

# Development Model of Syari'ah Financial Service Cooperatives with Data Envelopment Analysis Approach and Financial Performance, (The Study on Syari'ah Financial Service Cooperatives in West Sumatera)

**Yurniwati, Tafdil Husni, Rida Rahim, Desyetti**

**Abstract:** The aim of this study is to assess and analyze the efficiency and financial performance of Sharia Financial Services Cooperatives (KJKS) in West Sumatera province. This research was conducted at KJKS in Padang, Bukittinggi and Agam District. Sample selection method was done by using purposive sampling, and got sample of 104 KJKS. The data used consist of primary data and secondary data. Primary data were obtained from questionnaires filled by respondents. Secondary data is obtained from KJKS financial report. Method of measuring efficiency used is Data Envelopment Analysis (DEA). The method of analysis using descriptive analysis and hypothesis testing is by multiple regression equation. The results showed that KJKS efficiency using the assumption of constans return to scale (CRS) and return to scale variable (VRS) found efficient KJKS during 2013-2015 period of 13.75% and 86.25% inefficient KJKS. The result of hypothesis testing shows that efficiency has no effect on ROA, BOPO and FDR have significant effect to ROA.

**Index Term:** Data Envelopment Analysis, Financial Performance, Sharia Financial Services Cooperative

## I. BACKGROUND RESEARCH

Microfinance institutions are very important in improving micro enterprises in alleviating poverty, proving to be an effective tool to help the poor out of poverty [1][2][3]. Microfinance has great potential in developing MSME sector in particular and improving the general economic condition of the poor. For example, Grameen Bank in Bangladesh and BankcoSol in Bolivia (Morduch, 1999). In accordance with research Ramzan (1997); Roberts and Roberts (2003); Afrane (2003); Yurniwati and Rahim (2012) proves that capital injection to MSMEs has a positive impact on the increase in business turnover. The vision of microfinance institutions in Indonesia is to achieve a

healthy, robust and efficient financial institution system and help drive national economic growth and improve the economy of the poor. Microfinance institutions are more focused on providing finance for the poor who do not have

access to commercial banks, which aims to help and foster poor communities to establish businesses to increase their incomes.

Husni, Rahim (2017) found that the KJKS performance was significantly negative with traditional efficiency (Operational Cost per Operational Income), indicating that the higher the KJKS financing cost, the lower the KJKS profit will be. Sari and Saraswati's (2017) study that analyzed the performance of the banking industry in Indonesia for the period 2012-2014 found efficiency influencing return on assets (ROA). Farandy, Suwito, and Dabutar (2017) to measure the level of efficiency using the two-stage data envelopment analysis (DEA) method. The results show that the variable of ROA is affecting Islamic commercial bank efficiency. It is indicated that ROA that describes the higher level of bank profitability will produce a more efficient bank. Banks that have higher profit levels could potentially have a higher level of efficiency [4].

The motivation of the researcher is to evaluate the efficiency of KJKS with DEA (data development analysis) method and to evaluate the performance of KJKS in accordance with the target of micro finance institution, which is to strengthen the role of cooperatives in improving business competition condition and empowering UMKM. Research on microfinance institutions in poverty alleviation has been conducted in 2010-2012 with studies through micro credit nagari (KMN). The result of the research is the need for socialization and assistance in the channeling of nagari credit in order to achieve the target of community empowerment [5]. Since 2012, the Nagari Micro Finance Institution (LKMN) has changed to KJKS (Sharia Financial Services Cooperative) pursuant to Law No. 17 of 2012 article 87, in the Minister of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia No.91 / Kep / IV / KUKM / IX / 2004 concerning the Implementation of Sharia Financial Services Cooperative Business Activity (KJKS). KJKS as one of LKMS needs to be evaluated whether Sharia financial service cooperatives are efficient, how about their performance.

Financial sustainability can be demonstrated by KJKS independence and profitability, the level of payments and business success, as well as the benefits of the program for the community.

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**Yurniwati**, Andalas University, Indonesia,  
yurniwati.fekon.unand@gmail.com

**Tafdil Husni**, Andalas University, Indonesia

**Rida Rahim**, Andalas University, Indonesia

**Desyetti**, Andalas University, Indonesia

The sustainability of the credit program is an essential component of achieving the MFI's program objectives, namely, the profitability required to achieve self-sustainability, ie, MFIs that generate sustainably positive financial returns. Baitul Maal wat Tamwil (BMT) and KJKS (Shariah Financial Service Cooperatives) Islamic microfinance in West Sumatra is also potentially big in realizing a strong sector of UMKM. Overall, this study provides some important contributions to the literature on Sharia microfinance institutions. There are several indicators to measure KJKS performance such as efficiency with DEA (data envelopment Analysis) method, financial performance is ROA, BOPO and FDR. The result of research by using DEA to measure efficiency find more efficiency of KJKS means better performance of KJKS [6]. Research on the other hand, found that ROA has an effect on efficiency, but the result of this research is that efficiency has no effect on ROA.

## **II. THEORETICAL FOUNDATION AND PAST RESEARCH**

### **A. Efficiency**

Efficiency is a key concept in assessing financial institutions (Nigmonov, 2010) and one of the most popular performance parameters (Bank Indonesia, 2003). At the time of efficiency measurement, the bank is faced with the conditions of how to obtain an optimal level of output with existing input levels, or to obtain a minimum level of input with a certain level of output. With diidetifikasikannya allocation of inputs and outputs, can be analyzed further to see the causes of inefficiency [7].

Efficiency consists of two components: technical efficiency and allocative efficiency (Farell, 1957). Technical efficiency reflects the ability of the DMU to minimize the use of inputs to produce a certain amount of output, while the allocative efficiency reflects the DMU's ability to use inputs in optimal proportions, given each price and production technology. Coelli et all (199 also with total efficiency.

There are several methods of measuring the efficiency of banking that has been done so far [8], namely 1). Traditional Approach, using Index Number or ratio (BOPO); and 2). The Frontier Approach is based on the optimal behavior of the firm in order to maximize output or minimize costs, as a way of economic units to achieve goals. In approach Frontier Approach there are several approaches, namely 1). Deterministic Approach: often classified as Non-Parametric Approach, this approach uses Tekhnical Mathematic Programing, or popular with Data Envelopment Analysis (DEA); and 2). Stochastic Approach: This approach is classified as a parametric approach, using Econometric Frontier [9][10].

### **B. Data Envelopment Analysis (DEA)**

DEA is an efficiency measurement method that uses mathematical programming techniques. DEA measures the relative efficiency of a Decision Making Unit (DMU) pool in managing resources of the same type to produce output of the same type, where the functional relationship of input to output is unknown (Siswandi: 2004). DEA is used to measure efficiency, including health care, education, transportation, manufacturing, and banking. (Insukindro et al. 2000). DEA

was originally developed by Farell (1957) which measures the efficiency of a single technique input and one output to multi input and multi output. DEA was popularized by Charness, Cooper, and Rhodes (1978) with the assumption of Constan Return to Scale (CRS) and developed again by Bunker, Charness, and Cooper (1994) assuming Variable Return to Scale (VRS). Both methods are finally renowned as CCR and BCC models.

### **C. Data Envelopment Analysis Models.**

1) CCR model (Charness, Cooper, and Rhodes). The most basic DEA model is the CCR (Charness, Cooper, and Rhodes) model developed in 1978. In this model for each DMU (Decision Making Unit) measurement entity, a virtual input and output are generated  $V_i$  (input) and  $V_r$  (output) have value is unknown. So in DEA weights are generated from data and not specified from scratch. Each DMU will be directed to efficient use of inputs and will produce the best goal value by every DMU available. The CCR model which is the basic DEA model uses the assumption of Constan Return toScale which assumes that the addition of one unit of input should result in the addition of one unit of output. used is every DMU operate optimally. Efficiency in this type is also called Overall Efficiency ie technical efficiency and scale. The maximization above is a CCR or technical efficiency, so  $X_{ij}$  is the number of i-th inputs from the j-DMU and  $Y_{kj}$  is the number of k-type outputs from the j-j DMU. The efficiency rating is always less than or equal to 1. The DMU whose efficiency value is less than 1 means inefficient, while the DMU whose efficiency value equals 1 means the DMU is efficient.

2) Model BCC (Banker, Charness, and Chopper). The DEA BCC model known as the Variable Return to Scale (VRS) assumes that each addition of one input unit is insignificant followed by the addition of one unit of output, the addition of its output can be greater than one (Increasing Return to Scale), less than one (Decreasing Return to Scale) or still (Constant Return to Scale). A production process is said to be efficient if the use of a certain number of inputs can produce the optimal amount of output or to produce a certain amount of output with minimal input, this efficiency is referred to as technical efficiency (pure technical efficiency). This calculation model is often denoted as: DMU whose efficiency value is less than 1 means inefficiency whereas DMU whose value is equal to 1 means the DMU is efficient.

In addition to the above two models, several studies have developed a Technical Efficiency (TE) calculation from CRS. DEA is divided into two components, namely: the first component refers to the scale of efficiency, while the other components refer to the 'pure' TE. This can be done by calculating CRS and VRS against the same suatudata. If there is a difference between the two TE scores of the DMU, this indicates that the DMU has an efficiency scale. Measurement of efficiency in financial institutions, including nonprofits, has many approaches, among others: 1) Production Approach. This approach considers financial institutions as producers of savings and credit loans. Input is the amount of labor, fixed assets, and other materials. While the output is



the amount of deposits, loans, and related transactions. 2) Intermediation Approach.

In this approach, financial institutions are perceived as intermediaries in financial services, which transform and distribute financial assets from surplus units to deficit units. In this case, the inputs used are labor costs, capital, and interest payments on deposits. Outputs measured are credit loans and financial investments. 3) Asset Approach. This approach sees financial institutions as credit lending distributors whose output is measured by assets owned.

#### **D. Efficiency Measurement Approach with DEA**

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#### **E. Financial Performance (ROA)**

In this research, ROA is one indicator of performance. The reason this ratio is used as a performance measure is because it attributes the total net result achieved with the asset being sacrificed to obtain the net result. This ratio includes all the results obtained from operating, financing and investment activities [13][14][15].

#### **F. Financial Efficiency and Performance (ROA)**

Increased efficiency leads to increased bank revenues, reduced expenses, and will have an impact on the increase in the value of bank assets. Thus, the impact of bank efficiency is the growth of bank assets is positive. The more efficient the company's operations and the higher the efficiency of the company's asset utilization, the company's ability to deliver returns to all funders will be even higher as well. The measurement of the operating efficiency and efficiency of the asset utilization above is based on the company's financial ratios. Thus there is an association of efficiency with ROA and ROE (Subramanyam and Wild 2009). According Koetter et.all (2006), efficiency can improve the performance of financial institutions and have a positive and significant relationship with financial performance indicators. In his research, [16][17] used ROA and ROE as an indicator of financial performance and found that efficiency affects ROA and ROE. Hypothesis 1 is Efficiency effect on ROA

#### **G. BOPO and Financial Performance (ROA)**

In the banking industry in Indonesia, a measure of efficiency often used to provide an assessment of bank efficiency performance (Bank Indonesia Regulation Number 6/25 / PBI / 2004) is the ratio of BOPO. BOPO is an indicator to measure traditionally efficient but not able to describe the real condition of the bank, and the results are not easy to

interpret. While the frontier approach is used to assess the efficiency of a bank and better than the traditional accounting approach. According to Drake and Hall (2003), there are two kinds of frontier approaches used in assessing efficiency ie and the parametric approach (Stochastic Frontier Analysis or SFA) and nonparametric approaches (DataEnvelopment Analysis or DEA). Efficiency is one benchmark that can be used to see bank performance. The more efficient a bank then the performance will also be better. studies found that BOPO has a negative and significant effect on ROA. Hypothesis 2 is BOPO to ROA [11][12].

#### **H. FDR and Financial Performance (ROA)**

Financing Deposit Ratio (FDR) is a ratio that illustrates the comparison between loans issued with funds collected (Buchori (2009) .In the KJKS the concept of FRD can also be used to measure liquidity.The FDR ratio is expected to affect ROA, whereby the more liquid the company is, the higher the utilization of assets to generate profit Aka hypothesis 3 is FDR has pengaru against ROA.

### **III. RESEARCH METHODS**

This research is a quantitative descriptive research. The study was conducted on Sharia Financial Services Cooperative (KJKS) in West Sumatra. The research data is taken from the financial statements for the period of 2013-2015 selected as the sample. Sampling method based on purposive sampling method with criteria: (1) KJKS registered in the Office of Cooperatives and Industry in the city of Padang, Bukittinggi and Kabupaten Agam; (2) KJKS reporting the complete annual financial statements for the period 2013-2015; and (3) KJKS having the data required for this research. The sample of this study consisted of 95 KJKS in Padang City, 5 KJKS in Agam Regency and 2 KJKS in Bukittinggi City Based on the criteria, the sample of 104 KJKS comprised 95 KJKS in Padang City, 5 KJKS in Agam Regency and 2 KJKS in Bukittinggi city.

The data used are secondary data from the department of cooperatives and industrial city of Padang, Bukittinggi city and Agam district. Dependent variable in this research is KJKS performance measured by using Return on Assets (ROA) ratio. The ROA ratio is defined as the remaining business return divided by its total assets (Scott, 2000). The ROA ratios used in this study are in line with Scott's research, 2000 which is calculated by the formula of Business Returns divided by Total Assets.

Independent variables, a) Efficiency, measured using Data Envelopment Analysis b) Financing Deposit Ratio is measured by total financing per third party fund and c) BOPO measured by comparison of operational cost to operating income. FDR is measured by the ratio of the ratio between the amount of funds disbursed to the community (financing) with the amount of public funds and capital used. DEA calculations use input and output data. The input variables include Fixed Asset, Wage and Salary load, Adm and General Expenses, Total Expenses, and Total Capital. The output variables are Financing of Current Year, Operating Income (margin), and Operating Income / other. Financing



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Deposit Ratio variables are measured by total financing per third party fund.

First Analysis Method, calculate BOPO, ROA, FDR and efficiency. Efficiency is calculated by using Data Envelopment Analysis method treated with DEAP 2 DEA calculation in this research using production and intermediation approach. In DEA calculations, each Decision Making Unit (DMU) is the subject of research. DMU is also called the Decision Maker Unit in quantitative form that can be calculated its efficiency. In this study DMU consists of Sharia Financial Services Cooperative. A DMU is considered efficient if it has a score of 1. Inefficiency can be seen from a score of less than 1. Second, hypothesis testing includes Coefficient of Determination (Adjusted R Square) and Statistical Test t (Partial Test) to see the effect of independent variables ie Efficiency, BOPO and FDR against the dependent variable that is ROA.

## IV. RESEARCH RESULTS

### A. KJKS-BMT Financial Performance.

The result of the research shows the financial performance of KJKS as follows; (1) The average total capital of KJKS is 297,965,872 million rupiah, meaning that most of KJKS-BMT capital is still rolling. In 2010 the local government provided initial capital of Rp 300 million per kelurahan. On average, the current year financing amounted to 289,639,377 million rupiah, indicating that almost all capital owned by KJKS is channeled to productive communities. Average cost (wage, salary, administrative and general) amounted to 39,473,223 million rupiah with an average operating income of 49,409,572. Average operating income is greater than the average cost of KJKS. The financial performance assessed by using ROA, BOPO and FDR increases unless the FDR declines. The financial performance of ROA has increased from 3.92% in 2013 to 4.65% in 2015. The increase in ROA is still below the standard set by the ministerial decree of the State Small and Medium Enterprise Cooperation No. 129 / Kep / M / KUKM / 2002 dated 29 November 2002, where the ROA standard is said to be good if  $ROA > 10\%$ . ROA indicates the ability to use Assets. BOPO also showed a good performance of 82.87% in 2013 and declined to 62.32% in 2015. This means that the operational expenses compared to operating income is better because it dropped in 2015 to 62.32%. However, FDR has increased from 62.11% in 2013 to 136.53% in 2015, which means that the FDR rate has exceeded the government's required safe limit of 85% - 110%. This shows the lower bank liquidity ability, and if not managed properly will be fatal for the survival of micro financial institutions.

The calculation results from DER-CRSTE and VCRTSE software of CCR version with production and intermediation approach shows the development of KJKS efficiency of West Sumatra from 2013-2015, looks like picture 1 below.

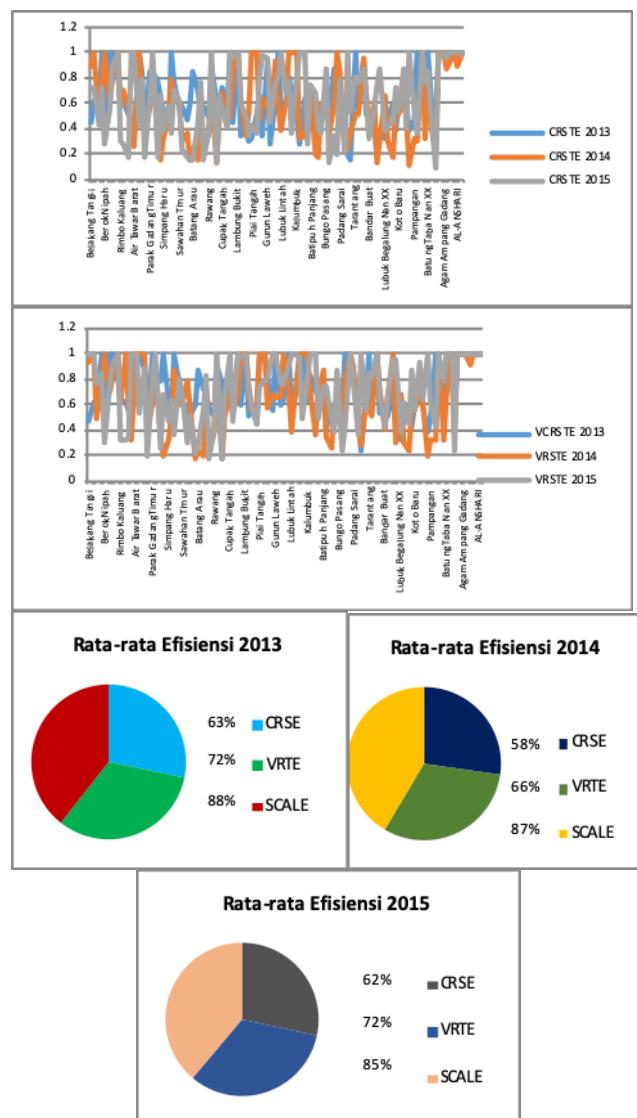


Fig. I. Average Efficiency of KJKS-BMT in 2013-2015

The average scale of efficiency in 2013 is 88% with the lowest value of 20.5% in KJKS Koto Pulai located in Koto Tangah sub-district in Padang city. The average efficiency scale of 2014, amounting to 86% with the lowest value of 13.8% at KJKS Batu Gadang in Kecamatan Lubuk Kilangan in Padang city. The efficiency calculations for 2013 and 2014 produce 14 or 13.74% efficient KJKS in West Sumatra, as much as 86.26% of KJKS operate inefficiently.

While in 2015 the average scale efficiency of 84% with the lowest value of 18.8% in KJKS Pasia nan tigo in Koto Tangah district in Padang city, efficiency calculation in 2015 which yield 16 or 16% efficient KJKS-BMT and 84% KJKS operate inefficiently during 2015. These results indicate that there is an efficient increase in KJKS, although the increase is not significant, this is because not all KJKS in West Sumatra, managed by professional management in managing microfinance institutions [18].

## B. KJKS Efficiency based on Return to Scale

The result of calculation with DEA method shows RTS value which most of KJKS is currently in economies of scale position that is condition where KJKS able to decrease cost per unit of its service product (cost efficiency) through business development and income increase. This is indicated by an indicator that as many as 47 KJKS (46.08 percent) are in the position of the IRS.

The results of this analysis have meaning that currently KJKS can still optimize the existing capital and reduce operational costs to improve efficiency. Efficient KJKS in West Sumatra between 2013-2015 based on input orientation with DEAP 2 method of BCC version of 13.74% among others; Kampong Jao, Purus, Kapalo Koto, Limau Manih, Tabing Banda Gadang, Korong Gadang, Tarantang, Taba Batik, KJKS BMT Agami Madani Nagari Tiku Utara, KJKS Agam Madani Nagari Ampang Gadang, KJKS BMT Agam Madani Nagari Balingka, KJKS Agam Feed Sinayan, KJKS AL-Anshari, KJKS Al-Hijrah. Inefficient KJKS in West Sumatera is 86.26%.

## C. Peer Analysis for Inefficient KJKS-BMT

One of the advantages of Data Envelopment Analysis (DEA) method is that it can show efficient KJKS reference for inefficient KJKS in order to increase its efficiency level. Efficient inefficient KJKS reference such as KJKS Olo in Padang Barat sub-district in Padang City, KJKS Batung Taba in Lubuk Begalung sub-district of Padang, KJKS Agam Madani Tiku Utara (Regency of Agam), KJKS Limau Manih (Kecamatan Pauh) and KJKS Kampung Jao (District of West Padang) in Padang City [19]. Similarly, other inefficient KJKS-BMTs can see efficient KJKS reference as a guide in managing and improving financial performance and efficiency of micro institutions..

## D. Hypothesis Testing Results

**Table I.** Summary of Hypothesis Testing Results

No	Explanation	2013	2014	2015
		<i>Adjusted R Square</i>		
1	B <sub>1</sub> EFDEA	-0,24	-0,05	0,09
2	B <sub>2</sub> BOPO	0,13	0,983	0,524
3	B <sub>3</sub> FDR	0,93	0,183	0,090
4	Eff, Bopo, FDR to ROA	0,154	0,986	0,509
<b>Parsial Test</b>				
1	Sig <sub>1</sub> EFDEA	0,972	0,378	0,244
2	Sig <sub>2</sub> BOPO	0,010	0,000	0,000
3	Sig <sub>3</sub> FDR	0,027	0,002	0,026
4	Sig <sub>4</sub>	0,023	0,000	0,000

**Source:** Statistical Processing Results (2017)

## E. Coefficient Determination Calculation Result

The calculation coefficient calculation results show the extent to which all independent variables, namely Efficiency, BOPO, and FDR in explaining the dependent variable, that is ROA. In 2013, the value of coefficient of determination (Adjusted R Square) of 0.154 or 15.4% which is still far from 100% indicates that the ability of Efficiency, BOPO, and FDR in explaining ROA is limited. While the rest of 0.846 or

84.6% are explained by other factors outside the regression model being analyzed. By 2014, the value of the coefficient of determination (Adjusted R Square) of 0.986 / 98.6% which is close to 100% indicates that Efficiency, BOPO, and FDR are able to provide all the information needed to predict the variation of ROA changes. The remaining 0.014 or 1.4% is explained by other factors outside the regression model being analyzed. By 2015, the value of the coefficient of determination (Adjusted R Square) of 0.509 or 50.9% which is close to 100% indicates that Efficiency, BOPO, and FDR are sufficient to provide all the information needed to predict the variation of ROA changes. While the rest of 0.491 / 49.1% is explained by other factors outside the research model.

## F. Partial Test Results (t)

Partial test results (t) Efficiency variable in 2013 has a significance value of 0.972 > 0.05. These results show that Efficiency has no effect on ROA. Year 2014 has a significance value of 0.378 > 0.05. These results show that Efficiency has no effect on ROA. Year 2015 has a significance value of 0.244 > 0.05. These results show that Efficiency has no effect on ROA. Partial testing from year 2013-2015 in every year shows the number of significance > 0,05 meaning Efficiency has no effect to ROA. The results of data processing showed beta value -0.24, -0.05, 0.026 with significance respectively that is 0.972, 0.378, 0.244. Testing in 2013 and 2014 shows a negative relationship between efficiency and ROA and has no effect. While testing of 2015 shows a positive relationship with a beta value of 0.026 but still has no effect. From the research conducted it can be concluded that efficiency has no contribution to ROA and no effect.

Partial test results (t) BOPO variable in 2013 has a significance value of 0.010 < 0.05. These results indicate that BOPO has a significant effect on ROA. 2014 and 2015 BOPO has a significance value of 0.000 < 0.05. These results indicate that BOPO has a significant effect on ROA. Partial testing from year 2013-2015 in each year shows the number of significance < 0.05 means BOPO significant effect on ROA. The results of data processing shows the value of beta successively 0.13, 0.983, 0.524 with the significance of 0.010, 0.000, 0.000 respectively. These figures show that any increase in BOPO of 1 will increase ROA by 0.13, 0.983, 0.524 assuming other independent variables are considered fixed. On the other hand it can also be seen the significance value < 0.05 indicates the influence of BOPO on ROA. When viewed in 2014 testing that shows a beta value of 0.983 and a 0.000 significance level explains that BOPO has a very high contribution to ROA.

For FDR variables, partial test results (t) for 2013 have a significance value of 0.027 < 0.05. These results indicate that FDR has a significant effect on ROA. Year 2014 has a significance value of 0.002 < 0.05. These results indicate that FDR has a significant effect on ROA. Year 2015 has a significance value of 0.026 < 0.05. These results indicate that FDR has a significant effect on ROA. Testing partially from year 2013-2015 in every year show sigifkansi < 0,05 mean FDR have significant effect to ROA. The results of data



processing showed beta value of 0.93, 0.183, 0.090 with significance respectively 0.027, 0.002, 0.026. These figures show that any increase in FDR of 1 will increase ROA by 0.93, 0.183, 0.090 assuming other independent variables are considered fixed. On the other hand can also be seen significance value <0.05 indicates the influence of FDR on ROA. When viewed in 2013 testing that shows a beta value of 0.93 and a significance level of 0.027 explains that the financing illustrated through FDR has a very high contribution to KJKS ROA. This means that the greater the financing ratio (FDR) of KJKS will lead to increased profitability.

Conversely, the lower the financing ratio (FDR), the profitability potential will decrease further. The FDR value indicates the effectiveness of KJKS in distributing the financing, if the FDR value indicates the percentage is too high or too low then the cooperative is considered not effective in collecting and channeling the funds to the customer, thus affecting the profit earned.

## V. CONCLUSIONS AND SUGGESTIONS

### A. Conclusions

- a. KJKS financial performance; ROA increased from 3.92% in 2013 to 4.65% in 2015, ROE increased from 4.43% in 2013 to 5.73% in 2015. BOPO also showed good performance of 82.87% in 2013 and year 2015 decreased to 62.32%. However, FDR has increased from 62.11% in 2013 to 136.53% in 2015, which means that the FDR level has exceeded the government's required safe limit of 85% - 110%.
- b. The value of efficiency using the assumption of constant return to scale (CRS) and return to scale (VRS) produces an efficient average KJKS period 2013-2015 of 13.75% and 86.25% inefficient KJKS.
- c. The production and intermediation approach provides an efficient KJKS reference for reference to inefficient KJKS. KJKS which can be used as reference is KJKS Batung Taba in Lubuk Begalung sub-district, Limau Manih in Pauh sub-district, Jao village in Padang Barat sub-district, West Tawar Barat in North Padang sub-district, Kapalo Koto in Pauh and KJKS Agam Madani Tiku Utara sub-district in Agam District.
- d. The calculation coefficient calculation results show the extent to which all independent variables, namely Efficiency, BOPO, and FDR in explaining the dependent variable, that is ROA. By 2014, the value of the coefficient of determination (Adjusted R Square) of 0.986 / 98.6% close to 1 indicates that Efficiency, BOPO, and FDR are able to provide all the information needed to predict the variation of ROA changes. While the balance of 0.014 / 1.4% was explained by other factors outside the regression model that was analyzed.
- e. The result of partial test (t) from 2013-2015 shows that Efficiency variable has no effect on ROA, BOPO variable has significant effect to ROA, and FDR variable has significant effect to ROA.

### B. Suggestions

Suggestion Based on the results of analysis in this study, the suggestions that can be asked in this study are:

1. Financing for inefficient KJKS to match the target of the calculation result using Data Envelopment Analysis (DEA) method so that its operational condition is more efficient.

2. The efficiency calculation should be conducted periodically to evaluate and monitor KJKS conditions in West Sumatra, so that the cooperative office, local government, kelurahan can megawasi and manage the inefficient KJKS-BMT.

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