

## **Sustainability of BMT financing for Developing Micro-enterprises**

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### **Abstract**

The aim of this study is to analyze the sustainability of Islamic micro-financing for developing micro-enterprises (ME). We use the sample of *Baitul Mal Wat Tamwil* (BMT), as Islamic microfinance institution in Indonesia. Two approaches will be used to explore the sustainability, i.e., technical efficiency (using data envelopment analysis (DEA) and level of outreach. The results indicate that: first, generally the efficiency of BMTs is relatively low. Scale efficiency also indicates that BMTs are operated still far from optimal scale. The results suggest that there is gap in efficiency scores obtained from CCR and BCC models. This indicates that BMTs still face the managerial problems. Second, Islamic micro-financing is useful for developing micro-enterprises and contribute a great social benefits to the society in several ways. Although the profitability efficiency of BMTs is relatively low, since generally BMTs have made a profit and social benefit, Islamic financing can be predicted to be sustainable – able to provide viable Islamic financing.

**Keywords:** Sustainability, technical efficiency of profitability efficiency, level of outreach.

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## 1. Introduction

The vital role of micro-enterprises (MEs) in the economy has been highlighted in many studies, among others are CAMEO (2004) and Budiantoro (2004). The study done by CAMEO (2004) shows that 44 percent of new job growth in California was created by MEs. It also generates extra income for owner and their families. While, Budiantoro (2004) finds that 30 percent of GDP in Indonesia was contributed by MEs. However, MEs have difficulties in developing their businesses since they only have small amount of capital. Whereas, building a strong business presumably requires access to sufficient capital. As stated in Ramzan (1997), Roberts and Roberts (2003), and Afrane (2003), the injection of capital into ME not only has positive impact on business turnover, but also on the monetary value of MEs' inputs, raw material or machinery and employment.

Within the ME field, micro-financing is the best known approach to providing financial services.<sup>3</sup> The provision of financial services would help ME to start or to strengthen their business. We believe that the rate and level of success of early stages businesses would enhance the operational sophistication of ME and increase the operational effectiveness, and lead to improve their performance. Nevertheless, in achieving the success, MEs need long-term access to financial services, and therefore, the sustainability of micro-financing is very important for these purposes. So far, the studies on the sustainability are limited to two aspects: first, the studies focus on a sample of microfinance institution (MFI) in different countries (for example, microfinance in Bangladesh, Bolivia, Georgia) ; second, the interest-based micro-financing.

Although Islam has already recognized the important of capital since Prophet Muhammad (pbuh), as can be seen in Akram Khan (undated), the establishment of Islamic-based micro-finance institutions (i-MFI) only appears in the early 1980s. Since then, many Muslim countries try to introduce i-MFI (such as Malaysia (1993), Indonesia (1984),

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<sup>3</sup> The terms micro-financing and micro-credit are often used interchangeably and yet they represent the provision of different and distinct levels of financial service. For example, under shariah principles, MFI provides the financing facilities to ME to buy raw material or inject capital via mudarabah financing.

Jordan (1978), Yemen (1997)) as a mode of financing to provide capital for MEs and to alleviate the poverty. However, the study that assess the performance especially sustainability of i-MFI is very rare. Therefore, this study contributes to the existing literature by using the sample of *Baitul Mal Wat Tamwil*, BMT (an i-MFI in Indonesia) which offers an Islamic micro-financing (interest-free based).<sup>4</sup> In addition, this institution constitutes a new form of development phenomenon in Indonesia.

The remaining discussion of this paper is organized into five sections. Section 2 discusses the prior studies that will highlight the development, sustainability and effectiveness of micro-financing. Section 3 discusses the measurement of efficiency. Section 4 discusses the results of the study. Section 5 provides the conclusions.

## 2. Prior Studies

Although the concept of sustainability and effectiveness has been coined in the economy for several decades, but their application in assessing the MEs in relation to MFI become a new area of research since mid-1980s (Brau and Woller, 2004). Sustainability of micro-financing programs constitutes important component to support the development of MEs, since it constitutes long-term process in which MEs require long-term access to financial institution. It indicates that the measurement of effectiveness (to evaluate the benefit of the programs) and the prediction of sustainability micro-financing programs are required in developing both MEs and MFIs.

From the above discussion, it shows that the success of micro-financing can be indicated from two sides: from debtor and creditor. First, from debtor side, micro-financing can increase production, income and profit of MEs. Second, from creditor side, the growth of asset and the rate of repayment of credit become an indicator of the effectiveness of credit. Therefore, it is needed to select the MEs to help making better allocation for

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<sup>4</sup> Example, *mudarabah*, *musharakah*, *murabahah*, *bai 'u bithaman ajil*, and *qard al hasan* financing.

sustainability and effectiveness of the credit as they will be a vehicle for economic development.

Since both are very much related, the studies that concentrate on those two components become a new focus area for MFI. It starts from the arguments that the effectiveness of micro-financing is related to the sustainability of the program, because achieving the success, MEs need long-term access to financial services. Therefore, financial sustainability or self-sufficiency is a prerequisite for making micro-financial services permanent as well as widely available (ICC, 2001). This study also argues that the sustainability is about creating institutions that can provide a positive flow of benefit for as long as they are needed. In addition, according to Pissarides et al. (2004), MFI can be said to be self-sustainable if, without the use of subsidies, grant or other concession resources, can profitably provide finance to MEs on an acceptable scale. In order to grow further, Otero (1998) reveals that MFIs need to generate profit, but at the same time, they are required to balance the social objectives of reaching low-income entrepreneurs with generating a return for their investors. Therefore, MFIs can be distinguished from others on their dual mission of balancing a social agenda or social impact with its financial objective.

The social agenda in helping the poor can be sustained, as proposed by Snow (1999) and Marr (2002), if the net benefits to the community exceed total cost. Benefits accrue to the community when new businesses are successful and income increases. Furthermore, Gaika (2003) states that the effectiveness of micro-financing depends on whether it has the flexibility to induce the participation of the poorest and whether it enables them to acquire the basic skill. It is strengthened further by Khandker (2003), who states that improving skill of borrowers is needed to improve the productivity and income.

From the perspective of MFI, we can conclude that the sustainability of micro-financing can be indicated by self-sufficiency and profitability of MFI; the rate of repayment and the business success of ME; as well as the benefit of the program to community. The sustainability of the credit programs becomes an important component to

achieve the goals of MFIs' programs, i.e., profitability is necessary to achieve self-sustainability. Hence, MFI that generates positive profit is financially sustainable. Therefore, analyzing the ability of MFIs in generating profits (profitability efficiency) is needed.

To achieve the profitability, financial resources should be allocated efficiently. Increasing efficiency enables the MFI to generate higher profits and this condition will create two benefits. First, the higher profit can be returned to investors that will encourage them to invest in MFI. Second, the higher retained earning will enable MFI to add capital internally, and it can reach more MEs and eventually, the sustainability can be achieved. Therefore, improving the efficiency of MFI becomes an important research agenda to pursue its sustainability.

### **3. Measurement of Efficiency**

Many studies have used DEA to evaluate the efficiency of financial institutions. It is due to several advantages. First, according to Golany (1993), DEA has the virtue of reducing multiple ratio measures to a single efficiency score. Furthermore, Gregoriou et al., (2004) states that the DEA method avoids certain weaknesses of financial ratio analysis, such as (i) the financial ratios cannot consider the value of management's decisions or actions that will affect future performance versus current performance; and (ii) these ratios only give an aggregate view of the different aspects of past and current performance (funding, marketing and operations). Related to the measurement of MFIs efficiency Nieto et al., (2004) states that DEA efficiency is well based on Economic Theory, while ratios efficiency are only consensus indicators and they lean toward DEA efficiency.

Second, Krivonoshko et al., (2002) argue that DEA is a powerful approach to efficiency investigation of production units. Furthermore, Anderson (1996) spells out a few of the characteristics that make DEA powerful; (i) DEA can handle multiple input and output models; (ii) it does not require an assumption of functional form of relating inputs to

outputs; (iii) decision making units (DMUs) are directly compared against a peer or combination of peers; (iv) Inputs and outputs can have very different units. Jemric and Vujcic (2002) reveals that the main advantage of DEA is that, unlike the regression analysis, it does not require a prior assumption about the analytical form of production function. Instead, it constructs the best practice production function solely on the basis of observed data and therefore it is not possible to make mistake in specifying the production technology. On the other hand, the main disadvantage of DEA is that the frontier is sensitive to extreme observations and measurement error since the basic assumption is that random errors do not exist and that all deviations from the frontier indicate in efficiency.

Third, Barr et al., (2002) believe that DEA has proven to be a valuable tool for strategic, policy, and operational problems, particularly in the service and non profit sectors. Furthermore, DEA is applicable to real world operations of complex financial institutions. Industry analysts and policymakers can use DEA as a powerful tool for increasing understanding of institution and markets in this rapidly changing and increasing complex industry. Leong et al., (2003) states that DEA models offer much potential for a significant advance in the comparative analysis of financial institution by enabling the current study of the multiple variables that affect bank efficiency over time. DEA model could be employed to develop industry monitoring tools using time series data for policy inference and performance evaluation.

Hence, the application of DEA is quite diverse. In banking, Luo (2003) has used the technical efficiency of profitability efficiency (by using DEA) to measure the ability of bank in generating profits (using employees, assets, equity as inputs and revenue, profit as outputs) and the efficiency significantly can be used to predict the likelihood of a bank failing.<sup>5</sup> Profitability efficiency model (by using DEA) also have been utilized by Soteriou and Zenios (1999) to measure the efficiency of bank branches (using managerial personnel, clerical personnel, computer terminal, space as inputs and profit as output) .

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<sup>5</sup> This study focuses on technical efficiency, because it reflects the ability of firm to obtain maximal output from a given set of input (see, Coelli (1996)).

Ataullah et al., (2004) also used DEA to measure the technical efficiency (TE) and pure technical efficiency (PTE) of bank in India and Pakistan ( based on the Constant Return to Scale (CRS) and Variable Return to Scale (VRS) assumption ) by using two models. First, loan-based model; banks incur operating and interest expenses to produce loan and advances, and investment. Second, income- based model; banks incur operating and interest expenses to produce interest and non interest income. They followed two input-output models, the first model (loan-based model) based on the assumption that commercial banks' objective to intermediate funds, and the second model (income- based model) based on assumption that commercial banks' objective to generate revenue. The results suggest that the efficiency of commercial banks is much higher in the first model, which uses earning assets as output, than in second model, which uses income as output. This gap in efficiency cores obtained from the two models could be due to the presence of high non-performing loans in the asset portfolio of banks in the two countries.

Furthermore, the use of DEA spreads to measure the efficiency of MFIs. Periera (2002) have used DEA to evaluate the efficiency (financial and operational) of MFIs and tried to answer the question of financial self-sustainability. The conclusion is that DEA can be powerful instrument to operate in micro-credit industry, whether in operation, deregulatory bodies or the financing institutions.

Basically the model that has been developed by Soteriou and Zenios (1999) and Luo (2003) to evaluate the profitability efficiency and the second model (income-based model) that has been developed by Ataullah et al., (2004) are not different. These models are developed based on the production approach. The difference of these models laid on the measurement of input and output. Model can be developed based on the objective of the analysis. Therefore, to analyze the efficiency of BMT using DEA, the model can be developed appropriately with the objective of the analysis. Since BMT is operated based on profit sharing system and refer to the second model from Ataullah et al., (2004), Lou (2003) and Soteriou and Zenios (1999) interest expenses in the model can be substitute by

the profit (that have to be paid by BMT to the savers and capitalist) as input, and interest income can be replaced by profit of BMT.

This study will use Charnes-Cooper-Rhodes Model (CCR model) and the Banker-Charnes-Cooper Model (BCC model). The main difference between the two models is the treatment of return-to-scale. BCC allows for variable-return-to-scale (VRS); CCR assumes that each DMU operates with constant-return-to-scale (CRS). The estimation with these two assumptions allows the technical efficiency (TE) to be decomposed into two collectively exhaustive components: pure technical efficiency (PTE) and scale efficiency (SE) (see, Coelli (1996)). PTE refers to managers' capability to utilize firms' given resources, while SE refers to exploiting scale economies by operating at a point where the production frontier exhibits constant returns to scale (Ataullah et al., 2004). According to Luo (2003) SE can be used to determine how close a DMU is to the most productive scale size.

The first step in measuring efficiency using DEA is to specify the inputs and outputs of BMTs. The input-output specification is developed based on the production approach by utilizing financial model. The inputs of BMTs cover the: (i) profit for savers and owner ( $x_{1j}$ ), and (ii) operating expenses ( $x_{2j}$ ); and the output is: (i) profits of BMT (total profit-profit distributed to savers and owner) ( $y_{1j}$ ). The analysis covers the period from 2002 to 2005. The sample includes 60 BMTs in six regencies (Brebek, Cilacap, Wonosobo, Klaten, Semarang, Jepara) for which data for at least three years are available. This will allow, to some extent, whether the efficiency of a BMT is due to the capability of managers or due to some random factors that cannot be controlled for in the DEA calculations.

#### **4. The Results**

This study drew upon primary data. The data were derived from two different agents, i.e., ME and BMT. First, data from ME (participants in BMT's financing) was collected from



January until March 2006. It was about 204 MEs involved in the survey. Second, the data for BMT was collected from June until December 2005. We utilized 60 BMTs in Central Java as our sample. The list of BMTs was collected from Central Java Center for the Incubation of Small Business (PINBUK). The questionnaire was directed to managers or officials of BMT.<sup>6</sup> By using the area sampling frame (i.e., based on the highest number of BMT in each regency per residence area), we are able to create a good sample to represent BMT in Central Java. In addition, we also use the willingness of BMT to locate the sample of MEs to answer the questionnaire as our sample frame.

In the following discussion, the results will be analyzed in three separate sub-topics: i.e., relative efficiency, level of outreach and sustainability of BMT.

### **Relative Efficiency**

Using both the DEA models (i.e., CCR and BCC models), the relative efficiency of BMTs is calculated for the period 2002-2005 (separately for each year). Production approach (by utilizing financial model) is used to estimate relative efficiency of the BMTs for both DEA models. Furthermore, an input orientation is chosen because there is a tendency that BMTs has a greater control on the quantity of input relative to quantity of output.

The summary results of production approach for both CCR and BCC are reported in Table 1. From this table, the average efficiency (M) (stands for the average of all optimal value  $\theta_o^*$ ) was obtained by running separate programs for the CCR and BCC models of each BMT.

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<sup>6</sup> An example of this questionnaire can be asked from authors.

Table 1: The summary result of DEA score

Panel A: Summary results (CCR model)				
	2002	2003	2004	2005
Number of BMTs	54	57	59	60
Number of efficient BMTs	4	4	3	4
Average efficiency (M)	0.273	0.312	0.253	0.250
Standard deviation (sigma)	0.301	0.321	0.272	0.287
Interval I = (M-sigma;M+sigma)	(0;0.574)	(0;0.633)	(0;0.525)	(0;0.537)
% of BMTs in Interval I	83.33%	84.21%	84.75%	85.00%
Panel B: Summary results (BCC model)				
	2002	2003	2004	2005
Number of BMTs	54	57	59	60
Number of efficient BMTs	10	15	10	6
Average efficiency (M)	0.401	0.432	0.359	0.310
Standard deviation (sigma)	0.358	0.390	0.352	0.321
Interval I = (M-sigma;M+sigma)	(0.043;0.759)	(0.042;0.822)	(0.007;0.711)	(0;0.631)
% of BMTs in Interval I	70.37%	71.93%	77.97%	81.67%
Panel C: Summary results of scale efficiency				
	2002	2003	2004	2005
Number of BMTs	54	57	59	60
Number of BMTs in optimal scale	4	5	3	5
Average scale efficiency (M)	0.670	0.784	0.743	0.809
Standard deviation (sigma)	0.270	0.269	0.232	0.206
Interval I = (M-sigma;M+sigma)	(0.4; 0.94)	(0.513; 1.053)	(0.511;0.975)	(0.603;1.015)
% of BMTs in Interval I	70.37%	80.70%	72.88%	85.00%

Under the constant returns to scale assumption, as shown in Panel A Table 1, the results for 2002 show that the BMTs were characterized by a large asymmetry in their technical efficiency. Only four (out of 54) BMTs were efficient in that year, and the average efficiency of the BMTs was only 0.273. It means that if BMT produces its output on the efficiency frontier instead of at its current (virtual) location, it would require about 27.3% of the inputs. These figures are, without a doubt, not only relatively but absolutely low. The fact that the efficiency frontier being spanned by only four BMTs and relatively low average efficiency, indicates that in 2002 BMTs in Central Java exhibit extreme behavior. Indeed, the four efficient BMTs were relatively small in asset and number of participants. Table 1 also shows, in subsequent years, the average efficiency of BMTs

increases slowly to 0.312 in 2003 and declines to 0.253 and 0.25 in 2004 and 2005 respectively. The number of efficient BMTs in 2003 and 2005 remained the same, but it decline to three BMTs in 2004.

If we allow for variable-returns-to-scale (BCC model), as shown in Panel B Table 1, we find much less change during the period being analyzed. Allowing for variable-returns-to-scale always results in higher average efficiency because DMUs that are efficient under the constant-returns-to-scale are accompanied by new efficient DMUs that might be operated under the increasing or decreasing returns-to-scale. The average efficiency of the BMTs was 0.401 in 2002, and increased to 0.432 in 2003, but then it decreased to 0.359 and 0.310 in 2004 and 2005 respectively. In 2002, the number of efficient BMTs is 10, and 15, 10 and 6 in 2003, 2004 and 2005 respectively.

The average scale of efficiency score of BMTs, was 0.670 in 2002, as shown in Panel C Table1, and increased to 0.784, 0.743 and 0.809 in 2003, 2004 and 2005, respectively. Although the average scale of efficiency of BMTs increases rapidly, this condition indicates that BMTs in Central Java were operated far below optimal scale. Under both assumptions, either constant or variable-returns-to-scale, one can conclude that in the last four years (2002-2005), the BMTs in Central Java did not experience change of efficiency in the context of financial efficiency (profitability efficiency).

There are several factors that may cause the low profitability efficiency of the BMTs. First, the previous information indicates that managers' capability to utilize BMTs' given resources still needs to be enhanced to increase the profitability efficiency. It is very reasonable, since generally, the business expansion is conducted on the basis of 'learning by doing' (trial and error based on the managers' innovation capability) since the opportunity to obtain managerial enhancement training is still limited (in term of frequency and experts).

Second, the inclination of BMTs in serving micro-enterprises (i.e., demand for capital) as many as possible (with small loan) increases sharply the operational expenses. This situation reduces the profitability efficiency of BMTs. The scattered-plot diagram in

Figure 1 indicates that there is a negative relationship between profitability efficiency (DEA Score) with the number of participant - the higher number of participants is linked with the smaller efficiency score.

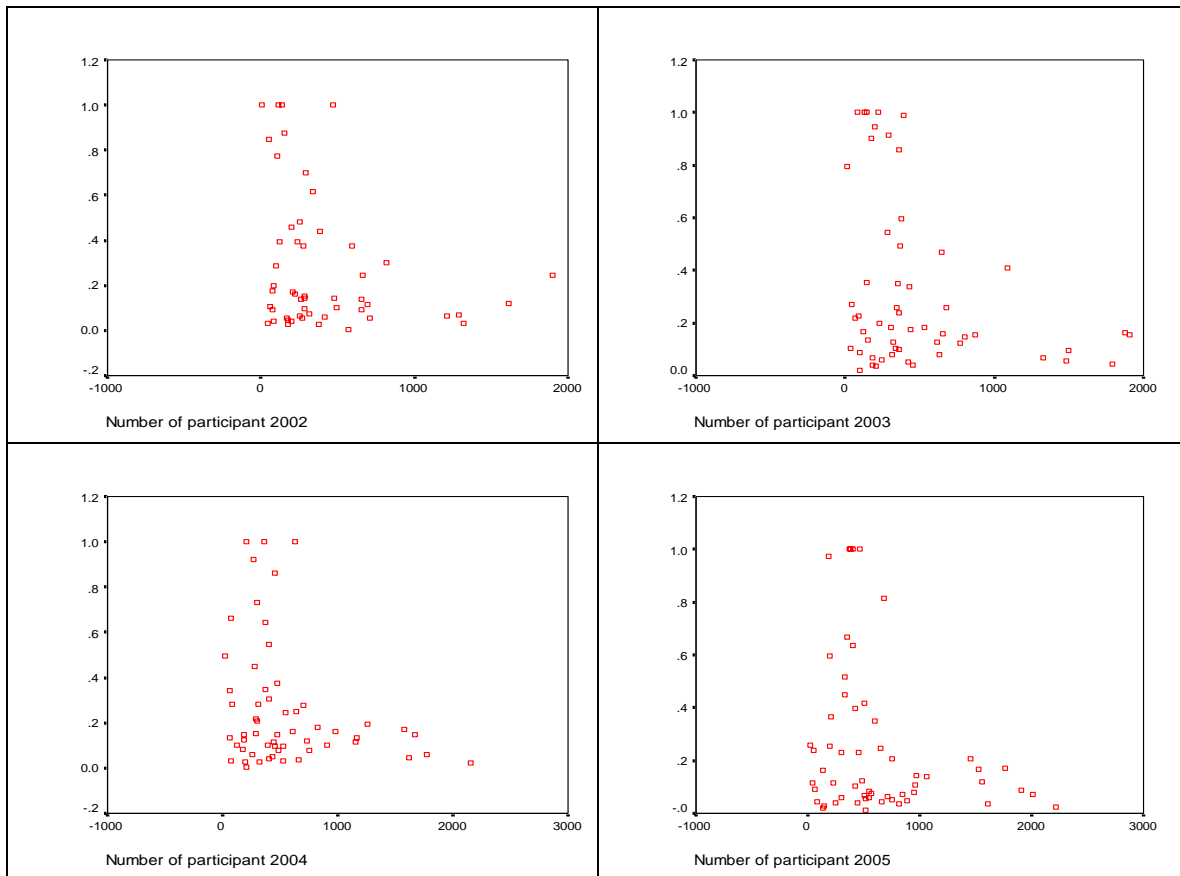


Figure 1: Relationship between efficiency and the number of participants (2002-2005)

Third, generally BMTs have been trying to increase the salary and the prosperity of their employees as the result of increasing business performance especially increasing their assets and profits. Therefore, it contributes to the increase of operational expenses as well as reduces the profit of BMTs and consequently reducing the profitability efficiency.

Fourth, generally BMTs have dual missions (business and social); i.e., act as financial intermediary (100% of BMTs); and an *amil* (collect and distribute *Zakah*), collect and distribute *Infaq* and *Shadaqah* (60% of BMTs) and provide financing on *qard al-hasan*

basis (53.33% of BMTs). Most of BMTs do not separate the management of business activities from social activities due to limited human resource.

Fifth, to fulfill the religious duty (follow the *Shari'ah*), most of BMTs (90 percent) pay *Zakah* and also taxes. It is clear that *Zakah* reduces the net profit of BMTs, and causes the profitability efficiency become lower. Nevertheless, *Zakah* (as the form of direct transfer payment from BMTs) contributes direct benefit to the society as a whole. This is the uniqueness of BMT as a part of the Islamic economic system. This suggestion is similar with Sadeq (1991), who argues the uniqueness of the Islamic economic system is that it incorporates in it unalterable provisions for compulsory transfer payments as well as optional charities, from the relatively better-off people in the economy to relatively worse-off population.

Finally, the other factors that also cause the lower efficiency of BMTs are: (i) some managers of BMT do a side job; (2) several BMTs use the manual system; (3) internal conflict between manager and the board of BMT. Double jobs cause the manager cannot fully concentrate in managing BMT, and the result can be predicted that the business performance of the BMT will be low. Manual system also brings the difficulties that cause the productivity of BMT become low. It is time consuming, since there is an inclination that the management cannot finish their job on time. The continuous internal conflict between manager and the board of BMT brings the BMT, in some cases, creates chaos.

### **Level of Outreach**

As shown in Table 2, Islamic financing practiced by BMTs in Central Java is able to enhance business performance of ME. The results of paired sample *t* test show that the mean of the business income, profit and business asset at the first time joining to BMTs (condition 1) different significantly from the second condition when survey is conducted (condition 2). The difference could be seen in column 4.

Table 2: The Summary of the paired samples t test of business income, profit and asset.

Indicators	Mean 1 (Rp)	Mean 2 (Rp)	Differences of Mean (Rp)	T value
Business Income 1 & 2	3,434,120.10	7,742,279.41	4,308,159.3	7.602***
Profit 1 & 2	803,379.90	1,877,972.79	1,047,592.9	8.418***
Business Asset 1 & 2	10,002,598.04	25,854,341.67	15,581,744.0	6.629***

Note: 1 and 2 represent the first and second conditions of the ME since joining the BMT

\*\*\* represents 0.01 significance level

Generally, MEs are also able to increase the number of employee from two persons to three persons after utilizing the Islamic micro-financing (with the difference of mean is one). This result indicates that Islamic micro-financing is able to improve business performance of ME effectively. The low rate of bad debt or the high rate of repayment also indicates that Islamic financing is effective in developing MEs. Overall, the rate of bad debt of BMTs in Central Java (for the period 2002-2005) is less than five percent or the rate of repayment greater than 95 percent. It indicates that Islamic financing which conducted by BMTs in Central Java is still effective.

The increasing business performance of MEs is also accompanied by the increasing of social benefit to the community in several forms. This study tries to analyze the social benefit by using four aspects: depth, breadth, length, and scope.

(a) Depth of Outreach

Depth of outreach is the value that society attached to the net gain of a given client (Schreiner, 2002). Household income of ME is used as a proxy of depth of outreach. The result of study shows that the household income of MEs increase significantly after more than eight months obtaining Islamic financing from BMTs. The result of paired sample *t* test ( $t = 7.602$ ,  $\alpha = 1\%$ ) shows that the household income of the participants at the first time joining to BMTs is different significantly from the last condition when survey is conducted (January–March 2006). Table 3 shows that the average of household income at the first time is Rp. 893,041.67 per month and increase to Rp. 2,150,813.7 per month, with the

difference of mean about Rp. 1,257,772.1. It indicates that the household income of the participants on average increase more than 100 percent.

Table 3: The Summary of the paired sample t test of household income.

Indicators	Mean 1 (Rp)	Mean 2 (Rp)	Differences of Mean (Rp)	T value
Household Income 1& 2	893,041.67	2,150,813.73	1,257,772.06	5.979***

Note: 1 and 2 represent the first and second conditions of the ME since joining the BMT

\*\*\* represent 0.001 significance level.

By using the BMTs' facilities, 96.08 percent of MEs stated that they can save the money, 99.02 percent can fulfill the basic requirement, 92.16 percent can pay the school fee for their children, 93.14 percent can pay the cost of medical treatment for their household members, and moreover 53.92 percent can increase their religious activities. Islam considers religion as constitutive of individual well-being and happiness, an end to be desired for its own sake (Naqvi, 2003). It means that Islamic financing that is offered by BMTs enhance their quality of life (physical and spiritual).

BMTs' financing was not only be able to improve the income of the participants, but also be able to reduce the percentage of participants under poverty line from 3.92 percent to 0.49 percent.<sup>7</sup>

#### (b) Breadth of Outreach

Breadth of outreach is the number of participants. The higher number of participant of BMTs point out that BMTs contribute higher benefit to the society - they can help higher number of MEs to develop their business. Giving Islamic financing to many of MEs, BMTs will contribute to the empowering people's economy.

<sup>7</sup> This calculation is based on the poverty line of Rp. 130,499 and Rp. 96,512 per month for urban and rural areas, respectively.

Table 4 shows that from 2002 to 2005 on average the number of BMT participants increases rapidly. In 2002, the mean of the number of participant is 482, and increase to 591 in 2003. The mean number of participant in 2004 is 727 greater than number of participant in 2003. Finally, in 2005 the number of participant increase more rapidly, the mean is 847. Roughly from 2002 to 2005 the numbers of participants increase 76 percent. The maximum number of participant in 2005 is 9495. This figure point out that BMTs has a big role to serve the society to develop the people's economy as well as to liberate the society from interest system.

Table 4: Descriptive statistics of the number of BMT participants (2002-2005)

	N	Minimum	Maximum	Mean	Std. Deviation
Number of participant 2002	56	8	5635	482	808
Number of participant 2003	58	12	7271	591	1006
Number of participant 2004	60	18	9032	727	1225
Number of participant 2005	60	20	9495	847	1345

Note : N is number of BMT

Source : Primary data

### (c) Length of Outreach

Length of outreach is the time frame of the supply of Microfinance. Based on the current (also the future) conditions of the society indicate that the existence of BMTs is still needed, then length matters. Length is difficult to measure because it occurs in the future. Profits of BMT are one of the proxy. Profits become the signals on the ability of BMT to buy resources on the market and thus offer some hope to survive.

Generally, the average of the monthly profit of BMTs during 2002-2005 increases sharply. Table 4 shows that the mean of monthly profit in 2002 is only Rp. 1,257,247.38 and there is one sample of BMT faces loss (Rp. 245,942.18), since the BMT is operated in the first year. The mean of the monthly profit of BMT increase to Rp. 1,571,388.64 and Rp. 2,158,268.36 in 2003 and 2004 respectively, although in these years there is BMT



which faces loss. In 2005 the profit increases sharply to Rp. 2,503,310.08 and all of BMTs obtain profit. This condition indicates that ability of BMT in obtaining profit increases every year. Since Central Java BMTs could have improved the real size of its asset as well as its profit, Central Java BMT had enough expected length.

Table 5: Descriptive statistics of monthly average profit (2002-2005)

	N	Minimum (Rp)	Maximum (Rp)	Mean (Rp)	Std. Deviation
Monthly Profit 2002	55	-245,942.17	7,472,315.66	1,257,247.39	1,627,081.24
Monthly Profit 2003	58	-64,121.08	10,920,285.25	1,571,388.64	2,237,695.01
Monthly Profit 2004	60	-368,637.50	13,696,523.00	2,158,268.37	2,914,318.13
Monthly Profit 2005	60	41,708.33	15,672,727.27	2,503,310.08	3,180,157.99

Source : processed from primary data.

(d) Scope of Outreach

Scope of outreach is the number of type of financial contracts supplied. The higher number of the type of Islamic financing which provided by BMTs enables for the society to develop the economic well-being in accordance with Islamic value. It is appropriate with the goal of Islam, that is the settlement of ethical notions as brotherhood and justice to promote the well-being for the entire Muslim community (Bellalah and Ellouz, 2004). Related to the goal of Islam, BMTs have developed different Islamic financing in conformity with Islamic principles. There are six types of Islamic financing that have been developed by BMTs; *mudarabah*, *musharakah*, *murabahah*, *bai'u bithaman ajil*), *qard-al hasan* and *ijarah financing*. Nevertheless, not all BMTs in Central Java develop all of type of financing. It depends on the ability of BMT in developing Islamic financing. Therefore, different BMT provides different type of financing.

The scope outreach of BMTs also embrace the activities of BMTs in collecting and distributing *Zakah*, *Infaq* and *Sadaqah* (ZIS), since the participation of BMTs in this process contributes in improving the welfare of the community as a whole. The distributing of ZIS to the society around the BMTs is expected to help the improvement of

their quality of life. It is appropriate with the *Shariah* objectives (*maqasid ash-shariah*) in achieving the society welfare (*falah*).

The other social benefit (scope of outreach) is the ease of procedure and requirement in getting Islamic financing from the BMTs. There are many of micro-enterprises experience difficulties in obtaining loan from banking, and therefore the existence of BMTs (which provide Islamic financing with easy procedure and requirement) enable them obtain financing for developing their business and improving their quality of life. Most of micro-enterprises (72 percent) state that the procedure in obtaining Islamic financing from BMTs is easy, 27 percent of them state very easy and only one percent of them state difficult. Furthermore, related to the requirement in obtaining Islamic financing, 78.4 percent of micro-enterprises state that the requirement is easy, 21.1 percent of them state easy and only 0.5 percent state difficult. The previous information depicts that generally BMTs give an ease to the micro-enterprises in obtaining Islamic financing to develop their business. It is one of the forms of social benefit that can be enjoyed by the society.

### **Sustainability of BMT**

It is important to build the sustainability of Islamic microfinance institution in order to sustain impact. Sustainability should be analyzed from two sides - profitability and social benefit - simultaneously to avoid the error in concluding the results. First, profitability of BMTs and DEA score. In 2005, all of BMTs can cover all of operational cost and obtain profit. It means that all of BMTs has achieved operational as well as financial sustainability. This condition is better than the condition in 2002, 2003 and 2004 in which the inclination of profitability of BMTs increased sharply (close to 100.00 percent). However, it must be recognized that the ability of BMTs in obtaining profit (profitability efficiency) is relatively still low. In this condition, the profitability of BMTs is still very sensitive to the change of economic condition and especially the change of financial institution regulation, since so far, there is no specific regulation related to the existence of

BMTs except through cooperative regulation in which BMTs are directed to follow cooperative corporate body. BMT suffer from the same regulatory and supervisory of cooperative sector which has not specific instruments to regulate the Islamic financial cooperatives and there is a tendency that it has been neglected. The change of economic condition or the change of financial institution regulation (in the context BMT) drastically makes the profitability of BMTs shake (uncertain). It means that the sustainability of Islamic financing that conducted by Central Java BMTs will be threatened (in danger). Therefore, to face the change and challenge of the market in the future, BMTs should enhance the quality of management and their efficiency. The composing of strategic planning becomes very important to face the future challenge.

Second, social benefit of BMTs. Although the profitability efficiency of BMTs is still low, BMTs have important role in contributing the social benefit to the society through several ways; increasing the number of participants, BMT as a *baitul mal*, *Zakah* of the profit of BMTs, taxes, increasing household income, job creation and *Zakah* payment of the profit of micro-enterprises.

(a) Increasing the number of participants.

The number micro-enterprises as the participants of Islamic financing per BMT on average increase from 482 in 2002 to 848 micro-enterprises in 2005. The increasing the number of participant of BMTs point out that BMTs contribute the higher benefit to the society - they can the help higher number of micro-enterprises to develop their business. Therefore, the contribution of BMTs in empowering people's economy will become more significant if they can give Islamic financing to the greater number of micro-enterprises. It directs to the achievement of the desired objective of the BMT establishment.

(b) BMT as a *baitul mal*

BMT has two component- *baitul mal* and *baitut tamwil*. The activities of *baitul mal* include collect and distribute *ZIS*, while the activities of *baitut tamwil* embrace collect money from members and channels those money to members and non members in the form of Islamic financing. The activities of BMT as a *baitul mal* will have important role in helping the improvement of the quality of life especially for the poor people, the needy and the weak via direct transfer payment or via *qard al-hasan* financing. Therefore, the existence of this institution contributes the additional social benefit to the community via social mission which complete the business mission (*baitut tamwil*) to develop micro-enterprises.

(c) *Zakah* of the profit of BMTs.

To fulfill the moral obligation as a form of social responsibility (follow the *Shari'ah*), most of BMTs (90 percent) pay *Zakah* of profits beside taxes. It is also constitutes a part of direct transfer payment that directly contributes to the social benefit to the community. Increasing ability to pay of the society that cannot take part in the market mechanism (the poor, the needy and the weak) constitutes the form of benefit of the *Zakah* payment. It means that *Zakah* payment contributes in helping solve the market failure problem.

## (d) Taxes

Taxes is a form of devotion and social obligation. The basic concept of taxes is that it is levied in return of certain facilities provided to the community, including the individuals who are taxed. (Manzoor, 1999). It, therefore, becomes a form of contribution which one makes in one's own interest and in proportion to one's income. BMTs (that generally have cooperative corporate body) have to pay taxes to fulfill the devotion of the

government as a form of social obligation. Although the taxes payment does not constitute direct transfer payment to the community, it will contribute to the social welfare.

(e) Increasing household income of micro-enterprises.

Increasing of household income accompanied by increasing of saving, ability to fulfill the basic requirement, ability pay school fee for their children and pay the cost of medical treatment of household members, and moreover increasing of the religious activity constitute evidence that Islamic financing which conducted by BMTs is able to improve the quality of life of the community or contribute the social benefit. It means that Islamic financing take part in empowering the people's economy.

(f) Job creation.

BMT financing recipients (micro-enterprises) in Central Java are able to improve business performance that is followed by job creation. The evidence shows that on average micro-enterprises able to increase the number of employee from two persons to three persons. The increasing number of employee (although only one person) that caused by improving business performance indicates that BMT financing contributes in creating job opportunity to the community. It means that the role of Islamic financing cannot be ignored, since it has role in solving unemployment problem and empowering people's economy. In other words, BMT financing contributes in improving the social welfare.

(g) *Zakah, Infaq and Shadaqah* of the profit of micro-enterprises.

BMT financing is able to improve the business performance of micro-enterprises which causes 66.18 percent of them pay *Zakah*, and moreover, 91.67 percent of them pay *Infaq or Sadaqah* of their profit. It constitutes evidence that BMT financing is able to improve the social responsibility as well as the quality of act of devotion of micro-

entrepreneurs in helping the community enhance their quality of life as the form of an individual responsibility. It is the part of the social benefit as the effect of BMT financing.

In sum, although the profitability efficiency of BMTs is relatively still low, BMTs (via Islamic financing) have played a social welfare oriented to the community through several ways, and therefore in the long-run it enables to bring about the feedback to the BMTs in the form of increasing profits- help the community help themselves (see Figure 3).

In other words, building sustainable BMT financing can also be achieved through increasing social benefit (broaden the services to the community), and only viable institutions can continually increase their social benefit. It means that BMTs themselves must be viable, sustainable and growing, and furthermore BMTs must make a profit and finance their expansion from their return. Since generally BMTs have made a profit and social benefit, Islamic financing can be predicted will be sustainable – able to provide Islamic financing in the long run. Furthermore, BMT financing will become a valuable vehicle for empowering people's economy.

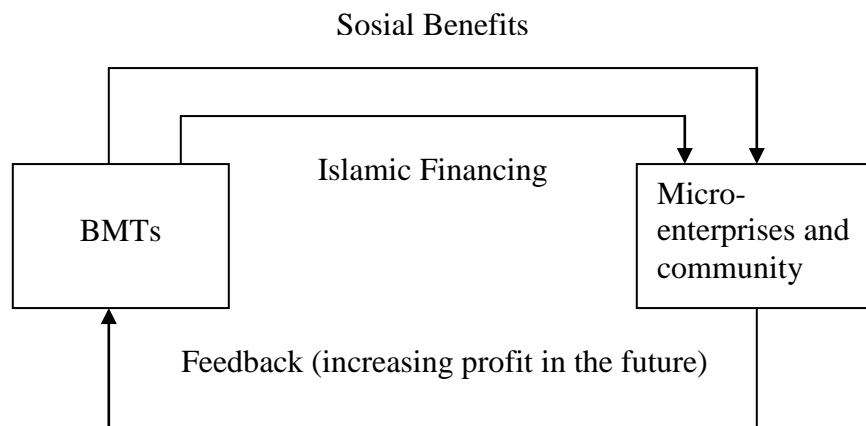


Figure 3: The effect of social benefit to the sustainability of Islamic financing

Figure 3 also depicts that it should have been that the ultimate objective Islamic financing is social benefit maximization through creation of healthier financial institutions to serve the need of masses, rather than just a handful. Therefore, improving of business

performance of BMTs for increasing the social benefit is very important. The finding indicates that to achieve sustainable Islamic financial institution, BMTs must achieve high returns and at the same time maximize social benefit.

The strong commitment of the management in struggling for the establishment and the development of Islamic financial institution, the attitude of help each other between BMTs, and the existence of BMT association has also important role in building sustainable BMT financing. First, based on the investigation indicates that in general the BMTs management have a strong commitment in developing Islamic financial institution as the effort to take part in empowering people's economy via *Shariah* system and combating the usurer. Second, the attitude of help each other and cooperate between BMTs could help BMTs in solving their problem (management and financial). They construct the attitude of help each other, cooperate between BMTs and avoid the attitude of hostile to each other (negative competition) - the strong BMTs help the weak. Third, actually the existence of BMTs association strengthen the pattern of help each other and cooperate between BMTs in the form of an organization, as well as the commitment in developing Islamic financial institution to empower people's economy so that BMTs sustain in the future.

Sustainability can be achieved by balancing the importance of financial institution, micro-enterprises and social welfare as a whole without sacrificing the importance one of the parties, since the Islamic ethical principles not only determine individual choice and collective choice but also provide a principle of integrating the two (Naqvi, 1981). It means that sustainability of Islamic financial institution, micro-enterprise development and social welfare must be achieved together by avoiding selfishness. Islamic financing develops the cooperate patterns which cause all of parties to enjoy benefit. Therefore, the sustainability must refer to the profitability of Islamic financial institution and micro-enterprises, as well as social welfare. In other words, BMTs must achieve high return and at the same time maximize social benefit.

Profitability of the business of micro-enterprises has important role in achieving the sustainability of BMT financing. Therefore, the selection of micro-enterprises as the partner of business of BMTs become important related to the effectiveness of BMT financing which cause all of parties to enjoy the profit. It must consider the capability and experience of micro-entrepreneurs in running business as well as the credibility or honesty (as the aspect of morality) as the effort to reduce the agency problems. The selection of micro-enterprises should also based on the result of sound feasibility study of the business. It is the key factor of the success of the business which affect the sustainability of BMT financing.

Khalily (2004) suggests that sustainability can be achieved through expansion of loan (financing) volume, diversification of financing portfolios, increase in cost efficiency and financing productivity, training of clients and employee, institutional development. Central Java BMTs enable to expand financing volume since the evidence indicates that micro-enterprises can improve their business, nevertheless BMTs still need to diversify their financing portfolios so that Islamic financing does not concentrate only on several types of business. The increasing of cost efficiency and financing productivity, training of employee, and institutional development constitute the important step that should be conducted by BMTs.

## **5. Conclusions**

Micro-enterprises (MEs) play a major role in the macroeconomic of less developed countries. Therefore, MEs development is very important to economic development. The sustainability of micro-financing is very needed for these purposes, because achieving the success, MEs need long-term access to financial services. This study provides an analysis of technical efficiency of Central Java BMTs and level of outreach to predict the sustainability of Islamic financing in developing micro-enterprises.



Using non parametric DEA models (i.e., CCR and BCC model), it is found that the overall efficiency of BMTs in period 2002-2005 is relatively low. Scale efficiency also indicates that BMTs were operated still far from the optimal scale. The results suggest that there is gap in efficiency scores obtained from CCR and BCC model and this indicates that Central Java BMTs still face the managerial problems in utilizing given resources. The results also suggest that there is still room for improvement in the efficiency of BMTs in allocating resources.

The results suggest that the causal factors of the low efficiency are; First, management weaknesses in which the development of BMTs was conducted in the way learning by doing in accordance with their capabilities. Second, there is tendency that BMTs want to serve micro-enterprises as many as possible which brings consequence increasing the operational cost. Third, BMTs pay the *Zakah* of the profits which reduces the profitability. Four, BMTs are still trying to increase the salary and prosperity of their employee. Fifth, Generally BMTs have double mission and they have not separated their management yet. Finally, several BMTs are still operated in manual system, double job of the managers and conflict between the manager and the board of BMT. Therefore, the management enhancement, (including the separation of management BMT as a financial intermediation and BMT as *amil*), avoiding over expansive, controlling the salary rate, avoiding the double job of the manager, avoiding the conflict between the manager and the board, and avoiding manual system constitute the key factors of the efficiency improvement.

The results suggest that BMT financing is very useful for developing MEs in Central Java as well as contribute a great social benefit to the society in the form of; (1) increasing of household income of micro-enterprises accompanied by increasing of saving, ability to fulfill the basic requirement, ability to pay school fee for their children and to pay the cost of medical treatment of household members, and moreover increasing of the religious activity (depth outreach); (2) providing Islamic financing for many peoples (breadth outreach); (3) providing Islamic financing in the long-run (length outreach); (4)

providing many types of financing (including ZIS) with easy procedure and requirements (scope outreach); (5) creating job opportunity. Therefore, BMTs need to be developed and constructed so that they can enhance their role in empowering peoples' economy.

The results suggest that sustainability can be achieved by balancing the importance of financial institution, micro-enterprises and social welfare as a whole without sacrificing the importance one of the parties. Therefore, although the profitability efficiency of BMTs is relatively still low (and sensitive to the change of economic condition and especially the change of financial institution regulation), since generally BMTs have made a profit and social benefit, Islamic financing can be predicted will be sustainable – able to provide viable Islamic financing.

The sustainability must refer to the profitability of Islamic financial institution and micro-enterprises, as well as social welfare. In other words, BMTs must achieve high return and at the same time maximize social benefit. Therefore, the increasing of cost efficiency and financing productivity, training of employee, and institutional development constitute the important steps that should be conducted by BMTs.

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### **Appendix: Brief Description of BMT**

The term of *Baitul Mal Wat Tamwil* expresses the BMT's social and business mission. The social mission, traditionally known as *baitul maal*, consist of the cost-free use of donation (*zakah, infaq, shadaqah*), mobilized from the public. The business mission, traditionally known as *baitul tamwil*, where deposits mobilized are commercially used and placed to productive investments. Sometimes BMT is also used as the abbreviation of *Balai Usaha Mandiri Terpadu* or Center for Self-reliant and Integrated Business development, thus pointing to self-reliance and integrated assistance as principles of services provided on the basis of revenue or profit sharing.

In December 1995, President Suharto declared the BMT program as a national movement aiming at empowering the people's economy through institution building and small business development. In the same year, Bank Indonesia and YINBUK (*Yayasan Inkubasi Bisnis Usaha Kecil* or the Foundation for the incubation of Small Business) signed a memorandum of understanding through which BMT were given the opportunity to participate in the Lingking Banks and Self-help Group program.

The role and task of BMT are seen in developing human resources and supporting small business by identifying viable business and potential microentrepreneurs, identifying their business needs and investment opportunities, assisting in preparing business plans and providing business consultancy, mobilizing funds from the public, providing or facilitating access to financial services and marketing channels, disseminating information and providing training.

It is worth to note here that BMTs are modeled on cooperative principles, but not all BMT operate as a legal entity. The establishment of a BMT has to be attested by notary and, if not yet registered as legal entity, receive a business certificate from the regional PINBUK. BMT statutes are standardized and include subjects such as identify area operation, objectives, and business activities based on *Syariah* principles. Source of funds are determined as share of the founding members, compulsory and voluntary savings, donations, loans, and retained profits. The mobilization of voluntary savings, borrowing from other sources of funds, and lending must be based on *Shariah* principles. 2.5% of annual profits have to be donated (*zakah*), and a minimum 10% (after *zakah* and tax) each have to be allocated to reserves and to compensation funds for management and commissioners. The allocation of the remaining profits is subject to decision of the general meeting of members.

Membership is limited to the working environment of a BMT in accordance with the cooperative law, the establishment of a BMT requires at least 20 founding members. Larger BMT split their members into sub-groups. BMT members must be willing to deposit money as working capital and to accept the principles of joint liability. The member assembly is the highest authority of the BMT organization and has to be carried out at least semi-annually. Decisions are taken by the one-member-one-vote principle. It is important to understand that a difference is made between founding and other members which are entitled to receive BMT services. It seems that only founding members are involved in decision-making processes.

The (founding) member assembly elects a supervisory board or board of commissioners, which represents the founding members and determines general policies during meeting, which have to be carried out at least one month. The BMT management consists of at least three persons but, depending on BMT size.