

Financial Technology (FinTech) and Its Impact on Financial Performance of Islamic Banking

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Abstract—As a financial services provider, Islamic banking must be able to keep up with the times by responding to challenges and establishing a competitive advantage through the development of innovative financial products and services using Fintech. The goal of this research is to examine how FinTech services affect Islamic banking's financial performance. With a case study at Bank Syariah Indonesia (BSI), this study used a quantitative-descriptive research design. Financial ratios such as CAR, ROA, ROE, BOPO, FDR, and Fintech service were used as secondary data. The data is in annual time series format ranging from 2016 to 2020. In this study, the program SPSS 21 was used to process the data to perform the Classical Assumption Test, Simple Linear Regression, t-Test, and Coefficient of Determination Test. Finding of current research proves that Fintech service has an impact on the financial performance of BSI in terms of CAR, ROA, ROE, BOPO, and FDR.

Keywords: Disruptive Innovation; Fintech; Financial Performance; Islamic Banking; Competitive Advantage.

1. INTRODUCTION

Disruptive innovation alters the company model to make it more effective and efficient. Disruptive innovation is defined as advances that successfully transform a pre-existing market system by introducing ease of access, practicality, convenience, and economic costs (Hopp et al., 2018). Disruptive innovation has evolved as a result of new ideas that have succeeded in modifying, replacing, or updating established business models, with the financial services industry being one of the industries affected (Anshari et al., 2020). According to Subbarao (2017), the financial services industry's disruptive innovation has altered the global financial services industry landscape, starting with its industrial structure, intermediation technology, and marketing approach to customers. All of these innovations encourage the emergence of a new phenomenon known as financial technology.

The terminology "financial technology" (FinTech) comes from the words "finance" and "technology" to describe a new technology that can enlarge the scope of the financial sector (Simatupang & Siska, 2021). Moreover, Almaududi (2021) explained that Fintech is revolutionizing the way global financial institutions operate. Fintech's advancement has resulted in a slew of new financial tools and applications, including payment apps, lending, borrowing, etc. Fintech is a revolutionary breakthrough in the financial industry that is now widely employed in the world of trade, business, and to address community needs. Since the release of regulation from Financial Services Authority Regulation (POJK) number 13/POJK.02/2018 regarding the Digital Financial Innovation in the Sector of Financial Services, the Fintech services in Indonesia have had a legal framework. This legislation was enacted in light of fintech's rapid development in developing safe and responsible digital financial innovations that emphasize consumer protection and have well-managed risks.

The Indonesian people still have a limited understanding of Islamic banking (Lestari et al., 2021). One of the issues is the unavailability of public banking services, particularly for individuals living on a remote islands. According to the findings of study entitled "Fulfilling its Promise the Future of Southeast Asia's Digital Financial Service (2019), as many as 92 million adults in Indonesia have never used financial or banking services. This figure represents moreover half of the 182 million adult population. This fact gives an opportunity for Islamic banking to grow its market and make Islamic banking more accessible to the public through Fintech services.

Any community activity in this era of globalization cannot be separated from technological advancements. Financial institutions, particularly Islamic banking, are in the same situation. To thrive in this new era of technology, Islamic banking must become technologically literate (Siska, 2022). Apriyanti (2018) argued that Islamic banking is currently facing intense competition for market share, both between Islamic banks and conventional banks, as well as among Islamic banks themselves. As a result, Islamic banking, as a provider of financial services, must be able to keep up with the times by responding to challenges by gaining a competitive edge through the development of new financial products and services using Fintech.

Several research on Fintech and banking services have been conducted. Research by Puspa & Hendratno (2020) found that Fintech has a beneficial impact on profitability (ROA & NIM) and banking operations efficiency (BOPO) at state-owned banks namely Bank Mandiri, BNI, BTN, and BRI. Mar'atushsholihah & Karyani (2021) concluded their research that there are differences in CAR, LDR, NIM, and ROA at Indonesian conventional commercial banks after the ratification of Fintech regulations in 2016. According to the research finding of Lestari et al., (2021) banking innovation through Fintech services can increase banking financial performance in terms of ROA, BOPO, and NPL of Islamic banks. Then the research of Kristianti & Tulenan (2021) came to the same conclusion that Fintech services can help conventional bank improve their financial performance. This study differs from previous research in terms of the financial ratios used such as ROA, NIM, BOPO, NPL, and LDR. The majority of earlier studies employed commercial banks as their samples. The purpose of the current research is to examine the impact of Fintech service on Islamic banks' financial performance using five financial criteria based on Bank Indonesia regulations: ROA, ROE, BOPO, CAR, and FDR.

2. THEORETICAL FRAMEWORK

2.1 Financial Technology

The advancement of global technology has resulted in new improvements and advances in various industries, particularly the financial industry. Financial Technology, or Fintech, is an innovation that has rocked the economic world and is currently quite popular in several countries, including Indonesia. Fintech adoption has become commonplace in the banking industry (Medyawati et al., 2021). Fintech services may be accessed by the public in a simple, practical, and secure manner, greatly assisting the general public in accessing banking financial services (Abdillah, 2020).

Financial technology (FinTech) is a blend of financial services and technology that alters the business model from traditional to moderate. Previously, people paid face to face and carry a certain amount of cash, but now they can make long-distance transactions using payments online (Bank Indonesia, 2018). Fintech, as defined by the Financial Services Authority (2018), is a technology-driven innovation in the industry of financial services. Fintech services are typically in the form of a system that is designed to perform financial transaction procedures. Based on the definition that has been presented, it can be concluded that Fintech is innovative financial platform, or application that delivers easy, safe, and practical financial services to serve the community and enhance the economy.

2.2 Fintech Service in Islamic Banking.

Fintech has benefited Islamic banking in increasing the speed and accuracy of business operations processing. Fintech benefits Islamic banking by making financial transactions easier. Customers can also use this financial service to gain access to banking services like financing, payments, transfers of money, and the purchase and sale of stocks and securities (Subbarao, 2017). Customers can use mobile phone and laptop technology to access financial services. Here are several Islamic banking Fintech services:

a. Internet Banking (through computer/internet)

One of the banking services that allow consumers to use the internet to obtain information, communicate, and conduct banking activities. Account balance information, payments (electricity, telephone, credit cards, and others), purchases (vouchers or tickets), transfers to other banks, and information on banking products or services are all available through internet banking. The benefit of internet banking is the convenience of transacting with a full menu and the fact that it can be accessed from any device, including a cellphone, laptop, notebook, and computer (Yusu et al., 2018).

b. Mobile Banking (via handphone)

Customers use Mobile Banking as one of the development outcomes since it allows bank customers to conduct banking transactions and access account information using only their cell phones (Tiyana et al., 2020).

c. SMS Banking

SMS Banking is a service supplied by the bank that uses SMS facilities to execute financial transactions and request financial information, such as checking account balances and account changes (Yusuf et al., 2018)

d. Phone Banking

Phone banking is one of the information technology-based banking services. Customers can utilize the phone banking service to do banking operations such as transfers between accounts at the same bank, pay phone bills, and offer refill coupons, among other things (Tiyana et al., 2020).

2.3. Islamic Banking Financial Performance

Financial ratios such as CAR, ROA, ROE, BOPO, and FDR can be used to assess Islamic banking's financial performance (Ilhami & Thamrin, 2021).

a. Capital Adequacy Ratio (CAR)

Banks require capital not only to fund their operational needs but also to manage risks (Siska et al., 2021). Management decisions to achieve a profit rate and control potential risks might be influenced by the bank's capital (Buchory, 2015). A bank's capital must be sufficient to cover all of the company's business risks (Nofita Sari & Endri, 2019). The capital adequacy ratio measures a bank's ability to withstand loss-related shocks. The higher the ratio, the more reliable and safe the bank is. The formula for the CAR is as follows:

$$CAR = \frac{\text{Bank Capital}}{\text{Risk Weighted Asset}} \times 100\% \quad (1)$$

b. Return on Assets (ROA)

Profitability refers to a firm's ability to produce a profit in terms of revenue, total of the assets, and own capital (Siska et al., 2021). According to (Setiawan & Hermanto, 2017) profitability indicates a firm's ability to make profit from all of its available resources. ROA is a key metric for evaluating the banking industry's profitability (Rizal & Rofiqo, 2020). To calculate ROA, the following formula can be used:

$$ROA = \frac{\text{Profit Before Tax}}{\text{Total Assets}} \times 100\% \quad (2)$$

c. Return on Equity (ROE)

Another financial metric to examine how much a company made the profit in comparison to the total of shareholder equity is called ROE (Oktavia & Genjar, 2019). A company with a high ROE is more likely to be in a position to make

money. The higher ROE, the more profitable the business entity is (Gwatiringa, 2020). To calculate ROE, the following formula can be used:

$$ROE = \frac{\text{Net Income after Tax}}{\text{Total Equity}} \times 100\% \tag{3}$$

d. Operating Expenses to Operating Income (BOPO)

The operational cost to operational income that well know as BOPO is ratio which assesses a bank's efficiency and capability to conduct business (Siska et al., 2021). The higher the BOPO ratio, the less efficient the bank is. The higher the BOPO ratio, the higher the bank's operational costs, resulting in worse banking efficiency and, consequently, lower banking profitability (Riftiasari & Sugiarti, 2020). The formula to calculate the BOPO ratio is:

$$BOPO = \frac{\text{Operating Expenses}}{\text{Operating Income}} \times 100\% \tag{4}$$

e. Financing to Deposit Ratio (FDR)

The FDR is ratio that is commonly used to calculate how much financing is disbursed by banks compared to third-party money collected by banks (Munir, 2018). FDR is a parameter that can be used to assess a bank's capability to refund customers' withdrawals that use credit as a source of liquidity. The greater FDR ratio, the more profitable the bank is (Wahyudi, 2020). Following formula can be used to determine the FDR:

$$FDR = \frac{\text{Total Financing}}{\text{Total Third Party Fund}} \times 100\% \tag{5}$$

A research framework can be developed based on a review of the theory, as displayed in the figure below.

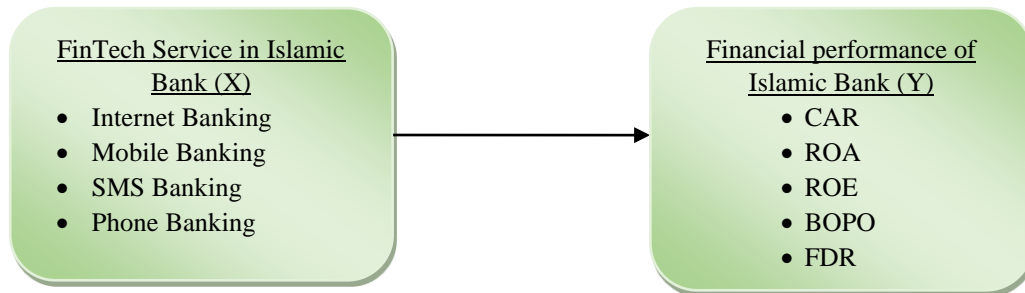


Figure 1. Research Framework

3. RESEARCH METHOD

3.1 Research Design, Type and Source of Data

This study employed a quantitative- descriptive research design with a case study at Bank Syariah Indonesia (BSI). The selection of the object of research with the consideration that BSI is the largest national Islamic bank, with assets worth IDR 247.3 trillion (as of June 2021), as a result of the merger of Bank Syariah Mandiri (BSM), Bank BRI Syariah Tbk (BRIS), and BNI Syariah. These assets are worth 40.1 percent of Islamic banking's total assets. Bank Syariah Indonesia is also the strongest in terms of capital, with IDR 22 trillion in core capital (tier 1), BSI has the highest capital among Indonesian Islamic banks. Secondary data for the financial ratios including CAR, ROA, ROE, BOPO, and FDR was utilized. The data is in annual time series data from 2016-2020. The data is obtained from the BSI annual report, which may be downloaded at <https://www.bankbsi.co.id>.

3.2 Variable of Research

Fintech service which includes mobile banking, internet banking, text banking, and phone banking, is the independent variable in this study. If the bank only uses one type of Fintech service in a year, it is given a value of 1 if using two types of fintech services such as SMS banking and mobile banking or phone banking it is given a value of 2. The addition of 3 and 4 values is adjusted to the Fintech services used. The financial performance of BSI, as identified by ROA, ROE, BOPO, CAR, and FDR, is the dependent variable, which can be accessed on the BSI's website.

3.2 Data Analysis Technique

3.2.1 Classical Assumption Test

Before applying regression to evaluate the data, the classical assumption test must be performed as a requirement to confirm that the data utilized is free of econometric issues. The classical assumption test includes the multicollinearity test, autocorrelation test, heteroscedasticity test, and normality test.

a. Multicollinearity test

The multicollinearity test is used to check if a correlation exists between the independent variables in a regression model. A good regression model should be no correlation between independent variables. The value that commonly used to indicate the level of multicollinearity is a tolerance value < 0.1 or a VIF value < 10 .

b. Autocorrelation test

According to Ghozali (2018), the autocorrelation test applied to evaluate if there is a correlation between the confounding error in period of t and the confounding error in period of $t-1$ in a linear regression model. An autocorrelation problem occurs when there is a correlation. Durbin - Watson test was used in this study to detect autocorrelation. The proof of autocorrelation is done through the classification table for d values as follows:

Tabel 1. Classification for Autocorrelation

d value	Interpretation
$< 1,10$	There is autocorrelation
$1,10 - 1,54$	No conclusion
$1,55 - 2,46$	There is no autocorrelation
$2,46 - 2,90$	No conclusion
$> 2,91$	There is autocorrelation

Source: Wijaya (2009)

c. Heteroscedasticity test

The heteroscedasticity test is used to evaluate if there is an inequality in variance between the residuals of one observation and the residuals of another observation in a regression model. When the variance between the residuals of one observation and the residuals of another observation is constant, homoscedasticity is present, but heteroscedasticity is present when the variance differs. A model with homoscedasticity or no heteroscedasticity is a good regression model. The plot graph was used in this study to detect heteroscedasticity. There is no heteroscedasticity if there is no clear pattern and the points are evenly distributed above and below 0 on the Y- axis.

d. Normality test

According to Ghozali (2018), in a regression model, the normality test is used to see if the dependent and independent variables have a normal distribution. In this study, identification for normality by looking at the Normal P-P Plot of Regression Standardized Residual. The regression model meets the assumption of normality if the normal graph pattern shows the dispersion of the points around the diagonal line and follows the diagonal line's orientation.

3.2.2 Simple Linear Regression

A simple linear regression equation describes the relationship between one independent variable (X) and one dependent variable (Y). In this research X refers to Fintech service and Y is the financial performance of BSI.

3.2.3 Hypothesis Test (Partial t-Test)

The hypothesis of this study is that fintech has an impact on Islamic banking's financial performance. A partial t-test was employed to evaluate the hypothesis. If the t statistic $< t$ table, or sig value < 0.05 , the independent variable has a significant effect on the dependent variable. Otherwise, if the value of t statistic $> t$ table or sig > 0.05 , it suggests that the independent variable does not affect on the dependent variable significantly.

3.2.4 Coefficient of Determination Test

The coefficient determination (R^2) is a measure of the strength of association between independent variables and the dependent variable as a whole. The coefficient of determination has a value of zero to one. A low R^2 value indicates that the independent variables' ability to explain the dependent variable's variation is very limited. Data management SPSS 21 was applied in this research to process the data.

4. FINDING AND DISCUSSION

4.1 Classical Assumption Test

a. Multicollinearity test

Table 2 displays the results of the multicollinearity test.

Tabel 2. Results of the Multicollinearity Test

Model	Coefficients ^a					Collinearity Statistics	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
	B	Std. Error	Beta				
1 (Constant)	38.160	43.882		2.870	.007		
Fintech	.600	16.586	.008	5.036	.002	1.000	1.000

a. Dependent Variable: Financial_Performance

Table 2 shows that the Fintech VIF value is 1,000, which is small than 10. As a result, it may be concluded that the model has no multicollinearity.

b. Autocorrelation test

The result of the autocorrelation test is displayed in table 3.

Tabel 3. Results of Autocorrelation Test

Model Summary ^b					
Model	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson	
1	.260	0.430	40.62703	1.816	

a. Predictors: (Constant), Fintech

b. Dependent Variable: Financial_Performance

From Table 3 can be seen that DW value is 1,816, which is in the range 1,55 – 2,46. It can be concluded that there is no autocorrelation in the model.

c. Heteroscedasticity test

The result of the heteroscedasticity test can be seen from following the scatterplot figure.

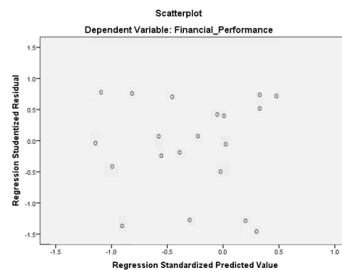


Figure 2. Scatterplot of heteroscedasticity test

From the scatterplot as displayed in Figure 2, it can be seen that pattern and the points are evenly distributed above and below 0 on the Y-axis. So that, the data is not identified heteroscedasticity.

d. Normality test

The result of normality test is displayed in Figure 3.

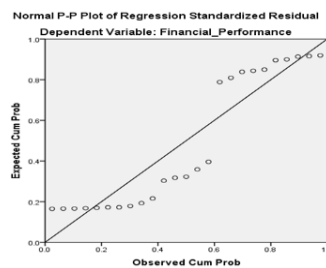


Figure 3. The Normal P-P Plot of Regression Standardized Residual

Figure 3 displays the pattern of the Normal P-P Plot of Regression Standardized Residual, which shows the dispersion of the points around the diagonal line and follows the diagonal line's direction. Hence, the regression model meets the normality assumption.

4.2. Simple Linear Regression

Tabel 4. Results of Simple Linear Regression

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	38.160	43.882		2.870	.007
Fintech	.600	16.586	.008	2.536	.002

a. Dependent Variable: Financial_Performance

The linear regression model in this research is: $Y = 38.16 + 0.6X$, as can be seen from the linear regression results in Table 4. This means that if the independent variable of Fintech Services remains constant, the financial performance will be 38.16 units and if the independent variable increases, the financial performance will be 0.6 units higher.

4.3. Hypothesis Test (Partial t-Test)

Tabel 5. Results of Parsial t-Test

Model	Coefficients ^a					df	Sig. Level	t table	
	Unstandardized Coefficients		Standardized Coefficients		t				
	B	Std. Error	Beta	Sig.					
1 (Constant)	38.160	43.882			2.870	.007	18	0.025	2.101
Fintech	.600	16.586	.008		2.536	.002			

a. Dependent Variable: Financial_Performance

To determine the impact of Fintech services on financial performance, the value of the t statistic must be compared to the value of the t table. The following formula is used to calculate the t table:

$$T \text{ table} = t(\alpha / 2; n-k-1) = t(0.025; 18) = 2.101$$

As shown in Table 5, the significant value of $0.002 < 0.05$ and t statistic $2.536 > 2.101$. As a result, fintech services which include the phone banking, SMS banking, mobile banking, and the internet banking have a significant impact on BSI's financial performance, and the hypothesis proposed in this study, that Fintech service has an impact on BSI's financial performance in terms of CAR, ROA, ROE, BOPO, and FDR, can be accepted. A positive beta value implies that there is a positive association or correlation between Fintech services and BSI's financial performance for 2016-2020. The finding of this study is in line with the research conducted by Lestari et al., (2021) that conclude innovation through Fintech services increase banking financial performance in terms of profitability (ROA) and efficiency (BOPO). This suggests that the availability of Fintech services utilized by Islamic banking can make it easier for the public to acquire financial services tailored to their needs, hence improving banking efficiency. Finally, banking profitability may improve. Furthermore the findings of this research matched up those of a study conducted by (Kristianti & Tulenan, 2021), which found that the use of Fintech can help banks enhance their financial performance.

4.3. Coefficient of Determination Test

The coefficient of determination (R square) indicates how much the independent variables explain the dependent variable. The coefficient of determination is a measure of the strength of the relationship between the independent and dependent variables as a whole. The correlation value varies from 0 to 1, with 0 representing a very weak relationship and 1 representing a very strong relationship. The results of the Coefficient of Determination Test are presented in Table 6.

Tabel 6. Results of Coefficient of Determination Test

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.460	.260	0.430	40.62703

a. Predictors: (Constant), Fintech

b. Dependent Variable: Financial_Performance

According to the results of the coefficient of determination as presented in Table 6, the value of R^2 is 26 percent. This means that the fintech variable explains approximately 26% of the variances or changes in BSI's financial performance from 2016 to 2020. Other variables outside of this study model account for the remaining 74%. Coefficient of determination as of 26%. Even though it has a significant impact on financial performance, the coefficient of determination of 26% is deemed low. The limited impact of Fintech services on BSI's financial performance is due to the fact that many people, particularly those living on distant areas, have yet to employ Fintech services in Islamic banking. This result is in accordance with the research results of Fulfilling its Promise the Future of Southeast Asia's Digital Financial Services that found that as many as 92 million Indonesian people do not have access to banking services.

5. CONCLUSION

According to the findings of the study, it can be concluded that Fintech services have a positive relationship with BSI's financial performance. Fintech services also have a significant impact on BSI's financial performance in terms of CAR, ROA, ROE, BOPO, and FDR. As a suggestion from this study, BSI should be more aggressive in educating the public about Islamic banking services.

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