



## Research Article

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Received: 9 May 2021 / Accepted: 5 August 2021 / Published: 5 November 2021

# Measurement and Comparison of Efficiency of Saving and Loan Cooperatives in Jakarta, Indonesia, through the Stochastic Frontier Analysis

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DOI: <https://doi.org/10.36941/jicd-2021-0014>

## Abstract

*Savings and loan cooperatives play an important role in the Indonesian economy as they also contribute to providing capital in the local market. This study examines the efficiency of savings and loan cooperatives in terms of number of members, total capital and operating costs and their effects on profits, total assets, disbursed loans and debt repayments. Two types of savings and loan cooperatives studied are savings and loan cooperatives owned by government employees and savings and loan cooperatives owned by the general public (community owned). The efficiency of these two types of cooperatives is studied separately and comparatively using the parametric Stochastic Frontier Analysis (SFA) method. and the research involved a total of 22 cooperatives from five areas in Jakarta. The results of the study used the SFA method and found that the average efficiency of community-owned cooperatives was greater than cooperatives owned by government employees.*

**Keywords:** Cooperatives, Saving, Loan, Efficiency, Jakarta, SFA

## 1. Introduction

Cooperatives in Indonesia aim to advance the welfare of cooperative members and develop the economy of the people and state of Indonesia in order to create an advanced, just, and prosperous society. In addition, cooperatives also play a role in creating and developing the country's economy with joint efforts based on kinship and economic democracy (Partomo, 2013)

This study focuses on savings and loans cooperatives in Jakarta, Indonesia. In general, savings and loans cooperatives have the same goals and characteristics as other financial organizations such as the People's Loan Bank (BPR) and conventional banks. Savings and loans cooperatives also have a main goal that must be achieved, namely to provide continuous service to their members in an effort to foster society. Savings and loans cooperatives aim to improve community welfare by providing loans to members and non-members of society. Therefore, the existence of a loan is expected to help the lending industry to develop so that it can create jobs that will reduce unemployment and poverty.

According to Reksomadipuro (2010) the problems faced by savings and loan cooperatives are problems from outside and within the cooperative itself. One of the obstacles from outside the cooperative is increased competition with other business entities while one of the internal problems of the cooperative is that the cooperative members are still not active in expanding the cooperative although they still use the cooperative to get a source of debt.

Savings and loans cooperatives are part of a financial institution whose operations are very similar to the banking system. It also has a sizeable contribution to the Indonesian economy. The rapid development of the savings and loan cooperative shows an encouraging indication.

An organization needs resources in carrying out every activity to achieve its goals. One way to find out whether an organization has carried out its operational activities in accordance with predetermined goals and in accordance with its objectives is to know the company's performance. This can be proven by the use and management of organizational resources. Financial reports as a source of company performance information must reflect the actual state of the organization within a certain period. This is because the savings and loans cooperative has the trust of its members as consumers and owners to feel safe and get good service as expected by its members and other communities. Savings and loans cooperatives must be able to prove their performance through the services provided. In addition, the savings and loans cooperative is a forum between members as owners, sources of funds and users of funds that have a strategic function in advancing the economic growth of the Indonesian people. This strategic role causes the continuity of the company to be maintained in order to function properly. Therefore, the performance of the savings and loans cooperative needs to be considered (Mulyono, 2012).

The financial performance of the savings and loans cooperative is the concern of all related parties such as owners, the community and the government. Therefore, savings and loans cooperatives are very important to apply the principle of vigilance in financial control and risk management. Thus, an important aspect of measuring financial performance is through the efficiency of financial management in generating cooperative profits.

If there is a rapid change in the financial system in the savings and loan cooperative, an important step that needs to be taken is to identify the efficiency of operating costs and income so that the savings and loans cooperative can obtain optimal profits, more loan funds and better service quality. Inefficiency will become an obstacle in fierce competition, especially between savings and loans cooperatives and Microfinance Institutions (MFIs) such as ACA, ACA, BMT and others, therefore in-depth analysis is very important to measure and evaluate efficiency in savings and loans cooperatives (Mulyono, 2012).

Efficiency is a performance parameter that is popularly used to answer various difficulties in calculating performance. savings and loans cooperatives are financial organizations that have risks and cooperatives must be able to minimize the level of risk. Therefore, savings and loans cooperatives need to act rationally in overcoming the problem of risk management efficiency (Hendar, 2010).

Savings and loans cooperatives are part of the financial industry in Indonesia which has a different role and operating system from other financial institutions. Savings and loans cooperatives are responsible for ensuring that funds from cooperative members as consumers and owners are channeled carefully, on target and channel funds efficiently. Therefore, the efficiency of the Savings and Loans Cooperative is an important indicator for analyzing the efficiency of financial policies that are used to produce maximum output with available inputs to achieve predetermined goals.

Nasution, et.al. (2008) explains that the performance of a cooperative will be successful if there are control tools or quality indicators from the cooperative, one of which is by knowing its efficiency. Evaluation of cooperative efficiency is very important because efficiency is a reflection of the cooperative's performance which includes profit, loan amount, total assets and debt repayment, as well as a factor that must be considered in order to act in minimizing the level of risk in its operating activities.

There are several aspects in assessing the level of performance and welfare of the savings and loans cooperative, one of which is the efficiency aspect. To find out and evaluate the performance of cooperatives in the process of achieving their goals, it is necessary to have a standard for measuring the performance of the cooperative itself. Annual financial reports can provide information related to the financial situation and results achieved by the cooperative. In the financial statements, there are several things that can be used to evaluate performance such as profit and loss reports, appraisals, lending and repayments in the context of performance evaluation. Guidelines for assessing the performance level of cooperatives are expected to increase public

confidence in cooperative management so that they can increase the income of its members.

Efficiency is the ratio between output and input, the ability to obtain maximum output with minimum input in a size suitable for the financial industry. Basically a cooperative as an organization is no different from any other form of business. For cooperatives, the level of efficiency must also be seen in line with the level of effectiveness because the high cost of services for members is offset by the benefits of getting better service. As an economic institution, the cooperative will experience a growth process, then the cooperative will grow bigger. At this stage of development, the problem of efficiency should not be taken lightly because according to the history of the development of cooperatives in the world of efficiency, it is very influential in determining its development.

The concept of efficiency comes from the concept of microeconomics, namely consumer and producer theory. Consumer theory tries to maximize utility or satisfaction while manufacturer theory tries to maximize profits or minimize costs. In producer theory, there is a frontier production line that describes the relationship between the input and output of the production process and a production boundary that represents the maximum output from the use of each input. This is a technology used by a business or industry (Ascarya, et.al., 2009).

## **2. Methodology**

The data source in this research is secondary data. This secondary data is obtained from the financial statements of the savings and loans cooperative in Jakarta from 2008 to 2013. The sample cooperative to be studied is the savings and loans cooperative. This is due to several main factors. First, there are many savings and loans cooperatives in urban and rural areas. Thus it can represent a cooperative study at both locations. Second, the savings and loans cooperative is very much needed because it helps people get the business capital they need. Third, savings and loans cooperatives in general have a better and more organized management system, especially in terms of financial reporting compared to other types of cooperatives. Meanwhile, the fourth factor was that savings and loans cooperatives received more attention from the government, especially in providing business capital assistance.

The number of samples used is twenty-two (22) cooperatives scattered throughout Jakarta, consisting of eleven (11) civil servant (government employees) savings and loan cooperatives and eleven (11) community-owned savings and loans cooperatives. The number of sample selection studied was based on the stipulated areas that each selected savings and loan cooperative was complete in accordance with the documentation requirements set by the government such as a copy of the Cooperative Establishment Law, Cooperative Establishment Meeting Report, 2 sets of Annual Financial Reports. is regulated to members and the head office of government

cooperatives and has a list of attendance at the cooperative establishment council.

The sample of savings and loans cooperatives is taken indiscriminately based on the information provided by the Jakarta Cooperative Head Office by providing a license to obtain the required data. The cooperatives chosen for this study are the cooperatives that have the best quality of all cooperatives in Jakarta. Table 1 shows the list of savings and loans cooperatives used as a sample.

**Table 1:** Sample Data on Savings and Loans Cooperatives in the Jakarta area

No.	Cooperative name	Location	Cooperative owner
1.	Koperasi Pegawai Rumah Sakit Jiwa, Dr. Suharto Heerjan	West Jakarta	civil servant savings and loan cooperatives
2.	Koperasi Pegawai Rumah Sakit Pelni	West Jakarta	civil servant savings and loan cooperatives
3.	Koperasi Primier Mandiri Sejahtera	West Jakarta	civil servant savings and loan cooperatives
4.	Koperasi Perum Peruri	South Jakarta	civil servant savings and loan cooperatives
5.	Koperasi Pegawai Departemen Agama Jakarta Selatan	South Jakarta	civil servant savings and loan cooperatives
6.	Koperasi Dinas Kebersihan	East Jakarta	civil servant savings and loan cooperatives
7.	Koperasi Sekjen Kementerian Pendidikan Dan Kebudayaan	Central Jakarta	civil servant savings and loan cooperatives
8.	Koperasi Kementerian Agama RI	Central Jakarta	civil servant savings and loan cooperatives
9.	Koperasi Primkopal Kolinlamil	North Jakarta	civil servant savings and loan cooperatives
10.	Koperasi Guru Dan Karyawan SMA 45	North Jakarta	civil servant savings and loan cooperatives
11.	Koperasi Kawasan Berikat Nusantara	North Jakarta	civil servant savings and loan cooperatives
12.	Koperasi Sumber Jaya	North Jakarta	community-owned Savings and Loans Cooperatives
13.	Koperasi Ksp Kodanoa	West Jakarta	community-owned Savings and Loans Cooperatives
14.	Koperasi Sejati Mulya	South Jakarta	community-owned Savings and Loans Cooperatives
15.	Koperasi Sehati	South Jakarta	community-owned Savings and Loans Cooperatives
16.	Koperasi Rawa Badung	East Jakarta	community-owned Savings and Loans Cooperatives
17.	Koperasi Wira Karya Jaya	East Jakarta	community-owned Savings and Loans Cooperatives
18.	Koperasi Ceger	East Jakarta	community-owned Savings and Loans Cooperatives
19.	Koperasi Tunas Jaya	Central Jakarta	community-owned Savings and Loans Cooperatives
20.	Koperasi Kesejahteraan Kaum Ibu	Central Jakarta	community-owned Savings and Loans Cooperatives
21.	Koperasi Kemauan Bersama	Central Jakarta	community-owned Savings and Loans Cooperatives
22.	Koperasi Makmur	East Jakarta	community-owned Savings and Loans Cooperatives

Savings and loan Cooperative research using the following variables (in Table 2.).

**Table 2:** Variables from Savings and Loan Cooperatives

<b>Input Variable</b>	<b>Definition</b>
Cooperative members	Members who have registered and meet the requirements as cooperative members, namely having paid the principal and obligatory contributions. In this study, the active members pay dues.
Capital	Money that is used to do business or run a company. Cooperative capital comes from cooperative members and outsiders, such as state-owned banks. Includes the amount of money lent to its members.
Operating Costs	Direct costs related to the operations of a cooperative company, including fixed costs and variable costs.
<b>Output Variable</b>	<b>Definition</b>
Profit	A surplus of total income compared to total operating costs or surplus income over total costs in the process of producing goods or services. In this study, the net profit (tax deductible profit).
Assets	Assets (economic resources) owned by a commercial company that can be clearly measured using units of money. The data studied is total assets.
Loans	Costs incurred to support investments that are planned, managed by yourself or others. Loans are granted to members and non-members.
Payback for debt	When a customer makes installment payments on a loan taken in an amount and time specified for the customer. Repayment of this debt together with the interest rate charged.

The theoretical or empirical evaluation of organizational performance is dominated by the use of the frontier method. In general, this method is divided into parametric and non-parametric. This method also has similar characteristics in applying relative efficiency as a measure of performance. The efficiency of the Decision Maker Unit (DMU) is defined as the ability to produce maximum output from minimum input, depending on resource constraints and the operating environment (Banker, et.al., 1984). The method with the parametric approach uses the Stochastic Frontier Analysis (SFA) approach while the non-parametric approach uses the Data Envelopment Analysis (DEA) approach.

The SFA approach assumes a production function used to map input and output relationships and calculate economic efficiency, which in turn consists of Pure Engineer Efficiency (PTE) and Allocative Efficiency (AE) (Fried, et.al., 1993). The strength of this approach is that it can control for stochastic errors in the econometric estimates. According to Greene (1993), in general, the frontier production function can be described as an extension of the regression method based on microeconomics. The production function can be achieved with maximum output with minimal input use. Different approaches have been developed for measuring efficiency in econometric means (Farrel, 1957). Frontier parameter analysis was discovered by Farrel (1957). The frontier production function was first developed by Aigner et al. (1977) and Meeusen and Van den Broek (1977). This function describes the maximum output generated for the number of inputs available to the financial institution. Greene (1993) explains that with the frontier production method it is possible to predict the relative efficiency of a particular group or company obtained from the relationship between production and the potential production being assessed. The Stochastic Frontier method assumes that the output is limited by a stochastic function called the Stochastic Production Frontier.

Stochastic Production Frontier is a frontier that describes the maximum output that can be generated from the input factor where the actual output will be right on the border when the input factor is used effectively. If not, the large output will be in the frontier, where the greater the intermediate, the greater the difference between the frontier and the actual value, which means that the input factor is less effective.

An important feature of the Stochastic Production Frontier method for estimating efficiency techniques is the effect of separating exogenous variables on output with the contribution of variations in the form of efficiency techniques. In other words, the use of this method can identify a production process without ignoring method errors. This may be due to the error term in this method which consists of two raw errors which are both normally distributed as follows.

First, a symmetrical component that allows random variations of the border between observations and captures the effects of measurement error, random shock and so on. Second, one storage component that is considered to be independent and similar to the distribution most often assumed to be half storage, independent of one another, and normal and maximum specific distribution and input.

SFA analysis was introduced by Meeusen and Vanden Broeck (1997) and Aigner et al. (1977). This SFA is used to measure the efficiency of financial institutions with several advantages, namely involving the term disturbance that represents disturbances, measurement errors and exogenous shocks that are out of control, environmental variables, enabling hypothesis testing using statistics, easier identification of outliers, cost of limit and distance functions. which can be used to measure efficiency measures that have multiple outputs. This method is used to calculate the value of efficiency by combining input and output variables. Input variables used as independent variables are members, capital, operating costs, assets, loan amounts and debt repayments.

The output variable used as the dependent variable is profit. According to Greene (1993), the frontier production method is possible to predict the relative efficiency of a particular group or company obtained from the relationship between production and the potential production being assessed. The Stochastic Frontier method assumes that the output is limited by a stochastic function called the Stochastic Production Frontier. Stochastic Production Frontier is a frontier that describes the maximum output that can be generated from these input factors. The output of financial institutions is profit.

The method for measuring profit efficiency is as follows:

$$\begin{aligned} \ln \pi = & \alpha + \sum_{j=1}^3 \beta_j \ln y_j + \sum_{k=1}^3 \gamma_k \ln w_k + \frac{1}{2} \sum_{j=1}^3 \sum_{k=1}^3 \beta_{jk} \ln y_j \ln y_k \\ & + \frac{1}{2} \sum_{k=1}^3 \sum_{j=1}^3 \gamma_{kj} \ln w_k \ln w_j + \sum_{j=1}^3 \sum_{k=1}^3 \delta_{jk} \ln y_j \ln w_k + \mu_{\pi} + v_{\pi} \end{aligned} \quad (1)$$

where  $\pi$  = profit,  $j = 1, \dots, 3$  output variables (1. assets, 2. loans and 3. debt repayments) and  $k = 1, \dots, 3$  input variables (1. capital, 2. total boarding house and 3. total experts);  $y_j$  = number of outputs  $j$ ;  $w_k$  = input quantity and  $\mu_{\pi} + v_{\pi}$  is the random error;  $\mu_{\pi}$  is representing the inefficiency of profit and  $v_{\pi}$  is representing the random

impression of profit.

According to Schmidt & Sickles (1984), developed the Stochastics Frontier Production Function method with panel data. To overcome the assumption that the company's influence is time-invariant, but the advantages of panel data are still obtained and will replace the company's influence with flexible time-function parameters and varying parameters between companies.

This method was discovered by Aigner et al. (1977) and contributed to econometric methods for production and estimates for the technical competence of firms. Schmidt & Sickles (1984) created the Stochastics Frontier Production Function method with the following data panels:  $Y_{it} = \alpha + X_{it}\beta + \varepsilon_{it}$  (2)

where  $Y_{it}$  is the output for  $t$ -th observation ( $t = 1, 2, 3, \dots, t$  for Savings and Loans Cooperative  $i$  ( $i = 1, 2, 3, \dots, n$ );  $X_{it}$  is a vector ( $1 \times k$ ), the value of the known input function associated with the set with  $i$ -th is attached to the  $t$ -th observation  $\beta$  is a vector ( $k \times 1$ ) as an unknown parameter to be budgeted;  $\varepsilon_{it}$  is assumed to be random error and is related to the production inefficiency technique.

### 3. Result and Discussion

This data analysis technique calculates the efficiency value of each savings and loan cooperative owned by government employees and community owned in Jakarta. This study calculates the efficiency value using the Stochastic Frontier Analysis (SFA) method. This method is used to assess the profit efficiency of the savings and loan cooperative. In this analysis, profit efficiency functions as the dependent variable and member, capital, operating costs and assets, credit amount (loan amount), debt repayment also functions as an independent variable. The results of calculations using the SFA method are as follows (in Table 3).

**Table 3:** Profit Efficiency of Government Employee Loan Cooperatives (KK) with the SFA Method.

Code	Cooperative Name	Efficiency Score (%)
KK01	Koperasi R S Jiwa, Dr. Suharto Heerjan	94.05
KK02	Koperasi Pegawai Rumah Sakit Pelni	65.06
KK03	Koperasi Premier Mandiri Sejahtera	74.25
KK04	Koperasi Perum Peruri	84.32
KK05	Koperasi Departemen Agama Jakarta Selatan	86.71
KK06	Koperasi Ibu pejabat Kebersihan	70.52
KK07	Koperasi Sekjen Pendidikan Dan Kebudayaan	99.62
KK08	Koperasi Kementerian Agama RI	76.32
KK09	Koperasi Primkopal Kolinlamil	61.22
KK10	Koperasi Guru Dan Karyawan SMA 45	98.56
KK11	Koperasi Kawasan Berikat Nusantara	64.89
	<b>Total</b>	<b>875.42</b>
	<b>Mean</b>	<b>79.58</b>

Based on Table 3. above, the value of profit efficiency for savings and loans cooperatives whose efficiency values are 90 percent - 100 percent of 3 cooperatives, namely Dr. Mental Hospital. Suharto Heerjan (KK01) of 0.9405 (94.05 percent), the Cooperative of the Secretary General of Education and Culture by 0.9962 (99.62 percent), the Cooperative for Teachers and Senior High School Employees by 0.9856 (98.56 percent) and the cooperative this is included in the efficient category. This efficiency is the result of all variables, namely the number of members, total capital, total operating costs, total assets, total credit, debt repayment which has a competency function that has a positive and significant effect on profit efficiency. Furthermore, in the savings and loans cooperative which has an efficiency value of 70 percent - 89 percent, the value is quite high and this cooperative category is not efficient, as many as 5 cooperatives, namely Primier Mandiri Sejahtera Cooperative, the efficiency value is 0.7425 (74.25 percent), the efficiency value of the Perum Peruri Cooperative is 0, 8432 (84.32 percent), the efficiency value of the Cooperative Office of Religion for South Jakarta was 0.8671 (86.71 percent), the efficiency value for the Headquarters Hygiene Cooperative was 0.7052 (70.52 percent), and the efficiency value for the Cooperative of the Ministry of Religion of the Republic of Indonesia was 0, 7632 (76.32 percent), this efficiency is the result of all variables, namely the number of members, total capital, total operating costs, total assets, total credit, debt payments which have an efficiency function that has a positive and significant effect on profit efficiency. Furthermore, in the savings and loans cooperative which has an efficiency value of less than 70 percent, the low efficiency value in the cooperative category is not efficient, as many as 3 cooperatives, namely the Pelni Hospital Officer Cooperative, the efficiency value is 0.6506 (65.06 percent), the efficiency value of the Primkopal Kolinlamil Cooperative is 0, 6122 (61.22 percent) and the efficiency value of the Nusantara Bonded Zone Cooperative of 0.6489 (64.89 percent), this efficiency value is from the contribution of independent variables, namely the number of members, total capital, operational costs, total assets, total credit and debt repayment. shows that all variables have an influential efficiency function. positive and significant impact on profit efficiency. Based on Table 6., the results of the analysis state that based on calculations using the SFA method, the average value of the efficiency of the savings and loan cooperatives from 11 cooperatives owned by government employees is 0.7858 (79.58 percent), it can be concluded that the cooperatives owned by government employees in Jakarta are not categorized as efficient.

**Table 4:** Results of the Coefficient Test for Cooperative Savings and Loans owned by Government Employees

Cooperative	Variable					
	Member	Capital	Cost	Asset	Loan	Payback
RSJ. Dr. Suharto Heerjan	0.6987	0.0321	0.0072	0.1814	0.1418	0.1046
Rumah Sakit Pelni	0.2449	0.2805	0.5333	0.9296	0.1139	0.1567

Cooperative	Variable					
	Member	Capital	Cost	Asset	Loan	Payback
Primer Mandiri sejahtera	0.1241	0.3512	0.2441	0.1725	0.7459	0.0085
Perum Peruri	0.0682	0.1925	0.1825	0.4251	0.0524	0.7213
Departemen Agama Jakarta Selatan	0.6887	0.0322	0.0462	0.1804	0.1417	0.1045
Dinas kebersihan	0.2448	0.2815	0.5332	0.9286	0.1138	0.1568
Sekjen Pendidikan dan kebudayaan	0.1242	0.3513	0.2451	0.1735	0.7458	0.0184
Kementerian Agama RI	0.0483	0.1924	0.1824	0.4252	0.0534	0.7212
Primkopal Kolinlamil	0.6876	0.0332	0.0681	0.1825	0.1429	0.1057
Guru dan Karyawan SMA 45	0.2427	0.2883	0.5311	0.9274	0.1117	0.1545
Kawasan Berikat Nusantara	0.1241	0.3512	0.2441	0.1725	0.7459	0.0085

Based on Table 4. of the savings and loans cooperative, namely the Dr. Miwa Hospital Cooperative. Suharto Heerjan The number of cooperative members gave the highest efficiency contribution, which was 0.6987 which was significant at  $\alpha = 0.01$  followed by other variables. The Pelni Savings and Loans Cooperative, that the number of cooperative members gave the highest contribution to the efficiency of total assets with a value of 0.9296, the savings and loans cooperative, namely the Premier Mandiri Sejahtera Cooperative, these variables gave the highest contribution to profit efficiency, namely the amount of loans with a value of 0.7459 , The Savings and Loans Cooperative, namely the Perum Peruri Cooperative, these variables provide the highest contribution to profit efficiency, namely the total debt payment with an efficiency value of 0.7213, the employees of the cooperative savings and loans at the Religious Affairs Office of South Jakarta, the variables that provide the highest contribution are the total a member of a cooperative with a value of 0.6887, credit for savings and loans for the Cooperative of the Sanitation Office, this variable provides the highest contribution to the value of profit efficiency of total assets with a value of 0.9286, the cooperative is a savings and loan cooperative, namely the Cooperative of the Ministry of Education and Culture n, these variables that provide the highest contribution to the value of profit efficiency are the amount of loans with a value of 0.7458, the savings and loans cooperative, namely the Ministry of Religion of the Republic of Indonesia, these variables contribute to the highest profit efficiency value is total debt repayment with an efficiency value of 0, 7212. Primkopal Kolinlamil Savings and Loans Cooperative, based on calculations with the SFA method all variables have an efficiency function that has a positive and significant effect on profit efficiency. Among these variables is the number of cooperative members with a significant value of 0.6876 at  $\alpha = 0.01$ . Savings and Loans Cooperatives for Teachers and Employees of SMA 45 The variables that contributed to the highest profit efficiency value were total assets with a value of 0.9274, the savings and loans cooperative, namely the Nusantara Bonded Zone Cooperative, among these variables gave the highest contribution to the value of profit efficiency was total loans with a value of 0.7416. each of which is significant at  $\alpha = 0.01$ .

**Table 5:** Competence of Community Savings and Loans Cooperatives with the SFA Method

Code	Cooperative Name	Efficiency Score (%)
KM12	Koperasi Sumber Jaya	83.29
KM13	Koperasi Ksp Kodanoa	99.95
KM14	Koperasi Sejati Mulya	77.71
KM15	Koperasi Sehati	87.63
KM16	Koperasi Rawa Badung	88.87
KM17	Koperasi Wira Karya Jaya	92.57
KM18	Koperasi Ceger	69.38
KM19	Koperasi Tunas Jaya	96.91
KM20	Koperasi Kesejahteraan Kaum Ibu	66.69
KM21	Koperasi Kemauan Bersama	87.91
KM22	Koperasi Makmur	66.37
	<b>Total</b>	<b>917.28</b>
	<b>Mean</b>	<b>83.39</b>

Based on Table 5. above, savings and loan cooperatives that have an efficiency value of 90-100 percent are the Kodanoa cooperative with an efficiency value of 99.95 percent, the Wira Karya Jaya cooperative with an efficiency value of 92.57 percent and the Tunas Jaya cooperative with an efficiency value of 96.91 percent. Cooperatives have a relatively high value but are not yet in the efficient category, namely 70 - 89 percent, namely the Sumber Jaya cooperative with an efficiency value of 83.29 percent, the Sejati Mulya Cooperative with an efficiency value of 77.71 percent, the Sehati Cooperative with an efficiency value of 88.87 percent, Cooperatives Willingness with an efficiency value of 87.91 percent, for cooperatives the value of efficiency <70 percent is the value efficiency of the Ceger Cooperative of 69.38 percent, the efficiency of the value of the Koperasi Welfare Ibu 66.69 percent and the efficiency of the Koperasi Makmur's value 66.37 percent. The average of 11 community-owned cooperatives with an efficiency value of 83.39 percent means that community-owned cooperatives in Jakarta have not yet reached efficiency. This efficiency value from the contribution of the independent variables, namely the number of members, total capital, operational costs, total assets, total credit and debt repayment shows that all variables have an efficiency function that has a positive and significant effect on profit efficiency.

**Table 6:** Results of the test of community-owned cooperative savings and loans.

Cooperative	Variable					
	Member	Capital	Cost	Asset	Loan	Payback
Sumber Jaya	0.0981	0.1714	0.1713	0.4141	0.0421	0.7112
Kodanoa	0.6885	0.0220	0.0372	0.1711	0.1443	0.1243
Sejati Mulyo	0.2413	0.2613	0.5537	0.8295	0.1237	0.1466
Sehati	0.1346	0.3623	0.2463	0.1834	0.7558	0.0287
Rawa Badung	0.0384	0.1972	0.1885	0.4274	0.0535	0.7245
Wira Karya Jaya	0.6581	0.0373	0.0371	0.1718	0.1456	0.1145

Cooperative	Variable					
	Member	Capital	Cost	Asset	Loan	Payback
Ceger	0.2345	0.2824	0.5836	0.7281	0.1148	0.1594
Tunas Jaya	0.1445	0.3560	0.2484	0.1787	0.7575	0.0694
Kesejahteraan Kaum Ibu	0.0793	0.1826	0.1878	0.4257	0.0559	0.7272
Kemauan Bersama	0.6885	0.0369	0.0471	0.1857	0.1435	0.1446
Kemauan Makmur	0.2468	0.2857	0.5356	0.9243	0.1117	0.1544

Based on Table 6., that the Sumber Jaya Loan Cooperative, this variable has a significant role in profit efficiency, namely the number of cooperative members with a value of 0.0981, Kodanoa Loan Cooperative, this variable has a high and significant role. On the profit efficiency of the number of cooperative members with a value of 0.6885 Savings and Loans Cooperatives, namely the Sejati Mulya Cooperative, the variable which has a significant role in the efficiency of total assets profits with a value of 0.8295 The Sehati Savings and Loans Cooperative, the variable that gives the greatest contribution to profit efficiency is the total loan with The value of 0.7558 Savings and Loans Cooperatives is the Rawa Badung Cooperative, the variable that provides the highest contribution to profit efficiency is the amount of debt payments with a value of 0.7245 Savings and Credit Cooperatives namely Wira Karya Jaya Cooperative, the variable that has a significant role on efficiency is the number of cooperative members with a value of 0.6581 , The Savings and Loans Cooperative, namely the Ceger Cooperative, the variables that contribute to profit efficiency are the amount of assets with a value of 0.7281, the Savings and Loans Cooperative is the Tunas Jaya Cooperative, these variables which have a significant role in the efficiency of the the total loan with a value of 0.7575, the Savings and Loans Cooperative, namely the Mother's Welfare Cooperative, these variables have a significant role in efficiency. is the number of cooperative members with an efficiency value of 0.0793. savings and loans cooperatives, namely the Cooperative Willingness Together, the variable that has a significant role in efficiency is the number of cooperative members with an efficiency value of 0.6885. The loan saving cooperative is Koperasi Makmur, the variable is total assets with the highest value of 0.9243.

Based on the description above, it can be concluded that there are three community-owned cooperatives that are competent, namely the Kodanoa Savings and Loans Cooperative, the Wira Karya Jaya Savings and Loans Cooperative and the Tunas Jaya Savings and Loan Cooperative. This is because the cooperative has very good management, especially in the production of operational costs. In addition, the cooperative members are also very active in assisting the further development of the cooperative, especially in seeking new members and discipline in debt repayment. In addition, mandatory fees must be paid on time every month and allow loans to run smoothly. For four savings and loans cooperatives whose efficiency is relatively high but not efficient, namely the Sumber Jaya Savings and Loans Cooperative with an efficiency value of 83.29 percent, the Sehati Savings and Loans Cooperative which has an efficiency value of 87.63 percent, the Rawa Badung Savings and Loan Cooperative with an

efficiency value of 88, 87 percent and Savings and Loans Cooperatives. Joint Will with an efficiency value of 87.91 percent. For other savings and loan cooperatives the efficiency value is still below 80 percent and the cooperative with the lowest efficiency value is the Makmur Savings and Loans Cooperative which has an efficiency value of 66.37 percent. Based on the study, the cooperative has not yet reached the level of efficiency because production for its operational costs is still not well managed. The average efficiency of these publicly owned cooperatives from a sample of eleven savings and loans cooperatives in Jakarta is 83.39. This means that the community-owned savings and loans cooperative is not efficient but its efficiency is considered good, even though the average level of efficiency has not yet been reached.

Based on table 3. And table 5., above, it can be seen that the efficiency value of the savings and loans cooperative for 22 cooperatives. To compare the efficiency value of government employees savings and loans cooperatives with those of the Community, based on the tables above, the government employees savings and loans cooperative is based on an average value of 0.7958 (79.58 percent). Which has the highest value of 0.9962 (99.62 percent) is the Second Secretary General of Education and Culture Cooperative (KK07), the SMAN 45 Teacher and Employee Cooperative with a value of 0.9856 (98.56 percent). Third, the Suharto Heerjan Mental Hospital Cooperative with a value of 0.9405 (94.05 percent). The cooperative is already in the efficient category. For the lowest efficiency value is 0.6112 (61.12 percent) in Primkopal Cooperative with an average of eleven savings and loans cooperatives owned by government employees 0.7958 (79.58 percent).

For Community owned Savings and Loans Cooperatives, there are three cooperatives that have nearly efficient efficiency values with the highest efficiency of 0.9995 (99.95 percent) in the Kodanoa Savings and Loans Cooperative (KM13). Second, the Tunas Jaya Cooperative was 0.9691 (96.91 percent). Third, in the Wira Karya Jaya Cooperative the amount of 0.9257 (92.57 percent). This means that this cooperative has achieved efficiency. For savings and loans cooperatives that have the lowest score is Koperasi Makmur, namely 0.6637 (66.37 percent). The average efficiency value from eleven cooperatives is 0.8339 (83.39 percent).

When compared. Based on the comparison between civil servant savings and loan cooperatives and community-owned savings and loan cooperatives, it can be seen that the efficiency value of civil servant cooperatives is smaller, namely the average efficiency value of civil servant cooperatives is 0.7958 (79.58 percent). For publicly owned cooperatives, the average efficiency value is 0.8339 (83.39 percent). This means that the value of community-owned savings and loan cooperatives is higher than the value of government-owned savings and loans cooperatives. For the efficiency value of 22 cooperatives, the highest efficiency value was found in the Kodanoa Savings and Loan Cooperative, namely 0.9995 (99.95 percent) while the lowest was the Primkopal Kolklaamal Cooperative, namely 0.6112 (61.12 percent). The average efficiency between government employees' savings and loans cooperatives and public savings and loans

cooperatives is 0.8149 (81.49 percent). This means that the savings and loans cooperative in Jakarta has not fully achieved efficiency, but is getting closer to 1 (100 percent).

**Table 7:** The results of the analysis of the profit efficiency test of the SFA method between Government Owned Credit Cooperatives (KK) and the Community (KM).

One-Sample Statistics					
	N	Mean	Std.Deviation	Std. Error Mean	
SFA test for Government Owned Credit Cooperatives (KK) and the Community (KM).	22	81.4909	12.75313	2.71898	

  

One-Sample Test						
	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
SFA test for Government Owned Credit Cooperatives (KK) and the Community (KM).	29.971	21	.000	81.49091	75.8365	87.1453

Based on table 7., the results of the analysis of the difference in profit efficiency values with the SFA method, that the average of 22 cooperatives is 81.49 percent, with a standard deviation of 12.75, and the results of the analysis is significant level at 0.000, meaning that there are differences in profit efficiency with the SFA method of loan cooperatives owned by government employees and cooperatives owned by public.

The calculation of this panel data analysis calculates the profit efficiency value of eleven government-owned savings and loans cooperatives and eleven community-owned savings and loans cooperatives for six years, with the independent variables namely number of members, total capital, total operating costs, total assets, total loans and total payments. repay the debt.

**Table 8:** Panel data Results of the Profitability Efficiency test for Savings and Loans Cooperatives

owned by Government Employees (KK)			
Variables	Coefficient	Standard Error	t-ratio
Intercepts	0.7408	0.3633	1.5308
Number of Cooperative Member ( $W_1$ )	0.5563***	0.1938	1.9521
Total Capital ( $W_2$ )	0.3785***	0.2121	1.6394
Total Operating Cost ( $W_3$ )	0.3477***	0.3343	2.4207
Total Assests ( $P_1$ )	0.4804***	0.1784	2.1964
Total Loan ( $P_2$ )	0.8521***	0.5921	4.9968
Total Payback for Debt ( $P_3$ )	0.4259***	0.1525	3.3335
Mean Efficiency		0.7594	

**Note:** significant at \*\*\* :  $\alpha=0.01$ , \*\* :  $\alpha=0.05$ , \* :  $\alpha=0.10$

Based on table 8., the calculations from the panel data of savings and loans cooperatives owned by eleven government employees from 2008 to 2013 use the SFA method with an average efficiency value of 0.7594 (75.94 percent). This efficiency value is the result of the contribution of the independent variable, namely the member variable with a value of 0.5563, the capital variable with a value of 0.3785, the variable operating costs with a value of 0.3477, the variable assets with a value of 0.4804, the variable amount of the loan with a value of 0.8521. and debt payment variable with a value of 0.4259. All of these variables are significant at  $\alpha$ : 0.01. All variables have an efficiency function that has a positive and significant effect on profit efficiency. The average efficiency value of 0.7594 (75.94 percent) is quite high and positive. In short, all of these variables played a significant role in generating competencies for eleven government savings and loans cooperatives. The variable of loan volume at this civil servant cooperative is the largest when compared to other variables and shows a dominant and positive relationship to profit efficiency.

**Table 9:** Results of the Proficiency Test for Savings and Loans Cooperatives owned by the Community (KM)

<i>Variables</i>	<i>Coefficient</i>	<i>Standard Error</i>	<i>t-ratio</i>
<i>Intercepts</i>	0.4963	0.2303	1.3514
Number of Cooperative Member ( $W_1$ )	0.2117***	0.4225	1.6307
Total Capital ( $W_2$ )	0.3367***	0.2174	1.2514
Total Operating Cost ( $W_3$ )	0.1125*	0.3321	2.2148
Total Assests ( $P_1$ )	0.7629***	0.5960	6.2541
Total Loan ( $P_2$ )	0.1325*	0.2217	3.2108
Total Payback for Debt ( $P_3$ )	0.1356*	0.1935	3.9623
<i>Mean Efficiency</i>		0.8882	

Note: significant at \*\*\* :  $\alpha=0.01$ , \*\* :  $\alpha= 0.05$ , \* :  $\alpha = 0.10$

Based on the calculation of table 9., from the panel data, the average efficiency value is 0.8882 (88.82 percent). This efficiency value is the result of the contribution of the independent variable, namely the number of cooperative members with a value of 0.2117, total capital with a value of 0.3367 followed by total assets with a significant value of 0.7629 at  $\alpha = 0.01$ . In addition, total operating costs have a value of 0.1125 and total debt repayments with a significant value of 0.1356 respectively at  $\alpha = 0.10$ . As for the loan size, the efficiency value is 0.1325 which is significant at  $\alpha = 0.10$ . The average efficiency value is 0.8882 (88.82 percent), which is quite high and positive. In short, all of these variables play an important role in generating efficiency for the eleven public savings and loan cooperatives. This variable of total assets of community owned cooperatives is the largest when compared to other variables and shows a dominant and positive relationship to profit efficiency.

So it can be concluded that as many as eleven community-owned savings and loans

cooperatives in Jakarta have not yet reached full efficiency levels. The cooperative is not yet fully efficient because there are several community-owned cooperatives that have problems in paying their debts. This means that the repayment of debts of cooperative members has not been smooth, so that the capital is reduced. This is what affects profit efficiency.

#### **4. Conclusion**

Based on the results of the analysis carried out on the savings and loans cooperative owned by government employees, it was found that the number of members, capital and operational costs played a role as input variables that had an effect on profit efficiency, the highest average efficiency value was 79.58 percent, for the highest efficiency value was 99, 62 percent and the lowest 61.32 percent. In publicly owned cooperatives, it is found that the number of members, capital and operational costs as input variables is efficiency, the average efficiency value is 83.39 and the highest value is 99.95 percent, and the lowest is 66.37 percent. Based on the analysis using the SFA method, it was found that the savings and loans cooperative owned by government employees had three cooperatives whose efficiency values were close to 100 percent, namely the Savings and Loans Cooperative at Dr. Soeharto Heerjan 94.05 percent, the Secretary General of Education and Culture Savings and Loans Cooperative 99.62 percent, and the SMAN 45 Teacher and Employee Savings and Loan Cooperative 98.45 percent. Meanwhile, the average efficiency value of the eleven cooperatives was 79.58 percent. For community-owned cooperatives, there are three cooperatives whose efficiency values are close to 100 percent, namely the Kodanoa Savings and Loans Cooperative with an efficiency value of 99.95 percent, the Wira Karya Sejahtera Cooperative with an efficiency value of 92.57 percent, and the Tunas Jaya Cooperative with an efficiency value of 96.91 percent. The average score of the eleven cooperatives was 83.39 percent. Based on the results of the analysis using the SFA method, it is known that the savings and loans cooperative recorded the average efficiency value of the eleven community-owned cooperatives with a value of 83.39 percent, where the value is greater than the saving and loan cooperatives owned by government employees, namely 79.58 percent. This shows that publicly owned cooperatives are more efficient. Based on the results of the analysis with panel data, it is known that the average efficiency value of government employee cooperatives of the eleven cooperatives is 75.94 percent and publicly owned cooperatives are 88.82 percent. The conclusion is based on an analysis using the SFA method, the community-owned savings and loans cooperative has a better efficiency value compared to the savings and loans cooperative owned by government employees.

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