners understand the efficiency, competitiveness and resilience in banking system. This study aims to analyze and classify the literature on efficiency, competitiveness and resilience in banking system.

This research conducted using the systematic review method is essential for compile and analyze data from multiple studies, providing a more comprehensive understanding of existing evidence. Also, this study will transparent methods for identifying, selecting, and analyzing studies, systematic reviews reduce biases that might arise from selective reporting. Systematic reviews offer a reliable synthesis of high-quality evidence, making it easier for practitioners, policymakers, and researchers to base decisions on the best available information. This study has research questions in seeks the development of current economic practice successfully supports the efficiency, competitiveness, and resilience of banks.

METHODS

This literature study employs the PRISMA approach that denotes Preferred Reporting Items for Systematic Reviews and Meta-Analyses ([Mujianto et al., 2022](#)). Figure 1 illustrates the PRISMA diagram. A systematic literature review was conducted employing the PRISMA flow methodology. PRISMA denotes Preferred Reporting Items for Systematic Reviews and Meta-Analyses ([Ramaditya, et al., 2022](#)). The objective of this PRISMA Flowchart is to aid authors in enhancing the systematic documentation of reviews. Figure 1 indicates that during the identification phase, searches conducted on the Google Scholar search engine using the specified keywords yielded 1,879 articles. During the screening phase, the author identified 209 duplicate papers and subsequently selected 1,670 articles based on the relevance of their abstract content to the issue, from which 450 abstracts were ultimately chosen. During the feasibility phase, the investigation persists regarding the accessibility of full-text papers, which will subsequently serve as analytical material for this study. At this stage, 30 full-text papers were selected, all of which addressed efficiency, competitiveness and resilience in banking system. Ultimately, 30 publications were deemed suitable for examination due to their alignment with the research goals.

To ensure the reliability and relevance of sources, an exhaustive search targeted scientific articles from reputable journals published between 2015 and 2024, in English, and readily accessible on online databases. The studies were retrieved through the Scopus database, with data collection conducted on January 1, 2024, using Harzing's Publish or Perish tool. The selected studies are associated with keywords such as banking efficiency, Banking Competitiveness, ' Banking Resilience and the filtering process (Figure 1), The papers were assessed, excluding those unrelated to the research focus on the cash flow statement. The research range of six years and the large number of keywords in this research are based on the fact that there is not much research focusing on banking effectiveness, resilience and competitiveness; therefore, the range of years and keywords must be expanded. Meanwhile, to maintain research quality, researchers only used scientific articles indexed by Scopus Q1 until Q4. The study delves into various dimensions of banking criteria in survival

performance orientation covering definitions, influencing factors, outcomes, and recent research developments.

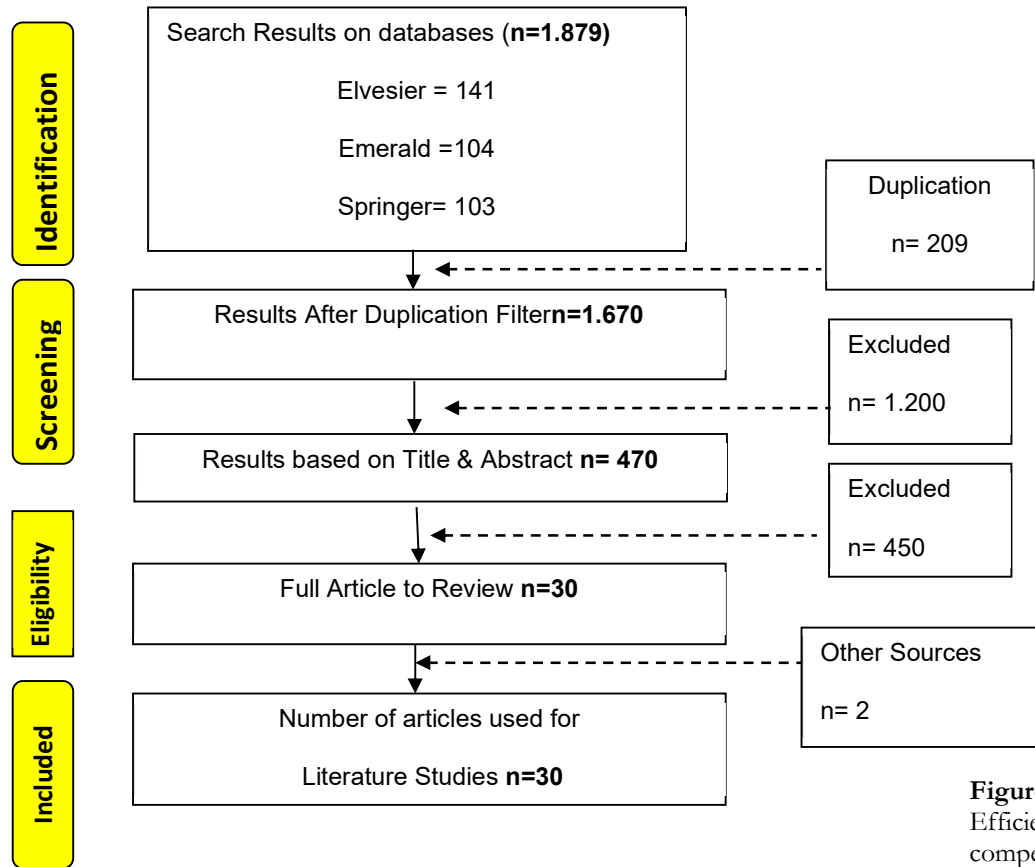


Figure 1. Efficiency, competitiveness and resilience in banking system

No	Title	Research result
1.	Banking system resilience: an empirical appraisal	The research results show that the economic crisis causes resilience and stability indicators to have a different pattern compared to before the crisis. Therefore, existing policies must be directed at achieving public confidence in the ability of institutions to withstand financial shocks without delay
2.	Impact Of The COVID-19 Crisis on The Portuguese Banking System. Linear Ordering Method	The research results show that choosing a linear ordering method does not have a significant effect on identifying banks that are most and least resistant to the impact of the pandemic.
3.	Resilience Of Commercial Banks of Bangladesh to The Shocks Caused by COVID-19 Pandemic: An Application Of MCDM-Based Approaches	Research results show that the COVID-19 pandemic has slowed economic growth and caused many businesses to close. Banks with low capital adequacy, low liquidity ratios, high NPL ratios, low profitability and lending exposure to risky sectors are more vulnerable regardless of bank size.
4.	The Impact of COVID-19 on Bank Equity and Performance: The Case of Central Eastern South European Countries	The research results show that the impact of COVID-19 on the economic and financial status of companies varies and is stronger in countries and regions with a concentration on tourism and direct-to-consumer services, micro, small and

No	Title	Research result
		medium-sized enterprises owned and run by minorities (including women).
5.	Resistance of commercial banks to the crisis caused by the COVID-19 pandemic: the case of Poland	The largest banks operating in the Polish banking sector are the most resilient in the context of the crisis triggered by the COVID-19 pandemic i.e. the research has clearly identified the two banks most at risk from the crisis. The banks most sensitive to COVID-19 are banks J, K and L which have weak capital positions characterized by low profitability and poorer credit portfolio quality than others.
6.	Efficiency, Asset Quality and Stability of the Banking Sector in Malaysia	The research results show that sharia subsidiaries of conventional banks are better than stand-alone sharia banks in various aspects. The consequence of this is that the sharia banking industry will be controlled by its parent bank and will not be creative, which will have an impact on long-term sustainability.
7.	Banks' Stability-Efficiency Within Dual Banking System: A Stochastic Frontier Analysis	The analysis results show that increasing the size of Islamic banks can contribute to the strength and stability of the banking system as a whole. Apart from that, it is known that interest-free banks are more risk-averse than conventional banks.
8.	Determinants of bank efficiency: evidence from the Latin American banking industry	The results of the analysis show that investors are afraid of the impact of this crisis on the banking sector and negatively assess the future prospects of banking companies and the possibility of delays in paying dividends, this is because most commercial banks do not publish detailed information about their credit exposure to the economic sector. certain.
9.	The differing efficiency experiences of banks leading up to the global financial crisis: A comparative empirical analysis from Australia, Canada and the UK	The results show that Australian banks performed better than Canadian and British banks in the researcher's sample period in terms of technical efficiency, costs and profits. This good performance can be explained by the stable growth in per capita income and a relatively high capital adequacy ratio
10.	The Efficiency of Indonesian Commercial Banks: Does the Banking Industry Competition Matter?	The research results show that the competition-inefficiency hypothesis is supported by this research. In a more competitive market, it costs banks more to track and handle loans that are not repaid. As competition increases, banks may hide information about their borrowers, making it more difficult to screen customers and gather information.
11.	Analysis of Efficiency and Productivity of Commercial Banks in Turkey Pre- and during COVID-19 with an Integrated MCDM Approach	The results showed that banks with foreign investment had higher production, according to the report. Foreign banks are less vulnerable to the COVID-19 shock because they operate in different regions and are familiar with epidemic policies. During COVID-19, the country's bank productivity fell. Regulators, politicians and bank managers must assess these outcomes.
12.	Continued Discussion on Conventional Versus Islamic Banks: Combining Financial Ratios And Efficiency	DEA results show that conventional banks are more efficient than sharia banks. Islamic banks can improve their policies by issuing shares and using funds in profitable ways, such as loans and advances, to generate more net income.
13.	The Interrelationship Among Efficiency and Concentration of Banking System and its Stability: Evidence from Poland	The research results show that the banking industry's return on equity after tax has a positive effect on its stability, and there is no relationship between the stability of the banking sector and the level of bank concentration or cost-to-income ratio.
14.	The Impact of Capital, Concentration, Size and Liquidity on Banking Industry Performance in Nigeria	This study assesses the impact of bank consolidation on Nigerian industrial performance. VECM analysis finds that size, concentration and liquidity have a negative effect on banking industry performance, although capital adequacy has

No	Title	Research result
		a favorable impact. In addition, economic growth has a negative but negligible impact on the performance of the banking industry, while inflation has a positive but insignificant impact.
15.	The impact of industry concentration on stability: The case of Indonesian Islamic-Commercial Banks.	Islamic commercial banks in Indonesia have become more consolidated compared to commercial banks. According to the concentration-vulnerability relationship, more concentrated markets and banks that have market dominance can gain more profits with higher interest rates, which leads to risky credit portfolios due to adverse selection and moral hazard. The concentration-stability relationship implies that a concentrated banking sector consists of larger institutions that can increase their economic scale and scope.
16.	Banking stability, institutional quality, market concentration, competition and political conflict in MENA	The quality of institutional variables plays an important role in explaining bank performance and stability. Banks operating in more concentrated markets earn higher returns, less competition and greater concentration will lead to reduced bank stability. Banking stability and profitability will be guaranteed if banks that have higher market power operate in a better environment with high regulatory quality.
17.	Bank Concentration and Bank Stability during the COVID-19 Pandemic.	The impact of the pandemic and bank concentration is significant and detrimental, although the interaction is quite strong for bank stability. The importance of adequate capitalization in enhancing the beneficial effects of the interaction between COVID-19 and bank concentration on bank stability.
18.	Do competition and efficiency lead to bank stability ? Evidence from Bangladesh.	The competition-stability relationship is nonlinear, and while efficiency contributes to stability, its impact is moderate on competition. Alternative measures of competition, stability and control variables, can be useful for policy makers to formulate strategies and policies that maintain financial stability.
19.	Use of derivatives, financial stability and performance in Turkish banking sector.	The use of derivatives by banks reduces the profitability of the banking system and increases bank risk. The factors that determine the use of derivatives also show that banks do not use derivatives to hedge their risks.
20.	Determinants of Banking Stability: Evidence from Haiti's Banking System	Macroeconomic factors and economic freedom have a positive impact on banking stability, while banking system factors have a negative impact on banking stability in Haiti. In contrast, government and institutional factors do not have a significant impact on Haiti's banking stability.
21.	Efficiency, Stability and Optimum Level of Bank Competition for Sustainable Development - A study of Sri Lankan Banking Sector.	Sri Lanka's banking sector is very competitive on average. With a non-parametric approach (Data Envelopment Curve analysis), there is a moderate level of efficiency and a high level of instability in the Sri Lankan banking sector.
22.	Bank Competition, Efficiency and Stability in Macau.	There is an insignificant positive relationship between bank market power and bank vulnerabilities including income volatility and insolvency risk.
23.	An analysis of competition, efficiency and soundness in the South African banking sector.	The impact of efficiency competition depends on the competition measure used. When using the Lerner index there is a negative effect of competition on efficiency and vice versa when using the theoretically strong Boone indicator. Competition using the Boone indicator is negatively related to the Z score, which implies that competition increases bank honesty.

No	Title	Research result
24.	COVID-19 pandemic impact on banking sector: A cross-country analysis	The COVID-19 outbreak has significantly reduced bank performance and stability. These results are consistently observed across geographic regions and country income classifications. The negative impact of COVID-19 depends on bank characteristics and market structure, while an improved regulatory environment, institutional quality, and financial development significantly improve bank strength and resilience.
25.	Does fintech lending expansion disturb financial system stability? Evidence from Indonesia	The expansion of FinTech lending encourages banks to work more efficiently to improve their credit quality rather than to intensify bank risk taking. The synergy between fintech and bank loans will improve the quality of bank credit.
26.	Stability And Resilience of Islamic Banking System: A Closer Look at The Macroeconomic Effects	Bank durability and stability are influenced by factors other than bank profits. External factors related to economic growth, inflation rates, and the rupiah exchange rate against the US dollar both have major effects.
27.	Does Islamicity matter for the stability of Islamic banks in dual banking systems?	In most countries, the business environment is centered on the principle of "owner wealth maximization". Islamism has a neutral effect on bank stability and Islamic banks do not find an environment of higher Islamism a contributing factor to their resilience. The Islamicity of the environment is not relevant in a dual banking system in the sense that Islamic banks may appear to be "disguised" versions of conventional banks.
28.	Bank resilience and political institutions: Do banking business models matter?	Quality political institutions lead to a more stable banking system, which is consistent with the view that quality political institutions increase transparency, thereby reducing adverse selection and leading to an overall increase in bank stability. Competition leads to stability for Islamic banks.
29.	Efficiency and stability of Islamic vs. conventional banking models: a meta frontier analysis	There is no statistically significant difference in average efficiency between Islamic and conventional banks when effectiveness is measured relative to group boundaries. However, a Meta Frontier Analysis that explains the differences in the modalities of the two banking systems reveals that Islamic banking technology is not at par with industry standards. The pure technical effectiveness of Islamic banks is much higher than that of conventional banks, but Islamic banks are faced with higher diseconomies of scale.
30.	Developing the Resilience of Pressure Index on Islamic Banking in Indonesia	The optimal level of pressure in Islamic banking is basically to maintain certain financing risks and provide optimal levels caused by external factors. The resilience of Islamic banking in Indonesia requires a balanced allocation of asset funding by reducing non-performance funding, increasing liquid assets, and healthy capital satisfaction.

Table 1.
Sample Study

RESULTS

Banking Efficiency

Efficiency is crucial in the global banking sector to maintain competitiveness. [Chotigeat et al. \(2004\)](#) indicated that the efficiency level and total assets of these banks are the primary factors of banking competitiveness. Research conducted by [Erasmus \(2014\)](#) demonstrated that the efficiency exhibited by banks prior to a crisis influenced their resilience throughout the crisis. Ariff and Shawtari (2019) demonstrate in their research that within Malaysia's dual-banking system, independent sharia banks encounter indirect competition from conventional banks and direct competition from sharia-compliant subsidiaries of conventional banks that

possess substantial assets and financial resources. greater, notwithstanding that the majority of these subsidiaries are recent and possess abbreviated operating durations. The research findings indicate that Islamic banks affiliated with conventional banks exhibit greater efficiency than independent Islamic banks, due to significant disparities in their support systems and capital resources. Research indicates disparities across various banking types, namely conventional banks, sharia subsidiaries of conventional parent banks, and independent sharia banks. This indicates that Islamic subsidiaries outperform both independent Islamic banks and their conventional parent banks. The research findings indicate that sharia subsidiaries exhibit greater stability in financing income than conventional holding companies and independent sharia banks, whereas independent sharia banks demonstrate inferior asset quality relative to sharia subsidiaries and conventional holding companies.

Louati and Boujelbene's research (2015) elucidates that the matter of "competitiveness and stability" is crucial for banking regulation within the Islamic financial sector, particularly in light of the recent upheaval in global financial markets. The data indicates that heightened competition within the sharia banking industry promotes overall banking stability. Moreover, regardless of competitiveness levels, the size of Islamic banks is favorably correlated with financial stability. Nonetheless, substantial traditional banks functioning in markets with restricted competition are increasingly engaging in risk-prone activity. Another discovery is that capitalization positively influences stability in low-competitive settings. This research indicates that Islamic and conventional banks contribute differently to the stability of the financial system. This disparity is, of course, attributable to the differing operational principles of the two banking types. Islamic banks are permitted to conduct their financing and investing activities in alignment with Sharia principles, whereas conventional banks function based on interest in their lending and borrowing operations. Consequently, companies may be unable to effectively capitalize on revenue diversification, enhanced loan-to-asset ratios, profitability, and other aspects, particularly regarding their financial health. This research indicates that Islamic banks enhance financial system stability more than conventional banks. This research examines efficiency, stability, and competitiveness, serving as a reference for future studies on the efficiency, competitiveness, and resilience of the banking sector in Indonesia. This paper emphasizes the role of sharia banking in enhancing competitiveness and financial stability.

In technical efficiency, it is known that there is a relationship between input and output in the production process. Where technical efficiency describes the company's capability to achieve the maximum output level with certain inputs, allocative efficiency describes the company's ability to maximize the use of available inputs with the appropriate price structure and technology usage. The combination of both measures can be used to calculate economic efficiency. The financial indicators commonly used in research to measure bank performance are the Capital adequacy, Asset quality, Management competency, Next, several methods used to measure bank efficiency are Data Envelopment Analysis. (DEA). DEA is a mathematical modeling technique used in bank efficiency to evaluate the performance of Decision Maker Units (DMUs) based on a set of inputs and outputs. In the context of banking, DMUs can be individual branches, departments, or the bank itself, and inputs and outputs can include various financial and non-financial metrics. DEA uses linear programming to determine the relative efficiency of each DMU and to identify best practices for improving overall performance. By using DEA, banks can identify areas for improvement and make data-driven decisions to enhance efficiency and increase their competitiveness in the market. DEA is a non-parametric method for measuring the efficiency of decision-

making units, including banks. DEA measures the relative efficiency of banks by comparing the inputs and outputs of each bank. ([Chotigeat et al. \(2004\)](#))

Another method to measure banking efficiency is Stochastic Frontier Analysis (SFA), which is an econometric method that measures bank efficiency by comparing the actual performance of the bank with the theoretical frontier of the best possible performance. Generally, SFA is a method used in bank efficiency analysis to estimate the best possible performance level for a bank, based on the available resources and technology. SFA uses statistical models to determine the maximum possible efficiency frontier and compares the actual performance of banks with this frontier. This allows for the calculation of technical efficiency, which measures how well banks use their inputs to produce outputs, and estimates the sources of inefficiency. SFA can be applied to different aspects of bank operations, such as financing processes, customer service, and risk management, to identify areas for improvement and support decision-making. By using SFA, banks can gain valuable insights into their efficiency and make informed decisions to improve their performance.

Jiménez-Hernández et al. (2019) conducted a study on efficiency and productivity within the Latin American banking sector. This research indicates that the largest banks in the Polish banking sector exhibit the greatest resilience amid the crisis triggered by the COVID-19 outbreak. Banks J, K, and L exhibit the greatest vulnerability to the risks posed by the COVID-19 pandemic due to their capital situations. Subpar (variable Z1), distinguished by diminished profitability and a credit portfolio quality inferior to others. Consequently, these banks must engage in strategic planning as a risk mitigation measure to implement appropriate actions for augmenting banking capital, so addressing prospective losses while meticulously considering capital distribution rules. Profit redistribution considers the implications of uncertainties related to the impacts and duration of COVID-19. As with prior global catastrophes, it is essential to derive lessons from the present circumstances, as a comparable epidemic is improbable to recur in the future. Consequently, the primary problem confronting banks today is the realignment of current tactics to anticipate future crisis situations. This research indicates that bank size is a metric of a bank's efficacy in navigating the crisis induced by the COVID-19 pandemic, as evidenced by the assertion that "banks A-F are the most resilient."

[Xiang et al. \(2015\)](#) conducted a study on banking efficiency by examining the optimal number of inputs, as indicated by technical efficiency, and their relative proportions based on their values. Profit efficiency (PE) encompasses cost efficiency (CE) and revenue maximization, contingent upon the amount and price of output. The study's results indicate that per capita income (PCI) and average profit margin (OPM) exert significant positive effects on all three metrics, suggesting that banks operate more efficiently in wealthier economies. The substantial negative impact of the four-bank concentration ratio (CNR) on earnings efficiency indicates that a highly concentrated banking sector correlates with increased market power and diminished efficiency. The substantial and beneficial impact of the capital adequacy ratio (CAR) on total equity (TE) and common equity (CE) indicates that it preserves a balance between the objective of enhancing financial stability and the necessity to mitigate adverse effects on efficiency and competition. Banks in superior financial condition are less prone to incurring losses on loans, hence necessitating reduced expenditures to recover these loans.

[Sari et al. \(2022\)](#) assert in their research that bank size does not significantly impact performance outcomes. The results of Tobit estimation indicate that economic growth significantly undermines the efficiency of commercial banks in Indonesia. The demand-

following hypothesis posits that the financial sector expands in response to the increasing service requirements of the real sector. However, the correlation between economic growth and bank efficiency indicates that this assertion is inaccurate. Consequently, economic growth leads to an increased need for financial services. This indicates that competition among private banks is more intense than that among government-owned banks. The nature of these factors is also affected by the bank's customer demographics.

[Khalifaturofi'ah \(2018\)](#) elucidates that capital, financing, and interest rates are critical determinants of banking financial performance. The quantity of capital and finance will influence the magnitude of total assets. Conversely, an increase in the interest rate established by the bank diminishes the public's inclination to secure funding, hence decreasing banking assets. Elevated interest rates would enhance banking profitability; nonetheless, banks lack adequate capacity to confront issues across diverse economic scenarios. An efficient bank is one that offers products and services at reduced costs.

The global banking sector must adapt to evolving business conditions and embrace digitalization to maintain competitiveness. The efficiency and total assets of these banks are critical factors influencing their competitiveness in at least three of the six countries ([Chotigeat et al. 2004](#)). According to research by [Erasmus \(2014\)](#), the majority of banks maintained efficiency during the global financial crisis. The efficiency demonstrated by banks in the past contributed to their resilience during the crisis. In terms of efficiency, not all banks possess the same capacity to enhance their performance. [Ariff and Shawtari \(2019\)](#) assert that sharia subsidiaries of conventional banks outperform independent sharia banks in multiple dimensions, including operational efficiency. This results in the sharia banking sector being governed by its parent institution, limiting its innovation and adversely affecting long-term survival. Similar to traditional banks, the magnitude of Islamic banks can enhance the robustness and stability of the whole financial system.

The bank's size is a crucial determinant of efficiency during a crisis. Research by [Jiménez-Hernández et al. \(2019\)](#) indicates that banks with a deficient capital position exhibit reduced profitability and inferior credit portfolio quality, characterized by elevated non-performing loans (NPL). An rise in bank size enhances efficiency and specialization in lending and credit, hence improving overall effectiveness. This research indicates that domestic banks have efficiency benefits; yet, these modest results may suggest that national and foreign banks do not demonstrate considerable performance disparities. Banks exhibiting superior financial circumstances demonstrate elevated efficiency levels, as elucidated by [Xiang et al. \(2015\)](#), indicating that financially robust banks are less prone to loan defaults, hence necessitating reduced expenditures to recover loans. To enhance efficiency, banks must augment their net income, minimize idle funds, reduce operational expenses, and allocate greater resources to revenue-generating investments while sourcing funds at lower costs ([Haque et al. 2022](#)). According to [Svitalkova \(2014\)](#), the primary cause of banking inefficiency is insufficient loan provision and non-performing loans (NPLs).

Banks, being financial institutions susceptible to macroeconomic shocks, must adjust to attain optimal efficiency. The advancement of financial technology has resulted in numerous innovations that enhance efficiency within the banking sector. [Svitalkova et al. \(2014\)](#), in their analysis of the Chinese banking industry, elucidate that fintech innovations augment bank efficiency and enhance the technologies employed by banks. Nonetheless, state-owned commercial banks exhibit diminished efficiency and utilize substandard technology. This is due to private banks' superior cost management and greater investment in research and

development (R&D) for new technology, which enhances CCB's financial marketing precision and customisation of financial services.

This may elevate credit risk, potentially leading to poor credit or default, augment operating expenses for customer registration, and diminish banks' profits ([Sari et al. 2022](#)). Etymologically, resilience derives from the English term resilience, signifying the capacity to revert to its previous state. It might be construed as an individual's capacity to endure, recuperate, and adjust to adverse circumstances. Resilience serves as a protective mechanism that alters an individual's reaction to perilous circumstances during pivotal moments in life. Resilience refers to the process and outcomes of effectively adapting to adverse conditions or highly hard life experiences, particularly those involving significant stress or trauma. Reivich and Shatte, in their book "The Resiliency Factor," define resilience as the capacity to surmount and adjust to challenging events or issues encountered in life. Enduring under strain and confronting adversity or trauma encountered in life ([Reivich and Shatte 2002](#)).

In a commercial environment, resilience refers to the ability of entrepreneurs to endure and adapt, enabling them to thrive and progress during periods of upheaval ([Kuckertz et al. 2020](#)). The definition of business resilience, as proposed by [Leflar and Siegel \(2016\)](#), is the capacity of a company to successfully manage and respond to a disruptive event, mitigate its impact, and recover swiftly. Resilience capability refers to the capacity of a system, enterprise, or community at risk to withstand, absorb, adapt to, and recover from the effects of a hazardous event promptly and effectively, including the maintenance and restoration of its structure and essential functions ([Sheffi 2015](#)).

Banking Competitiveness

[Haque et al. \(2022\)](#) propose to assess bank efficiency and productivity prior to and during COVID-19 by a new integrated multi-criteria decision-making (MCDM) methodology. The study's findings indicate that international banks exhibit less susceptibility to the COVID-19 shock due to their operations in many geographies and their familiarity with epidemic regulations. During the COVID-19 pandemic, the productivity of government banks declined. Regulators, lawmakers, and bank executives must evaluate these results. The correlation coefficient signifies the legitimacy of the suggested methodology. The proposed approach has been evaluated for reliability and stability. The integrated SWARA II-MEREC-MARCOS model has effectively assessed the efficiency and productivity of Turkish commercial banks. The SWARA II-MEREC-MARCOS framework is straightforward, dynamic, and integrates both subjective and objective elements. Future research may implement the principle in evaluating bank performance, selecting suppliers, recruiting workers, and in information technology.

[Haque et al. \(2022\)](#) indicate that a review of prior research reveals the ongoing ambiguity in the discourse surrounding Islamic banks vs regular banks, as various studies yield divergent outcomes. The study's findings indicate that AlJazira, Saudi Investment Bank, and Alawal Bank must enhance their net income, diminish the volume of non-performing loans, minimize operational expenses, and allocate additional funds towards revenue-generating investments to augment their income. Deer. Riyadh Bank, Saudi Investment Bank, and AlJazira Bank should endeavor to augment their net revenue by reducing operational expenditures and procuring funds from more economical sources. Regarding ROE, these banks have underperformed.

[Mikita \(2022\)](#) explains that banking efficiency (defined as the return on equity of the banking sector after tax and the ratio of bank costs to income) and the amount of concentration in the banking sector have a substantial impact on the stability of the banking sector in Poland. Return on equity after tax (ROE) of the banking sector is a factor in the stability of the sector (expressed in terms of z-score). The above-mentioned aspects have a positive impact on the stability of the Polish banking system. There is no correlation between the stability of the Polish banking industry (represented in terms of z-score) and the bank's cost-to-income ratio or concentration level, which indicates the combined proportion of the three largest commercial banks in Poland by total banking assets.

[Obilikwu \(2018\)](#) explains that concentration, bank size, capital adequacy, and liquidity are some of the consolidation target variables that negatively influence BIP in Nigeria, along with economic growth and inflation, which are included as control variables in this study. Only enough money can have a major positive impact on BIP in Nigeria. While economic growth has a negligible negative impact on BIP, inflation has a negligible positive impact. As banks improve, regulators must always ensure that they maintain capital adequacy ratios based on applicable regulations. The industry should not consolidate because studies have shown that having many banks in business is preferable to having fewer banks.

The findings of [Kozak al. \(2021\)](#) indicate that the linear ordering strategy does not significantly influence the identification of banks that are most and least resilient to the effects of the pandemic. The resilience of the banks in the research sample is inconsistent in confronting the effects of the COVID-19 pandemic problem. The research findings indicate that the four major banks in the asset sector do not exhibit the highest resilience. On one hand, banks may be compelled to finance economically vulnerable sectors that are also critical; on the other hand, this could exacerbate systemic risks if the pandemic persists in Portugal or in the countries where they are heavily engaged.

The findings of this study align with prior research indicating that the COVID-19 crisis had a comparatively milder effect on banks with strong capital and profitability. The findings of this study for Portugal indicate that the top-ranked banks are predominantly distinguished by elevated Tier 1 ratios, superior LCR levels, and comparatively low C/I ratios relative to their sector. Two of these institutions are comparatively little banks. This may indicate that their specialization, characterized by a relatively low concentration of COVID-19 sensitive industries in their portfolio, or the distinctive value of their business, such as retail or private banking, enables them to manage their assets and liabilities effectively, ensuring stable operations in a dynamic business environment. Consequently, the degree of capital adequacy and liquidity emerges as crucial factors influencing bank resilience during the pandemic crisis.

Banking Resilience

[Ruza et al. \(2019\)](#) endeavored to categorize the factors influencing resilience and stability into three distinct groups: 1) balance sheet, which includes leverage, interfinancial lending, asset size, asset composition, liability composition, and foreign exposure. 2) Market structure, encompassing market concentration and ownership diversity, and 3) regulation, monetary policy, and fiscal policy. This research elucidates that the purpose of macroprudential regulation is to enhance the resilience of the financial system and mitigate systemic risks that propagate across the system. The research findings indicate that the resilience-stability indicators for the examined set of nations exhibit markedly distinct patterns following the financial crisis. Some countries have enhanced their rankings, while others are seeing a decline. Secondly, the comparative standings of nations on resilience-stability indicators

enabled this study to recognize Canada and the United States as exemplars of optimal practice. Third, by examining particular nations, this research might pinpoint potential vulnerabilities and opportunities for enhancement in each instance. Furthermore, the examine the primary aim of macroprudential regulation to prevent distress in banking institutions. This study employs five diagnostic criteria to evaluate the resilience of the Bangladesh banking sector in mitigating the adverse impacts of the COVID-19 pandemic. EBL and DBBL were identified as the most resilient banks in Bangladesh in mitigating the adverse effects of the COVID-19 epidemic. Additionally, it may be inferred that Onebank, Citybank, Trustbank, Standbank, SIBL, and Dhakabank are the most vulnerable banks in Bangladesh to the adverse effects of the COVID-19 pandemic. Numerous banks in this analysis had substantial profitability ratios yet possessed minimal capital bases, elevated non-performing loans (NPLs), and deficient short-term liquidity ratios. Certain banks exhibit low short-term liquidity ratios (below 1) and elevated non-performing loan (NPL) ratios, which mitigate the effects of substantial profitability figures. Consequently, banks must focus on sustaining a robust capital base, minimizing non-performing loans (NPLs), and ensuring elevated liquidity ratios, particularly during the COVID-19 pandemic when the demand for capital is expected to surge dramatically. This research indicates that banks with a significant concentration of loans in industrial sectors adversely affected by COVID-19 can exhibit resilience during this crisis if they sustain a capital base exceeding the required level, possess high short-term liquidity, and minimize non-performing loans (NPL). Feasible.

Kozak (2021) stated that during a crisis, poor credit might precipitate bank runs and result in a liquidity shortage. As COVID-19 disseminates to nations with less advanced healthcare systems, a comparable scenario may arise. The initial concept is substantiated by studies regarding the susceptibility of TCR and CET1 of 18 CESE banks to escalations in NPLs. In 2020, CESE bank possessed robust capital, enabling it to uphold capital standards despite a 12% rise in non-performing loans. The banks in the region have exhibited varying degrees of resistance to the COVID-19 shock. European Union banks have greater resilience to surges in non-performing loans compared to non-European Union banks, attributable to their enhanced capital reserves and reduced incidence of non-performing loans. Smaller banks exhibit a more significant rise in non-performing loans, hence substantiating the second claim. These banks may postpone provisioning for non-performing loans to enhance their financial statements and augment new loans to reduce the NPL ratio. These circumstances may elevate credit risk and diminish bank capital in the future.

CONCLUSION

Banks, as financial institutions that are very vulnerable to macro shocks, must adapt to achieve maximum efficiency. The development of financial technology itself has led to many innovations that can be implemented to create efficiency in the banking industry. Competitiveness is also very important in gaining the trust of the community and investors. A bank with strong competitiveness can demonstrate good financial performance and has the ability to survive in the midst of intense competition. In a more competitive market, there are several problems that banks will face, such as the increased credit risk when banks tend to offer higher-risk loans to attract new customers or retain existing ones. This can increase credit risk and potentially lead to non-performing loans or defaults, raise operational costs to acquire customers, and reduce banking profits. Banks exhibiting robust competitiveness can achieve favorable financial performance and possess the capacity to endure in a highly competitive environment. In a more competitive market, banks will encounter various

challenges, including heightened credit risk as they may offer higher-risk credit to attract new clients or maintain current ones.

949 Foreign banks are less vulnerable to the COVID-19 shock because they operate in various regions and are accustomed to epidemic policies. During COVID-19, the productivity of state-owned banks declined. Regulators, politicians, and bank managers must assess these results. Resilience is essential for banks to successfully confront the difficulties and hazards that periodically emerge. Consequently, banks must consistently prioritize enhancing their resilience by formulating effective strategies and perpetually fortifying their security systems and adherence to relevant norms and regulations. Competitiveness is crucial for securing the trust of the public and investors. Previous study indicates various recommendations for further investigation that require more thorough examination to conduct a more in-depth analysis of the interconnections among efficiency, competitiveness, and resilience elements, particularly in the context of the periods preceding, during, and following the COVID-19 pandemic.

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