

CORPORATE GOVERNANCE, BANK SIZE, AND BOARD EDUCATION ON INDONESIAN BANK PERFORMANCE: THE MEDIATING ROLE OF CAPITAL STRUCTURE DURING ECONOMIC UNCERTAINTY

Fitriaty, Junaidi, M. RIDWANSYAH, Syahmardi YACOB 

Faculty of Economics and Business, Universitas Jambi, Jambi, Indonesia

Article History:

- received 5 February 2026
- accepted 2 June 2026

Abstract. This study looks at how corporate governance mechanisms, bank size, and board education affect the financial performance of Indonesian banks during a period of economic uncertainty, with capital structure included as a mediating variable. The study is based on panel data from 40 conventional commercial banks listed on the Indonesia Stock Exchange for 2020–2022, giving a total of 120 bank-year observations. Bank performance is measured by return on assets (ROA), and capital structure is measured by total debt to total assets (DTTA). The study applies Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine both direct and indirect relationships in a relatively small sample and under financial data conditions that may not be normally distributed. The results show that bank size has a positive and significant effect on both bank performance and capital structure. Capital structure has a negative but insignificant effect on bank performance. Board education has a positive effect on capital structure but a negative effect on bank performance, suggesting that highly educated boards may adopt more conservative financing and strategic choices during crisis periods. Independent commissioners also show negative effects on capital structure and bank performance. This may mean that stronger monitoring reduces managerial discretion under conditions of high uncertainty. The indirect effects through capital structure are not significant, and the VAF results also show that capital structure does not meaningfully carry the effects of governance and organizational characteristics to performance. This study contributes to the literature on banking governance in emerging markets by showing that during periods of economic disruption, governance mechanisms do not always operate in the direction predicted by conventional agency-based arguments. The findings imply that Indonesian banks may require governance arrangements that balance oversight, expertise, and strategic flexibility, especially during crisis periods.

Keywords: corporate governance, independent commissioners, bank size, board education, capital structure, bank performance, Indonesia.

JEL Classification: G21, G32, G34.

✉Corresponding author. E-mail: syahmardi_yacob@unja.ac.id

1. Introduction

The banking sector has an important role in maintaining economic stability and supporting business activity, especially in emerging economies such as Indonesia (Soumena et al., 2023; Amoah et al., 2020). Banks collect funds from the public and distribute them to productive sectors through lending and other financial services. Through this role, banks contribute to investment, job creation, and broader economic growth (Amoah et al., 2020). In Indonesia, banks are also dealing with tighter competition and stricter regulation, while at the same time being pushed to improve efficiency and financial inclusion (Baskerville et al., 2020; Ahamed et al., 2021). At the same time, technological developments, particularly the growing role of

FinTech, have become increasingly relevant to financial performance in the banking industry (Melati, 2024). More broadly, changing and competitive business environments have also increased the importance of organizational adaptation and collaborative approaches to innovation (Srisathan et al., 2022).

These pressures became even stronger during 2020–2022, when the COVID-19 pandemic generated widespread disruption and substantial changes across economic and organizational environments (Hite & McDonald, 2020), creating a period of heightened uncertainty for banks. In this situation, governance became more important because banks needed to maintain accountability and internal control while still responding flexibly to changing conditions. For this reason, bank performance should not

be seen only as the result of managerial decisions, but also as an indication of institutional strength, public trust, and regulatory effectiveness (Bayar et al., 2021; Akbar & Siti-Nabiha, 2022).

Many previous studies discuss bank performance together with governance structure, bank size, and board characteristics (Bouteska, 2020; Gupta & Mahakud, 2020; Issa et al., 2021; Kanakriyah, 2021). Independent commissioners may help reduce conflicts of interest in the bank. They may also help make supervision less biased (Alam & Miah, 2021; Hossain et al., 2022). Bank size is also commonly linked to performance, as larger banks tend to have more financial capacity and stronger operational resources (Douplos et al., 2023; Al-Dmour et al., 2023). In addition, the educational background of board members may shape the quality of strategic decision-making, risk assessment, and financial management, thereby influencing bank performance (Birindelli & Iannuzzi, 2022; Ramly & Basharahil, 2021).

However, the findings from earlier studies are still mixed. In some cases, board independence is associated with better firm performance, but in others the relationship is weak, insignificant, or even negative (Bhatia & Gulati, 2021; Nguyen et al., 2020). A similar situation can be seen in board education. Although better-educated boards are often expected to make better decisions, they may also become more cautious and less quick in responding when firms face crisis conditions. Similarly, larger banks may benefit from scale advantages, but increased size may also generate complexity and inefficiency (Zhang & Zhang, 2022). These mixed findings suggest that the effects of governance and organizational characteristics are likely to be context-dependent, particularly under economic stress, as uncertainty and competitive conditions can shape the relationship between organizational strategies and performance (Handoyo et al., 2023).

Capital structure is another factor that may help explain bank performance. In banks, it is closely related to how leverage is managed against the asset base without putting stability and profitability at risk. For this reason, capital structure may also connect governance and organizational characteristics with bank performance (Hunjra et al., 2020; Rehan et al., 2023). Yet empirical evidence on this mediating role remains limited, particularly in the context of Indonesian listed banks operating during a period of uncertainty.

This study therefore aims to examine how independent commissioners, bank size, and board education affect the financial performance of Indonesian banks during the period 2020–2022, with capital structure included as a mediating variable. More specifically, this study addresses four research questions: (1) Do independent commissioners, bank size, and board education directly affect bank performance? (2) Do these variables affect capital structure? (3) Does capital structure affect bank performance? and (4) Does capital structure mediate the relationships between independent commissioners, bank size, board education, and bank performance?

This study contributes to the literature in three ways. First, it provides a more context-sensitive explanation of governance effectiveness during periods of economic uncertainty. Second, this study adds to earlier research by examining board education and capital structure together in one framework. Third, it provides evidence from Indonesia's two-tier governance system, where the position of independent commissioners is institutionally different from that of directors in one-tier board systems.

2. Literature review and hypothesis development

2.1. Independent commissioners and bank performance

In Indonesia's two-tier governance system, independent commissioners are part of the board of commissioners, which is separate from the board of directors. They are expected to oversee managerial actions in an objective way. More broadly, corporate governance frameworks emphasize the importance of governance mechanisms in directing and monitoring organizational activities (Nassereddine, 2022). Agency theory sees the monitoring role of independent commissioners as a way to reduce conflicts of interest between owners and managers through stronger oversight in the firm (Richardson, 2006). Stewardship theory also suggests that effective oversight can help keep managerial actions in line with organizational interests and support better firm outcomes (Lu et al., 2022).

Earlier studies have examined the relationship between board structure, including board independence, and firm performance, generally emphasizing the importance of board characteristics in shaping firm outcomes (Agarwal & Singh, 2020; Khalil & Chihi, 2020; Kufo & Shtembari, 2023; Farooq et al., 2022). In the banking sector, corporate governance mechanisms are particularly important because they can influence the financial performance of commercial banks (Okoye et al., 2020; Zulkifli, 2020), while banks also operate in a complex risk environment and are subject to extensive regulatory scrutiny.

However, this positive relationship may become weaker in times of crisis. In this situation, banks often need fast decisions and flexible action. If supervision is too strict, management may have less room to respond. As a result, decision-making can become slower and bank operations less flexible (Bhatia & Gulati, 2021; Nguyen et al., 2020; Ramly & Basharahil, 2021). In a highly regulated banking environment such as Indonesia, the supervisory role of independent commissioners may therefore generate both governance benefits and coordination costs.

Despite these competing arguments, the baseline expectation of this study remains consistent with the dominant governance literature:

H1: Independent commissioners have a positive influence on bank performance.

2.2. Bank size and bank performance

Bank performance is influenced by various bank-specific characteristics and financial factors (Rashid & Jabeen, 2016). Among these characteristics, bank size may play an important role in determining performance. Larger banks usually have more room to access funding and support their business activities (Naili & Lahrichi, 2022; Javaid et al., 2022). This may help them maintain profits and remain stable when economic conditions are under pressure. They may also be supported by better technology and risk management systems (Elsaid, 2023; der Crujjsen et al., 2023).

Still, a larger size does not always lead to better performance. When a bank becomes too large, it may be harder to manage. Coordination can become more difficult, and this may reduce efficiency (Ramlall, 2024; Salem et al., 2024). Nevertheless, the dominant view in the banking literature suggests that larger banks are generally better positioned to sustain performance, especially under adverse macroeconomic conditions.

Accordingly, the following hypothesis is proposed:

H2: Bank size has a positive influence on bank performance.

2.3. Board education and bank performance

Board education is related to the knowledge and skills that directors bring into strategic decisions. Upper echelons theory explains that educational background can influence how directors read information, assess risk, and respond to strategic issues (Plöckinger et al., 2016). Because of that, directors with relevant educational backgrounds may be better prepared to deal with strategic decisions (Almansour et al., 2023; Farooq et al., 2022).

Some previous studies link directors' education in finance or business to funding decisions and financial performance (Jaya & Rathod, 2021; Molina-García et al., 2023; Hazaea et al., 2023; Kurnianto & Soewarno, 2024). Better-educated directors may be more capable of evaluating financial opportunities and risks, designing appropriate strategies, and enhancing the firm's competitive position (Amorelli & García-Sánchez, 2021; Whitler et al., 2022).

However, the effect of education may not always be positive in crisis settings. Boards with higher levels of education may become more aware of risk, more focused on compliance, and more careful in approving aggressive business strategies. During periods of uncertainty, this may result in more conservative lending, stricter investment decisions, and slower strategic action. In this sense, board education may involve a trade-off between prudence and short-term profitability (Lu et al., 2022; Gupta & Das, 2022).

Based on the dominant theoretical expectation, this study proposes the following hypothesis:

H3: Board education has a positive influence on bank performance.

2.4. The mediating role of capital structure

Capital structure plays an important role in explaining corporate financial outcomes because financing decisions can influence firm value and financial performance (Kruk, 2021). Previous research has also highlighted the relevance of capital structure to firms' financial performance and financial metrics (Kamal & Shelke, 2024). In banking, this issue is particularly important because leverage affects resilience, regulatory compliance, and profitability (Hunjra et al., 2020; Rehan et al., 2023). More broadly, effective risk management practices are important for bank performance because they help banking institutions manage financial risks and maintain organizational stability (Noory et al., 2021).

Independent commissioners may encourage more careful financing decisions through stronger oversight and greater attention to accountability, reflecting the broader role of corporate governance in shaping financial and capital-related decisions (Elhabib, 2024). Directors with stronger educational backgrounds may also make financing decisions more carefully because they may be better able to assess financial risk, liquidity needs, and capital adequacy (Bamiro et al., 2024; Gajdosikova & Valaskova, 2022). Bank size may also affect capital structure, since larger banks usually have wider access to funding markets and more room to manage their financing (Xu, 2022; Do et al., 2022).

At the same time, the mediating role of capital structure may weaken during periods of widespread economic uncertainty. In the 2020–2022 period, financing decisions may not have depended only on internal governance characteristics. They may also have been influenced by macroprudential limits, crisis priorities, and caution in the banking system. Because of this, governance mechanisms and organizational characteristics may affect performance more directly than through capital structure.

Accordingly, this study tests whether capital structure mediates the relationships between independent commissioners, bank size, board education, and bank performance.

2.5. Research framework

Based on the discussion in the previous sections, this study develops an integrated research framework to explain the relationships among corporate governance mechanisms, organizational characteristics, capital structure, and bank performance. It includes the direct effects of independent commissioners, bank size, and board education on bank performance, along with their indirect effects through capital structure.

The framework is based on the view that governance attributes and organizational scale can influence managerial decisions, especially those related to financing strategies and risk management, which may then affect financial performance. Capital structure is incorporated as an intervening mechanism to examine whether financing

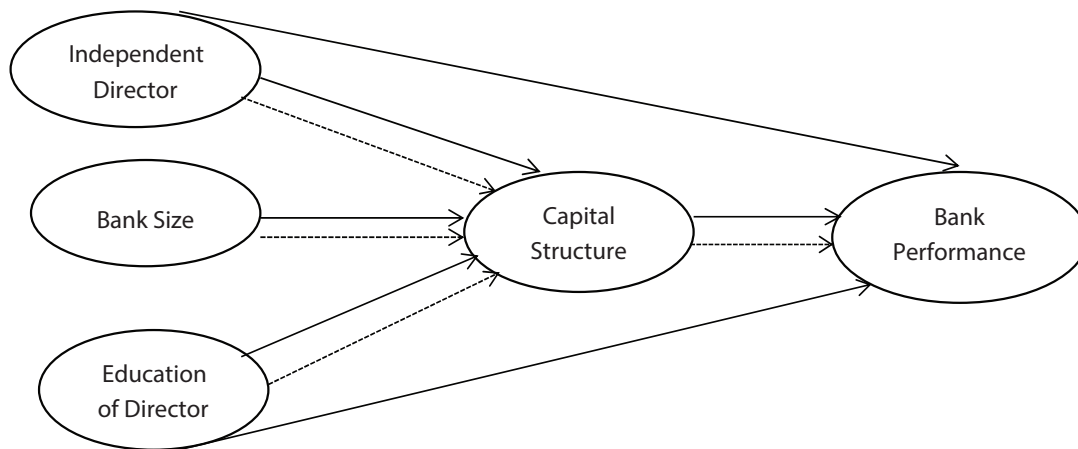


Figure 1. Research framework (source: author's own work)

decisions transmit the effects of governance and organizational characteristics to performance outcomes. Figure 1 illustrates the conceptual model of the study and summarizes the hypothesized relationships among the variables.

3. Methodology

This study uses a quantitative explanatory approach to examine the effects of independent commissioners, bank size, and board education on bank performance, with capital structure treated as a mediating variable. The study relies on secondary data taken from the annual reports of conventional commercial banks listed on the Indonesia Stock Exchange (IDX) for the 2020–2022 period. This observation window was deliberately selected because it captures the pandemic period and the early post-pandemic adjustment phase, both of which were characterized by heightened economic uncertainty in the Indonesian banking sector.

The study used purposive sampling. Only banks that met the required conditions were included in the sample. The sample included only banks that were listed during 2020–2022, operated as conventional commercial banks, and provided complete data on the variables used in this study. Based on these criteria, 40 banks were included in the final sample, generating 120 bank-year observations. The sample selection process and the criteria used to determine the final sample are summarized in Table 1.

Data in this study were collected through non-participant observation, in which the researcher did not take part directly in the observed process. The observation was carried out by reviewing the annual financial reports of banking companies for the 2020–2022 period. The quantitative data used were the annual financial reports of banking companies listed on the Indonesia Stock Exchange (IDX) during that period.

Table 2 presents the operational definitions and measurements of all variables used in this study. For conceptual clarity, bank performance is measured by Return on Assets (ROA), while capital structure is measured by Total

Debt to Total Assets (DTTA). In addition, the governance variable is consistently defined as independent commissioners, not independent directors, in order to reflect the Indonesian two-tier governance system accurately.

Table 1. Sample determination (source: author's own work)

Information	Amount
Population: Banking companies listed on the Indonesia Stock Exchange for the period 2020–2022	47
Sampling according to certain criteria (Purposive Sampling):	
Conventional General Banking Companies Listed on the IDX for the 2020–2022 Period	43
Conventional banking companies listed on the IDX for the 2020–2022 period have a Complete Annual Report with the Educational Background of the Board of Commissioners and Directors	40
Number of companies included in the sample	40
Duration of observation in years	3
Total Sample (n x research period) (40 x 3 years)	120

To improve conceptual clarity, the variables are defined as follows. Bank performance is measured by Return on Assets (ROA), following Tahir et al. (2024). Capital structure is measured by Total Debt to Total Assets (DTTA), following Hunjra et al. (2020). Bank size is measured by the natural logarithm of total assets, following King et al. (2016). Independent commissioners are measured by their proportion on the board of commissioners, in line with Indonesia's two-tier governance system (Hamid & Kozhich, 2007; Tahir et al., 2012). Board education is measured by the share of directors whose educational background is relevant, based on the information provided in the annual report, following Tahir et al. (2024).

Table 2 presents the operational definitions and measurements of all variables used in this study. For conceptual clarity, bank performance is measured by Return on Assets (ROA), while capital structure is measured by Total Debt to Total Assets (DTTA). In addition, the governance variable is consistently defined as independent commissioners, not

independent directors, in order to reflect the Indonesian two-tier governance system accurately.

Table 2. Measurement of variables (source: author's own work)

Variable	Define	Reference
Independent commissioners	An independent commissioner is an individual not employed by the company on whose board they serve, and they are not involved in the day-to-day operations. Their role involves offering impartial advice and overseeing the board's activities	(Hamid & Kozhich, 2007; Tahir et al., 2012)
Bank Size	The natural logarithm of total assets	(King et al., 2016)
Education Director	Linear number of Director education / Number of Directors	(Tahir et al., 2024)
Capital Structure	Total Debt/ Total Asset	(Hunjra et al., 2020)
Bank Performance	ROA	(Tahir et al., 2024)

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS software. PLS-SEM was chosen because the model examines several direct and indirect relationships at the same time. It is also considered suitable for a sample of 120 bank-year observations. In addition, financial data from the 2020–2022 crisis period may not fully meet the assumption of multivariate normality, and PLS-SEM is more flexible in this kind of condition than covariance-based SEM.

In this study, economic uncertainty is treated as the common contextual condition affecting the full sample during 2020–2022 rather than as a separate latent construct. Thus, the model is designed to capture how bank-level governance and organizational characteristics influenced performance under the same broad crisis environment. This contextual condition is explicitly incorporated into the interpretation of the findings.

The analysis proceeds in three stages. First, descriptive statistics are used to summarize the characteristics of the data. Second, the quality of the measurement model is examined using collinearity diagnostics, internal consistency, and discriminant validity. Third, the structural model is examined using path coefficients, t-statistics, p-values, and indirect effects. To strengthen the mediation analysis, the Variance Accounted For (VAF) is also used to determine whether capital structure meaningfully transmits the effects of the explanatory variables to bank performance.

Ethical considerations

This study uses publicly available secondary data obtained from the annual reports of banks listed on the Indonesia Stock Exchange. No human participants, confidential personal data, or experimental procedures were involved. Therefore, the study does not raise direct ethical con-

cerns related to human subject research. Nevertheless, the use of secondary data may involve certain limitations, including reporting bias, disclosure inconsistency across firms, and the inability to verify all governance information beyond what is officially published. These limitations are acknowledged in order to ensure transparency in the research process.

4. Results

This section presents the study results based on panel data from Indonesian commercial banks in 2020–2022. The presentation starts with the data characteristics, followed by measurement quality and the relationships among the variables. As an initial step, descriptive statistics are reported to summarize the distribution, central tendency, and variability of the main variables, namely bank performance, bank size, capital structure, independent commissioners, and board education.

The descriptive statistics indicate substantial variation across the sampled banks in terms of profitability, leverage, size, governance composition, and educational background. The mean ROA of 0.0030 indicates that bank profitability was relatively low during the observation period. This is in line with the difficult conditions faced by banks during the pandemic and the recovery phase. Differences in bank size and capital structure also show that the sample banks varied in their operational scale and financing strategy. The descriptive statistics for all study variables are presented in Table 3.

Table 3. Data description (source: author's own work)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ROA	120	-.0900	.0400	.0030	.02185
Bank Size	120	28.4100	35.9400	31.6942	1.78123
DTTA	120	.0900	1.1400	.7830	.13518
Independent_Commissioner	120	.3333	.8000	.5720	.09544
Education Director	120	.4000	1,000	.8176	.17687

Before testing the structural relationships among the constructs, the adequacy of the measurement model was assessed to ensure the reliability and validity of the research instruments. This step is essential to confirm that the constructs are measured accurately and are empirically distinct from one another. Accordingly, collinearity was examined using the Variance Inflation Factor (VIF), while discriminant validity was assessed through the Heterotrait–Monotrait ratio (HTMT). Internal consistency reliability and convergent validity were also evaluated using Cronbach's alpha, composite reliability, and average variance extracted (AVE). The results are reported in Tables 4 to 6.

Table 4. Collinearity test (source: author's own work)

	VIF
Bank_Size	1,000
DTTA	1,000
Education_Director	1,000
Independent_Commissioner	1,000
ROA	1,000

The Variance Inflation Factor (VIF) value of 1,000 for all variables in this study, namely Bank_Size, DTTA, Education_Director, Independent_Commissioner, and ROA, indicates that there is no multicollinearity among the independent variables in the regression model used. Multicollinearity occurs when the independent variables are highly attenuated from each other, which can interfere with the accuracy of the regression coefficient estimation. However, the VIF value of 1,000 indicates that the independent variables in this study do not stack linearly; so that each variable provides a unique and unduplicated contribution to the dependent variable ROA. Thus, the analysis of the regression results can be interpreted more accurately, not distorted by multicollinearity, ensuring that each independent variable makes a clear contribution to bank performance.

Table 5. Heterotrait-Monotrait Ratio (HTMT) (source: author's own work)

	Bank Performance	Bank Size	Capital Structure	Education	Independent Commissioner
Bank Performance					
Bank Size	0.395				
Capital Structure	0.071	0.323			
Education	0.008	0.103	0.198		
Independent Commissioner	0.185	0.206	0.107	0.129	

This Heterotrait-Monotrait Ratio (HTMT) table displays the HTMT values used to assess the discriminant validity between latent variables in the model. HTMT is a measure used to assess the discriminant validity between two latent constructs. Discriminant validity indicates how well a construct differs from another construct. The HTMT value should be lower than 0.90. Obtained Results:

1. Bank Performance and Bank Size: The HTMT value is 0.395, which is far below the threshold of 0.90 indicating that the constructs of Bank Performance and Bank Size have good discriminant validity.
2. Bank Performance and Capital Structure: The HTMT value is 0.071, which is also far below the threshold, indicating that these two constructs are different from each other.

3. Education and Independent Commissioner: The HTMT value is 0.129, indicating good discriminant validity between these two constructs.

Table 6. Validity and reliability test (source: author's own work)

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Bank Performance	1,000	1,000	1,000	1,000
Bank Size	1,000	1,000	1,000	1,000
Capital Structure	1,000	1,000	1,000	1,000
Education	1,000	1,000	1,000	1,000
Independent Commissioner	1,000	1,000	1,000	1,000

Because each construct in this study is operationalized using a single observed indicator, the reliability and validity values reported as 1.000 should be interpreted with caution. In single-indicator PLS models, such values are a technical consequence of the specification rather than evidence of exceptional measurement quality. Accordingly, greater emphasis is placed on collinearity diagnostics, discriminant validity, and the significance of structural relationships.

The perfect values (1.000) for Cronbach's Alpha, rho_A, Composite Reliability, and AVE in this table indicate that the constructs in the research model have very high internal consistency and reliability. The indicators measuring each construct are very consistent and are able to explain all the variance of the construct. The convergent validity of each construct is also very strong, indicating that the indicators are very appropriate in measuring the constructs they represent. Although these values are ideal, in real practice, values that are too perfect can indicate potential overfitting or lack of diversity in the data.

To improve readability, the structural model results are organized into direct effects on bank performance, direct effects on capital structure, and indirect effects through capital structure. The results of the direct-effect analysis are presented in Table 7, including the path coefficients, standard deviations, t-statistics, and p-values for each relationship examined in the structural model.

The structural results show that bank size has a positive and significant effect on bank performance ($\beta = 0.396$, $p < 0.001$), which supports H2. This means that larger banks tend to record better profitability. One possible reason is that they have wider access to funding, stronger operational support, and more room for diversification. Bank size also shows a positive and significant effect on capital structure ($\beta = 0.290$, $p < 0.001$), which indicates that larger banks tend to use higher leverage relative to total assets. Meanwhile, capital structure has a negative but not significant effect on bank performance ($\beta = -0.064$, $p = 0.468$). This result suggests that greater leverage may reduce profitability during periods of uncertainty, although

Table 7. Direct effect (source: author's own work)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Bank Size -> Bank Performance	0.396	0.395	0.065	6,083	0.000
Bank Size -> Capital Structure	0.290	0.293	0.080	3.615	0.000
Capital Structure -> Bank Performance	-0.064	-0.073	0.089	0.726	0.468
Education -> Bank Performance	-0.022	-0.032	0.088	0.249	0.803
Education -> Capital Structure	0.178	0.181	0.105	1,685	0.093
Independent Commissioner -> Bank Performance	-0.107	-0.113	0.096	1.122	0.263
Independent Commissioner -> Capital Structure	-0.070	-0.061	0.110	0.638	0.524

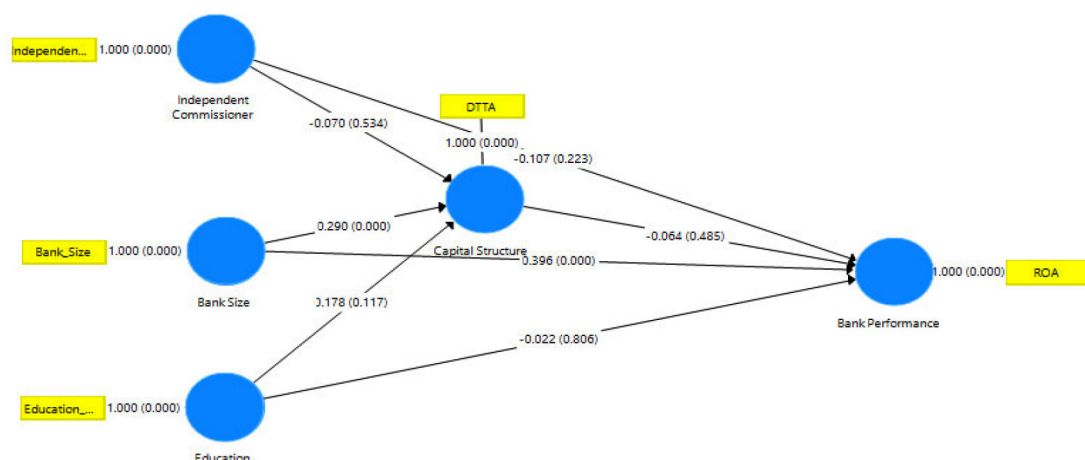
Table 8. Indirect effect (source: author's own work)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Bank Size -> Capital Structure -> Bank Performance	-0.019	-0.021	0.027	0.694	0.488
Education -> Capital Structure -> Bank Performance	-0.011	-0.012	0.020	0.561	0.575
Independent Commissioner -> Capital Structure -> Bank Performance	0.005	0.005	0.014	0.330	0.742

the effect is not strong enough in this sample to be statistically confirmed. Board education has a negative and insignificant effect on bank performance ($\beta = -0.022$, $p = 0.803$), while its effect on capital structure is positive but only marginal at the 10 percent level ($\beta = 0.178$, $p = 0.093$). This result suggests that boards with higher levels of education may prefer more careful and structured financing decisions. However, this cautious approach does not necessarily lead to stronger short-term profitability during a crisis period. Independent commissioners have a negative and insignificant effect on bank performance ($\beta = -0.107$, $p = 0.263$) and a negative and insignificant effect on capital structure ($\beta = -0.070$, $p = 0.524$).

Therefore, H1 is not supported. This result suggests that the monitoring role of independent commissioners may not automatically improve bank outcomes under highly uncertain conditions. The indirect effects of bank size, board education, and independent commissioners on bank performance through capital structure are presented in Table 8.

To assess mediation, the indirect effects through capital structure were examined. The indirect effect of bank size on bank performance through capital structure is negative and insignificant ($\beta = -0.019$, $p = 0.488$). The indirect effect of board education on bank performance through capital structure is also negative and insignificant ($\beta = -0.011$, $p = 0.575$). Likewise, the indirect effect

**Figure 2.** Model of configuration strategy (source: author's own work)

of independent commissioners on bank performance through capital structure is positive but insignificant ($\beta = 0.005$, $p = 0.742$).

To strengthen the interpretation of mediation, the Variance Accounted For (VAF) was calculated. For bank size, the VAF is around -5.04 percent, which shows that mediation is not meaningful and that the direct and indirect effects move in different directions. For board education, the VAF is around 33.33 percent. However, because the indirect effect is not statistically significant, mediation cannot be confirmed. For independent commissioners, the VAF is approximately -4.90 percent, again indicating no meaningful mediation. Overall, these results confirm that capital structure does not significantly mediate the relationships between the explanatory variables and bank performance. The structural relationships among the study variables, based on the estimated path coefficients, are illustrated in Figure 2.

The results above show the relationships among corporate governance attributes, bank size, capital structure, and financial performance, but they do not fully explain why these relationships appear. Therefore, the following section discusses the findings in light of existing theoretical perspectives and prior empirical studies, and highlights their implications for banking practice and policy, particularly in the context of economic uncertainty.

5. Discussion

This study provides evidence that the determinants of bank performance during 2020–2022 must be interpreted in light of the extraordinary uncertainty created by the COVID-19 period and its aftermath. Under such conditions, governance mechanisms do not necessarily operate in the direction predicted by standard positive governance arguments.

First, the positive and significant effect of bank size on bank performance indicates that larger banks were better positioned to withstand the adverse conditions of the crisis period. This finding is in line with the view that larger banks may have certain advantages. These may include wider access to funding, more diversified business activities, stronger reputation, and a better ability to absorb shocks (Douplos et al., 2023; Ramlall, 2024). During periods of uncertainty, these advantages become especially valuable because resilience depends not only on profitability, but also on liquidity access and operational stability (Bayar et al., 2021; Naili & Lahrichi, 2022).

Second, capital structure shows a negative but insignificant relationship with bank performance. This result suggests that higher leverage may have reduced profitability by increasing financial pressure and limiting balance sheet flexibility, although the effect was not statistically strong. This finding is consistent with the view that during crisis periods, banks with more conservative financing structures may be better able to preserve resilience and reduce exposure to solvency risk (Hunjra et al., 2020; Rehan et al., 2023; Salem et al., 2024).

Third, the negative relationship between board education and bank performance, combined with its positive relationship with capital structure, is one of the most interesting findings of this study. From the perspective of upper echelons theory, directors with stronger educational backgrounds may possess greater analytical ability and a sharper awareness of downside risk. However, during crisis periods, this may lead to more cautious lending behavior, more conservative strategic choices, and slower execution of growth-oriented decisions. In other words, board education may strengthen prudence without necessarily improving short-term profitability (Lu et al., 2022; Gupta & Das, 2022; Hazaea et al., 2023). This finding should therefore not be interpreted as evidence that educated boards are detrimental, but rather as evidence that education may shift board behavior toward stability and risk containment during uncertain periods.

Fourth, the negative relationship between independent commissioners and bank performance also deserves close attention. Under normal conditions, independent commissioners are expected to strengthen monitoring and reduce agency problems. However, in a highly regulated banking environment such as Indonesia, the supervisory role of independent commissioners may become more compliance-oriented and procedural during a crisis. During a crisis, banks usually need quick decisions on restructuring and credit policy, as well as fast responses to market shocks. In this situation, stronger oversight may reduce managerial discretion and make strategic action less flexible (Bhatia & Gulati, 2021; Ramly & Basharahil, 2021; Wadesango et al., 2020). From the perspective of resource dependence theory and managerial discretion theory, this suggests that board independence may also create costs when the monitoring role becomes more dominant than the advisory and strategic role.

This interpretation is especially relevant in the Indonesian two-tier governance system, where the board of commissioners has a formal supervisory role that is separate from executive management. In this setting, the presence of independent commissioners alone may not be enough. What also matters is how they carry out their role during crisis and regulatory pressure.

Finally, capital structure does not appear to play a significant mediating role in this model. The results suggest that governance characteristics and bank size are related to performance more directly. In times of broad uncertainty, factors such as governance quality, board behavior, and organizational capacity may have a stronger short-term effect than financing structure. This may explain why the direct effect of bank size is clear, while the indirect effect through capital structure is limited.

From a practical perspective, the findings imply that banks should not assess board effectiveness solely in terms of formal independence or academic qualifications. Instead, they should also consider strategic agility, crisis responsiveness, and the ability to balance oversight with timely decision-making. For regulators and policymakers, the findings suggest that governance arrangements

should preserve accountability and transparency without unintentionally reducing managerial flexibility during periods of economic disruption.

6. Conclusions and future research

This study looks at the effects of independent commissioners, bank size, and board education on the financial performance of Indonesian listed banks in 2020–2022, while capital structure is included as a mediating variable. The findings show that bank size has a positive and significant effect on both bank performance and capital structure, indicating that scale remains an important source of resilience during periods of economic uncertainty. By contrast, capital structure has a negative but insignificant effect on bank performance and does not mediate the relationships between governance variables and performance.

Board education is positively related to capital structure but negatively related to bank performance. This suggests that boards with higher levels of education may take more conservative strategic and financing decisions during crisis periods. Independent commissioners also show negative relationships with capital structure and bank performance. This indicates that stronger monitoring does not always lead to better outcomes when banks need to respond quickly and flexibly to uncertainty.

Overall, the study suggests that during periods of economic disruption, the effectiveness of governance depends not only on control and formal qualifications, but also on strategic adaptability. In the Indonesian two-tier banking system, independent commissioners and highly educated boards may contribute to prudence, yet such prudence may come at the expense of managerial discretion and short-term profitability.

The study offers several practical implications. Banks need oversight, but they also need to make decisions quickly. Board effectiveness should therefore be judged not only from formal qualifications, but also from how boards respond in difficult situations. Regulators also need to maintain accountability without making banks too rigid during a crisis.

There are some limitations in this study. The analysis is based on secondary data, the observation period is relatively short, and economic uncertainty is treated only as a common background condition. Future research can extend the period of analysis, include year effects or macroeconomic controls, add more governance variables, and make comparisons with other emerging banking systems.

References

- Agarwal, S., & Singh, A. (2020). Literature review on the relationship between board structure and firm performance. *International Journal of Business Ethics in Developing Economies*, 9(2), 33–43.
- Ahamed, M. M., Ho, S. J., Mallick, S. K., & Matousek, R. (2021). Inclusive banking, financial regulation and bank performance: Cross-country evidence. *Journal of Banking & Finance*, 124, Article 106055. <https://doi.org/10.1016/j.jbankfin.2021.106055>
- Akbar, T., & Siti-Nabiha, A. K. (2022). Objectives and measures of performance of Islamic microfinance banks in Indonesia: The stakeholders' perspectives. *ISRA International Journal of Islamic Finance*, 14(2), 124–140. <https://doi.org/10.1108/IJIF-11-2020-0231>
- Al-Dmour, H., Saad, N., Basheer Amin, E., Al-Dmour, R., & Al-Dmour, A. (2023). The influence of the practices of big data analytics applications on bank performance: Filed study. *VINE Journal of Information and Knowledge Management Systems*, 53(1), 119–141. <https://doi.org/10.1108/VJKMS-08-2020-0151>
- Alam, M. K., & Miah, M. S. (2021). Independence and effectiveness of Shariah supervisory board of Islamic banks: Evidence from an emerging economy. *Asian Review of Accounting*, 29(2), 173–191. <https://doi.org/10.1108/ARA-01-2020-0005>
- Almansour, B. Y., Elkrgli, S., & Almansour, A. Y. (2023). Behavioral finance factors and investment decisions: A mediating role of risk perception. *Cogent Economics & Finance*, 11(2), Article 2239032. <https://doi.org/10.1080/23322039.2023.2239032>
- Amoah, L., Adjasi, C. K. D., Soumare, I., Osei, K. A., Abor, J. Y., Anarfo, E. B., Amo-Yartey, C., & Otchere, I. (2020). Finance, economic growth, and development. In *Contemporary issues in development finance* (pp. 20–50). Routledge. <https://doi.org/10.4324/9780429450952-2>
- Amorelli, M.-F., & García-Sánchez, I.-M. (2021). Trends in the dynamic evolution of board gender diversity and corporate social responsibility. *Corporate Social Responsibility and Environmental Management*, 28(2), 537–554. <https://doi.org/10.1002/csr.2079>
- Bamiro, N. B., Zakariya, Z., Raimi, L., & Thomas, Y. (2024). Unlocking the nexus: Exploring the mediating and moderating dynamics of risk factors in economic literacy for organizational performance – A systematic review. *Journal of Economic and Administrative Sciences*, 42(3), 630–655. <https://doi.org/10.1108/JEAS-12-2023-0343>
- Baskerville, R., Capriglione, F., & Casalino, N. (2020). Impacts, challenges and trends of digital transformation in the banking sector. *Law and Economics Yearly Review Journal – LEYR*, 9, 341–362.
- Bayar, Y., Borozan, D., & Gavrilitea, M. D. (2021). Banking sector stability and economic growth in post-transition European Union countries. *International Journal of Finance & Economics*, 26(1), 949–961. <https://doi.org/10.1002/ijfe.1829>
- Bhatia, M., & Gulati, R. (2021). Board governance and bank performance: A meta-analysis. *Research in International Business and Finance*, 58, Article 101425. <https://doi.org/10.1016/j.ribaf.2021.101425>
- Birindelli, G., & Iannuzzi, A. P. (2022). Women and bank performance: Theoretical background and literature review. In *Women in financial services: Exploring progress towards gender equality* (pp. 43–123). Springer. https://doi.org/10.1007/978-3-030-93471-2_3
- Bouteska, A. (2020). Do board characteristics affect bank performance? Evidence from the Eurozone. *Journal of Asset Management*, 21, 535–548. <https://doi.org/10.1057/s41260-020-00181-2>
- der Cruysen, C., de Haan, J., & Roerink, R. (2023). Trust in financial institutions: A survey. *Journal of Economic Surveys*, 37(4), 1214–1254. <https://doi.org/10.1111/joes.12468>
- Do, D. T., Duong, T. Q. L., Nguyen, T. H. T., Nguyen, T. T. T., & Tran, M. D. (2022). The impact of ownership structure on financial performance of listed logistics firms in Vietnam. *Academy of Strategic Management Journal*, 21(2), 1–16.
- Doumpos, M., Zopounidis, C., Gounopoulos, D., Platanakis, E., & Zhang, W. (2023). Operational research and artificial intelli-

- gence methods in banking. *European Journal of Operational Research*, 306(1), 1–16. <https://doi.org/10.1016/j.ejor.2022.04.027>
- Elhabib, M. A. A. (2024). Corporate governance and capital market development in the GCC: A comparative literature review. *Journal of Capital Markets Studies*, 8(2), 255–274. <https://doi.org/10.1108/JCMS-06-2024-0027>
- Elsaid, H. M. (2023). A review of literature directions regarding the impact of Fintech firms on the banking industry. *Qualitative Research in Financial Markets*, 15(5), 693–711. <https://doi.org/10.1108/QRFM-10-2020-0197>
- Farooq, U., Tabash, M. I., Al-Naimi, A. A., & Drachal, K. (2022). Corporate investment decision: A review of literature. *Journal of Risk and Financial Management*, 15(12), Article 611. <https://doi.org/10.3390/jrfm15120611>
- Gajdosikova, D., & Valášková, K. (2022). A systematic review of literature and comprehensive bibliometric analysis of capital structure issue. *Management Dynamics in the Knowledge Economy*, 10(3), 210–224. <https://doi.org/10.2478/mdke-2022-0014>
- Gupta, J., & Das, N. (2022). Multidimensional corporate social responsibility disclosure and financial performance: A meta-analytical review. *Corporate Social Responsibility and Environmental Management*, 29(4), 731–748. <https://doi.org/10.1002/csr.2237>
- Gupta, N., & Mahakud, J. (2020). CEO characteristics and bank performance: Evidence from India. *Managerial Auditing Journal*, 35(8), 1057–1093. <https://doi.org/10.1108/MAJ-03-2019-2224>
- Hamid, H. H., & Kozhich, V. (2007). Corporate governance in an emerging market: A perspective on Pakistan. *Journal of Legal Technology Risk Management*, 1, Article 22.
- Handoyo, S., Suharman, H., Ghani, E. K., & Soedarsono, S. (2023). A business strategy, operational efficiency, ownership structure, and manufacturing performance: The moderating role of market uncertainty and competition intensity and its implication on open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(2), Article 100039. <https://doi.org/10.1016/j.joitmc.2023.100039>
- Hazaea, S. A., Al-Matari, E. M., Farhan, N. H. S., & Zhu, J. (2023). The impact of board gender diversity on financial performance: A systematic review and agenda for future research. *Corporate Governance: The International Journal of Business in Society*, 23(7), 1716–1747. <https://doi.org/10.1108/CG-07-2022-0302>
- Hite, L. M., & McDonald, K. S. (2020). Careers after COVID-19: Challenges and changes. *Human Resource Development International*, 23, 427–437. <https://doi.org/10.1080/13678868.2020.1779576>
- Hossain, M. R., Akhter, F., & Sultana, M. M. (2022). SMEs in Covid-19 crisis and combating strategies: A systematic literature review (SLR) and a case from emerging economy. *Operations Research Perspectives*, 9, Article 100222. <https://doi.org/10.1016/j.orp.2022.100222>
- Hunjra, A. I., Verhoeven, P., & Zureigat, Q. (2020). Capital structure as a mediating factor in the relationship between uncertainty, CSR, stakeholder interest and financial performance. *Journal of Risk and Financial Management*, 13(6), Article 117. <https://doi.org/10.3390/jrfm13060117>
- Issa, A., Yousef, H., Bakry, A., Hanaysha, J. R., & Sahyouni, A. (2021). Does the board diversity impact bank performance in the MENA countries? A multilevel study. *Corporate Governance: The International Journal of Business in Society*, 21(5), 865–891. <https://doi.org/10.1108/CG-06-2020-0222>
- Javaid, M., Haleem, A., Singh, R. P., Suman, R., & Khan, S. (2022). A review of blockchain technology applications for financial services. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, 2(3), Article 100073. <https://doi.org/10.1016/j.tbench.2022.100073>
- Jaya, K. R., & Rathod, P. (2021). A review of investment behaviour and decisions. *Recent Trends in Management and Commerce*, 2(1), 26–31.
- Kamal, S., & Shelke, A. (2024). Influence of capital structure on financial metrics of packaged foods companies traded on the Bombay stock exchange. *International Journal of Communication Networks and Information Security*, 16(3), 403–410.
- Kanakriyah, R. (2021). The impact of board of directors' characteristics on firm performance: A case study in Jordan. *Journal of Asian Finance, Economics and Business*, 8(3), 341–350.
- Khalil, A., & Chihi, S. (2020). Would meetings between the board of directors and the Shariah supervisory board affect the financial performance of Islamic banks? *Journal of the International Academy for Case Studies*, 26, 1–7.
- King, T., Srivastav, A., & Williams, J. (2016). What's in an education?: Implications of CEO education for bank performance. *Journal of Corporate Finance*, 37, 287–308. <https://doi.org/10.1016/j.jcorpfin.2016.01.003>
- Kruk, S. (2021). Impact of capital structure on corporate value – review of literature. *Journal of Risk and Financial Management*, 14(4), Article 155. <https://doi.org/10.3390/jrfm14040155>
- Kufo, A., & Shtembari, E. (2023). How board size and board independence affect insurance companies' performance. *European Journal of Interdisciplinary Studies*, 15(1), 68–80. <https://doi.org/10.24818/ejis.2023.05>
- Kurnianto, S., & Soewarno, N. (2024). Moderating effect of board gender diversity on the relationship between prospector business strategy and financial performance: Evidence from Indonesia. *Cogent Business & Management*, 11(1), Article 2371066. <https://doi.org/10.1080/23311975.2024.2371066>
- Lu, Y., Ntim, C. G., Zhang, Q., & Li, P. (2022). Board of directors' attributes and corporate outcomes: A systematic literature review and future research agenda. *International Review of Financial Analysis*, 84, Article 102424. <https://doi.org/10.1016/j.irfa.2022.102424>
- Melati, Y. A. (2024). Fintech and financial performance in the banking industry: A literature review. *Asian Journal of Economics and Business Management*, 3(1), 357–361. <https://doi.org/10.53402/ajebm.v3i1.385>
- Molina-García, A., Diéguez-Soto, J., Galache-Laza, M. T., & Campos-Valenzuela, M. (2023). Financial literacy in SMEs: A bibliometric analysis and a systematic literature review of an emerging research field. *Review of Managerial Science*, 17, 787–826. <https://doi.org/10.1007/s11846-022-00556-2>
- Naili, M., & Lahrchi, Y. (2022). The determinants of banks' credit risk: Review of the literature and future research agenda. *International Journal of Finance & Economics*, 27(1), 334–360. <https://doi.org/10.1002/ijfe.2156>
- Nassereddine, S. (2022). Corporate governance between the theoretical framework and application mechanisms: Literature review. *Journal of Financial, Accounting & Managerial Studies*, 9(2), 336–358. <https://doi.org/10.35392/1772-009-002-038>
- Nguyen, T. H. H., Ntim, C. G., & Malagila, J. K. (2020). Women on corporate boards and corporate financial and non-financial performance: A systematic literature review and future research agenda. *International Review of Financial Analysis*, 71, Article 101554. <https://doi.org/10.1016/j.irfa.2020.101554>
- Noory, S. N., Shahimi, S., & Ismail, A. G. (2021). A systematic literature review on the effects of risk management practices on the performance of Islamic banking institutions. *Asian Journal of Accounting & Governance*, 16. <https://doi.org/10.17576/AJAG-2021-16-05>

- Okoye, L. U., Olokoyo, F., Okoh, J. I., Ezeji, F., & Uzohue, R. (2020). Effect of corporate governance on the financial performance of commercial banks in Nigeria. *Banks and Bank Systems*, 15(3), 55–69. [https://doi.org/10.21511/bbs.15\(3\).2020.06](https://doi.org/10.21511/bbs.15(3).2020.06)
- Plöckinger, M., Aschauer, E., Hiebl, M. R. W., & Rohatschek, R. (2016). The influence of individual executives on corporate financial reporting: A review and outlook from the perspective of upper echelons theory. *Journal of Accounting Literature*, 37(1), 55–75. <https://doi.org/10.1016/j.acclit.2016.09.002>
- Ramlall, I. (2024). What are the drivers of bank profitability in the world? A critical review of the empirical literature with the layout of a blueprint model. *Journal of African Business*, 26(2), 1–32. <https://doi.org/10.1080/15228916.2024.2344135>
- Ramly, Z., & Basharahil, N. (2021). Bank governance and risk-taking: A survey of the literature. *The Middle East International Journal for Social Sciences (MEIJSS)*, 3(4), 236–259.
- Rashid, A., & Jabeen, S. (2016). Analyzing performance determinants: Conventional versus Islamic Banks in Pakistan. *Borsa Istanbul Review*, 16(2), 92–107. <https://doi.org/10.1016/j.bir.2016.03.002>
- Rehan, R., Hadi, A. R. A., Hussain, H. I., & Hye, Q. M. A. (2023). Capital structure determinants across sectors: Comparison of observed evidences from the use of time series and panel data estimators. *Heliyon*, 9(2), Article e19618. <https://doi.org/10.1016/j.heliyon.2023.e19618>
- Richardson, S. (2006). Over-investment of free cash flow. *Review of Accounting Studies*, 11, 159–189. <https://doi.org/10.1007/s11142-006-9012-1>
- Salem, M. R. M., Shahimi, S., & Alma'amun, S. (2024). Does mediation matter in explaining the relationship between ESG and bank financial performance? A scoping review. *Journal of Risk and Financial Management*, 17(8), Article 350. <https://doi.org/10.3390/jrfm17080350>
- Soumena, F. Y., Anwar, A. I., Arsyad, R., Laming, R. F., & Baha-soan, A. N. (2023). Institutional framework and regulatory challenges in the development of the sharia financial sector in Indonesia: A political economy perspective. *Jurnal Ar-Ribh*, 6(2), 61–72.
- Srisathan, W. A., Ketkaew, C., Jitjak, W., Ngiewphrom, S., & Naru-etharadhol, P. (2022). Open innovation as a strategy for collaboration-based business model innovation: The moderating effect among multigenerational entrepreneurs. *PloS One*, 17(6), e0265025. <https://doi.org/10.1371/journal.pone.0265025>
- Tahir, S. H., Ghafoor, S., Zulfikar, M., Sajid, M. A., & Illyas, H. (2024). Retracted: Navigating board dynamics: Configuration analysis of corporate governance's factors and their impact on bank performance. *Plos One*, 19(5), Article e0300283. <https://doi.org/10.1371/journal.pone.0300283>
- Tahir, S. H., Sabir, H. M., Arshad, A., & ul Haq, M. A. (2012). Two-tier corporate governance model for Pakistan. *European Journal of Business and Management*, 4(6), 38–48.
- Wadesango, N., Mhaka, C., & Blessing, M. (2020). Literature review of the effect of corporate governance on financial performance of commercial banks in a turbulent economic environment. *Academy of Strategic Management Journal*, 19(3), 1–14.
- Whitler, K. A., Lee, B., & Young, S. (2022). The impact of boards of directors on chief marketing officer performance: Framing and research agenda. *Academy of Marketing Science Review*, 12(1–2), 116–136. <https://doi.org/10.1007/s13162-022-00230-6>
- Xu, G. (2022). From financial structure to economic growth: Theory, evidence and challenges. *Economic Notes*, 51(1), Article e12197. <https://doi.org/10.1111/ecno.12197>
- Zhang, L., & Zhang, C. (2022). Manufacturer encroachment with capital-constrained competitive retailers. *European Journal of Operational Research*, 296(3), 1067–1083. <https://doi.org/10.1016/j.ejor.2021.05.027>
- Zulkifli, R. (2020). Systematic literature review on methods used by previous researchers to study the relationship between corporate governance and banks' performance. *Asian Journal of Law and Governance*, 2(3), 1–17.