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The Moderating Role of Information Technology in The Performance of Baitut Tamwil Muhammadiyah in Central Java Indonesia

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Abstract

This study aimed to analyze the moderating role of Information Technology in the performance of Baitut Tamwil Muhammadiyah (BTM) in Central Java, Indonesia. The target population was members of this Islamic Microfinance Institution. Data from 2015 to 2018 in the Central Java Sharia Office was used to obtain a sample size of 14 from 21 BTMs. Multiple Regression Analysis was then applied to analyze this data and explain the relationship between variables. The results showed that independent variables, including CAR, NPF, and BOPO ratios are positively correlated with ROA (Return on Assets) of BTM, except FDR. Information technology system moderation variables including FDR_SYSTEM and BOPO_SYSTEM significantly and positively affect ROA, while CAR_SYSTEM and NPF_SYSTEM are negatively correlated with the returns on total assets of the institution. In general, BTM should use I.T. for excellent performance and join academics and other stakeholders to increase awareness of the benefits of these computer-based systems in Islamic Microfinance institutions.

Keywords:

BTM, ROA, CAR, NPF, BOPO, FDR, and ITS

JEL: G 21, G 23

1. Introduction

Utami et al. (2018) established that BMT and BTM, the popular Islamic Financial Cooperatives in Indonesia have different conventional dimensions. The two are registered by the Ministry of Cooperatives and SMEs under Act No.25/1992 and adhere to Islamic rules (Afandi, 2014). Seibel (2005) stated that BMT is a commercial and social institution, while BTM has a strong commercial orientation. Furthermore, Usamah (2015) established that the former was founded by Muhammadiyah, Indonesia's largest modern Muslim organization.

Improving performance and maintaining soundness is crucial for Sharia Microfinance institutions in Indonesia. According to L.J. Gitman (2012), BTM strives to get a high profit that could give it a competitive edge, attract cheap capital from in-house companies, foreign capital, and partnerships. This increases microfinance profitability, a source of equity that promotes economic growth.

Ministry of Cooperatives and SMEs issued Regulation no. 35.3/Per/M.KUKM/X/2007 regarding Guidelines for Financial Health Assessment of Islamic Microfinance Institutions. Zein (2018) stated that this policy monitors capital, productive asset quality, management, efficiency, liquidity, independence and growth, participation, and compliance with sharia provisions from the fatwa institution of the Indonesian Ulama Council.

This study evaluated performance based on capital, risk, financing, costs, and assets ratios, as ROA (Singh et al., 2016). With ROA as the dependent variable, proxies used include Capital Adequacy Ratio (CAR), Non-Performing Finance (NPF), Financial to Deposit Ratio (FDR), and Operating Expenses and Operating Income (BOPO).

BTM was established on January 5, 1996, in Pekalongan and inaugurated by Lukman Harun, a Muhammadiyah leader, and famed Islamic fighter. The BTM Pekalongan, the mother of all BTMs, has subsidiaries on Java Islands, Sumatra, and Kalimantan. It also has microfinance architecture in primary BTM (regional), BTM Center, and Parent BTM at the center. BTM Bojong achieved a 5.01 ROA in 2015, which is the highest in the history of BTMs. In 2016 BTM Bligo recorded an average of 4.7960154598, a decrease of .3039845402. BTM Bojong recorded a further .2671520366 decrease in 2017 and BTM Wiradesa .5797203543 increase in 2018. The average BTM ROA in Central Java in 2015 was 1.39 and decreased to 1.01 in 2016. In 2017 the figure reduced to 0.91 and 0.73 in 2018, drawing the attention of the institution. BTM is now betting on information technology systems to improve its ROA.

Muriu (2011) established that studies aimed at investigating the performance of microfinance institutions are limited, affecting analysis of BOPO, CAR, and NPF impacts on microfinance profitability. According to Veithzal (2007), BOPO, a comparison between Operational Costs and Operating (OEOI) Income, measures the efficiency and ability of banks to carry out their operations. A low OEOI occurs when the operating income is higher than operating costs, showing that the bank has a better efficiency ratio.

BTM uses FDR to assess the financing quantity of third parties, meets deposit withdrawals made, and repays borrowers when due to improve its liquidity. According to Horne & Jr (2005), trade-offs between liquidity and profitability significantly affect the financial performance of institutions. Liquidity reduces investment income when organizations hold their funds, while profitability utilizes assets and available funds to yield higher returns. Almazari (2014) supported the financial intermediation theory that states high FDR shows a better link between savers and borrowers increasing profitability and financing.

Kamir (2010) established that the capital adequacy ratio is the capital to risk-weighted

total assets ratio that determines the bank's financial position. Banks with high CAR have a better efficiency level, implying that they can face unexpected credit risks.

BTM capital ensures funds are available to avoid risks and maintain its CAR to a minimum of 8% through customer protection and stabilizing the financial system. BTM's capital adequacy is the ratio between the available capital and the risk-weighted total assets. High CAR shows the BTM is financially healthy; hence can manage credit risks.

Channeling funds to financial investments can also reduce the credit risks, which are measured with NPF. According to Al-Smadi-Wabel (2011), financial institutions should develop lending policies to lower loan defaulting for high profitability.

Financial institutions use ROA as a comprehensive profitability measure (Muiru, 2011). Expressed in percentage, ROA of 5%, 20 %, or more is healthy, implying that the bank is making more profits. Hasbi (2015) stated that the capital structure accounts for 43.3% and the alpha of 5% profitability. Diknawati (2014) & M. Khoirun (2019) supported this, establishing that Capital Adequacy Ratio significantly affects profitability.

M. Khoirun (2019), Warda & Widyarti (2015), Wulundari & Shofawati (2017), and Fitriyah &Sholikhin (2019) showed that Deposit Ratio (FDR) significantly and positively affects ROA while Non-Performing Financing (NPF) has no effects on bank's return on capital.

Warda & Widyarti (2015) supported that Operating Costs and Operating Income affect Return on Assets. Diknawati (2014) and Fadrul, dan Asyari (2018) disagreed with this, stating that Operational Costs and Operating Income (BOPO) negatively affect Return on Assets.

Although Muslims are the largest members of Islamic MFIs, most of them choose where to save or borrow money. Masyita & Ahmed (2013) stated that their selection bases on non-economic factors, including service quality, convenience, speed, proximity, payment methods, and loan officers, increasing the need for information technology to improve operations.

Adrian et al. (2019) established that information technology is the success key for companies and SMEs. Information technology mediates resources and technological capabilities to give organizations a competitive advantage, showing the importance of these computer-based systems (Jeffers et al., 2008); (Nigel P. Melville, 2010); (Amirbekova, 2016).

Sravani (2013) revealed that overcoming technology-related problems speeds up the growth of the financial sector. This study supported Sowmya & Reddy (2018), which stated that integrating Information Technology (I.T.) into Microfinance Institutions improves the flow of information, efficiency, and outreach of services. Also, it provided empirical evidence on the factors affecting performance (ROA) and the information technology system as the moderator.

2. Research Method

The target population for this study was members of the BTM Syariah Center in Central Java, Indonesia. Data from 2015 to 2018 available at Central Java Sharia Office in Jl. Mayend S. Parman No. 3 183 Wiradesa Pekalongan was used to collect a sample size of 14 from 21 BTMs. The members were obtained from Central Java Sharia yaitu, BTM Wiradesa, BTM Doro, BTM Kalibening, BTM Batang, BTM Wuled, BTM Talun, BTM Kedungwuni, BTM Kesesi, BTM Punggelan, BTM Bligo, BTM Bojong BTM Kota Pekalongan, BTM Kaliwungu and BTM Wonopringgo.

According to Munawir (2001), ROA describes the results obtained from the company's

financial resources. This ratio determines profit or SHU that could be distributed to shareholders or used to obtain information on the returns the company and cooperatives will provide on total assets. The ROA formula is presented as follows:

$$\text{ROA} = \frac{\text{SHU after tax}}{\text{Total assets}} x100\%$$

Source: (Ministry of Cooperative and Micro Small-Medium Enterprises, 2007)

The ratio measures the capital adequacy of Islamic Microfinance institutions, enhancing absorption of reasonable risks (Kasmir, 2010). According to the Minister of Cooperatives and SMEs, BTM KSPPS should have a healthy CAR of at least 8%, which can be calculated with the following formula;

$$\text{CAR} = \frac{\text{Weighted Capital}}{\text{Risk - Weighted Assets}}$$

Source: (Ministry of Cooperative and Micro Small Medium Enterprises, 2007)

Nugroho et al. (2021) stated that NPF focuses on stakeholders of Islamic financial institutions as the primary sustainability indicator calculated with the following formula:

$$\text{NPF} = \frac{\text{Total non - performing financing}}{\text{Total financing}} \text{ x } 100\%$$

Source: (Ministry of Cooperative and Micro Small Medium Enterprises, 2007)

According to Veithzal (2007), the Financing to Deposit Ratio (FDR) shows the bank's financing amount to its third parties. Customer credits may offset the bank's obligation to meet deposit withdrawals and satisfy extended credit (Kasmir, 2010). LDR is a ratio between the banks' credit granted and public funds deposited. A ratio below one shows that the bank satisfied its extended credit with its own deposit. FDR can be calculated with the following formula.

$$\text{FDR} = \frac{\text{Total financing}}{\text{Total third party funds}}$$

Source: Regulation of the Minister of Cooperatives and SMEs in 2007

The efficiency and capability levels of a bank are shown with FDR, whose indicators also take advantage of BOPO, a ratio between operating costs and operating income (Kasmir, 2010).

$$\frac{\text{Total Expenses}}{\text{Total Revenue}}$$

Source: (Ministry of Cooperative and Micro Small Medium Enterprises, 2007)

This study used SPSS 20, classical assumption testing, and hypothesis testing to analyze the model equations (Ghozali, 2018) as follows:

Model 1 :

$$\text{ROA} = \alpha_0 + \beta_1 \text{CAR} + \beta_2 \text{NPF} + \beta_3 \text{FDR} + \beta_4 \text{BOPO} + e$$

Model 2 :

$$\text{ROA} = \alpha_0 + \beta_1 (\text{CAR*STI}) + \beta_2 (\text{NPF*STI}) + \beta_3 (\text{FDR*STI}) + \beta_4 (\text{BOPO*STI}) + e$$

Variables :

ROA : *Return on Asset* (Y)
CAR : *Capital Adequacy Ratio* (X1)
FDR : *Financing to Debt Ratio* (X2)
NPF : *Non-Performing Financing* (X3)
BOPO : *Cost-Efficient* (X5)
STI : Sistem Teknologi Informasi (Z)

3. Results and Discussion

a. Descriptive Statistics

The variable results showed that the value of ROA ranged from 0.45 to 2.48, with a mean of 0.9433 and 0.52473 standard deviations. The FDR score ranged from 29.24 to 102.39, with a mean of 66.57321 and 15.14664 standard deviation. BOPO had a minimum score of 61.77, a maximum of 119.40, a 88.6437 mean, and a standard deviation of 12.15625. The minimum value CAR was 0.48, maximum of 30.48, a mean of 8.3130, and the standard deviation of 8.21852. The NPF scored a minimum of 1.31, a maximum of 5.67, a mean of 3.2081, and a standard deviation of 1.01733.

b. The Test of Classical Assumption

1) The Test of Normality

The results of the normality test with Kolmogorov-Smirnov showed that the value of asymp value. sig. (2-tailed) was 0.200 greater than the 0.05 alpha (a) value; hence the regression residuals figure was normally distributed.

2) The Test of Multicollinearity

This study used Variance Inflation Factor (VIF) and Tolerance, a type of multicollinearity test. In the test, tolerance value was < 0.10 and VIF > 10, giving a multicollinearity result with a tolerance value > 0.10 and VIF to all variables < 10. The results showed the research model had no multicollinearity problem.

3) The Autocorrelative Test

The Autocorrelation test results with SPSS showed that the D.W. value is 1,773, between *du* = 1,730 and value 4 – *du* = 2,270. Therefore, there was no autocorrelation among residual values in the multiple linear regression data.

4) The Test of Heteroskedasity

In this test, variables significantly and positively affected each other with values > 0.05 (5%); hence no heteroscedasticity problem.

c. Multiple Regression Analysis

1) T Statistic Test

Table 1: The Statistics Test

Indonesian Islamic Bank	B	Beta	T-	Sig
Constant	2.347		5.441	0.000
FDR	.002	0.64	.899	0.372
BOPO/OEOI	-.017	-.405	-5.225	0.000
CAR	.046	0.626	8.863	0.000
NPF_TRNS	-.113	-.220	-3.093	0.003

Source: secondary data that has been processed, 2020

T Statistic Tests aimed to examine the impacts of FDR, BOPO, CAR, and NPF_TRANS on ROA and NPF_TRANS ROA_TRANS BTM in Central Java. The results showed that the coefficient value for the FDR BTM model in Central Java is 0.002, and t is 0.899, as illustrated in table 1. FDR had no effect on ROA with a significance level of 0.372. BOPO with a significance level of 0.000, the regression coefficient of -0.17, and the t value of -5.255 positively and significantly affected profitability. The CAR coefficient scored -0.017 with a t-value of -8.863 and a significance level of 0.000, implying it affects returns on assets. The NPF_TRANS coefficient scored -.113 with a t-value of -0.017 and a significance level of 0.003, implying it positively affects the bank's profits from its assets.

The regression equation was arranged arranged as follows

ROA = 2,347 + ,002 FDR - ,017 BOPO + ,046 CAR - ,113 NPF_TRANS + e

Table 2: The Statistics Test

Indonesian Islamic Bank	B	Beta	T-	Sig
Constant	1.642		5.062	.000
FDR	.026	.736	7.493	.000
BOPO/OEOI	.026	-.607	-8.269	.000
CAR	.035	.482	5.280	.000
NPF_TRNS	-.122	-.237	-2.789	.007
FDR_SYSTEM	-.028	-1.790	-7.789	.000
BOPO_SYSTEM	.018	1.544	6.566	.000
CAR_SYSTEM	-.006	-044	-.617	.450
NPF_SYSTEM	.073	.244	1.327	.190

Source: secondary data that has been processed, 2020

ROA = 1,642 - ,028 FDR_SYSTEM + ,018 BOPO_SYSTEM - ,006 CAR_SYSTEM + ,073 NPF_SYSTEM

FDR_SYSTEM variable, which moderates information technology obtained -0.028, the T value of -7.789, and Sig. 000, affecting profitability. The BOPO_SYSTEM with a coefficient value of 0.018, the T value of 6.566, and Sig. Level of 000 has a positive correlation with ROA. Furthermore, the CAR_SYSTEM with a coefficient of -0.006, a t of the value of -.617, and Sig. Level of .450 and NPF_SYSTEM coefficient that scored .073, a T value of 1.327 and Sig. Level of.190 negatively affected performance.

2) F Statistic Test

The F test showed that CAR, NPF, and BOPO positively affected the performance of BTM as illustrated below;

Table 3: The Statistics Test

Model	F	Sig.
BTM in Central Java	56.353	0.000

Source: secondary data that has been processed, 2020

Table 3 above shows BTM Central Java scored an F-number of 56.353 with a significance level of 0.000 in an F statistics test that used a 5 % significance level. The results also established that FDR, BOPO, CAR, NPF_TRAN, FDR_SYSTEM, BOPO_SYSTEM,

CAR_SYSTEM, and NPF_SYSTEM positively affect profitability.

3) Coefficient Determination Test

This test aimed to investigate the impacts of FDR, BOPO, CAR, and NPF_TRAN on ROA, and the results are presented in the table below.

Table 4: The Statistics Test

Model	Adjusted R Square	Std Error of the Estimate
BTM in Central Java	0.723	.27623

Table 4 above shows the coefficient of determination (adjusted R^2) value obtained in BTM Central Java is 0.723. These results show that the four independent variables have a 72.3% ability to explain their correlation with ROA and the other 27.7% explanations come from sources beyond the research model.

Discussion of FDR with a regression coefficient of .026, t value of 7.493, and a significance level of .000 notably affected the performance of BTM in Central Java.

A high FDR in this institution indicates stable financing due to more income in profit-sharing or margin. The sample size used in this study showed that the average BTM FDR declined in 2016 and increased in 2017 and 2018. The 2018 FDR increase affected the ROA of several BTMs in Central Java, showing that the institution efficiently manages investments.

Windriya (2019), Risalah et al. (2018), Primasari (2018), Wulandari & Shofawati, (2017), M. Khoirun (2019), Wardana & Widyarti (2015), Diknawati (2014) and Fitriyah & Sholikhin (2019) aslo supported this study, stating that FDR significantly affects ROA.

The BOPO or OEOI obtained a regression coefficient of -0.026 and t -8.269 and a significance level of 0.000, meaning this independent variable positively correlates with BTM performance. Generating high operating income with low operating costs indicates this Sharia Microfinance institution is efficient and competent. If the company fails to operational costs, expenditure will increase, negatively affecting performance. Islamic MFIs should strive to achieve a better BOPO or OEOI like the BTM in Central Java that increased its profitability.

Wahyudi et al. (2021),Windriya,(2019), Risalah et al.(2018), M. Khoirun(2019), Wardana & Widyarti (2015) supported this study, establishing that reducing operational costs and increasing operational income positively affect performance. However, Serby (2021) and Dicknawati (2014) stated that different BOPO results are negatively related to profitability.

CAR with a regression coefficient of 0.035, t value of 5.280, and the significance level 0,000 positively affected profitability of BTM in Central Java. High CAR shows that BTM can effectively handle credit risks because it is in good financial health.

Wahyudi et al. (2021), Risalah et al. (2018), Diknawati (2014), and M. Khoirun (2019) also stated that Capital Adequacy Ratio positively significantly *affects profitability. However,* Fitriyah & Sholikhin (2019) had a different opinion, stating that CAR is negatively correlated with ROA.

NPF_TRANS achieved a significance level of 0.007, affecting profitability because of better BOPO or OEOI recorded at BTM in Central Java. These results supported Wardana and Widyarti ET (2015), Wulandari R (2017), which established that Non-Performing Financing is positively correlated with performance. However, Fitriyah & Sholikhin (2019)

disagreed with these studies, stating that NPF is negatively correlated with ROA.

FDR_SYSTEM and BOPO_SYSTEM have a significance level of .000, implying they affect profitability when used with information technology systems. The CAR_SYSTEM with a regression coefficient of -.006, t value of 5.280, and a significance level of 0.540 and NPF_SYSTEM with a 0.073 coefficient, at-value of 1.327 and a significance level of 0.190 negatively affect performance.

The moderating variables, including FDR_SYSTEM and BOPO_SYSTEM, affect ROA BTM. The results are also in line with the results of research conducted Mulla et al. (2019), (Oyewole et al., 2013) and (Siddik et al., 2016) and supported this study, stating that adopting e-banking affected profitability.

4. Conclusion

This study showed that FDR, BOPO, CAR, NPF_TRAN, FDR_SYSTEM, BOPO_SYSTEM, CAR_SYSTEM, and NPF_SYSTEM are positively correlated with ROA. FDR, BOPO, and CAR had a significance level of .000 and NPF_TRANS 0.007, implying they affect profitability. FDR_SYSTEM and BOPO_SYSTEM also positively and significantly affect ROA except for the CAR_SYSTEM and NPF_SYSTEM. Future studies should utilize other variables, including Net Operating Margin (NOM), BTM age, and BTM ownership. This adjustment is expected to increase the R square with near-perfect results.

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