

The Impact of Good Corporate Governance and Financial Technology Innovation on Indonesian Bank Financial Performance

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Abstract

Purposes: This study intends to explore the influence of Good Corporate Governance (GCG) and financial technology innovation on the financial performance of the banking sector in Indonesia. The existence of the board of directors and board of commissioners measures GCG. The extent to which the digital services provided by banks to customers will measure financial technology innovation.

Methods: This study intends to explore the influence of Good Corporate Governance (GCG) and financial technology innovation on the financial performance of the banking sector in Indonesia. The existence of the board of directors and board of commissioners measures GCG. The extent to which the digital services provided by banks to customers will measure financial technology innovation.

Findings: The findings demonstrate that the composition of the independent board of commissioners can play a significant role in the financial performance of Indonesian banks, particularly in terms of Return on Assets (ROA) and Return on Equity (ROE). Financial technology innovation can determine ROE significantly, even in a negative direction. In addition, the size of the bank can determine ROA and ROE significantly and positively. The implications of the study show that the role of GCG mechanisms still has not had a significant impact on the financial performance of banks in Indonesia. Therefore, the role and function of GCG will be optimized for implementation. Likewise, financial technology innovation still cannot play a significant role in the short term.

Novelty: The novel aspect of this study is the inclusion of financial technology innovation as a variable, which is crucial for banks to sustain performance during the pandemic and navigate the rapid advancements in financial technology. Banks must deliver quick and accurate services to their customers.

Keywords: Bank Financial Performance, Bank Size, Financial Technology Innovation, Good Corporate Governance

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INTRODUCTION

The banking industry faced significant challenges during the pandemic. Banking performance is a highlight for interested parties to assess future business projections. The existence of a strong financial system showed the economic growth of a country. The COVID-19 pandemic has increasingly affected the financial industry in Indonesia despite the different impacts of the 1998 financial crisis (Cakranegara, 2020). The COVID-19 crisis has significantly impacted the financial performance of banks worldwide, including in Indonesia. The Financial Services Authority (OJK) and Bank Indonesia (BI) have taken various steps to support the banking sector during the pandemic. The COVID-19 crisis has been a major challenge for the banking industry, but it has also triggered changes that can increase resilience and innovation in this sector.

The banking industry has previously faced performance challenges due to changes in the industry environment, including transaction preferences and customer behavior, and more massively due to the COVID-19 crisis. Adoption and innovation of financial technology are very important for banks to continue to deliver the best performance. The Fourth Industrial Revolution has become a catalyst for the adoption of technology in business operations. Traditional businesses are transitioning to online platforms, a process known as digital transformation (Do et al., 2022). This transformation involves the use of digital technologies to bring significant advancements in business activities, personal experiences, and the development of new business models (Abdulquadri et al., 2024). Technological advances and digital transformation signify a fundamental shift in the financial sector. This revolution is driven by innovative business models that leverage emerging technologies to enhance customer service (Abad-Segura et al., 2020).

The financial performance of banks is becoming increasingly significant as it reflects the institution's overall health. A bank's sustainability is also gauged by its financial performance (Egbunike & Okerekeoti, 2018). Various measures can be used to see financial performance such as profitability with return on assets (ROA) ratio Bansal et al. (2018) or net interest margin (NIM) (Menicucci & Paolucci, 2016). Previous studies have confirmed that banking profitability is an empirical subject that will continue to be studied in various forms of study (Garcia & Trindade, 2019).

Implementing good corporate governance (GCG) and financial technology innovation for banks is becoming more demanding. Digitization of banking transactions is inevitable. The role of GCG and financial technology innovation is an important factor that will determine the level of financial performance of banks. Good governance will ensure that organs in the bank can perform their duties under applicable regulations. Effective corporate governance contributes to improved corporate performance. The COVID-19 pandemic has affected corporate governance and led to a decline in performance, but good governance can help mitigate these negative impacts (Putra, 2024). The results of previous studies showed that ROA and ROE were determined by GCG significantly (Manu et al., 2019). The Islamic bank performance can be determined by corporate governance (Nurkhin et al., 2018).

This study aims to analyze the impact of GCG and financial technology innovation on Indonesian banking performance. The composition of commissioners can play a significant role in influencing the operational and business policies of banking so that it will have an impact on its performance. Ownership structure can also significantly impact banking performance (Hanafi et al., 2013). The board of commissioners has been proven to be able to increase the profitability of banking operations in Indonesia (Lutfi et al., 2014). The novel aspect of this study is the inclusion of financial technology innovation as a variable, which is crucial for banks to sustain performance during the pandemic and navigate the rapid advancements in financial technology. Banks must deliver quick and accurate services to their customers. Financial technology innovation can significantly impact performance, with effective Internet and mobile banking services being examples of such innovation that banks can offer (Khalifaturafi'ah, 2021). Financial technology innovation also plays a crucial role in determining a corporate's value (Olalere et al., 2021).

The study will also analyze other factors that can determine a bank's financial performance. One such factor is the size of the bank, which can impact its profitability. Previous research has shown mixed results regarding bank size, with some studies indicating a positive effect on ROA Bolarinwa and Soetan (2019), Egbunike and Okerekeoti (2018), and R. Yadav et al. (2015), while others suggest a negative impact (R. Yadav et al., 2015), or no significant effect at all (Bougatef, 2017).

The research questions for this study are: how do GCG and financial technology innovations influence the financial performance of banks in Indonesia? How does GCG affect financial technology innovations in the Indonesian banking sector? And how does bank size impact both financial performance and technological innovation in Indonesian banks?

The literature review states two approaches to explain banking performance, namely accounting and economic bases (Olson & Zoubi, 2011). The first approach mainly concentrates on utilizing information from financial statements. ROA, ROE, or NIM are often used to assess a bank's performance in this approach. However, the inherent constraints of this method, along with advances in social science techniques such as parametric and non-parametric, have encouraged the development of alternative methods known as economy-based approaches (Talbi & Bougatef, 2018).

This study uses an accounting-based approach to measure banking performance in Indonesia and analyze the factors that influence it. The factors that influence the profitability of a bank can be grouped into two categories: internal and external factors (Al-Harbi, 2019). Internal factors include proxies that can be regulated by bank management through policy and other decision-making. This includes variables related to financial statements and other internal factors that can be influenced by a bank's internal decisions. On the other hand, external factors refer to indicators that bank management cannot control, such as government regulation, inflation rate, level of competition, and other economic and market factors. This shows the importance of considering both internal and external factors in banking performance analysis (Kassem & Sakr, 2018).

This study aims to analyze the Indonesian banking performance. GCG variables are an important factor in determining bank performance. The researchers introduced a relatively new variable to the study: financial technology innovation. Few prior studies have explored the impact of financial technology innovation on banking performance. However, this variable is crucial for banks in addressing the challenges posed by rapid technological advancements, as well as the economic and business conditions brought about by the COVID-19 pandemic. The researchers will also examine the impact of GCG on financial technology innovation and how it affects bank performance. Effective GCG will encourage bank management to take appropriate policies in financial technology innovation applied in bank operations. Service to customers will be faster and more accountable so that customer satisfaction is more guaranteed. Finally, the bank's performance reached the best point, even in the pandemic that still hit.

Companies' implementation of GCG aims to improve performance to benefit all stakeholders. Effective corporate governance contributes to improved corporate performance (Putra, 2024). Corporate governance is a structure that strengthens the relationship between various parties, such as shareholders, managers, and investors, and ensures that available resources are allocated among competing users. In addition, corporate governance provides a framework for formulating corporate goals and how to achieve them, as well as monitoring the achievement of corporate performance (Oppong et al., 2024). The previous study's findings indicate that board accountability (as a measurement of GCG) positively and significantly impacts bank profitability, as reflected by ROA, ROE, and Tobin's Q (Alam et al., 2024).

Since the global financial crisis in 2008, there has been increasing attention to the impact of financial technology innovation on banking performance. The presence of foreign board members will have an impact on the company's performance. Foreign directors often bring international knowledge and experience that can help companies access global markets, increase innovation, and strengthen management strategies. On the

other hand, foreign directors may have a limited understanding of the local cultural and market context, which can result in decisions that are less appropriate to local conditions or difficulties in overcoming specific challenges in the country where the company operates. Empirical evidence shows that the proportion of foreign board members has a positive and significant relationship with firm performance for both listed non-financial companies and banks (Andoh et al., 2023). Other studies show that the presence of foreign directors had a negative and significant impact on bank performance, indicating a decline in performance with an increase in foreign directors (Bekiaris, n.d.; Magoma et al., 2024). Based on this assumption, we propose that:

H1 : Foreign directors have a significant impact on the financial performance of Indonesian banking.

The composition of the independent board of commissioners can have a significant impact on a company's financial performance. Independent commissioners often bring different expertise and perspectives, which can help in making wiser strategic decisions. Research shows that when independent boards of commissioners function well, they can help improve a company's financial performance by ensuring better corporate governance and reducing risk. The board of commissioners has been proven to be able to increase the profitability of banking operations in Indonesia (Lutfi et al., 2014). The composition of the board of commissioners can significantly influence the bank's performance (Hanafi et al., 2013). Other studies have found a positive relationship between the percentage of independent commissioners and a company's financial performance. Independent commissioners contribute to better governance, increase oversight of management, and improve long-term performance (Fauzi & Locke, 2012). Based on this assumption, we propose that:

H2 : Independent commissioners have a significant impact on the financial performance of Indonesian banking.

Foreign ownership also has a positive impact on corporate financial performance, especially in developing countries. This is mainly due to access to better technology, higher governance standards, and greater capital. Empirical studies confirm a positive relationship between foreign ownership and firm performance globally. The positive effect is more pronounced in emerging markets as foreign investment brings improvements in technology, management, and capital (K. Wang & Shailer, 2018). The other findings also indicate that the current AFI is positively associated with firm performance over the next four quarters (the upcoming year). The results imply that foreign investors tend to select firms that are already highly productive (Nguyen et al., 2024). Based on this explanation, we propose that:

H3 : Foreign ownership has a significant impact on the financial performance of Indonesian banking.

Institutional ownership refers to the ownership of a company's shares by institutions such as banks, insurance companies, pension funds, investment funds, and other financial institutions. Institutional ownership can have a positive impact on a company's financial performance. Institutional owners often encourage better governance practices, increased transparency, and a focus on long-term growth. Institutional investors with potential business ties with the companies they invest in may be compromised in their role as monitors of those firms (Cornett et al., 2007). Empirical studies have proven the significant influence of institutional ownership on financial performance as measured by ROA (Abedin et al., 2022). Based on this assumption, we propose that:

H4 : Institutional ownership has a significant impact on the financial performance of Indonesian banking.

Since the global financial crisis in 2008, there has been increasing attention to the impact of financial technology innovation on the financial services industry (Ashiru et al., 2023). While there is broad agreement on the benefits of innovation for the real economy, the crisis has brought financial technology innovation into focus for re-evaluation and reconceptualization. Financial technology innovation can be achieved through the adoption of branchless banking systems and the application of technology. The variable measurement of financial technology innovation has not been studied much. Financial technology innovation involves delivering banking services to customers by leveraging technology to facilitate business transactions. Financial technology innovation has significantly enhanced profitability (Khalifaturofi'ah, 2021).

Financial technology innovation can increase a company's value (Olalere et al., 2021). The financial industry can boost performance through innovation and digital transformation strategies (Kurniawan et al., 2021). In Kenya, financial technology innovation has been found to significantly contribute to banking performance (Chipeta & Muthinja, 2018). Previous research has shown evidence of a positive relationship between digital financial technology innovation and financial depth, with the strongest impact coming from internet use and mobile financial services. In contrast, the lowest impact comes from bank branches (Misati et al., 2024). Another interesting finding shows that financial technology innovation negatively affects bank performance. State-owned banks, joint-stock commercial banks, and long-established banks are more negatively affected by financial technology innovation than urban and rural commercial banks and newer banks (Corbet et al., 2024). In addition, the other study's results show that the development of financial technology in banking significantly increases bank profitability and inversely affects the level of risk-taking, which shows a substantial and positive impact on financial performance and stability. However, there is no significant evidence regarding the effect of banking financial technology development on stock returns (Kayed et al., 2024). Based on this description, we propose that:

H5 : Financial technology innovation has a significant impact on the financial performance of Indonesian banking.

This study will also investigate bank size as a characteristic factor of banks that will be able to determine bank performance in addition to GCG factors and financial technology innovation. The relationship between firm size and profitability is a classic topic in business and industrial economics. Both theoretical and empirical studies have yielded inconsistent results (I. S. Yadav et al., 2021). Previous research has shown varied outcomes, such as a negative impact of bank size on ROA (Saif-Alyousfi & Saha, 2021). Firm size has been found to negatively and significantly influence ROA and ROE (I. S. Yadav et al., 2021). Conversely, some studies have shown that size positively and significantly affects ROA (Bolarinwa et al., 2019; Bolarinwa & Soetan, 2019; Egbunike & Okerekeoti, 2018; Fidanowski et al., 2018; Menicucci & Paolucci, 2016). Additionally, size has been proven to positively and significantly determine a bank's ROE (Ali & Puah, 2019). In contrast, (Bougatef, 2017) found that bank size does not significantly affect ROA, and other research has shown no relationship between size and bank ROA (Öhman & Yazdanfar, 2018).

The size of a company is a crucial factor in achieving substantial profits, including in non-bank industries. Firm size positively and significantly impacts the profitability of the hospitality sector (Menicucci, 2018), the manufacturing industry (Nanda & Panda, 2018, 2019), pharmaceutical companies (Lim & Rokhim, 2020; Tyagi & Nauriyal, 2017), and insurance companies (Alhassan et al., 2015). However, firm size did not significantly affect manufacturing profitability before the 2008 economic crisis (Nanda & Panda, 2018), and it also did not significantly influence the profitability of insurance companies (Zainudin et al., 2018). Additionally, firm size has been demonstrated to positively and significantly influence ROE (Alarussi & Alhaderi, 2018). Based on this assumption, we propose that:

H6 : Bank size has a significant impact on the financial performance of Indonesian banking.

Foreign directors can significantly contribute to financial technology innovation in the Indonesian banking sector by bringing global experience, introducing advanced technology solutions, and helping banks adapt to market developments and existing regulations. Research on the influence of foreign directors on innovation in the Indonesian banking sector is still limited, but several studies show that the presence of foreign executives can accelerate technology adoption in various industries, including banking. The previous study indicate the negative impact of foreign director on corporate innovation (Sierra-Morán et al., 2024). Based on this explanation, we propose that:

H7 : Foreign directors have a significant impact on the financial technology innovation of Indonesian banking.

The composition of independent commissioner boards can influence financial technology innovation in the banking sector by improving the quality of supervision and encouraging innovative policies that focus on efficiency and risk management. Boards with a high proportion of independent commissioners tend to be more objective in encouraging banks to invest in new technologies that can increase competitiveness and innovation, such as digital payment systems or the use of artificial intelligence to personalize services. The research findings indicate that independent directors tend to have a negative impact on firm innovation, as measured by the number of patents (Sierra-Morán et al., 2024). However, this negative effect can be reduced when there is a high level of diversity in terms of gender and nationality among the independent directors. Based on this description, we propose that:

H8 : Independent commissioners have a significant impact on the financial technology innovation of Indonesian banking.

Foreign ownership can provide a significant boost to fintech innovation in Indonesian banking. Foreign ownership encourages banks to focus more on increasing competitiveness through technology. Banks with foreign investors tend to be more open to adopting new technologies to stay competitive. Banks with foreign ownership often have access to a wider global network. The previous finding shows that Chinese corporations' outward foreign direct investment positively impacts their green technology innovation, enhancing their capacity to adopt and develop environmentally sustainable technologies (Zhang et al., 2023). Based on this assumption, we propose that:

H9 : Foreign ownership has a significant impact on the financial technology innovation of Indonesian banking.

Institutional ownership has a significant influence on fintech innovation. Institutional shareholders often have a large influence on a company's strategic decisions. They tend to support banks in adopting new technologies to improve efficiency and long-term profitability. In addition, institutional investors also support initiatives that focus on financial inclusion, especially through the adoption of technologies that enable access to banking services for a wider population segment. The research findings indicate that institutional ownership can significantly enhance corporate innovation by providing informational, resource-based, and governance-related benefits (Li & Liu, 2023). These effects enable firms to better innovate by leveraging the strategic advantages brought by institutional investors, including access to important resources, improved oversight, and more informed decision-making. Based on this assumption, we propose that:

H10 : Institutional ownership has a significant impact on the financial technology innovation of Indonesian banking.

Bank size also has a significant impact on fintech innovation in the banking sector. Larger banks typically have more financial and technical resources to invest in new technologies. They can more freely fund research and development to create or adopt fintech innovations, such as

digital payment systems, blockchain, and artificial intelligence (AI). Previous studies provide evidence that the size of a bank affects innovation (Tan et al., 2023). Based on this explanation, we propose that:

H11 : Bank size can determine the financial technology innovation of Indonesian banking.

The research framework is presented in Figure 1 below. GCG is measured by foreign directors, independent commissioners, foreign ownership, and institutional ownership to analyze its impact on financial performance and financial technology innovation. Bank size is also studied for its impact on financial performance and financial technology innovation. In addition, financial performance is influenced by financial technology innovation.

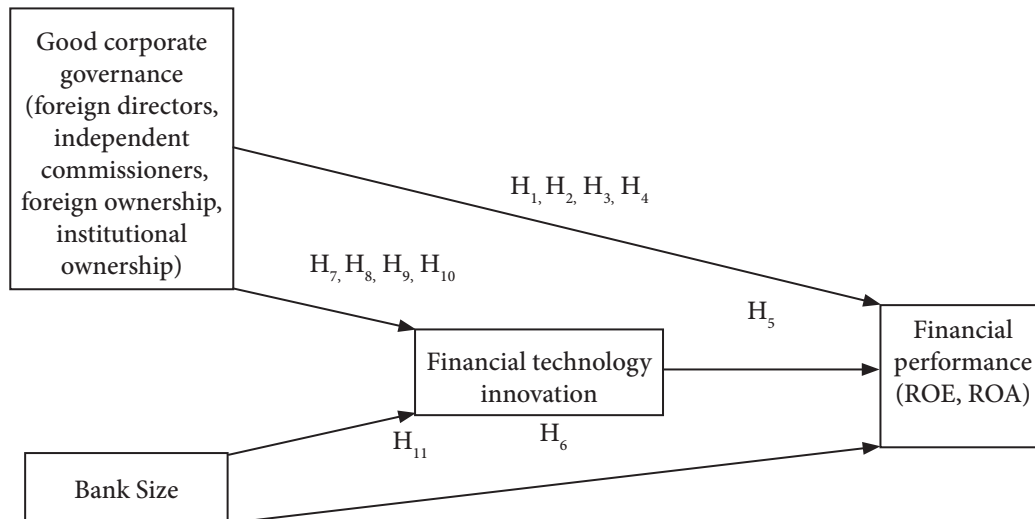


Figure 1. Research Framework

METHODS

This study focuses on banks listed on the Indonesia Stock Exchange as of December 31, 2022. Purposive sampling was utilized to include banks that issued annual reports during the observation period and provided the relevant data needed for the study. The observation period extends over five years (2018 to 2022). The 228-unit unbalanced panel data were collected from the 46 listed banks.

This study uses financial performance as the dependent variable, with profitability as the proxy, measured via ROE and ROA. ROE is calculated from the ratio of profit before tax to capital. ROA is determined by the ratio of profit before tax to total assets. The independent variables are GCG mechanism, financial technology innovation, and bank size. The ratio of foreign members of the board of directors measures the GCG mechanism, the ratio of independent commissioners, the ratio of foreign ownership, and the ratio of institutional ownership. The number of Internet and mobile banking service innovations measures financial technology innovation. Total assets measure bank size. Table 1 shows the definition and operationalization of the variables used in this study.

Data were collected through documentation, specifically financial statements and annual reports from each bank. The analysis employed descriptive methods and panel data regression analysis. A descriptive analysis aims to explain banking performance and financial technology innovation in Indonesia. Descriptive analysis is also aimed at comparing the two variables. Regression analysis of panel data was conducted to investigate the role of GCG and financial technology innovation in the financial performance of Indonesian companies. STATA version 17 is used to process research data that has been obtained. The regression equation developed in this study is:

$$ROE = \beta_0 + \beta_1 \text{foreigndir} + \beta_2 \text{indcomm} + \beta_3 \text{foreignown} + \beta_4 \text{instown} + \beta_5 \text{Intech} + \beta_6 \text{Size} + \varepsilon \dots (1)$$

$$ROA = \beta_0 + \beta_1 \text{foreigndir} + \beta_2 \text{indcomm} + \beta_3 \text{foreignown} + \beta_4 \text{instown} + \beta_5 \text{Intech} + \beta_6 \text{Size} + \varepsilon \dots (2)$$

$$\text{Intech} = \beta_0 + \beta_1 \text{foreigndir} + \beta_2 \text{indcomm} + \beta_3 \text{foreignown} + \beta_4 \text{instown} + \beta_5 \text{Size} + \varepsilon \dots (3)$$

Table 1. Variable Definition and Abbreviation

Variables	Definition and Measurement	Abbreviation
Dependent Variable		
Profitability	Return on equity: calculated from the ratio of profit before tax to capital	ROE
	Return on asset: the ratio of profit before tax to total assets.	ROA
Independent Variables		
GCG mechanism	Foreign director ratio: the ratio of foreign board of directors members.	foreigndir
	Independent commissioners ratio: the ratio of independent commissioners members to total members of commissioners.	indcomm
	The ratio of foreign ownership: the proportion of a company's shares owned by foreign investors	foreignown
	The ratio of institutional ownership is the proportion of a company's shares owned by institutional investors.	instown
Financial technology innovation	The number of Internet and mobile banking service innovations.	intech
Bank size	Total assets of the bank.	size

Table 2. Descriptive Statistics of Research Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
roe	228	0.033	0.195	-0.954	0.846
roa	228	0.007	0.035	-0.158	0.135
foreigndir	228	0.679	1.137	0	6
indcomm	228	0.581	0.131	0	1
foreignown	228	0.378	0.349	0	1
instown	228	0.897	0.151	0.003	1
intech	228	7.403	4.618	1	21
lnsize	228	17.328	1.835	13.402	21.412

Source: Research data processed, 2024.

RESULTS AND DISCUSSIONS

The study results were presented as descriptive statistical analysis and panel data regression analysis with two regression equation models. The first model analyzes the effect of GCG and financial technology innovation on financial performance. The second model aims to analyze the influence of GCG on financial technology innovation. The results of the analysis are outlined as follows.

Table 2 shows the mean ROE is 0.033311 and ROA is 0.007400, indicating that the banks' profitability during 2018-2022 is still low, with only 3% ROE and less than 1% ROA. The minimum value of ROE is -0.9544, and ROA is -0.1589, indicating that some banks do not profit but suffer losses. However, there are banks that are able to achieve ROE of 0.8461 and

ROA of 0.1358. On average, banks have foreign board members (average value of 0.679825) with a maximum of 6 foreign board members. On average, banks have also met the requirements to have one independent commissioner member, although some still do not have independent commissioners members. The average foreign ownership is 37.85% and institutional ownership is 89.70%. The financial technology innovation variable has an average value of 7.4, indicating that the bank has an average of 7 financial technology innovations. The highest value is 21 and the lowest is 1. The average value of bank assets is 17.32848 with a minimum value of 13.40289 and a maximum of 21.41268.

Test Results of the Effect of GCG, Technology Innovation, and Size on Financial Performance

Prerequisite tests have been performed through multicollinearity, correlation, heteroscedasticity, and autocorrelation tests. The multicollinearity test was conducted by analyzing the values of VIF and 1/VIF, and the results showed that there was no multi-collation in the research model. The VIF value (mean) obtained is 1.81 or less than 10. Table 3 presents a correlation analysis between variables and shows that the correlation score is less than 0.8, which means there is no serious correlation in the research model.

The results of the autocorrelation test with the Wooldridge test show that the probability value is 0.4195 or over 0.05, showing no autocorrelation problem in the model. The heteroscedasticity test with the Breusch-Pagan Lagrangian test shows that the probability value is 0.0020 or less than 0.05. These results show no heteroscedasticity problem in the research model.

Table 3. Correlation Matrix Analysis (ROA and ROE as dependent variables)

Model 1 (ROE)							
	roe	foreigndir	indcomm	foreignown	instown	intech	lnsize
roe	1.000						
foreigndir	-0.046	1.000					
indcomm	-0.148	-0.185	1.000				
foreignown	-0.005	0.648	-0.157	1.000			
instown	0.138	-0.075	-0.121	0.298	1.000		
intech	0.191	-0.414	-0.045	-0.228	0.087	1.000	
lnsize	0.332	0.047	-0.103	0.202	0.246	0.541	1.000
Model 2 (ROA)							
	roa	foreigndir	indcomm	foreignown	instown	intech	lnsize
roa	1.000						
foreigndir	-0.080	1.000					
indcomm	-0.181	-0.185	1.000				
foreignown	0.042	0.647	-0.158	1.000			
instown	0.131	-0.074	-0.121	0.301	1.000		
intech	0.107	-0.413	-0.044	-0.224	0.086	1.000	
lnsize	0.239	0.051	-0.103	0.208	0.208	0.539	1.000

Source: Research data processed, 2024.

The Hausman test is then performed to determine the best fixed or random effect model. With ROE as the dependent variable, got fixed effect model is better as a research model. The prob>chi2 value is 0.0323 or greater than 0.05 so there is a significant difference between fixed and random effect models. While in the ROA model as a dependent variable, a random effect model was obtained as the best model in this study. The prob>chi2 value is 0.2727 or greater than 0.05 so there is a significant difference between fixed effect and random effect models.

Table 4 shows the results of regression analysis with model 1 (ROE as the dependent variable) and model 2 (ROA as the dependent variable). The results of the fixed effect analysis show that there is a significant and negative influence of the composition of the independent board of commissioners on ROE at a significant level of 10%. The probability value of indcomm is 0.093 or less than 0.10 with a coefficient of -0.18735. The variable of financial technology innovation (intech) has a probability value of 0.016 or less than 0.05, which indicates a significant influence of financial technology innovation on ROE. The value of the coefficient is -0.15377, which indicates a negative influence. Meanwhile, bank size (lnsize) has significantly and positively influenced ROE. The probability value is 0.007, with a coefficient of 0.062693.

The next result indicates a result that is not very different: the composition of the independent board of commissioners (indcomm) has been proven to affect ROA significantly and negatively. The probability value is 0.016 or less than 0.05, with a coefficient value of -0.06878. The size of the bank has also proven to be a significant and positive determinant of ROA. The probability value is 0.043 or less than 0.05, with a coefficient value of 0.005738.

Table 4. Regression Analysis Results (ROA and ROE as Dependent Variables)

	ROE				ROA			
	Coef.	Robust Std. Err.	t	P>t	Coef.	Robust Std. Err.	z	P>z
foreigdir	-0.019	0.024	-0.78	0.437	-0.003	0.002	-1.45	0.147
indcomm	-0.187	0.109	-1.72	0.093*	-0.068	0.028	-2.4	0.016**
foreignown	0.057	0.128	0.45	0.655	-0.011	0.009	-1.17	0.243
instown	-0.076	0.101	-0.75	0.457	0.005	0.015	0.37	0.71
intech	-0.153	0.061	-2.49	0.016**	-0.009	0.007	-1.4	0.161
lnsize	0.062	0.022	2.83	0.007**	0.005	0.002	2.03	0.043**
_cons	-0.607	0.296	-2.05	0.046	-0.032	0.039	-0.83	0.408
VIF (mean)	1.81				1.81			
Wooldridge test	0.664				3.542			
Breusch-Pagan	Chi2	9.53			Chi2	5.09		
	Prob>chi2	9.53			Prob>chi2	0.024		
Hausman	0.032				0.272			
Wald chi2	2.26				19.84			
Prob>chi2	0.054				0.003			
R-sq	0.042				0.107			

Source: Research data processed, 2024.

Note: ***, **, * significant at the 1%, 5%, and 10% levels respectively.

Test Results of the Effect of GCG and Size on Financial Technology Innovation

The second regression equation examines the effect of GCG on financial technology innovation. Table 5 shows the results of correlation analysis between variables and shows that the highest correlation value of 0.3832 is the correlation between instown and lnsize variables. The correlation value between variables is not more than 0.80, which indicates there is no significant correlation between variables in this research model. The VIF value (mean) of 1.54 or less than 10 indicates no multicollinearity in the research model.

The results of the autocorrelation test with the Wooldridge test showed that the probability value of 0.1547 or more than 0.05 indicated that there was no autocorrelation problem in the model. The heteroscedasticity test with the Breusch-Pagan Lagrangian test shows that the

probability value is 0.1229 or more than 0.05. These results indicate no heteroscedasticity problem in the research model.

Table 5. Correlation Matrix Analysis (Innovation as Dependent Variable)

	intech	foreigndir	indcomm	foreign~n	instown	lnsize
intech	1					
foreigndir	-0.180	1				
indcomm	-0.098	-0.273	1			
foreignown	-0.126	0.700	-0.158	1		
instown	0.131	-0.461	-0.050	0.095	1	
lnsize	-0.371	-0.199	-0.235	0.095	0.383	1

Source: Research data processed, 2024.

Table 6 shows the results of multiple regression analysis. The Hausman test provides results showing that the GLS regression random effect is the best model for analyzing the influence of GCG on financial technology innovation. The prob value of $> \chi^2$ is 0.4842, which shows a significant difference in this study's random and fixed effect models. The results of the analysis further confirm that no proxy GCG mechanism is able to determine financial technology innovation significantly. Only the size of the bank can play a significant and positive role in financial technology innovation.

Table 6. Multiple Regression Analysis Results (innovation as dependent variable)

intech	Coef.	Robust Std. Err.	z	P>z	[95% Conf. Interval]	
foreigdir	-0.439	0.388	-1.13	0.258	-1.200	0.321
indcomm	-2.042	1.333	-1.53	0.125	-4.655	0.569
foreignown	0.511	2.217	0.23	0.818	-3.835	4.858
instown	1.191	2.857	0.42	0.677	-4.408	6.791
lnsize	-0.430	0.117	-3.66	0.000***	-0.660	-0.199
_cons	4.699	4.006	1.17	0.241	-3.153	12.552
VIF (mean)		1.54				
Wooldridge test	F		2.106		Prob > F	0.154
Breusch-Pagan	Chi2		1.35		Prob > chi2	0.122
Hausman	Chi2		4.47		Prob > chi2	0.484
Wald chi2	45.44					
Prob>chi2	0.000					
R-sq	0.318					

Source: Research data processed, 2024.

Note: ***, **, * significant at the 1%, 5%, and 10% levels respectively.

Impact of GCG on Financial Performance

The impact of GCG on banking financial performance can be significant. GCG is a key factor in establishing and maintaining long-term success for financial institutions. GCG encourages adopting efficient and effective management practices, including performance monitoring, optimal use of resources, and rational decision-making. GCG can increase bank productivity and profitability by reducing waste and increasing resource use. The results of previous studies showed that ROA and ROE were determined by GCG significantly (Manu et al., 2019). Corporate governance is a factor that can affect the profitability performance of Islamic banks (Nurkhin et

al., 2018). Other studies showed different results, such as the audit committee as a measure of GCG mechanisms having a negative and insignificant effect on ROA and ROE (Ahmed et al., 2024). Other studies have shown that the frequency of board meetings hurts bank performance. Meanwhile, gender diversity has linear and non-linear relationships with bank performance (Sain & Kashiramka, 2024).

This study uses the size of the GCG mechanism with the composition of the independent board of commissioners. Despite the negative direction, the results significantly impact ROA and ROE. A higher proportion of independent board members on the board of commissioners was associated with a decline in the bank's ROA and ROE. While an independent board of commissioners can significantly influence a bank's profitability, its effectiveness in enhancing profitability is contingent on several factors, such as the board's composition, the quality of its oversight, and its ability to engage effectively with bank management.

Other results do not indicate that foreign director composition, foreign ownership, and institutional ownership significantly influence the financial performance of Indonesian banks. The presence of foreign board members does not have an impact on the financial performance of banks. Foreign board members should be able to provide a transfer of experience and skills to help banks achieve better performance. Foreign ownership in the banking industry should have a significant impact on the financial performance of banks. Banks owned by foreign investors often have access to better capital, technology, and managerial expertise, which can improve banks' operational efficiency and productivity. Foreign banks tend to implement better risk management and corporate governance practices, which in turn can increase profitability. Institutional ownership also significantly impacts banks' financial performance, both in terms of supervision, efficiency, and profitability. Institutional investors, such as pension funds, insurance companies, and mutual funds, usually have greater capacity and incentives to ensure that banks implement good corporate governance practices. They tend to be more active in overseeing management, reducing agency risk, and minimizing opportunistic behavior by bank managers. With better governance, banks can improve efficiency and long-term profitability. Large institutions usually have a long-term investment perspective, meaning they place more emphasis on sustainable growth and bank stability rather than pursuing short-term profits. This can encourage banks to make more prudent and strategic business decisions supporting more stable financial growth.

Impact of Financial Technology Innovation on Financial Performance

In recent years, the rapid progress of digital technology has brought about significant shifts in the banking business model, moving from traditional physical branches to Internet banking and then to mobile banking (Wang & Cao, 2022). Research shows that digitalization and the use of scenario-based finance have improved service efficiency and customer experience in inclusive finance (Zhu & Guo, 2024). Digital inclusive finance not only increases customer loyalty but also increases revenue from other businesses, which ultimately improves bank performance.

Innovations in finance have been a major catalyst for transformation within the banking sector, enabling banks to become more efficient, responsive, and competitive. By effectively leveraging technology, banks can enhance their overall financial performance. Financial technology empowers banks to offer superior customer services, such as digital banking options, swift transactions, and an improved user experience. This, in turn, can boost customer satisfaction and strengthen the bond between banks and their clients, positively influencing the bank's financial performance. The reshaping of the banking industry by financial technology innovation is undeniable, as it creates opportunities for improved performance and better customer engagement. Banks that adopt these technological advancements and prioritize integration are likely to experience significant gains in financial results and competitive positioning. Nonetheless, achieving success in this rapidly changing environment requires a strategic emphasis on innovation, customer needs, and tackling new regulatory and security challenges.

Previous studies have shown that financial technology innovation can significantly increase bank profitability. This shows that banks that can adopt financial technology innovations will have a better chance of achieving better financial performance (Khalifaturrofi'ah, 2021). Innovation will also increase the company's value (Olalere et al., 2021). The financial industry can improve its performance through innovation and digital transformation strategies (Kurniawan et al., 2021). Other research highlights the contribution of financial technology innovation to banking performance in Kenya. The results show that innovation can be a key factor in improving the performance of the financial industry, in both developing and developed country contexts (Chipeta & Muthinja, 2018). Moreover, offering more innovative financial services is linked to higher bank profitability and value, especially after 2015 (Wang & Cao, 2022). Lastly, while offering innovative financial services can boost the value of financial-holding subsidiary banks, it might negatively affect the profitability of nonfinancial-holding banks.

The findings in this study indicate a significant impact on ROE in a negative direction and in line with previous studies. Mobile banking has a negative impact on the ROA and ROE of Lebanese banks (El Chaarani & El Abiad, 2018). Similar results also indicate that adopting Internet banking in a bank based on the test results has a negative influence on a bank's performance, but this influence is not significant (Sugiarto, 2012). The negative impact is because in the current year, the bank will incur considerable costs for the innovation of services provided to customers. These large costs will reduce the bank's profitability level in the current year.

Impact of Bank Size on Financial Performance

The size of a bank, often measured by total assets, significantly impacts financial performance. Larger banks tend to have better ROA and ROE due to their ability to leverage economies of scale, risk diversification, and operational efficiencies. Large banks tend to have advantages in access to technology and funding. Large size can enable banks to grow revenues more quickly through market expansion and broader product penetration. However, they also face challenges in managing complexity and flexibility. Therefore, although bank size provides many competitive advantages, large banks need to manage operational complexity effectively to ensure optimal financial performance.

The findings in this study support the findings and theories affirm that bank size is an important determinant of bank financial performance. Size is proven to positively and significantly determine a bank's ROE (Ali & Puah, 2019). However, some findings are not aligned, namely the insignificance of the effect of bank size on profitability (Rohman & Nurkhin, 2022). ROA is not significantly affected by the bank size (Bougatef, 2017). Other results also showed no relationship between size and bank ROA (Öhman & Yazdanfar, 2018).

Impact of GCG and Bank Size on Financial Technology Innovation

Good corporate governance is critical in driving financial technology (fintech) innovation in the banking sector. Good governance involves a board of directors understanding innovation's importance and driving a technology-first strategy. A proactive board supporting digital transformation can facilitate the development and adoption of new technologies. Good governance creates an organizational culture that encourages innovation and adaptation. Banks with flexible policies in new product development are more likely to innovate. Decision-making based on data and proper risk analysis can improve a bank's ability to invest in relevant and profitable technologies.

This study fails to provide empirical evidence that GCG can determine Indonesia's banking financial technology innovation level. No GCG indicator has a significant influence on banking financial technology innovation. Other research findings found a significant impact of GCG on financial technology innovation (Wang & Cao, 2022). The proportion of independent directors, educational background and expertise of directors, director presence level, and institutional ownership level measure GCG.

The size of the bank has a significant impact on financial technology innovation. Research results have empirically proven that the size of the bank significantly determines innovation. Larger banks tend to have more financial resources for investment in financial technology innovation. They can allocate larger budgets for research and development, as well as for implementing new technologies, such as the construction of sophisticated IT infrastructure or the development of innovative mobile banking applications. Larger banks have greater flexibility and can respond to changing markets and customer needs through technological innovation. They can more quickly adapt to new market trends, such as adopting digital payments or online banking services, and respond to competition from non-bank competitors, such as financial technology companies.

CONCLUSIONS

This study aims to analyze the impact of GCG mechanisms and financial technology innovations on the financial performance of banks in Indonesia. The study also analyzed the effect of bank size as an important determinant of bank profitability. The results showed that only the composition of the independent board of commissioners as a proxy for GCG mechanisms could significantly impact ROE and ROA, even though the direction was negative. In addition, financial technology innovation also has a significant impact on ROE. Innovations made by banks may have a positive effect on the following year's performance. In addition, bank size is a significant determinant of bank ROA and ROE in Indonesia. The amount of assets owned by the bank will directly impact the bank's ability to use it more freely and encourage the bank to be more able to achieve significant profits. The size of the bank can also determine financial technology innovations positively and significantly.

Limitations in this study include measuring variables of financial technology innovation. The proxy used is the amount of service innovation the bank has conducted. Other researchers could develop other measures to measure financial technology innovation more precisely. In addition, GCG can be measured by the quality of GCG implementation, which better describes the extent to which the quality of GCG implemented by banks will significantly impact bank financial performance. Previous studies used creativity and a variety of boards of directors as GCG measures and found significant impacts on performance.

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