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Impact of Financial Technology Firms on Banking Performance: Insights from Indonesia

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ABSTRACT

The presence of fintech companies in the banking sector of Indonesia plays a crucial role in enhancing the conventional financial system. This study examines the influence of financial technology (Fintech) firms on the performance of banks by utilizing data from the Indonesian banking sector between 2018 and 2022. This study employs a regression analysis using a data panel fixed effect model. This study quantifies the impact of different financial variables, including Capital Adequacy Ratio (CAR), Gross Non-Performing Loans (NPL), Net Interest Margin (NIM), Return On Assets (ROA), Return On Equity (ROE), Operating Expense to Operating Income (BOPO), and Loans. Control factors in the context of Fintech include the deposit ratio (LDR), gross domestic product (GDP), and inflation. The results indicate that the financial indicators, including CAR, NPLgross, ROA, ROE, and NIM, do not have a statistically significant influence on Fintech. Additionally, Fintech is significantly influenced by other indicators such as BOPO (Balance of Payments) and LDR (Loan-to-Deposit Ratio), as well as control variables, including GDP (Gross Domestic Product) and inflation. This demonstrates that Indonesian banks can reap advantages by engaging in partnerships with fintech startups to enhance the financial system and optimize corporate profitability resulting from this collaboration.

Introduction

In the era of Society 5.0, information and communication technology advances have changed many aspects of human life, including finance. As a significant component of the financial system, the banking sector is not immune to the impact of the ongoing digital transformation. The phenomenon has a considerable influence, rapidly transforming the banking sector and driving innovation in several aspects of financial services. This aligns with research (Chishti & Barberis, 2016), The banking industry is now experiencing significant changes due to digital transformation. Financial technology (Fintech) refers to the development of digital transformation at the intersection of financial services and technology (Gunadi, Lie, & Susanto, 2020). Fintech refers to employing technology in the financial sector to create novel business models, applications, procedures, or products.

Meanwhile, Islamic fintech is a business activity that complies with Islamic principles. Through the use of technology, fintech firms have the ability to decrease the expenses associated with transactions and the imbalance of information, minimize the risks of moral hazard and adverse selection, and enhance the efficiency of financial operations (Wang, Mao, Wu, & Luo, 2023). Furthermore, fintech has the potential to significantly

influence financial markets, institutions, and service offerings, as discussed in the study "Fintech credit market structure: business models and financial stability implications." (Campanella, Serino, Battisti, Christofi, & Anastasia Giakoumelou, 2017).

The exponential expansion of FinTech firms can be primarily attributed to the practical advancements enabled by the Internet, smartphones, and mobile communications. These advancements have facilitated the emergence of novel business models and organizational frameworks, including digital payment applications, peer-to-peer (P2P) lending services, cryptoassets, and decentralized finance platforms (Schweizer, Schlatt, Urbach, & Fridgen, 2017). FinTech firms have the ability to disrupt traditional financial intermediaries and banks, particularly via the introduction of innovative business models that heavily depend on digital technology (Das, 2019; Li, 2020). Banking professionals have acknowledged the difficulty. Consequently, banks strive to restructure their operations in order to achieve sustained success. In order to do this, it is essential to address internal issues and establish a competitive edge by taking into account external advancements and engaging in collaborations with other entities. There is a clear alignment between the vulnerabilities of banks and the advantages of fintech businesses, and vice versa. Banks must evaluate and leverage potential external sources of innovation originating from startup companies, such as through acquisitions, alliances, incubations, or joint ventures. Fintech should not only be perceived as a disruptor, but also as an opportunity for collaboration and the advancement of innovation (Drasch, Schweizer, & Urbach, 2018). A crucial element for successful cooperation between banks and fintech businesses is the preservation of fintech's inventive traits and the adoption of a receptive mentality towards novel concepts and alterations, all while efficiently amalgamating them with banking rules, knowledge, processes, and resources.

FinTech has been recognized as a powerful catalyst for change in the banking sector (Sorrentino, 2015; Zalan & Toufaily, 2017) and a crucial tool for achieving a cashless society at the national level, particularly by promoting financial inclusion (Amalia, 2016). FinTech is transforming the financial services market by directly influencing supply and demand. The study undertaken by (Campanella et al., 2017) provides practical suggestions for European regulators and commercial banks to enhance their positions in financial innovation and risk monitoring. Similarly, a study conducted by (Dasilas & Karanovic, 2023) demonstrates that FinTech businesses have a beneficial influence on the functioning of banks. Furthermore, according to (Chen, Wu, & Yang, 2019), major banks with substantial market shares possess considerable financial resources and leverage technical economies of scale by making substantial expenditures in innovative endeavors to safeguard themselves from the adverse effects of disruptions. Consequently, by investing in innovation, established banks may effectively reduce the adverse effects caused by disruptive innovation from FinTech companies. A study (Goetz, 2017) found that increased competition in the banking sector can lead to increased stability, greater profitability, and improved asset quality. These results imply that competition forces banks to increase efficiency by utilizing cutting-edge technology to maintain competitiveness against FinTech firms.

Nevertheless, there is a contention that the use of financial technology (fintech) in the finance sector, as embraced by fintech companies, disturbs the process of financial intermediation and has a negative impact on banking organizations. According to (Phan, Narayan, Rahman, & Hutabarat, 2019), a study examining Indonesian market data found that the growth of FinTech companies negatively impacts the performance of traditional banks. The adverse effects are elucidated via the lens of consumer viewpoint and disruptive innovation theory. Consumer theory suggests that alternative services that precisely fulfill client need have the capacity to supplant obsolete offerings. Consequently, FinTech businesses are capable of delivering state-of-the-art financial services at reasonable costs, which rival the services provided by established financial institutions (Aaker & Keller, 1990). The notion of disruptive innovation posits that emerging players in the financial technology industry use state-of-the-art technology to provide convenient and affordable financial goods and services, such as loans, payments, and investments, therefore stimulating competition in the market. Both ideas propose that FinTech companies and banks have a mutually exclusive effect on offering financial services.

An exceptional scientific investigation is necessary to address the conflicting information about the impact of fintech businesses on bank profitability. The objective of this study is to address the existing research gap and the limited amount of research conducted on the profitability of fintech and Islamic banking in Indonesia. The objective of this research is to experimentally analyze the impact of fintech businesses on the profitability of banks, utilizing data from the Indonesian Islamic banking and fintech sectors. This article intends to investigate the evolution of FinTech and its possible impact on the Islamic banking system, using the information provided so far. The study especially examines the impact of new technology provided by FinTech businesses on the stability, structure, and performance of Indonesia's Islamic banking sector.

An advancement in the financial sector that makes use of technology is known as fintech. Sharia Fintech includes financial technology (fintech) companies that adhere to Sharia principles and structures. Some fintechs have the potential to be developed separately from the elements of maysir, interest (riba), and ambiguity (gharar), all of which are explicitly excluded from an Islamic perspective. International financial products and standards largely influence Islamic finance. Most Islamic financial products are derived from conventional banking. Given these circumstances, traditional banks and Islamic banks are engaged in competition. In contrast, Islamic banks face stiff competition from traditional banks due to their profit-oriented operations and lack of concern for national boundaries.

In contrast, fintech companies do not require physical locations, centers, or visibility. These digital institutions operate over the Internet, can engage individuals who do not use traditional banks, and have the advantage of maintaining minimal transaction costs. Due to the benefits mentioned above, Islamic fintech can serve as an alternative source of Islamic finance and a means to circumvent the limitations of conventional banking (Demirdöğen, 2021).

While fintech has the potential to stimulate competition in the financial industry, enhance efficiency in services, and provide more accessible systems compared to conventional financial institutions, it remains unable to fully supplant the multifaceted tasks

of banks. The reason for this is that fintech exhibits more adaptability in delivering services (Ansori, 2019), The fintech service system mostly focuses on big data rather than emotional intimacy, as opposed to conventional banks (Saripudin, Nadya, & Iqbal, 2021). FinTech businesses may be classified into two distinct categories: those that enhance bank services by offering technology used by banks to provide financial services, and those that provide services that are traditionally offered by banks, such as payment services (Romānova & Kudinska, 2017). The impact of FinTech companies on bank profitability is questionable because to the variability in the services they provide. In this discourse, we examine two studies that investigate the impact of FinTech on the performance of banks.

H1= Positive impact of Fintech on bangking performance

H2= Negative impact of Fintech on bangking performance

Method

In order to evaluate the impact of FinTech businesses on the financial performance of banks, we conducted an analysis of public, private, and Islamic banks that regularly published financial statements from 2018 to 2022. We used several proxies, including the capital adequacy ratio (CAR), gross non-performing loans (NPL), net interest margin (NIM), return on assets (ROA), return on equity (ROE), operational expenditure to operating income (BOPO), and loan-to-deposit ratio (LDR), to assess the performance of the bank. Furthermore, researchers use macroeconomic factors, such as the growth of gross domestic product (GDP) and the inflation rate (INF), as supplementary control variables. The data was acquired from the Financial Services Authority and Bank Indonesia. The empirical model we use is based on the literature that predicts the factors that influence bank performance (Dasilas & Karanovic, 2023; Phan et al., 2019; Shaban, James, Castle, View, & Le, 2018).

As for the method in determining performance with fintech variables in Indonesia using a data estimator with a fixed effect model test, this model aims to overcome multicollinearity problems, reduce estimation bias, control heterogeneity effects, and estimate marginal effects. The model is specified as follows:

$$FinTech_{i,t} = \alpha + \beta_1 CAR_{i,t} + \beta_2 NPLGross_{i,t-1} + \beta_3 ROA_{i,t} + \beta_4 ROE_{i,t} + \beta_5 NIM_{i,t} + \beta_6 BOPO_{i,t} + \beta_7 LDR_{i,t} + \beta_8 GDP_{i,t} + \beta_8 INF_{i,t} + e_{i,t}$$

Result and Discussion

The study was carried out between 2018 and 2022, including a total of 280 observations. In order to explain the findings of statistical test research, researchers start with descriptive analysis of panel data regression testing and fixed effect model (FEM) tests. Table 1 explains the descriptive statistical test being observed, and the results explain that nine variables are measured on a numerical scale. The average value (mean) of the variable X1 is 39.4; X2 is 3.36. X3 is 1.58. X4 is 4.71. X5 is 5.12. X6 amounted to 96.34, X7 to 88.78, and X8 to 4.25. X9 amounted to 2.98, and Y amounted to 571.2. In addition to the mean value, there is also the value of the median, maximum, minimum, standard deviation, skewness, Jargue Bera, probability, sum, and sum sq. dev. These are presented in Table 1 below:

Table 1. Descriptive Statistics

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Y
Mean	39.40207	3.363786	1.581464	4.717500	5.126500	96.34700	88.78609	4.254000	2.982000	571.2000
Median	23.92500	2.820000	1.060000	5.310000	4.500000	90.92000	85.82000	5.020000	2.720000	570.0000
Maximum	820.9000	69.00000	15.89000	95.44000	32.42000	428.4000	295.7600	5.310000	5.510000	691.0000
Minimum	2.050000	0.000000	-10.85000	-1010.000	0.220000	26.11000	0.000000	2.070000	1.680000	440.0000
Std. Dev.	65.27094	4.559789	2.722879	62.03962	4.114805	39.49588	32.79874	1.236529	1.374541	86.36201
Skewness	7.640518	11.04005	1.751521	-15.68019	4.079252	4.505647	2.065629	-0.871216	0.972392	-0.135590
Kurtosis	80.05975	155.7161	14.22780	257.4636	23.41500	30.28752	13.41682	2.165923	2.553441	1.878629
Jarque-Bera	72003.34	277780.5	1613.906	766910.8	5638.891	9634.477	1465.070	43.53715	46.45198	15.52847
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000425
Sum	11032.58	941.8600	442.8100	1320.900	1435.420	26977.16	24860.11	1191.120	834.9600	159936.0
Sum Sq. Dev.	1188622.	5800.878	2068.525	1073847.	4723.922	435219.0	300136.3	426.5923	527.1325	2080893.

Source: Research data processed with Eviews-12

Table 2 presents the outcomes of the panel data regression analysis, which examines the causal link between the independent variables and the dependent variable. This analysis includes many tests, such as the Chow test and the Hausman test. Based on the results of these two tests, the most optimal model used in this research is the fixed effect model. The findings may be conveniently shown in the following table:

Table 2. Fixed Effect Model (FEM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	652.6421	29.71173	21.96581	0.0000
X1	0.152850	0.100992	1.513488	0.1316
X2	-1.393060	1.054788	-1.320701	0.1880
X3	-1.969297	2.279436	-0.863941	0.3886
X4	0.098502	0.093644	1.051877	0.2940
X5	-5.029490	3.242816	-1.550963	0.1224
X6	0.489310	0.159632	3.065231	0.0025***
X7	-0.714480	0.197844	-3.611328	0.0004***
X8	-51.37532	4.910857	-10.46158	0.0000***
X9	60.52903	4.274960	14.15897	0.0000***

Effects Specification				
Cross-section fixed (dummy variables)				

R-squared	0.527116
Prob(F-statistic)	0.000000

Standar error in parentheses. *, **, *** denote significant at 10%, 5%, and 1%.

Source: Research data processed with Eviews-12

According to the fixed effect model test table, it is evident that variables X1 to X5 do not have a statistically significant impact on fintech businesses (Y) due to the X1 coefficient value of 0.152850 and a probability of 0.1316. The coefficient value for X2 is -1.393060, and the probability is 0.1880. The coefficient for X3 is -1.969297, with a probability of 0.3886. The coefficient value for X4 is 0.098502, with a probability of 0.2940. The coefficient for X5 is -5.029490, with a probability of 0.1224. All probability values for X1 to X5 are greater than 0.05. If the probability value exceeds 0.05, it may be inferred that the dependent variable is not considerably impacted, thereby forming the foundation for decision-making. The factors X6 to X9 have a significant impact on the dependent variable, as seen by the X6 coefficient value of 0.489310 and a probability of 0.0025. The X7 coefficient has a value of -0.714480 and a probability of 0.0004. The X8 coefficient has a value of -51.37532 and a probability of 0.0000. The coefficient value of X9 is 60.52903, and the probability is 0.0000. This indicates that the probability value is less than 0.05. The factors X6, X7, X8, and X9 have a statistically significant impact. Regarding the fixed test results for the cross-section, the R-squared value is 0.527116, which is equivalent to 52.7%. This indicates that the independent variable has a 52.7% impact on the dependent variable. In addition, the remaining 47.3% has an impact on additional factors that were not addressed in this research.

Conclusion

The emergence of the FinTech business has had a substantial influence on the financial services offered by conventional banks. This research aims to evaluate the influence of fintech on the performance of Indonesian banks by analyzing relevant data. Applying a fixed effect model, our analysis reveals that several financial indicators, including capital adequacy ratio (CAR), gross non-performing loans (NPL), return on assets (ROA), return on equity (ROE), and net interest margin (NIM), do not have a statistically significant impact on fintech. The divergence may arise due to the distinct business strategies used by fintech businesses as compared to banks. Furthermore, the relative novelty of fintech companies and the lack of clear regulatory frameworks contribute to this disparity. Nevertheless, fintech is influenced by other financial performance indicators, including operational expenditure to operating income (BOPO) and loan to deposit ratio (LDR), along with control variables such as inflation and GDP.

These results suggest that the operation of fintech companies can support new business model changes that are more cost-effective and innovative that can be applied by banks. In addition, Fintech companies can collaborate to provide new financial services for customers. This study offers practical recommendations for banks, governments, and consumers. In order to establish a mutually advantageous collaboration, banks should form partnerships with fintech startups. Banks can identify new business opportunities to increase profit margins with their cooperation.

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