



## Measuring The Efficiency of Pesantren Cooperatives: Evidence in Indonesia

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**Abstract:** The Cooperative (Koperasi) as a non-Bank financial institution has the purpose of improving the welfare of its members as Koperasi Hidmat and the staffs of Latifah Mubarakiyah Koperasi Ponses Suryalaya that have been since decades ago. Over time, the ideal cooperative can show a significant development and increase the welfare of its members. This study aims to determine the efficiency of cooperative as a benchmark, because by known the performance value of a cooperation, it will known the weaknesses and advantages so that it can be improved the weaknesses and maintain the advantages. The method used is apply Data Envelopment Analysis (DEA). Inputs used from principal savings, mandatory savings, and fixed assets while the output used from savings in the cooperative, savings in other cooperative and SHU. As for result of this research indicates there are 9 perfect efficient DMUs (100 %) and inefficient DMU is 11 DMUs, consisting of 7 (IRS conditions) and 4 (DRS condition). The most inefficient cooperative is Koperasi Hidmat (2014) of 30.66% efficiency level. Kopkar IAILM is able to maintain its grade efficiency level from 2009 to 2015 when compared to other DMUs cooperatives in the observation, except in 2014. The calculation of efficiency level in this research is relative and it is not absolute, so that it is possible when the cooperative sample is added or the observation year is expanded, so it will get different result. The necessity of any cooperative or BMT based on Pondok Pesantren to make annual financial statements in order to increase accountability and transparency of fund management.

**Keywords:** Efficiency, Cooperative, Pesantren, DEA.

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### Introduction

As a muslim boarding school (Pesantren) bases on Tasawuf that adheres to the teaching of Tarekat Qadiriyyah Naqshabandiyyah (TQN)<sup>1</sup>, it has certainty a lot of activities such as in the field of education, socio-cultural, and economic. Pesantren Suryalaya was built by Syekh Abdullah Mubarak bin Noor Muhammad<sup>2</sup> in 1905. The the leadership takes turn to be continued

<sup>1</sup> TQN ia one of religious school of thought in sufism which is combination of two tarekats that are Tarekat Qadiriyyah and Tarekat Naqshabandiyyah and belong to tarekat Muktarabah spread through the Indonesian Archipelago.

<sup>2</sup>Abdullah Mubarak was a founder of pesantren Suryalaya that was born in 1976 M in Desa Cicilung, Bojong Benteng, Pagerageung Tasikmalaya. But over time, the increasing needs are not only the incidental needs but the future investment needs of providing loans for higher education fees such as S-2 (Master's Program) and S-3 (Doctorate Program). He was a student of syekh Tolhah Cirebon who became as Khalifah Tarekat Qadiriyyah Naqsa Bandiyyah in 1908.

by K.H A. Shohibul Wafa Tajul Arifin<sup>3</sup> that known as Abah Anom who has developed rapidly. The number of brothers<sup>4</sup> Tarekat Qadiriyyah Naqsabandiyah spreads throughout the Indonesian Archipelago even abroad and has a regional coordinator (korwil) in its regions to facilitate communication among them.

In order to improve the quality and expand the thinking of to (ikhwan) brothers in the social field of Pesantren Suryalaya do various activities training and coaching for developing the skills and abilities of the brothers. The training was held in the cooperative with the department of Islamic spiritual of Army Central Jakarta and the Social Ministry.

To sustain its economy of Pesantren Suryalaya (Islamic Boarding School) has a cooperative, regardless of which has been already incorporated or not yet incorporated law, such as Hidmat cooperative, Koperasi Latifah Mubarakiyah, Koperasi Sekolah and Baitul Mall Pesantren.

Koperasi Hidmat existing in Ponpes Suryalaya, established in 1973 with the original name of Koperasi Putra Bakti. This cooperative was managed by brothers who only live in Pesantren., but over time and needs in March 1979, this cooperative has a new name that is Cooperative Hidmat standing for "Hidup Masa Tarekat" and its membership is expanded not only among brothers lived in Pesantren but also all of the brothers of TQN Suryalaya.

The activities of the business are expanded not only savings and loan but penetrated into others business field such as livestock, kinds of services like electricity payment services, telephone, photocopy and others. Koperasi Hidmat got funding from the cooperative department of Indonesia of the leadership of Orde Baru in 1968 of Kabinet Pembangunan III from the young minister of cooperative i.e Letjen (purn) TNI Bustanul Arifin. Like a common business, Koperasi Hidmat has experienced ups and downs, various types of business tried and developed because they aim to welfare its members that are para ikhwan (brothers) of TQN and to help the cost of activities in Ponpes Suryalaya.

Institute Agama Islam Latifah Mobarokah (IAILM)<sup>5</sup> Suryalaya in supporting the additional needs of academia, community and the staffs, it has established cooperative employees since 2002 that's IAILM Cooperative known as Koperasi Karyawan "Kopkar". The beginning of the cooperative is aim to help the cost of activities which are incidentals such as the needs of Almamater coat, coat, t-shirt and KKN's Bags, academic gown, and others.

To develop its members of Kopkar cooperate and ask to join in the flag of Kopkar with cooperative of Sekolah Tinggi Ilmu Ekonomi (STIE), so that the sector of business increases not only serving but also opening a shop or stall to meet the demand of the campus. The development of cooperative is done as one of management effort to achieve the goal or objective of cooperative that give prosperities for its members.

After the cooperative has been running for a long time, it is necessary to do a measurement so that we can see how far the performance of management in developing its business. The level of institutional efficiency cannot be avoided anymore, because considering efficiency affects the development of its business. In the cooperative, the efficiency level must also be viewed in balance with the level of effectiveness, because the high service costs must be balanced with the advantage profit to get the better door to door service given to its members. Hopefully, after the measurement of the efficiency level of both cooperatives that are Kopkar and Koperasi Hidmat can improve the quality so that the purpose of establishment of cooperatives can be achieved to get the prosperity of its members.

<sup>3</sup> Abah Anom was the fifth child of Abah Sepuh and Hj. Juhriyah that was born on January 1st, 1915. He was as vice Talkin and was given leadership to lead Pesantren Suryalaya in 1953 to die.

<sup>4</sup> Ikhwan is the name of men among TQN Community.

<sup>5</sup> IAILM is an Islamic Religious College found by Abah Anom on September 5<sup>th</sup>, 1986 in order to realize the goal of national education.

Cooperative or BMT in fact, face various obstacles. For the example, the study done by Rusydiana and Devi (2013) attempts to identify the dominant factors that has become obstacles in the development of BMT in Indonesia using Analytic Network Process (ANP). The results show that main problems can be divided into four aspects, namely Human Resources, Technical, Legal and Structural, and Market/Communal. The overall problem decomposition shows priorities results, they are: 1) the lack of legal support; 2) the weak of supervision and coaching; 3) the absence of LPS; 4) lack of human resources understanding; and 5) competition.

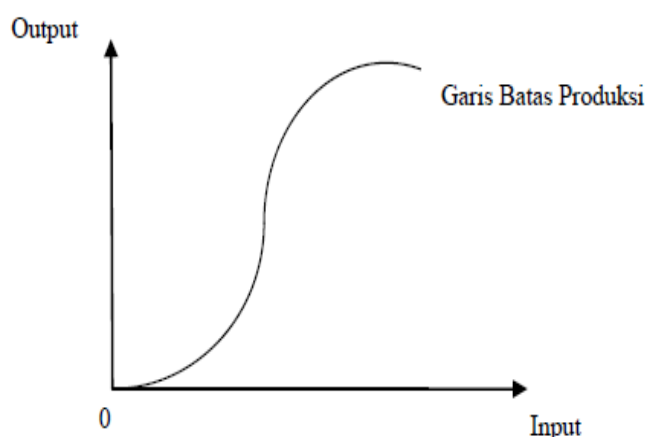
## Theoretical Base

### *Efficiency Concept*

For a business entity, the efficiency is very important thing. The concept of efficiency often is defined as doing anything right. It's always related with how the company in reaching the goal. Therefore, the concept of efficiency is often seen from the side of the cost as input and profit as output.

The concept of efficiency comes from micro-economy concept of procedur theory. On the theory of the producer, there is the production frontier curve that describes the relationship between input and output of the production process. This curva frontier represents the maximum output level of any use of input that represents the use of technology from a company or industry (Ascarya and Yumanita, 2007).

**Figure 2.1. Frontier Production Curve**



In economy theory, there are two types of efficiency called economic efficiency has technical efficiency. The economic efficiency has macroeconomic representation, while technical efficiency has a microeconomic representation. The measurement of technical efficiency only for technical and operational relationships in the process of using input to output.

In the company's point of view is known three kinds of efficiencies; technical efficiency, allocative efficiency and economic efficiency. Technical efficiency reflects the company's ability to achieve optimal output level by using a certain level of input. This efficiency measures the production process in producing a certain amount of output by using the least possible input. In other words, a production process is said to be technically efficient when the output of a good can not be increased without reducing the output of another good.

Allocative efficiency reflects the company's ability to optimize the use of its inputs with its price structure and technology. Pareto's efficiency terminology is often equated with the allocative efficiency for respecting the Italian economy "Vifredo Pareto" who developed the efficiency concept inexchange. The Pareto efficiency says that production input is used

efficiently if it's no longer possible used to improve a business without causing at least another state to be worse. In other words, if the input is allocated to produce output that can't be used or not used by consumers, it means that the input is not used efficiently.

The economic efficiency describes the combination of technical and allocative efficiency. Implicitly, economic efficiency is least cost production concept. To the level of a specific output, a production company is said to be economically efficiently if the firm uses the cost which the unit cost of output is the least. In other words, to the level of a specific output, a production process can be used to produce that level of output at the smallest cost for a unit.

In general, the measurement of efficiency is divided into two that are Parametric and Non Parametric. The method of Data Envelopment Analysis is widely used for Non Parametric Analysis or CCR . The first DEA model is the CRS approach introduced by Charnes et. al (1978). The second model is the VSR or BBC approach introduced by Banker, Charnes and Cooper (1984). Furthermore, a lot of developments of the DEA model for efficient level measurement and productivity in various areas. The following of some DEA model of the author is invested .

**Table 2.1. The Development of Model Data Envelopment Analysis**

NO	MODEL	YEAR	AUTHOR	SOURCE
1	<b>DEA Model CCR</b>	1978	Charnes, Cooper, Rhodes	Charnes, A., Cooper, W.W., and Rhodes, E. (1978), "Measuring the efficiency of decision making unit", <i>European Journal of Operational Research</i> , Vol. 2, pp. 429-444.
2	<b>Malmquist Productivity Index [MPI]</b>	1982	Caves, Christensen, Diewert	Caves, D.W., Christensen, L.R., and Diewert, W.E. (1982), "The economic theory of index numbers and the measurement of input, output and productivity", <i>Econometrica</i> , Vol. 50, pp. 1393-1414.
3	<b>DEA Model BCC</b>	1984	Banker, Charnes, Cooper	Banker, R.D., Charnes, A., and Cooper, W.W. (1984), "Some models for estimating technical & scale inefficiencies in data envelopment analysis", <i>Management Science</i> , Vol. 30, No. 9, pp. 1078-1092.
4	<b>Free Disposal Hull [FDH]</b>	1984	Deprins, Simar, Tulkens	Deprins, D., Simar, L., and Tulkens, H. (1984), "Measuring labor-efficiency in post offices", in Marchand, M., Pestieau, P., and Tulkens, H. (Eds). <i>The performance of public enterprises – Concepts and measurement</i> , Amsterdam, North-Holland, 243-267.
5	<b>Additive Model</b>	1985	Charnes, Cooper, Golany, Seiford, Stutz	Charnes, A., Cooper, W.W., Golany, B., Seiford, L.M., and Stutz, J. (1985), "Foundations of DEA and Pareto-Koopmans empirical production functions", <i>Journal of Econometrics</i> , Vol. 30
6	<b>Window Analysis</b>	1985	Charnes, Clarke, Cooper, Golany	Charnes, A., Clarke, C., Cooper, W.W., and Golany, B. (1985), "A development study of DEA in measuring the effect of maintenance units in the US Air Force", <i>Annals Operation Research</i> , Vol.2: 95-112
7	<b>Assurance Region [DEA-AR]</b>	1986	Thompson, Singleton, Thrall, Smith	Thompson, R.G., Singleton, Jr.F.D, Thrall, R.M., and Smith, B.A. (1986), "Comparative site evaluations for locating a high-energy physics lab in Texas", <i>Interfaces</i> , Vol. 16, pp. 35-49.

8	<b>Cross Efficiency</b>	1986	Sexton, Silkman, Hogan	Sexton, T.R., Silkman, R.H., Hogan, A.J. (1986), "Data envelopment analysis: Critique and extensions". In: Silkman, R.H. (Ed), <i>Measuring Efficiency: An assessment of Data Envelopment Analysis</i> , Vol. 32, Jossey-Bass, San Francisco, pp. 73-105.
9	<b>Facet Model</b>	1988	Bessent, Bessent, Elam, Clark	Bessent, A.M., Bessent, E.W., Elam, J., and Clark, C.T. (1988), "Efficiency frontier determination by constrained facet analysis", <i>Operations Research</i> , Vol. 36, pp. 785-796.
10	<b>Cone Ratio</b>	1990	Charnes, Cooper, Huang, Sun	Charnes, A., Cooper, W.W., Huang, Z.M., and Sun, D.B. (1990), "Polyhedral cone-ratio DEA models with an illustrative application to large commercial banks", <i>Journal of Econometrics</i> , Vol. 46: 73-91.
11	<b>Fuzzy DEA</b>	1992	Sengupta	Sengupta, J.K. (1992), "A fuzzy systems approach in data envelopment analysis", <i>Computers &amp; Mathematics with Applications</i> , Vol. 24(9): 259-266.
12	<b>Super Efficiency</b>	1993	Andersen & Peterson	Andersen, P., and Petersen, N.C. (1993), "A procedure for ranking efficient units in DEA", <i>Management Science</i> , Vol.39, pp. 1261-1264.
13	<b>Network-Dynamic DEA</b>	1996	Fare & Grosskopf	Fare, R., and Grosskopf, S. (1996), <i>Intertemporal Production Frontiers: With Dynamic DEA</i> . Boston, MA: Kluwer Academic.
14	<b>Hierarchical Model</b>	1998	Cook, Chai, Doyle, Green	Cook, W.D., Chai, D., Doyle, J., and Green, R.H. (1998), "Hierarchies and groups in DEA", <i>Journal of Productivity Analysis</i> , Vol.10:177-198
15	<b>Bootstrapped DEA</b>	1998	Simar & Wilson	Simar, L, and Wilson, P.W. (1998), "Sensitivity analysis of efficiency scores: How to bootstrap in nonparametric frontier models", <i>Management Science</i> , Vol. 44(1): 49-61.
16	<b>Russell Measure [ERM]</b>	1999	Pastor, Ruiz, Sirvent	Pastor, J.T., Ruiz, J.L., and Sirvent, I. (1999), "An enhanced DEA Russel graph efficiency measure", <i>European Journal of Operational Research</i> , Vol. 115, pp. 596-607.
17	<b>Imprecise Data [IDEA]</b>	1999	Cooper, Park, Yu	Cooper, W.W., Park, K.S., and Yu, G. (1999), "IDEA and AR-IDEA: Models for dealing with imprecise data in DEA", <i>Management Science</i> , Vol. 45, pp. 597-607.
18	<b>Multicomponent/Parallel Model</b>	2000	Cook, Hababou, Tuenter	Cook, W.D., Hababou, M., Tuenter, H. (2000), "Multi-component efficiency measurement and shared inputs in data envelopment analysis: An application to sales and service performance in bank branches", <i>Journal of Productivity Analysis</i> , Vol. 14, pp. 209-224.
19	<b>Slack Based Measure [SBM]</b>	2001	Tone	Tone, K. (2001), "A slacks-based measure of efficiency in DEA", <i>European Journal of Operational Research</i> Vol. 130:498-509.

### *The Previous Study*

There are some researches related to the measurement of the level of financial institutions. Including in this case, the efficiency of Sharia Banks in Indonesia. Hosen and Rahmawati tried to analyze the efficiency, profitability and health of Sharia Commercial Banks in Indonesia period 2010 up to 2013. The results show that the average value of the highest

level of efficiency is: Bank Mega Syariah (92.38%), Bank Syariah Mandiri (87.96%), Bank Syariah Bukopin (84.92 %), BMI (83.28%), and BRI Syariah (78.35%). There are several significant variables that affect the level of efficiency that is: operating expenses, profit sharing, total of financing, securities.

Firdaus and Husen (2013) also examined about the efficiency of the bus with the stages of DEA approach. The findings are in general, the level of efficiency of 10 (ten) buses has a fluctuating trend during the study period. Individually, BMI has the highest average level of efficiency with the average level of the lowest efficiency with the score of 72.12% different with two studies above.

Wahab, Hosen and Muhari (2014) compared the technical efficiency of Conventional Bank (BUK) and Sharia Commercial Bank (BUS) in Indonesia. The result shows that the average efficiency of BUK has been operating relatively longer than BUS. In addition, there are the differences of operational between BUK and BUS that are profit-sharing system. The profit-sharing in BUS is unpredictable at the beginning because it's based on the realization of the result of the existing business, while BUK is directly determined at the beginning.

The same study using DEA was conducted by Ascarya and Yumanita (2007), a study using DEA. A Sharia Banking over the period 2000 - 2004. The result of the research indicates that technical relative efficiency of Sharia Bank is intermediation approach (87%) and production (85%) in 2004. And then the relative scale efficiency of the intermediation approach (87%) and production approach (97%). In general, Sharia Bank production approach has decreased scale efficiency because at that time, Sharia Bank sufficiently aggressive in expansion opened new offices. The research related to other Sharia Banks are also done by Effendi (2016). The other studies using DEA on islamic economics and finance researches has done by Rusydiana (2018) also Rusydiana and Sanrego (2018).

Among the result of the research above, almost no research that specifically see the efficiency performance of cooperatives in Pesantren. So this research becomes important to do.

## **Research Methodology**

### ***The Research Data***

The research object is two (2) that are in Pesantren Suryalaya Tasikmalaya (table 1). The data used is from 2002 to 2017. This is necessary so that the comparison can be more accurate (apple to apple). However the availability of data is limited, it could not be displayed result.

**Table 3.1. The Research Object**

<b>No</b>	<b>The Cooperation Name</b>	<b>Research Period</b>
1	Koperasi Karyawan Ponpes Suryalaya	2002-2015
2	Koperasi Hidmat	2010-2017

Data used is based on secondary data and financial report published by each cooperative.

## The Research Methodology

This study uses two methods: 1) Data Envelopment Analysis (DEA) and 2) Paired t-test.

### Data Envelopment Analysis

Data Envelopment Analysis (DEA) method is used to see the efficiency level of Micro Finance Institution, that is Pondok Pesantren relatively. What is relative is to compare the efficiency level of Decision Making Unit (DMU) with other DMU as a research object. Relative means no specific standard is used in determining the efficiency level. Efficiency relatively means DMU is the most efficient compared to other DMU a research object.

Dea has advantages among other research methods done by Siswandi and Purwanto (2005):

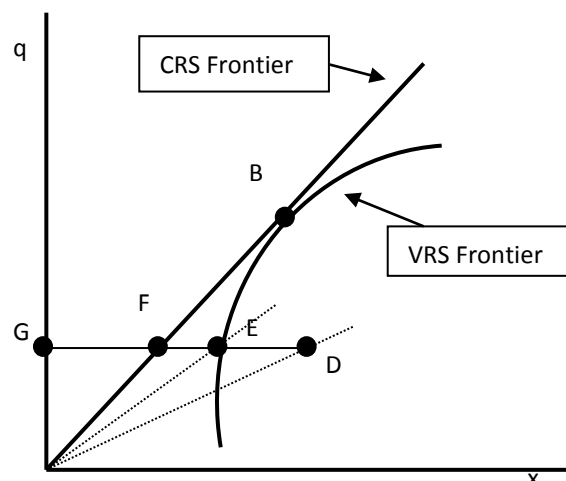
1. DEA is capable of handling relation efficiency measurements for some similar DMU (Decision Making Unit) using multiple inputs and outputs).
2. This method doesn't require the assumption of the form of a function of the relationship between input and output variables as applied ordinary regression
3. In Data Envelopment Analysis (DEA) some DMUs are compared directly among of them
4. The input and output factors are be able to be different unit of measurement, for example 1(1X1) to be the number of people saved while output 2(2X2) to be the amount of revenue in rupiah units without to change variable units

There are two models approaches in the DEA method: a) Model CCR (Charnes, Cooper and Rhodes), b) Banker, Charnes and Cooper (BCC). The fundamental difference between the two models are lied in the assumption of Constant Return to Scale (CRS) that any change is made, so that the number of inputs will be followed by change in the number of outputs with the same proportion. While the second model requires the assumption of Variable Return to Scale (VRS), in which the change in the number of inputs in certain proportion allows the change in the number of outputs with different proportions, may be greater proportion, same proportion, or even smaller proportion. A condition in which it can produce a larger output is called as Increasing Return to Scale (IRS) and if it produces less than smaller proportion, it is called Decreasing Return to Scale (DRS) condition. The efficiency calculated by this VRS assumption in referred as "Pure Technical Efficiency" (Ascarya and Yumanita, 2006).

The straight center line CRS which describes the performance of the company that works on optimum scale, while the curved line is the VRS line which describes the technical efficiency of firms on different scales between are company and another. The point of E shows a technically efficient company, but it doesn't work on an optimum scale. Therefore the firm at point D and E should increase their scales until they reach point B is efficient in overall.

**Figure 3.1. The Efficiency of CRS and VRS**

**The Graph 3.1. The Efficiency of CRS and VRS**



In this study, the authors choose to use the intermediation approach that views financial institutions as intermediating in financial services which transform and transfer financial assets from deficit units. In this case, inputs are as principal savings, mandatory savings

The variables of input and output used in the research is followed:

**Tabel 3.2 The Specification of Input and Output**

<b>Input Variables</b>	<b>Data Sources</b>
Principal savings	Neraca
Mandatory Savings	Neraca
Fixed Activa	Neraca
<b>Output Variables</b>	<b>Data Sources</b>
Investment in others	Neraca
SHU	The Profit and Lose Report

#### *Paired Samples t-test*

This method used to test the average value of two interconnected population samples, such as before and after. T-test is needed to test the initial hypothesis; whether there is a difference between two types of Cooperative of Boarding School (Koperasi Pondok Pesantren) or not. (Groebner et al, 2008)

#### **Result and Discussion**

The table 1 below shows the efficiency value of each cooperative, it can be seen that the efficient cooperative (constant 100%) is Kopkar in 2015, 2013, 2012, 2011, 2010, 2009, 2005 and 2003. Koperasi Hidmat only reached the maximum efficiency level in 2019. So generally, it can be concluded that Koperasi Karyawan IAILM is able to maintain the gradual level of efficiency from 2009 to 2015, when compared to Koperasi Hidmat in this observation. Based on the table information, the DMU condition of the cooperative that is the lowest efficiency level is Koperasi Hidmat that is 30.66% in 2014. It can certainly be considered for the DMU cooperation that has not been efficient to improve its pure technical efficiency.

In addition, if we look at the inefficient DMUs, it can be seen from the table below if the inefficient DMU is divided into two parts: Increasing Return to Scale (IRS) and Decreasing Return to Scale (DRS). The cooperatives included in the group of Increasing Return to Scale (IRS) that are Koperasi Hidmat in 2017, 2016, 2015 and Kopkar 2014. Here is the detail table about the efficiency condition and RTS of each cooperative.



**Tabel 4.1. Score of Efficiency & Return to Scale (RTS)**

No.	DMU	Score	RTS of Projected DMU
1	2002-Kopkar	0,9998	Increasing
2	2003-Kopkar	1	Constant
3	2005-Kopkar	1	Increasing
4	2007-Kopkar	0,7076	Constant
5	2008-Kopkar	0,8989	Constant
6	2009-Kopkar	1	Increasing
7	2010-Koperasi Hidmat	1	Increasing
8	2010-Kopkar	1	Constant
9	2011-Koperasi Hidmat	0,6116	Increasing
10	2011-Kopkar	1	Constant
11	2012-Koperasi Hidmat	0,5049	Increasing
12	2012-Kopkar	1	Constant
13	2013-Koperasi Hidmat	0,4093	Increasing
14	2013-Kopkar	1	Constant
15	2014-Koperasi Hidmat	0,3066	Increasing
16	2014-Kopkar	0,6099	Decreasing
17	2015-Koperasi Hidmat	0,581	Decreasing
18	2015-Kopkar	1	Decreasing
19	2016-Koperasi Hidmat	0,6241	Decreasing
20	2017-Koperasi Hidmat	0,6458	Decreasing

Related to the previous table information, we can further explain the classification of DMU based on the information of efficient and inefficient cooperative DMUs on the certain group scale. Based on the analysis result can be seen the number of fully efficient cooperatives. Then, the second group is a cooperative that has high efficiency (efficiency value between 0.80-0.99) as much as 2 cooperatives (high efficiency).

The other group is a cooperative that has a moderate level of efficiency (value of efficiency between 0.60- 0.70) or known as efficient medium. There are 5 cooperatives. Meanwhile, the last group is the low efficient cooperative that has low efficiency (efficiency value below 0.60). The number of DMUs cooperative included in the last group is 4 cooperatives.

After subsequent clustering analysis is benchmarking analysis. Based on the result of the following data, there are some cooperatives become references for the DMU that has not been efficient.

**Table 4.2. Bechmarking and References.**

No.	DMU	Score	Benchmarking	Reference(Lambda)		
1	2002-Kopkar	0.9998	2002-Kopkar	0.999		
2	2003-Kopkar	1	2003-Kopkar	1		
3	2005-Kopkar	1	2005-Kopkar	1		
4	2007-Kopkar	0.7076	2003-Kopkar	0.654	2011-Kopkar	0.346
5	2008-Kopkar	0.8989	2003-Kopkar	0.526	2011-Kopkar	0.474
6	2009-Kopkar	1	2009-Kopkar	1		
7	2010-Koperasi Hidmat	1	2010-Koperasi Hidmat	1		
8	2010-Kopkar	1	2010-Kopkar	1		
9	2011-Koperasi Hidmat	0.6116	2003-Kopkar	0.025	2009-Kopkar	0.214
10	2011-Kopkar	1	2011-Kopkar	1		
11	2012-Koperasi Hidmat	0.5049	2010-Koperasi Hidmat	0.676	2010-Kopkar	0.324
12	2012-Kopkar	1	2012-Kopkar	1		
13	2013-Koperasi Hidmat	0.4093	2010-Koperasi Hidmat	0.481	2010-Kopkar	0.519
14	2013-Kopkar	1	2013-Kopkar	1		
15	2014-Koperasi Hidmat	0.3066	2010-Koperasi Hidmat	0.081	2010-Kopkar	0.919
16	2014-Kopkar	0.6099	2011-Kopkar	0.881	2015-Kopkar	0.119
17	2015-Koperasi Hidmat	0.581	2011-Kopkar	0.755	2015-Kopkar	0.245
18	2015-Kopkar	1	2015-Kopkar	1		
19	2016-Koperasi Hidmat	0.6241	2011-Kopkar	0.399	2015-Kopkar	0.601
20	2017-Koperasi Hidmat	0.6458	2011-Kopkar	0.256	2015-Kopkar	0.744

The section shows the cooperatives that become references to other cooperatives which are still in inefficient condition. From the calculation of frontier analysis shows that the cooperative generally that becomes the most reference is Kopkar in 2011. Kopkar 2011 is referenced to be 7 times by other DMU of cooperatives have not been efficient.

Furthermore, The cooperative that becomes the highest reference is Kopkar 2015. Kopkar 2015 referenced to be 5 times by other DMU of cooperatives have been inefficient. The cooperative that becomes The third most highest reference is Koperasi Hidmat 2010 that the reference is 4 times. It means that the best 3 cooperatives during the observation period of the efficient research is Kopkar 2011, Kopkar 2015 and Kopkar 2010.

### **Conclusion and Suggestion**

The research on the measurement of the efficiency level based on Koperasi Pondok Pesantren is important to do, because it is still relatively to make the similar research. Here are some conclusions that can be taken along with recommendation for future research:

- 1) There are 9 perfect efficient DMUs (100 %) and inefficient DMU is 11 DMUs, consisting of 7 (IRS conditions) and 4 (DRS condition). The most inefficient cooperative is Koperasi Hidmat (2014) of 30.66% efficiency level.
- 2) Kopkar IAILM is able to maintain its grade efficiency level from 2009 t0 2015 when compared to other DMUs cooperatives in the observation, except in 2014.
- 3) The calculation of efficiency level in this research is relative and it is not absolute, so that it is possible when the cooperative sample is added or the observation year is expanded, so it will get different result.
- 4) The necessity of any cooperative or BMT based on Pondok Pesantren to make annual financial statements in order to increase accountability and transparency of fund management.

- 5) In addition, this financial report data is useful for researchers / academics to be used as the score of research data. The final goal of improving and developing of Koperasi Pondok Pesantren in Indonesia.
- 6) The cooperative organization of Pondok Pesantren needs to do the calculation of regular and periodic efficiency level, so that it is known the efficiency level, potential improvement, and advantages and disadvantages generally within the framework of efficiency analysis.
- 7) Because of limitation of data that the author obtain, the number of observation is still relatively small. The limitation is also due to the differences of the year of observation from both cooperatives although it is still tolerable.

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