Efficiency of Baitul Maal wa Tamwil (BMT) as Islamic Microfinance Institution in Indonesia: An Application of Data Envelopment Analysis

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Abstract

The primary objectives of most microfinance program is alleviating the poverty by assisting the poor to be economically independent. Different with conventional microfinance that offers the financing scheme based on interest (read: riba), Islamic microfinance offers the financing scheme based on shariah principles to enhance the business development of microentrepreneurs. Furthermore, Islamic microfinance assists the microentrepreneurs to applicate the Islamic ethics in daily life that effects to press the number default of payment. Recently, there are around 4,000 Baitul Maal Wa Tamwil (BMTs) operate and have enhanced thousand poor people life in Indonesia. They are Islamic Microfinance Institutions (Islamic MFIs) that responsible in collecting, managing and distributing the funds either for charity (e.g for the poorest) or providing financial services for the microentrepreneurs. In addition, measuring efficiency of microfinance program is important to enable the microfinance institutions (MFIs) to strengthen the management, generate sufficient profits and maintain efficient operations to ensure its sustainability. The main aim of the paper is to examine the efficiency of BMTs as Islamic microfinance institutions in Indonesia. Data Envelopment Analysis (DEA) is used to examine the relative efficiency of the selected BMTs. DEA is a non-parametric method which utilize the linear programming method to measure technical (technological) efficiency and requires inputs and outputs data. Twelve large size BMTs are chosen as

the sample of the study and they have operated in the provinces of Indonesia with the highest number of poor people live. The study indicated that financing and human resources are the bases of inefficiency in BMTs. Inefficient BMTs are expected to optimize its operations by emulating the input minimization and output maximization practices adopted by efficient BMTs. The findings are not only relevant and applicable to Indonesia but also to other muslim countries and would be useful for further empirical research in this area.

Keywords*: microfinance, efficiency, DEA, BMT*

Introduction

In the last few years, microfinance has become an important component to reduce poverty. Microfinance is defined as the provision of a broad range of financial services such as deposits, loans, payment services, money transfers and insurance to poor and low income households and microenterprises (ADB, 2000). Providing the financial services can assist the poor to establish or expand the microenterprises (MEs) in the informal sectors of the economy and enhance their quality of life or release them from poverty (Widiyanto, 2007).

In Indonesia, as of 2006, there are approximately 49 million of small and medium enterprises (SMEs) active in the country and SMEs have been the main player in domestic economic activities as they account for more than 99.9 % of all firms and employ 96.2 % of the total workforce (Tambunan, 2011). The muslim micro-entrepreneurs as the largest customers for microfinance programme in the country, are including in the SMEs movement. To answer the need of muslim customers, an Islamic financial cooperatives which is called Baitul Maal wa Tamwil (BMT) is established to help muslim micro-entrepreneurs as a strategy for eradicating rural poverty (Kholis, 2009). BMT divides its role into two functions. The social missions is operated by Baitul Maal where collecting and distributing the charity fund to the poor is the

main objective (zakat, infaq, sedekah). Whilst, Baitut Tamwil operates based on commercial or economic activities, upon which the fund are being distributed to productive activities.

Being a public institution, BMTs have been subjected to be responsible and accountable to the stakeholders and muslim public at large. Its performance which is represented by the efficiency and the effectiveness in managing society funds are an obligatory that indicates the health of this institutions. Increasing efficiency is important to enable the BMTs in attracting the investor, increase its capital internally and secure it's position to be sustain in the future. However, the studies which measure efficiency and effectiveness on Islamic microfinance institutions (IMFIs) especially BMTs are still limited. In fact, BMT's roles and tasks are seen in developing human resources and supporting small micro enterprises (SMEs) that can support economic activities. Thus, this paper attempts to fill the gaps by examining the efficiency of BMTs as Islamic microfinance institutions in Indonesia. The structure of the paper is divided into four sections. The next section provides an overview of BMTs in Indonesia and literature on efficiency. Section three discusses the methodology while section four explains the findings. The last section is the conclusion.

Literature Review

Unlike the commercial bank which is regulated under the Banking Act of Indonesia Central Bank, BMTs as Islamic microfinance institutions (IMFIs) are regulated under Ministry of Cooperatives No.91/kep/M.KUKM/IX/2004. The jurisdiction was published as guidelines for BMT's operational. BMT can be called shariah financial services cooperatives (KJKS; Koperasi Jasa Keuangan Syariah)[1] due to its nature in cooperative model. This model was born as the nature of Indonesian culture. Where cooperation among community develops into a business and social mission. In cooperative model, capital which used to start BMT is shared among the founders, while

[1] Some of BMTs use the name of KJKS BMT, BMT or KJKS only. But all of the identification name are the same meanings (considered as BMT of Islamic MFIs). BMT with KJKS's name also means that the BMT had regulated by Ministry of Cooperatives and SME

the BMT's customers also involve to pay a membership fee as the contribution to BMT's operation. Therefore, BMT's mission is always the priority for the members welfare.

Recently, there are around 4,000 BMTs operate and spread in 25 provinces in the country. However, eventhough BMTs concept and role are well accepted by society and the growth of number increased significantly, most BMTs faced common problems that need to be solved. A study by Rodoni (2008) found that most BMTs were lacking in human resources and had limited link to develop the business. Widiyanto and Ismail (2010) also indicated that the effectiveness of BMTs in financing was relatively low and it might be caused by the poor of management. Meanwhile, Kholis (2009) and Amalia (2009) analyzed that most of BMTs lack supervision and development assistance. Based on the previous studies, it can be summarized that the growth of BMTs is not consistent with its performance. On this condition, BMTs need assistance to develop its role, solve human resource problems, and increase its performance in order to achieve its objective in alleviating poverty and maintain the financial sustainability. Therefore, the efficiency and the effectiveness of BMTs are needed due to its responsible on the matter of financial intermediaries of the society.

According to Berger and Humphrey (1997), the first task in evaluating the performance of a financial institution is to separate those production units that are performing well from those that are performing poorly. This can be done by applying non-parametric or parametric frontier analysis which proposed by efficiency measurement. The information by efficiency analysis could help managerial to improve their performances (Berger and Humphrey,1997), improved profitability and service quality to customers (Berger, et.al, 1993). While for an MFI, efficiency analysis is useful to know if MFIs are well performing and if they can in the long run survive autonomously (Sedzro and Keita, 2009).

In term of efficiency, generating the maximum desired outputs for given inputs with available technology and describing how well a system in

performing is called economic efficiency. On the other word, it can be said that the effort to minimize costs or maximize profits by choosing a certain volume and structure inputs and outputs means economically efficient.

There are number of researchs done in measuring the efficiency of microfinance institutions (MFIs) over the world. Most of them are using Data Envelopment Analaysis (DEA) method to measure the efficiency and covered a sample period of two to five years. DEA is a non-parametric method which utilize the linear programming method to measure technical (technological) efficiency and requires inputs and outputs data.

Study by Qoyyum and Ahmad (2006) are among studies that analysed the efficiency of MFIs in South Asia (Pakistan, India Bangladesh). Hassan and Sanchez (2009) explored the efficiency of MFIs in MENA (Middle East and North Africa), Latin America and South Asia countries. Haq and Skully (2009) studied the efficiency of MFIs in Asia, Latin America and Africa. While Nghiem et.al (2006) analyzed the efficiency of MFIs in Vietnam only. All of these studies used DEA method to analyze efficiency of MFIs and found the effectiveness of this method in analyzing the best practices of MFIs, identify the problems and improve the MFI's functions. On the other hand, study on efficiency of Islamic MFIs are still limited, in fact, this institutions have established among muslim countries. How we assess that Islamic MFIs are efficient in contributing its role in economic and social, is one of the question that should be investigated more. Therefore, measuring efficiency of Islamic MFIs is an important effort to enhance the function of this institution for the ummah (muslim society).

Research Methodology

Charnes, Cooper and Rhodes (1978) or CCR defined Data Envelopment Analysis (DEA) as a mathematical programming model applied to observational data that provides a new way of obtaining empirical estimates of relations such as the production functions and/or efficient production possibilities surfaces that are conner stones of modern economics. DEA can be

defined as a methodology for analyzing the relative efficiency and managerial performance of Decision Making Units (DMUs) which have multiple inputs to produce multiple outputs. The purpose of DEA is to construct a non-parametric envelopment frontier over the data points such that all observed points lie on or below the production frontier (Coelli, 1996)

DMUs can be considered as any entity that is to be evaluated in terms of its abilities to convert inputs into outputs. These entities can be profit or non-profit organizations. Moreover, DEA does not only determine efficiency value for each DMU but also identify other inefficient DMUs. DMUs can be utilized as benchmarks for improving inefficient test. A DMU is considered inefficient if the score is less than 1, but it is efficient if it obtains a score of 1.

If a population represented by *n* productive units DMU1, DMU2,….DMUn and each unit produces *s* outputs while consuming *m* inputs. The input matrix stated by *X = [xij, i = 1,2,..m, j = 1,2,…..n*], while the output matrix represented by *Y = [yij, I = 1, 2,…s, j= 1, 2,….n]*. Further, the q-th line, i.e Xq and Yq of these matrixes thus shows quantified inputs or outputs of unit DMUq. Therefore, based on Charnes, et.al (1978), the efficiency rate of such a unit in the presence of multiple input and output factors is defined as:

$$Efficiency = \frac{\text{weighted sum of outputs}}{\text{weighted sum of inputs}} = \frac{\sum_{i=1}^{s} UiYiq}{\sum_{j=1}^{m} VjXjq}$$

where:

vj, j = 1, 2,..m, are weights assigned to j-th input,

ui, i = 1, 2,..s, are weights assigned to i-th output

DEA are calculated by using Constant Return Scale (CRS) and Variable Return Scale (VRS) model. CCR assumes ratio of additional input and output is equal (CRS) or DMUs is at optimal scale, while BCC argues ratio of additional input and output is non-equal (VRS). In addition, CCR model represents multiplication of Pure Technical Efficiency (PTE) and Scale Efficiency (SE) while BCC model examines Technical Efficiency (TE) only.

Technical efficiency (TE) describes the ability of a business unit to maximize output given certain amount of input or minimize its inputs given outputs. Hasan and Sanchez (2009) defined pure technical efficiency (PTE) to firm's ability to avoid waste by producing as much output as input usage allows, or by using as little input as output production allows. While Scale efficiency (SE) is defined as proportional reduction if the firm or bank achieved constant return to scale (CRS) or refers to the firm's ability to work at its optimal scale.

To define some notation, Coelli (1996) started by assuming data on K inputs and M outputs on each of N firms or DMUs. For the i-th DMU, it stated by the vectors xi and yi. Moreover, the data of all N DMUs represented by the KxN input matrix, X and the MxN output matrix, Y. Coelli (1996) also mentioned that the best way to introduce DEA is via the ratio form. For each DMU, a measure of the ratio of all inputs, such as u'yi/v'xi, where u is a Mx1 vector of output weights and v is a Kx1 vector of input weights. The input oriented measure of a particular DMU, under CRS, is calculated by:

$$\begin{aligned} &\text{Min}_{\theta,\lambda}\ \theta \\ &\text{St} \quad -yi + Y\lambda \geq 0, \\ &\qquad \theta xi - X\lambda \geq 0, \\ &\qquad \lambda \geq 0 \end{aligned}$$

where θ is a scalar and λ is a Nx1 vector of constant (Coelli, 1996). If $\theta = 1$, the DMU is considered is efficient which lies on the frontier (technical efficient). Meanwhile, if $\theta < 1$, DMU is inefficient, thus, it need a $1 - \theta$ reduction in the inputs levels to reach the frontier. It should be noted that the linear programming problem must be solved N times, once for each DMU in the sample.

The use of CRS which considered all DMUs are at optimal scale, might encourage the result of TE confounded by SE. It can be happen when DMU is in imperfect competition, constraints on finance, etc. Therefore, the use of VRS which was promoted by Banker, Charnes, and Cooper (1984) attempt to calculate TE that devoid the SE effects. Based on CRS linear programming problem, the VRS can be calculated by adding the convexity constraint: $N1'\lambda = 1$ to provide:

$$\begin{aligned} &\text{Min}_{\theta,\lambda}\ \theta \\ &\text{St} \quad -yi + Y\lambda \geq 0 \\ &\qquad \Theta xi - X\lambda \geq 0, \\ &\qquad N1'\lambda = 1 \end{aligned}$$

$\lambda \geq 0$,

where N1 is an Nx1 vector of ones. This model provides TE scores which are greater than or equal to CRS model, it caused by a convex hull intersecting planes which envelope the data points more tightly than the CRS conical hull.

DEA method as one of measuring the efficiency is selected to measure the performance of BMTs on this study. This method is choosen due to its useful features when it applied such each decision making unit (DMU)[2] is assigned a single efficiency score, hence allowing ranking amongst the DMUs in the sample. Secondly, it highlights the areas of improvement for each single DMU and it is possibility of making inferences on the DMU's general profile. The formula of DEA method is as follows

Efficiency of DMU = *p*

Σ μk yk0 DMU = decision making unit

k=1 m = different inputs

m p = different *outputs*

Σ vi xi0

n = number of DMU evaluated

i=1

xij = number of input I consumed by DMUj

yij = number of output k produced by DMUj

In DEA, The most efficient firm (with the score of 1) doesn't necessarily generate maximum output level but it does indicate that it has tendency of generating best practice outputs among the rest of firms in the given sample.

Some previous studies that using DEA method, mostly used production and intermediation approach to the choice of inputs and outputs which is similar with approach that used by banks. According to Nghiem et.al (2006), production approach considers financial institutions as a production unit, using standard inputs to make transactions and to process financial documents. Meanwhile, in the intermediation approach considers financial institutions as intermediating between savers and borrowers. Zamil and Abdul Rahman (2008) argued that intermediation approach was suitable for evaluating Islamic banking activities or an Islamic financial institution as a whole. Intermediation approach implies the importance of intermediary activities.

For the purpose of this study, the intermediation approach

[2] DMU on this study is BMTs

will be adopted in the definition of inputs and outputs used whereby it assumes BMTs are primarily intermediating funds to microentrepreneurs. Two inputs and two outputs will be analyzed to measure BMT's efficiency by using DEA method. Due to data availability issues, the inputs and outputs that proposed by this study are as follows:

Table 1
The Inputs and Outputs of The Study

INPUTS	OUTPUTS
Fixed assets; represents the support of fixed assets to BMT's operations	**Disbursement of loans**; represents the BMT's main activities which delivers the microfinancing to microentrepereneurs or poor people
Total Capital; represents total funds that have been collected to support BMT's activities	**Total profit sharing**; represents the achievement of BMTs to financial sustainability

Based on table 1, fixed assets (less any depreciation) is the asset that support BMT's activities, while total capital consists of membership fees, donation or funds from third parties. Moreover, total profit sharing represents the achievement of BMTs in earning the profit, while loans disbursed are measured by borrowed funds. All variables are measured in millions of Rupiah (Rp).

Results and Analysis

The basic of Data Envelopment Analysis (DEA) is related to examine the relative efficiency of the selected institutions. This study initially reports the efficiency of twelve large size BMTs from the year 2009 to 2011, which operated in the provinces of Indonesia with the highest number of poor people live (East java, West Java and Central Java). Currently, the number of population in Indonesia estimated around 237 million people, where around 30 million (12.49 %) people live below poverty line (Central Bureau Statistic, 2011). The highest population of poor people live is on three provinces, such West Java has 4,648.63 million poor people, followed by Central Java with 5,107.36 million poor people

and the highest number is in East Java with 5,356.21 million.

To identify the efficiency measures, this study applies DEA method by using DEAP version 2.1 developed by Coelli (1996). The efficiency result by 12 BMTs are as follows:

Table 2
Technical Efficiency in BMTs; 2009-2011
(Constant and Variable Return to Scale)

Year	Sample Size	Technical Efficiency Mean of sample CRS	Pure Technical Efficiency Mean of sample VRS	Scale Efficiency Mean of sample
2009	12	0.631	0.756	0.840
2010	12	0.681	0.793	0.866
2011	12	0.779	0.862	0.905
MEAN		0.697	0.804	0.870

Table 2 explains the mean of TE under the assumption of CRS, while PTE and SE under the assumption of VRS. Between 2009 to 2011, the mean TE under the assumption of CRS ranged from 63.1% to 77.9%. On the other word, it can be concluded that in 2011 for example, the BMTs on average could have produce the same level of output by actually using only 77.9% of the input mix or on average the BMTs were still 22.1 % technically inefficient. Meanwhile, under the assumption of VRS, between 2009 to 2011, 75.6% to 86.2% is the PTE range, and 84% to 90.5% is the SE range. TE under the CRS is called (global) TE, since it did not account for scale effect (Cooper, et.al, 2000). Meanwhile, TE under VRS assumption represents the local PTE.

Moreover, the mean TE in the BMTs increases from 2009 to 2011. The same condition was

occurred for PTE and SE. The main source of technical inefficiency of BMTs between 2009 to 2011 is pure technical inefficiency. It is clarified by lower efficiency measures of PTE as compared to SE. In 2011, for instance, with the average SE at 90.5%, it can be summarized that inefficiency was due to the divergence of the actual scale of operation for the most productive scale size is about 9.5% as compared to the pure technical inefficiency of 13.8%.

Table 3 explains the TE for 12 BMTs, calculated using DEA under the assumption of CRS. Al Hikmah Bangsri are consistently efficient in the optimal scale throughout the sample period. BMTs at an annual average level of 1 is considered as the highest average of TE.

Table 3
DEA Technical Efficiency for BMTs from 2009-2011
(Constant Return To Scale) – By Year

No BMTs	Province	Technical Efficiency (CRS)			MEAN
		2009	2010	2011	
1. Al Amanah	West Java	0.345	0.396	0.498	0.413
2. Al Ikhlash	West Java	1.000	0.770	0.593	0.788
3. Al Ishlah	West Java	0.294	0.390	0.661	0.448
4. Al Ittihad	West Java	0.408	0.789	1.000	0.732
5. Binama	Central Java	0.476	0.601	1.000	0.495
6. Hudatama	Central Java	0.408	0.397	1.000	0.602
7. As Salam	Central Java	0.334	0.344	0.442	0.373
8. Amanah Bukateja	Central Java	0.625	0.830	0.676	0.703

9. Al Hikmah Bangsri	Central Java	1.000	1.000	1.000	1.000
10. Bina Umat Sejahtera	East Java	0.681	0.651	0.780	0.704
11. Syirkah	East Java	1.000	1.000	0.709	0.903
12. UGT Sidogiri	East Java	1.000	1.000	0.993	0.998
MEAN		0.631	0.681	0.779	0.697

Moreover, in table 4 and table 5 present PTE and SE respectively under the VRS assumption. As evidenced in the result in table 4, Al Hikmah Bangsri is still consistently efficient. Similar result is also showed by BMT Binama, Syirkah and UGT Sidogiri with the same level of 1. Amanah Bukateja follows with an annual average level of 94.3%, Al Ittihad, Al Ikhlash and Al Ishlah come after with an annual average level of 90.4%, 79.1% and 78.6%. On the other hand, the least efficient BMTs with an annual average level of 44.6% and 42.9% are conducted by BMT As Salam and Al Amanah. Overall, all the BMTs process the PTE level of 80.4%. It means that the BMTs could have produced the same level of output by actually using only 80.4% of the input mix.

Table 4
DEA Technical Efficiency for BMTs from 2009-2011
(Variable Return To Scale) – By Year

No	**BMTs**	**Province**	**Technical Efficiency (VRS)**			**MEAN**
			2009	**2010**	**2011**	
1.	Al Amanah	West Java	0.345	0.438	0.505	0.429
2.	Al Ikhlash	West Java	1.000	0.773	0.600	0.791
3.	Al Ishlah	West Java	0.689	0.825	0.844	0.786
4.	Al Ittihad	West Java	0.711	1.000	1.000	0.904

5. Binama	Central Java	1.000	1.000	1.000	1.000
6. Hudatama	Central Java	0.470	0.417	1.000	0.629
7. As Salam	Central Java	0.340	0.391	0.607	0.446
8. Amanah Bukateja	Central Java	0.829	1.000	1.000	0.943
9. Al Hikmah Bangsri	Central Java	1.000	1.000	1.000	1.000
10. Bina Umat Sejahtera	East Java	0.682	0.675	0.789	0.715
11. Syirkah	East Java	1.000	1.000	1.000	1.000
12. UGT Sidogiri	East Java	1.000	1.000	1.000	1.000
MEAN		0.756	0.793	0.862	0.804

In table 5, additionally, Al Hikmah Bangsri was functioned in a condition free of any scale inefficiency. UGT Sidogiri, Al Ikhlash and Bina Umat Sejahtera follow with an annual average level of scale inefficiency 0.2%, 0.5% and 0.7%. The least efficient BMT in term of SE was conducted by BMT Al Ishlah with an annual average level of scale inefficiency 43.9% respectively. Overall, all the BMTs operate the average SE level of 85.8% for the period 2009 to 2011.

Table 5
DEA Scale Efficiency for BMTs from 2009-2011
(Variable Return To Scale) – By Year

No	**BMTs**	**Province**	**Technical Efficiency (VRS)**			**MEAN**
			2009	**2010**	**2011**	
1.	Al Amanah	West Java	0.998	0.904	0.987	0.963
2.	Al Ikhlash	West Java	1.000	0.996	0.989	0.995

3. Al Ishlah	West Java	0.426	0.473	0.783	0.561
4. Al Ittihad	West Java	0.574	0.789	1.000	0.904
5. Binama	Central Java	0.476	0.601	1.000	0.788
6. Hudatama	Central Java	0.870	0.950	1.000	0.940
7. As Salam	Central Java	0.984	0.880	0.727	0.864
8. Amanah Bukateja	Central Java	0.754	0.830	0.676	0.753
9. Al Hikmah Bangsri	Central Java	1.000	1.000	1.000	1.000
10. Bina Umat Sejahtera	East Java	0.998	0.963	0.989	0.983
11. Syirkah	East Java	1.000	1.000	0.709	0.903
12. UGT Sidogiri	East Java	1.000	1.000	0.993	0.998
MEAN		0.840	0.866	0.905	0.858

The scope of efficiency of BMTs measured in this study is related to the efficiency of the individual BMTs where as intermediary, BMTs attempt to optimalize its fixed assets and capital to achieve the optimum disbursement of loan and profit. The next table summarizes the average efficiency of BMTs between 2009 to 2011 measured by DEA

Table 6
Summary of Average DEA Efficiency of BMTs from 2009-2011

No	BMTs	Province	MEAN		
			TE	PTE	SE
1.	Al Amanah	West Java	0.413	0.429	0.963
2.	Al Ikhlash	West Java	0.788	0.791	0.995
3.	Al Ishlah	West Java	0.448	0.786	0.561

4. Al Ittihad	West Java	0.732	0.904	0.904
5. Binama	Central Java	0.495	1.000	0.788
6. Hudatama	Central Java	0.602	0.629	0.940
7. As Salam	Central Java	0.373	0.446	0.864
8. Amanah Bukateja	Central Java	0.703	0.943	0.753
9. Al Hikmah Bangsri	Central Java	1.000	1.000	1.000
10. Bina Umat Sejahtera	East Java	0.704	0.715	0.983
11. Syirkah	East Java	0.903	1.000	0.903
12. UGT Sidogiri	East Java	0.998	1.000	0.998
MEAN		0.697	0.804	0.858

From table 6, it shows that on average BMTs can produce the same level of output by actually using only 69.7% of the input mix (inputs consist of total capital and total fixed asset). In contrast, the average of PTE and SE is at 80.4% and 85.8% respectively. Overall, the average technical inefficiency of the BMTs is mainly due to pure technical inefficiency. It is proved by the lower level of PTE as compared to SE. This means that BMT have wasted their resources or failed to produce enough outputs (e.g making enough loans, raising funds or getting more borrowers).

When the individual BMTs were analyzed, it was found that Al Hikmah Bangsri was the most efficient BMT compare to others due to its consistently efficient either in the optimal scale or in variable return to scale that achieve level of 1. Moreover, BMT Binama as one of the big size of BMT in Indonesia did not show fully efficient condition. It was showed by the scale inefficiency of 21.2%. In addition, on average the BMTs experienced pure technical inefficiency of between 5.7% to 57.1% and scale inefficiency of between 0.2% to 43.9%. The gap in efficiency scores between CRS and VRS

may indicate that BMTs were still facing managerial problems in utilizing given resources. Similar result also showed by Widiyanto and Ismail (2007) that indicated the poor of management in BMT's body.

Furthermore, Based on VRS assumption and intermediation approach, the study showed that only three BMTs were relatively efficient, while the nine others were inefficient. It has indicated that BMTs did not used the resources (inputs) optimally, thus, creating unobtained optimal outputs. BMT As Salam was one of the least efficient BMT, for instance, it has the lowest level of TE (37.3%) and PTE (44.6%). Eventhough, As Salam has higher level of SE compared to Al Ishlah, the study indicates that As Salam has a problem in financing and human resources due to the low level of TE and PTE.

Learn from BMTs that have high level of efficiency such Al Hikmah Bangsri, Syirkah and UGT Sidogiri, the study suggests the low efficiency level of BMTs to optimize the inputs (e.g additional capital from third parties) in order to increase output maximizations (e.g increasing the profit).

Conclusion

The objective of this study has been to estimate the efficiency of twelve large Baitul Maal wa Tamwil (BMT) as Islamic microfinance institutions in Indonesia by using Data Envelopement Analysis (DEA). These twelve BMTs are operating in the provinces of Indonesia with the highest number of poor people live. The study considers intermediating approach where BMTs as intermediating between savers and borrowers. Moreover, fixed assets and capital of BMTs are chosen as inputs, while, disbursement of loans and total profit sharing are preferred as outputs.

The result indicates that overall the average technical inefficiency of the BMTs is mainly due to pure technical inefficiency. It indicates that BMTs were not optimal to produce the outputs, such lack of raising the funds. Furthermore, from twelve BMTs, it is confirmed that only three BMTs have high level of efficiency. The BMTs with the low level of efficiency indicated by the low

level of TE and PTE. On the other word, the low level efficiency of BMTs are lack of management such low quality of human resources and lack of financing.

In conclusion, the study suggests to optimize the inputs and increase the outputs for the low level efficiency of BMTs such catch the additional capital from third parties to increase the profits. The study also implies to learn from BMTs with the optimum level of efficiency, especially how these BMTs can be survive autonomously and financial sustainability. In a nutshell, other Islamic MFIs can learn from the efficient BMTs in Indonesia for developing the economic of ummah globally.

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