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EFFECTIVENESS OF ISLAMIC BANK EARNING: PARAMATIC STOCHASTIC FRONTIER APPROACHES

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Abstract: This study aimed to determine the level of Effectiveness of Islamic banks earning by the Stochastic Frontier Approach (SFA) approach and assess the effect of banking financial performance on Indonesian Islamic banks listed on IDX. The population in this studied are all sharia banking companies listed on the Indonesia Stock Exchange in the 2014-2019 period. Sampling used a purposive sampling technique and produced a sample of 60 Islamic banking companies. The data source used in this study is the annual secondary data. The results of the hypothesis are ROA has no significant effect on the effectiveness of company earnings, Finance Deposit to Ratio (FDR) is having a substantial impact on the efficacy of company earnings, Asset Quality is having a considerable effect on the effectiveness of company earnings, Effectiveness (BOPO) does not substantially affect on Earningability (ROA), Solvency Ratio (CAR) has no impact on the effectiveness of the company's earning, and Market Sensitivity (IRR) has no significant effect on earningability.
Keywords: Earning Effectiveness; Stochastic Frontier Approach; Islamic Bank; Financial Performance

Abstrak: Penelitian ini bertujuan untuk mengetahui Tingkat Efektivitas Pendapatan Bank Syariah dengan Pendekatan Stochastic Frontier Approach (SFA) dan menilai pengaruh kinerja keuangan perbankan pada bank syariah Indonesia yang terdaftar di BEI. Populasi dalam penelitian ini adalah seluruh perusahaan perbankan syariah yang terdaftar di Bursa Efek Indonesia periode 2014-2019. Pengambilan sampel menggunakan teknik purposive sampling dan menghasilkan sampel sebanyak 60 perusahaan perbankan syariah. Sumber data yang digunakan dalam penelitian ini adalah data sekunder tahunan. Hasil hipotesis adalah ROA berpengaruh tidak signifikan terhadap efektivitas laba perusahaan, Finance Deposit to Ratio (FDR) berpengaruh besar terhadap efektivitas laba perusahaan, Kualitas Aktiva berpengaruh cukup besar terhadap efektivitas laba perusahaan. , Efektivitas (BOPO) tidak berpengaruh secara substansial terhadap Earningability (ROA), Solvency Ratio (CAR) tidak berpengaruh signifikan terhadap efektivitas earning perusahaan, dan Market Sensitivity (IRR) tidak berpengaruh signifikan terhadap earningabilitas.
Kata Kunci: Efektivitas Penghasilan; Pendekatan Perbatasan Stochastic; Bank Islam; Kinerja keuangan

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INTRODUCTION

The condition of conventional banks in Indonesia at the end of 2019 asset turnover is dominated by the five largest banks, namely BRI, Mandiri, BCA, BNI and BTPN banks. This situation has an impact The slowing up of third-party fund collection has led to the growth of the assets of 13 top-tier banks, which control more than 70% of banking assets in the country, below the industry average (www.ojk.id). Whereas the Financial Services Authority (OJK) regulation through OJK circular number 14 / SEOJK.03 / 2016 (Cristea, 2016) formally treat the rules for providing incentives for efficient banks. The temptation is given in the form of a core capital allocation (AMI) discount for the requirements for the establishment of a branch office.

Banks on sharia-based principles have recently developed in Indonesia. But abroad, especially in Middle Eastern countries like Egypt or Pakistan, banks based on sharia principles have been developing rapidly for a long time. Islamic banking only makes investments that are halal according to Islamic rules. This is in accordance with Indonesian society, who are mostly Muslims. With the trend of the halal industry that is being favored by the Indonesian people, who are mostly Muslims, it has a positive impact on Islamic banking, which can encourage the development of Islamic banking. Although Islamic banks have not been able to integrate with the broader and global financial system because payments are still focused on the domestic economy, the Islamic banking industry has shown positive developments from year to year.

The trend of the halal industry that is being favoured by Indonesian people, which is predominantly Muslim, has a positive impact on Islamic banking, which can encourage the development of Islamic banking. This development was marked by the achievements made by Islamic banks, in 2014-2018 Islamic banks were able to record a Compounded Annual Growth Rate (CAGR) of 15%, higher than the national banking industry which registered a CAGR of 10%. Also, the total assets of sharia banking as of July 2019 have increased to Rp494.04 trillion or 5.87% of the total banking assets of Indonesia. Other developments that have been carried out by Islamic banks include developing information technology to strengthen digital banking to meet customer needs. To continue to expand its business, Islamic banks are oriented to earning or earning. Advantages obtained are not only for the benefit of the owner or founder but also very important in business development in Islamic

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banks. Higher earnings indicate that the Islamic bank is getting healthier. Also, the operation of bank funds uses third party funds that may pose a risk of being rushed, namely massive withdrawals of funds by customers, on this basis Islamic banks need to maintain the soundness of a bank (Hartono, 2013).

Signalling theory is where a company gives signals to users of financial statements such as companies, investors, and the public. According to (Brigham, 2018) signalling theory an action taken by a company to provide instructions for investors about how management views the company's prospects. The need for companies to ensure information is because of the information asymmetry between banks and outsiders. When the data is announced, and all market participants have received the news, market participants first interpret and analyze the information as a good signal or a wrong signal. And pecking order theory is a policy adopted by a company to find additional funds by selling its assets (Fahmi, 2011). According to (Frank & Goyal, 2003) The pecking order theory of capital structure is the most influential is the theory of corporate leverage, in the sense of the pecking order theory states that companies prefer internal funds over external. A earningable company will have a smaller debt because all of its domestic funds can meet the company's operational activities.

The efficiency of the performance of a bank or company in the Islamic view is a vehicle for the community to bring it to the implementation of the teachings of the Qur'an which is the principle of At-ta'awun (helping each other and working together in society for good). And the policy of letting Al-Ikhtinaz is to hold funds that are unemployed and not used for more useful activities. Then “(Widyaningrum & Septiarini, 2015) evaluation of earnings efficiency is essential to be carried out by a business entity, bank and company assessment not only on its performance but also on its soundness as well. Financial performance according to (Fahmi, 2012) Bank financial performance is a picture of the financial condition of a bank in a given period both regarding aspects of raising funds and channelling funds which are usually measured by indicators of capital adequacy, liquidity and earningability (Abdullah, 2014). Assess and measure the effectiveness of profit Bank can use The Stochastic Frontier Approach (SFA) approach originally came from two papers published almost simultaneously by two teams on two different continents (Broeck & Review, 1977), one month later. SFA is applied to measure bank efficiency by (Leong et al., 2003), conveying some of the advantages of SFA can be done through an output-oriented approach

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to measuring technical ability and an input-oriented approach to measuring efficiency cost. (Tahir & Haron, 2008) determine the input and output of banks can be categorized into two paths, namely the production approach and the function approach. Each organization has goals both general and specific goals, short term and long term, which will be realized by using a variety of existing resources or factors of production. Managers will not be able to achieve their goals optimally if the use of resources or factors of production is not carried out with the right process. Understanding Effectiveness according to (Yudhaningsih, 2011) namely, effectiveness is the ability to choose goals or the right equipment for the achievement of the goals set. Efficiency and effectiveness speak about the vision, mission and direction of the organization, and relate to focusing the energy of the organization in a particular direction And according to (Mulyono, 2000) Organizational effectiveness is an index of the results achieved against organizational goals.

Financial performance appraisal can be one way that management can meet its obligations to investors and achieve the goals set so that economic performance can continue to improve. Financial performance shows the weaknesses or strengths of the banking system. The better economic performance of a bank can increase public confidence or customers so that it can be said as a strength and vice versa. Bank financial performance can be seen in several aspects, namely, liquidity, asset quality, efficiency, solvency, and market sensitivity (P. T. Bank et al., 2015).

The financial performance of a company illustrates whether the strategy, implementation of the plan, and all banking activities can affect the number of earnings or earnings obtained. According to Fahmi (2011) the analysis can provide information to those who need it if the results of the study produce right conditions it can increase the trust of customers or the community and other parties concerned. Meanwhile, according to Merentek (2013) The level of bank health is the ability of a bank to carry out regular banking operations and be able to fulfil all obligations well in ways that are by applicable banking regulations. The level of bank health is assessed by a qualitative approach to various factors that influence the condition and development of banks, in this case, are capital, productive assets, management factors, earningability factors, liquidity factors and sensitivity factors. These five factors are known as CAMELS. This research is expected to provide practical benefits to be an evaluation material for Syariah banking managers to improve banking financial performance

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to be more productive and theoretical, namely to increase knowledge, self-development in scientific writing, finance, banking and banking production in Indonesia both conventional banks and sharia. As a contribution of scientific literature, especially in the field of financial management and other financial institutions, namely banking.The financial performance of a company illustrates whether the strategy, implementation of the plan, and all banking activities can affect the number of earnings or earnings obtained. According to Fahmi (2011) the analysis can provide information to those who need it if the results of the study produce right conditions it can increase the trust of customers or the community and other parties concerned. Meanwhile, according to (Merentek, 2013) The level of bank health is the ability of a bank to carry out regular banking operations and be able to fulfil all obligations well in ways that are by applicable banking regulations. The level of bank health is assessed by a qualitative approach to various factors that influence the condition and development of banks, in this case, are capital, productive assets, management factors, earningability factors, liquidity factors and sensitivity factors. These five factors are known as CAMELS.

The effect of Return On Asset (ROA) on earning effectiveness, the definition of effectiveness according to (Yudhaningsih, 2011), namely, Effectiveness is the ability to choose the right destination or equipment for the specified purpose. Therefore, the return on assets (ROA) analysis measures the company's ability to generate earnings by using the total assets (wealth) owned by the company after being invincible with the costs to finance these assets (Han et al., 2012). ROA conveys what results from the capital invested in assets. ROAs for public companies can differ substantially and will depend heavily on the industry.

H_1: Return on assets (ROA) has a positive effect on earnings effectiveness

The effect of Finance Deposit to Ratio (FDR) on earning effectiveness, the Finance to Deposit Ratio (FDR) is used to measure the composition of the amount of credit extended compared to the amount of public funds and capital used. Finance to Deposit Ratio (FDR) states how far the bank's ability to repay withdrawals made by depositors by controlling the financing provided as a source of liquidity (Munawir, 2002). If the Finance to Deposit Ratio (FDR) ratio is high, it means that bank liquidity is low because of the high amount of financing, but with high financing it will increase interest income so that the Earning Effectiveness is also high. According to (Nirmalasari, 2014), the higher the Finance to

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Deposit Ratio (FDR), the higher the total credit provided than third party funds (TPF), so that interest income increases than interest costs.

H2: Finance to Deposit Ratio (FDR) has a positive effect on Earning Effectiveness

The effect of the Effect of Asset Quality (NPF) on earnings effectiveness, non Performing Finance (NPF) shows the amount of non-performing financing from the total financing provided by the bank. Troubled financing can occur because the debtor cannot meet predetermined requirements, for example unable to pay off the loan. If problematic financing of Islamic banks is high, the bank's earning can be reduced because it is used to cover losses due to problematic financing so that bank earnings decrease. This statement is in accordance with the research of (Rofiqoh & Purwohandoko, 2014), namely the higher the Non-Performing Finance (NPF), the worse the quality of bank credit, which causes the number of non-performing loans to increase. In other words, when Non-Performing Finance (NPF) is high, the bank's retained earnings are also high so that it will cause bank revenues to fall and also have an impact on decreasing earning effectiveness.

H3: Non Performin Finance (NPF) has a negative effect on earnings effectiveness.

The effect of Efficiency (BOPO) on earnings effectiveness, operational Cost to Operating Income (BOPO) describes the income ability of a bank to cover bank operational costs. The main activity of banking is to collect funds from the public and distribute it in the form of financing, so that interest costs constitute the largest portion for the bank. if the BOPO ratio is high, it indicates that the bank's operating costs are higher than the bank's operating income so that the bank's earningability will decrease. This statement is in accordance with Romadloni's research (Romadloni, 2015), namely if BOPO has increased, there has been an increase in operating costs with a percentage greater than operating income. As a result, the effectiveness of bank earnings will decrease

H4: BOPO has a negative effect on earnings effectiveness

The Effect of Solvency Ratio (CAR) on earnings effectiveness, Capital Adequacy Ratio (CAR) is a ratio that reflects capital adequacy. Capital Adequacy Ratio (CAR) is used to measure the adequacy of capital owned by a bank to support assets that contain or generate risk. If the Capital Adequacy Ratio (CAR) is high, it indicates that the bank's capital adequacy is high so that the losses incurred by the bank can be absorbed by the bank's capital,

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so that the bank's earning will be high because it is not used to cover bank losses (Masdupi, 2012).

H$_5$: The solvency ratio (CAR) has a positive effect on earnings effectiveness

The Effect of Market Sensitivity (IRR) on earnings effectiveness, the Interest Rate Risk (IRR) ratio shows the ability of a bank to manage its assets and liabilities which are sensitive to changes in market interest rates. If there is an increase in interest rates, interest income increases than interest costs, so that bank earnings will increase, and vice versa if there is a decrease in interest rates, income will decrease and interest costs will increase, so that bank earnings will decrease. According to research (Romadloni, 2015) if interest rates increase, the increase in IRSA is greater than IRSL, which causes the increase in interest income to be greater than interest costs.

H$_6$: Market sensitivity (IRR) has a positive effect on earnings effectiveness.

METHOD

The type of this research is a quantitative research. The data used in this study are secondary data in the form of financial reports and annual reports of and annual reports of banking companies listed on PT. Bursa Efek Indonesia 2014-2019. The population in this study were all Islamic banking companies listed on the Indonesia Stock Exchange in the 2014-2019 period, from which the community was sampled using the purposive sampling technique. The criteria used in this study are:

Table 1. The criteria used Sampel and sampel

No	Kriteria Penambilan Sampel	Jumlah
1	Islamic Banking Companies Listed on the Indonesia Stock Exchange.	11
2	Islamic Banking Companies Listing during the 2014-2019 Period.	(1)
3	Total sampel Islamic Banking	10
	Total sampel periode 2014-2019	6 x 10 = 60

Data Analysis

Stochastic Frontier Analysis (SFA)

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Stochastic Frontier Approach (SFA) is a parametric approach that assumes the existence of two parts error term (Altunbas et al., 2001). In this approach, efficiency is considered to follow an asymmetrical distribution, usually half-normal (normal hals), whereas random symmetric distribution is standard symmetric (Berger & Humphrey, 2005). The earnings efficiency formula is:

$$\ln(\pi + \theta) = f(w, p, z, v) + \ln u\pi + \ln \varepsilon\pi$$

Data Quality Test For Multiple Linear Regression

Before a multiple linear regression statistical test is performed to prove the existing hypothesis, it must first be tested with the quality of the data with the classical assumption test (Ghozali, 2018). The multiple regression equation is set as follows:

$$Y = \alpha + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + e$$

Information :

Y = Effectiveness of Bank Earnings

α = Constant

b_1, b_2, b_3, b_4, b_5 = Partial Regression Coefficient

X_1 = Return on Asset (ROA)

X_2 = Financial Deposit to Ratio (FDR).

X_3 = Non Performing Finance (NPF)

X_4 = Bank Efficiency Ratio (BOPO),

X_5 = Capital Adequacy Ratio (CAR),

X_6 = Interest Rate Risk (IRR)

e = Standar Error

RESULTS

Islamic Bank Earnings Efficiency

The results of the Efficien Measurement test using the Stochastic Frontier Approach (SFA) method with production functions use the Stochastic Frontier Approach (SFA) 4.1 software, which is the mean efficiency = 0.3459 which means that on average Islamic banks listed on IDX have not been effective in managing earnings and revenues. According to (Connelly et al., 2011), the signalling theory from these results is a wrong signal for banking companies. In detail, the following is the value of the efficiency of Islamic bank earnings:

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Table 4. Earning Effectiveness of Islamic Banks

No	No	Nama Bank	2014	2015	2016	2017	2018	2019
1	1	Bank Mega Syariah	0.450	0.335	0.369	0.698	0.531	0.372
2	2	Bank Victoria Syariah	0.374	0.702	0.376	0.542	0.290	0.263
3	3	Bank BCA Syariah	0.266	0.281	0.317	0.265	0.189	0.189
4	4	Bank Jabar Banten Syariah	0.235	0.466	0.461	0.401	0.267	0.497
5	5	Bank BNI Syariah	0.234	0.266	0.266	0.251	0.497	0.220
6	6	Bank BRI Syariah	0.338	0.369	0.446	0.356	0.351	0.317
7	7	Bank Bukopin Syariah	0.411	0.280	0.373	0.127	0.782	0.351
8	8	Bank Panin Dubai Syariah	0.141	0.975	0.284	0.230	0.297	0.369
9	9	Bank Muamalat	0.372	0.353	0.316	0.228	0.409	0.297
10	10	Bank Syariah Mandiri	0.378	0.387	0.462	0.409	0.372	0.319

Source: Stochastik Frontier Approach

Multiple Linear Regression Analysis

Table 8. The Results of Multiple Linear Regression

		Unstandardized Coefficients		Standardized Coefficients
	Model	B	Std. Error	Beta
1	(Constant)	1.308	.635	
	x1	.000	.003	-.013
	x2	.049	.016	.533
	x3	-.013	.006	-.637
	x4	.002	.003	.076
	x5	-.056	.059	-.280
	x6	.157	.089	.242

From the results of the data can be equated:

$$Y = \alpha + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + e$$

$$Y = 1{,}308 + 0{,}00\ x_1 + 0{,}049x_2 - 0{,}013x_3 + 0{,}002x_4 - 0{,}056x_5 + 0{,}0157x_6 + e$$

Parameters (t-test)

Table 9. Significant Test of Individual Parameters

	Model	T	Sig.
1	(Constant)	2.059	.045
	x1	-.093	.926
	x2	2.984	.005
	x3	-2.056	.046
	x4	.522	.604
	x5	-.948	.348
	x6	1.766	.084

The Effect of Return on Assets (ROA) on the Effectiveness of Earnings

The Return on Asset (ROA) variable has a significance value of 0.926> 0.05 which means that H0 is accepted and H1 is rejected. These results indicate Return on Assets has no significant effect on earnings effectiveness. Although some previous studies show a

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considerable impact, researchers want to strengthen the results of (Han et al., 2012) which states Higher earning efficiency in unregistered banks comes from lower fund prices from their deposits. The results are not consistent with research showing that banks listed on the exchange are more efficient than banks that are not listed on the stock exchange. So researchers still enter ROA as a variable in the study.

Finance Deposit to Ratio (FDR) on earnings effectiveness

Variable Finance Deposit to Ratio (FDR) significance level of 0.005 <0.05, which means H0 is rejected, and H1 is accepted. These results indicate the Finance Deposit to Ratio (FDR) has a significant effect on the effectiveness of earnings. This identifies that the amount of funding provided is supported by good quality financing. Finance Deposit to Ratio (FDR) is a ratio that states how far the bank's ability to repay withdrawals of funds made by depositors by controlling the financing provided as a source of liquidity is in line with research (Riyadi, 2014). The results of this study indicate that the Financial Deposit to Ratio (FDR) significantly influences the earnings effectiveness variable. This means that the higher the Financial Deposit to Ratio (FDR) of an Islamic bank becomes a measure of the success of an Islamic bank to obtain high corporate earning effectiveness.

Effect of Asset Quality (NPF) on earnings effectiveness

Based on the t-test results obtained a significance level of 0.046 <0.05, which means that Non-Performing Finance (NPF) has a significant effect on the effectiveness of earnings in Islamic banks listed on the IDX. Non-Performing Finance (NPF) shows the amount of problem financing from the total funding provided by banks. The results of this study indicate that Non-Performing Finance (NPF) has a significant effect on the Effectiveness of Earnings. Conversely, a low Non-Performing Finance (NPF) value indicates the low level of problematic financing at Islamic banks, so that the chance of Islamic banks to obtain earnings from the funding will be high and the effectiveness of company earnings will also increase.

Effect of Efficiency (BOPO) on Earning Effectiveness

Based on the t-test results obtained a significance level of 0.604> 0.05 which means that BOPO does not have a significant effect on Earning Effectiveness in Islamic banking. BOPO is a ratio that can be used to measure operational costs and non-operational costs incurred by banks to obtain revenue. The results of this study indicate that the BOPO does not affect earnings effectiveness, this means the high or low BOPO resulting from an increase or

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decrease in operational costs of Islamic banks does not affect earning effectiveness. This is due to Islamic bank compliance in OJK circular number 14 / SEOJK.03 / 2016 regarding efficient bank incentives (Cristea, 2016).

Effect of Solvency Ratio (CAR) on Earning Effectiveness

The Capital Adequacy Ratio (CAR) variable has a significant level of 0.348> 0.05 which means that the Capital Adequate Ratio (CAR) is not meaningful to the effectiveness of earnings in Islamic banking. This means that the higher or lower Capital Adequate Ratio (CAR) does not significantly influence the Earning Effectiveness of Islamic banks. These results differ from the results (Han et al., 2012) the effect is significantly positive.

Capital Adequacy Ratio (CAR) is a ratio that reflects the capital adequacy of a bank. No effect on Capital Adequacy Ratio (CAR) on the effectiveness of earnings can be caused by Islamic banks not optimizing capital owned by Islamic banks. (Otoritas Jasa Keuangan Republik Indonesia, 2014) Money held by Islamic banks is not channelled as financing, and Islamic banks tend to invest their capital carefully so that the adequacy of wealth owned by Islamic banks remains at the limit set by Bank Indonesia at a minimum of 8%.

Effect of Market Sensitivity (IRR) on Earningability (ROA)

The influence of the Interest Rate Risk (IRR) variable with the Earning Effectiveness level of significance is 0.084> 0.05 which means that the Interest Rate Risk (IRR) has no significant effect on the Effectiveness of Earnings on Islamic banking listed on the Indonesia Stock Exchange in 2013-2018. Interest Rate Risk (IRR) is used to measure the ability of management to manage assets and liabilities that are sensitive to changes in interest rates. Even though Islamic banks do not recognize the existence of interest rates, Islamic banks cannot be separated from the life of external interest rates, according to (Ramadilli Mohd et al., 2008) because the market that is targeted by Islamic banks is not only customers who are loyal to Islamic banks. If the earning-sharing is smaller than the interest rate, and the margin is higher than the interest rate, the customer can switch to a conventional bank. Therefore, the Sharia Supervisory Board (DPS) in determining yields and margins is still within the maximum limit set by Bank Indonesia. The fixed margin value makes the earning in cheap financing, sure that the risk borne by changes in interest rates at Bank Indonesia is smaller than the earning and loss sharing financing. This means that changes in interest rates at Bank Indonesia do not affect the earnings derived by Islamic banks.

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CONCLUSIONS

The results of the Effectiveness Measurement test using the Stochastic Frontier Approach (SFA) method with production functions use the Stochastic Frontier Approach (SFA) 4.1, which is the low efficiency = 0.3459 which means that on average Islamic banks listed on IDX have not been effective in managing profits and income. The Return on Asset (ROA) variable has a significance level value of 0.926> 0.05 which means that H0 is accepted and H1 is rejected. These results indicate Return on Assets has no significant effect on earnings effectiveness. Finance Deposit to Ratio (FDR) variable has a significant impact on earnings effectiveness. Performing Finance (NPF) is having a substantial effect on earnings effectiveness. BOPO has no significant effect on profit effectiveness. And the Capital Adequacy Ratio (CAR) variable has a significant level of 0.348> 0.05 which means that (CAR) is not substantial to earnings effectiveness. While the influence of variable Interest Rate Risk (IRR) with Profit Effectiveness significance level of 0.084> 0.05 which means that Interest Rate Risk (IRR) does not have a significant effect on Profit Effectiveness.

The results of this study are expected to be a reference for investors in making decisions to invest in Islamic banking. Earnings effectiveness is one of the factors that can describe the success of banking in the implementation of banking operations. The higher the efficiency of profitability obtained, the more interested investors to invest. To increase profitability, bank managers must optimize the financial performance of Islamic banks consisting of variable Return on Assets (ROA), Finance Deposit to Ratio (FDR), Non-Performing Finance (NPF), Operational Costs to Operating Income (BOPO), Capital Adequate Ratio (CAR), Interest Rate Risk (IRR). That is because these variables can be taken into consideration in making the right investment decisions and profitable for investment.

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