

Does Banking Digitization Reduce Non-Performing Financing in Sharia Commercial Banks?: Evidence from Indonesia

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Abstract: Digitalization in the banking sector has received great urgency and attention in the last few decades because it has been able to provide many conveniences for banks and customers in conducting transactions, this condition has further increased productivity. This increase in productivity describes an increase in income so that Non-performing financing faced by Sharia Commercial Banks in Indonesia can be minimized. Non-performing financing is necessary because a high NPF can disrupt banking operations. This study aims to study and analyze whether digitalization in the economic and banking sectors can reduce Non-performing financing in Sharia Commercial Banks in Indonesia. This research is a positivist study with a quantitative approach which is analyzed using panel regression with dummy variables, with the help of EViews software. This study uses secondary data in the form of banking digitization data, internal factors in Sharia Commercial Banks in Indonesia. This research provides evidence that digitalization that is occurring in the economic and banking sectors, as well as internal and external banking conditions, have made a significant contribution to reducing Non-performing financing in Sharia Commercial Banks in Indonesia.

Keywords: Digitalization, Non-Performing Financing, Sharia Commercial Banks

Abstrak: Digitalisasi di bidang perbankan mendapat urgensi dan perhatian besar dalam beberapa dekade terakhir karena mampu memberikan banyak kemudahan bagi bank dan nasabah dalam bertransaksi, kondisi ini semakin meningkatkan produktivitas. Peningkatan produktivitas ini menggambarkan peningkatan pendapatan sehingga Non Performing Financing yang dihadapi Bank Umum Syariah di Indonesia dapat diminimalisir. Pembiayaan bermasalah (non-performing financing) diperlukan karena NPF yang tinggi dapat mengganggu operasional perbankan. Penelitian ini bertujuan untuk mempelajari dan menganalisis apakah digitalisasi pada sektor perekonomian dan perbankan dapat mengurangi pembiayaan bermasalah pada Bank Umum Syariah di Indonesia. Penelitian ini merupakan penelitian positivistis dengan pendekatan kuantitatif yang dianalisis menggunakan regresi panel dengan variabel dummy, dengan bantuan software EViews. Penelitian ini menggunakan data sekunder berupa data digitalisasi perbankan, faktor internal Bank Umum Syariah di Indonesia. Penelitian ini memberikan bukti bahwa digitalisasi yang terjadi pada sektor perekonomian dan perbankan, serta kondisi internal dan eksternal perbankan, telah memberikan kontribusi yang signifikan dalam mengurangi pembiayaan bermasalah pada Bank Umum Syariah di Indonesia.

Kata Kunci: Digitalisasi, Non-Performing Financing, Bank Umum Syariah,

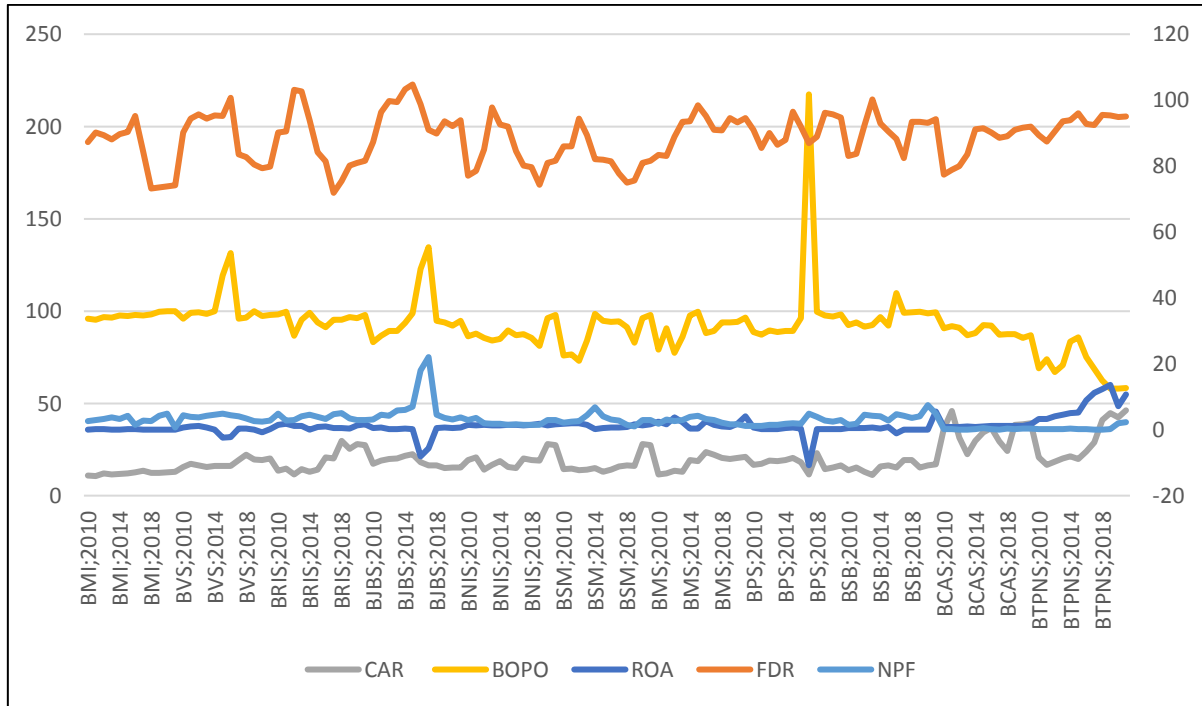
Introduction

Banking is part of the financial sector which has an important role in the economy, including in which sharia commercial banks are enough to take the attention of the Indonesian people. In circulation, Islamic commercial banks are faced with many problems related to non-performing financing. Non-performing financing needs to get a major place in financial traffic in the banking sector, especially Islamic commercial banks in Indonesia, which incidentally are still in the development and development stage because non-performing financing can hinder the flow of funds from banks to the public because there is a systemic risk of failure. as well as contingent effects, especially if the capital adequacy ratio is low, the financing to deposit ratio is large enough, returns are low, as well as various other internal banking conditions that are not good enough, will further worsen the condition of Islamic banking in Indonesia.

The strategy to overcome this problem is of course inseparable from the contribution of internal factors from Islamic commercial banks themselves, which are generally measured by several indicators such as FDR (Financing to Deposit Ratio), CAR (Capital Adequacy Ratio), ROA (Return on Assets), and BOPO (Operating Costs to Operating Income). Some of these internal factors need to be managed effectively and efficiently in order to minimize the risk of non-performing financing. Figure 1 shows fluctuating developments in the condition of non-performing financing and several internal banking factors. Based on Figure 1, it is illustrated that the NPF condition of Islamic commercial banks moves in tandem with internal factors and in several years has experienced a developmental phenomenon that is contrary to theory.

Figure 1.

Development of the Internal Conditions of Islamic Commercial Banks for 2010-2021



Source: Financial Authority Services

The era of the Covid-19 pandemic has accelerated digital acceleration in Indonesia and has had a major impact on the financial sector, especially banking and therefore apart from internal factors, digitalization has also contributed. Islamic banks as a part of the banking system in Indonesia are also influenced by the development of digitalization. Digital finance in the banking world is related to the emergence of various digital services, such as mobile banking applications where customers can carry out various financial transactions without having to come to the physical banking office in person. The financial services authority states that from 2016 to 2021, mobile banking transactions will increase by more than 300% (Idawati & Syafputri, 2022), so that banks will find it easier to control and mitigate various possibilities that will arise in the future, including non-financial services. -performing financing.

Several previous studies have carried out similar research (Achmad Ali Fikri, Syamsul Arifin, 2022; Azmi et al., 2023; Ikhsan & Karyatni, 2023; Limited, 2022; Mamun & Rana, 2023; Marliyah et al., 2021; Muslimah, 2019; Prastyo & Anwar, 2021; Shonhadji, 2020; Wu et al., 2023; Xu et al., 2022), but have concentrated more on internal and macroeconomic factors. And not many have included banking digitalization such as mobile banking and internet banking created by commercial banks as one of the most important parts in mitigating the risk of non-performing financing at syariah commercial banks in Indonesia. For this purpose, this research is aimed at providing theoretical and empirical evidence of the impact of digitalization in the financial sector on non-performing financing in commercial banks in Indonesia.

Method

This research is a positivism research with quantitative methods based on hypothesis testing and analyzed by statistical procedures (Gujarati & Porter, 2009; Wooldridge, 2002 ; Baltagi, 2005). This method is used to obtain empirical evidence regarding how digitalization can affect problem financing at Islamic Commercial Banks in Indonesia. This study uses secondary data in the form of panel data obtained from official publications from institutions related to research, including Bank Indonesia, the Central Bureau of Statistics, the Financial Services Authority, and various relevant sources. The observation period in this study is 12 years from 2010 to 2021. Meanwhile, the research object consists of 11 Islamic Commercial Banks that have been registered with the Financial Services Authority and meet the research criteria and data availability. This study was analyzed using panel data regression analysis with the help of Eviews software with the stages of model building, model selection, classical assumption testing, and hypothesis testing. The models in this research are as follows:

$$NPF_{it} = \alpha_0 + \alpha_1 Digital_{it} + \alpha_2 FDR_{it} + \alpha_3 CAR_{it} + \alpha_4 ROA_{it} + \alpha_5 BOPO_{it} + \varepsilon_{it}$$

The dependent variable used is non-performing financing at Islamic Commercial Banks in Indonesia (NPF). The independent variables include banking internal

conditions consisting of ROA, FDR, CAR, BOPO and Digitalization (Digital). The dummy variable is used to capture the effect of digitalization on banking, be it internet banking or mobile banking. In this case, a bank that has not implemented internet banking and mobile banking is purchased with a value of 0, and is given a value of 1 if it has used and implemented internet banking and mobile banking. This study also uses literature studies and documentation studies in collecting data, evaluating, and analyzing various information needed in this research.

Result and Discussion

This study uses the panel data regression method, with several stages, first conducting descriptive statistical tests, selecting models, testing classical assumptions and then testing the hypotheses. The following are the results of statistical descriptive tests to see the mean, standard deviation, maximum, minimum, variance, range, kurtosis, and skewness.

Table 1. Deskriptif Statistic

	DIGITAL	FDR	CAR	ROA	BOPO	NPF
Mean	0.454545	159.0927	19.74133	1.213864	92.59492	2.962576
Median	0.000000	90.14500	17.75500	0.735000	93.81500	2.880000
Maximum	1.000000	9391.000	46.22000	13.60000	217.4000	22.04000
Minimum	0.000000	71.87000	10.61000	-10.77000	58.00000	0.020000
Std. Dev.	0.499826	809.7009	7.801421	2.804586	15.71682	2.698068
Skewness	0.182574	11.35676	1.633597	1.093716	3.725768	3.941336
Kurtosis	1.033333	129.9866	5.374868	11.70861	32.33526	26.85975
Jarque-Bera	22.00611	91528.30	89.73004	443.4360	5038.454	3472.833
Probability	0.000017	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	60.00000	21000.24	2605.856	160.2300	12222.53	391.0600
Sum Sq. Dev.	32.72727	85885646	7972.945	1030.407	32359.43	953.6241
Observations	132	132	132	132	132	132

Based on Table 1, the minimum NPF value is 0.02, the lowest NPF value is owned by bank BTPN Syariah. Meanwhile, the highest NPF value is 22.04 which is owned by Bank BJB Syariah. The average NPF value is 2.96, and the standard deviation is 2.69 which means the NPF value at Islamic commercial banks is 26.9%. Next is selecting the right model to use in the study by carrying out the Chow test, Hausman test, and LM test, as shown in Table 2 below.

Table 2. Chow Test Result

Effects Test	Statistic	d.f.	Prob.
Cross-section F	7.837526	(10,116)	0.0000
Cross-section Chi-square	68.138454	10	0.0000

Based on the results of the chow test, where the probability value is $0.000 > 0.05$, thus the model chosen is the fixed effect model.

Table 3. Hausman Test Result

Test Summary	Chi-Sq.		
	Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	51.973380	5	0.0000

The probability value of the Hausman test is 0.000 which is less than 0.05, for that the best model chosen is the fixed effect model. Because these two tests gave the results of selecting the fixed effect model, this study chose the fixed effect model as the best regression model used in this study. To avoid biased estimator results, this study conducted classic assumption tests including normality tests, multicollinearity tests, and autocorrelation. The results of the classic assumption test are as shown in Table. 4.

Table 4. Classical Assumption Test Result

Test		
Normalitas	Jrque-Bera Prob	0.065001
Autokorelasi	Durbin-Watson Test	1.246050

The results of the classical assumption test show that the largest model violates the classical assumptions. For the normality test, the probability value is $0.065 > 0.05$, indicating that the data is normally distributed. Furthermore, the Durbin-Watson value of 2.2460 is between the dU and 4-dU values, so the model is free from autocorrelation problems. Meanwhile, for the multicollinearity test the probability value of all variables is below 0.09, so it is concluded that it is free from multicollinearity problems. Likewise with the heteroscedasticity test, the probability value of all variables is above 0.05 so that the model can be said to be free from heteroscedasticity problems.

Furthermore, the results of panel data regression analysis to find out how digitalization developments and internal conditions affect non-performing financing in Islamic commercial banks in Indonesia are presented in table 1.5.

Table 5. Panel Data Regression Test Results

Variable	Coefficien			
	t	Std. Error	t-Statistic	Prob.
C	0.389817	1.776182	1.219469	0.0067
Digital	-0.146809	0.384410	-4.381908	0.0032
FDR	0.050292	0.000207	3.412329	0.0165
CAR	-0.073706	0.038297	-2.924624	0.0467
ROA	-0.456743	0.137697	-3.317010	0.0012
BOPO	0.026260	0.018061	3.453977	0.0148

Effects Specification

Cross-section fixed (dummy variables)			
		Mean dependent	
R-squared	0.599647	var	2.962576
Adjusted R-squared	0.547877	S.D. dependent var	2.698068
		Akaike info	
S.E. of regression	1.814184	criterion	4.142361
Sum squared resid	381.7864	Schwarz criterion	4.491791
		Hannan-Quinn	
Log likelihood	-257.3958	criter.	4.284353
F-statistic	11.58295	Durbin-Watson stat	1.246050
Prob(F-statistic)	0.000000		

From the analysis results table in Table 5, the panel data regression equation in this study is as follows:

$$\text{NPF}_{it} = 0.3898_0 - 0.147 \text{ Digital}_{it} + 0.050 \text{ FDR}_{it} - 0.073 \text{ CAR}_{it} - 0.456 \text{ ROA}_{it} + 0.014 \text{ BOPO}_{it} + \varepsilon_{it}$$

Based on these results, it is explained that the coefficient value for digitization is 0.147 indicating that if there is an increase of one percent in digitization that occurs, non-performing financing will decrease by 0.147 percent. A one percent increase in FDR will increase NPF by 0.050 percent. Furthermore, if there is an increase in CAR by one percent, non-performing financing will decrease by 0.073 percent. Likewise with ROA and BOPO, if there is an increase of one percent in these variables, non-performing financing will increase by 0.014 percent.

The test results show that all the variables in this study together have a significant influence on non-performing financing in Islamic commercial banks in Indonesia with a probability f value of $0.000 < 0.05$ and an f -count value of 11,582 greater than the f -table value of 2.17. Likewise with the partial effect, all independent variables have a significant effect on non-performing financing in commercial banks in Indonesia. The digital variable probability value is $0.0032 < 0.05$ with a t -count $> t$ -table value of $4,382 > 2,571$ with a negative coefficient meaning that digitalization has a significant negative effect on non-performing financing in Islamic commercial banks. The FDR variable has a probability value of $0.003 > 0.05$ and t -count $> t$ -table $3.412 > 2.571$, meaning that FDR has a significant positive effect on NPF. Furthermore, CAR and ROA have a significant negative effect on NPF with probability values of $0.046 > 0.05$ and $0.001 > 0.05$, respectively, with t -count values of 2.925 and 3.317 greater than the t -table values. Finally, BOPO has a significant positive effect on non-performing financing in Islamic commercial banks in Indonesia with a probability value of $0.014 < 0.05$ and a t -count value of 3.453 greater than the t -table value. The results of the regression test show that the coefficient of determination is 0.5996 indicating that 59.95% of the development of Non-performing Financing in Islamic commercial banks in Indonesia can be explained by the variation of the variables examined in this study. While 40.05% is explained by variations in variables outside the model studied.

Digitalization has a significant negative effect on non-performing financing in Islamic commercial banks in Indonesia. Digitalization that has occurred in the last few decades has certainly had a significant impact on the development of the banking sector where banking systems and services have shifted to digital systems. Digitalization in the banking sector is proxied by the provision of mobile banking applications for banks. Digitalization, such as the use of mobile banking applications, can make it easier for Islamic commercial bank customers to manage and access banking services, be it transactions or paying bills. This condition can reduce the risk of non-performing financing

because this convenience makes it easy for customers to repay loans in a timely manner (Synatrya, 2021). In addition, for banks, digitization can provide more accurate information related to customers' financial conditions (Idawati & Syafputri, 2022), so that they can mitigate the risk of non-performing financing earlier and better, as well as more efficiently and effectively. This research found that the increasingly rapid development of digitization can reduce Non-performing Financing (NPF) in Islamic commercial banks in Indonesia, as in previous studies (Ilmiah & Islam, 2023; Lei & Li, 2021; Limited, 2022; Print et al., 2023; Sherif, 2023; Sudirman et al., 2023; Synatrya, 2021; Wu et al., 2023; Xu et al., 2022). Furthermore, digitalization is of course capable of providing significant risks if it goes hand in hand with the development of cybercrime in the future.

The Financing to Deposit Ratio (FDR) has a positive and significant effect on non-performing financing. The greater the proportion of FDR, the greater the non-performing financing of Islamic commercial banks (Print et al., 2023). This condition explains that the more banks disburse and to third parties, the more banks will automatically depend on the funds that are mostly channeled, thus enabling the increase in non-performing financing, and vice versa. However, it does not necessarily require a low FDR value, because a low FDR condition causes banking. This finding is in line with the findings of previous researchers (Azmi et al., 2023; Ikhsan & Karyatni, 2023; Print et al., 2023; Umaternate & Mongid, 2023; Zhang, 2022).

Capital Adequacy Ratio (CAR) has a significant negative effect on NPF, meaning that an increase in CAR can reduce NPF. This condition occurs because CAR measures the strength of Islamic commercial banks in dealing with banking risks including financing activities (Shonhadji, 2020; Ikhsan & Karyatni, 2023). If CAR is low, banking will not be strong enough to bear the risk if non-performing financing increases. Furthermore, Return on Asst (ROA) also has a significant negative effect on NPF at commercial banks in Indonesia. The higher the ROA, the NPF will decrease and vice versa. This proves that the profits from assets generated by Islamic commercial banks are able to sustain non-performing

financing experienced by influencing the ability of Islamic commercial banks to generate profits from disbursed financing and the risks that may arise as a result (Achmad Ali Fikri, Syamsul Arifin, 2022; Prastyo & Anwar, 2021; Print et al., 2023; Umaternate & Mongid, 2023; Yunita, 2021).

Finally, Operational Costs to Operating Income (BOPO) has a significant positive effect on NPF. If Islamic commercial banks have a relatively high BOPO value, this condition explains that the bank's operational costs are relatively higher than operational income, will have an impact on declining bank profitability and further affect the strength of banks in supporting non-performing financing experienced by banks generally sharia in Indonesia.

Conclusion

This research provides evidence that digitalization that is occurring in the banking sector is able to support the development of non-performing financing, especially in Islamic commercial banks in Indonesia which are examined in this study. Various conveniences provided by digitization such as convenience in financial transactions, loan payments, as well as various conveniences in conducting other banking traffic make the public and Islamic commercial banks more effective and efficient in financial activities which can ultimately increase productivity for banking and reduce Non-performing financing that occurs, as has been proven by the significant influence of digitalization and the internal conditions of banking in Indonesia. This research, of course, has limitations that are limited to only eleven banks in Indonesia by not including macroeconomic variables which also certainly explain variations in non-performing financing in Islamic commercial banks in Indonesia, so further and in-depth research is needed. This research implies that all banks in Indonesia must be more adaptive to the development of digitalization and the development of cybercrime in the future.

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