

Conference Paper

Capital Strengthening of Micro-enterprises for Poverty Reduction in East Java

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Abstract

Reduction in the number of those in poverty needs to be followed by increased productive economic activity. Productive effort is an effort to produce goods or services to provide added value and increase income for micro entrepreneurs. The poverty reduction program used in East Java is reduction of poverty from Cluster 3 based on the economic empowerment of the Ministry of Micro-, Small-, and Medium Enterprises. This article aims to measure efficiency of the micro-enterprises industry sector in achieving poverty alleviation programs in East Java, secondly to identify factors that affect the efficiency of micro-enterprises in the use of government credit program in East Java, and, lastly, to measure poverty status of micro-enterprises in using government credit program in East Java. Methods used in this research are Data Envelopment Analysis, Tobit Regression and Logistic Regression. After analysis, the results of average technical efficiency industry sector based on VRS assumptions are 0.86 and 0.8 with assumption of CRS. Then, the results of Tobit regression, factors affecting the efficiency of SMEs, namely, profit, age, education, experience, assets, credit access government program, and realization periods, show a positive impact on the technical efficiency of micro-enterprises in East Java. Study results of logistics regression are technical efficiency, government credit program access, expenditure, gender of family head and home location affecting on poverty status of micro-enterprises in East Java.

Keywords: efficiency, poverty, micro-enterprises

1. Introduction

Poverty is a major issue in the world, including Indonesia. The Indonesian government has implemented proven policies to reduce poverty, evidenced by the decline in the number of poor people in 1980 by 28.6% declined to 17.47% in 1996 (Central Bureau of Statistics). The economic crisis that occurred in 1998 had a huge impact on the country's economy, including 49.5 million poor or 24.23% of the population of Indonesia, while, in 1996, there were only 34.01 million or 17.4%. Because of the economic

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crisis, the Indonesian government set the eradication of poverty as one of the policy priorities. Implementation of poverty eradication programs from 1998 to the present has generally reduced the poverty of Indonesia from 49.5 million or 24.23% in 1998 to 30 million or 12,365% in September 2011. After the crisis, the percentage of the poor has decreased consistently, reaching 14.15% in 2009 as the result of the recovery of the country's economic situation and supported by the government's commitment to reduce poverty through various programs and poverty eradication policies. However, the process of decline can be said to be relatively slow compared to the pre-crisis period.

The highest poverty rate in Indonesia in 2015 is East Java Province (4,775,970) and the lowest poverty in Indonesia in the Bangka Belitung Province is 66,620 people (Central Bureau of Statistics, 2015). The number of poor people in East Java illustrates that East Java is the region which needs special attention in the handling of poverty, while East Java is also a center of trade, education, and industry which are affected in high migration flows. Poverty in East Java declined from 2013 to 2014, but increased by 2015.

Poverty reduction programs are conducted by more relevant productive activities in poverty reduction for micro, small and medium-sized enterprises, especially micro-enterprises. Reduction in the number of poor people needs to be followed by increased productive economic activity. Productive economic activity is an activity to produce goods or services to provide added value and increase income for entrepreneurs. Therefore, it requires innovation in the production process. Production process undertaken by the micro-enterprises in the industry sector has raw materials derived from domestic raw materials only, so, if there is an economic shock from abroad, such as inflation, then micro-enterprises can still carry out the production process. Thus, the number of poor people does not increase greatly.

East Java Provincial Government has implemented a poverty alleviation program set by the Central Government to reduce poverty. One of the poverty alleviation programs used in East Java is the reduction of poverty from Cluster 3 based on the economic empowerment of the Ministry of Micro, Small and Medium Enterprises. The Cluster 3 poverty reduction program is charged with the strengthening of business capital in the form of government program credits. The government has realized the poverty alleviation program, Cluster 3, in the form of Kredit Usaha Rakyat (KUR), which was issued as a response to Presidential Decree No.6 Year 2007 dated 8 June, 2007.

The government is well aware that micro-enterprises can help in reducing poverty. The necessary strategic steps are to develop micro-enterprises through capitalization.

Capital is an important part of business development, hence access to capital, which is credit and a production tool, is an indispensable tool in improving the competitiveness of micro-entrepreneurs. Banks are still often assessing micro-entrepreneurs as non-bankable debtors, due to the lack of access to adequate funding, such as walls blocking someone from poverty. Therefore, government assistance is needed to facilitate the strengthening of capitalization through banking.

Implementation of the KUR program is given to micro-enterprises to strengthen production, as venture capital is one of the weaknesses of micro-enterprises. A study by Taha (2012) suggests a positive impact of the micro credit program on increased revenue, spending and increased profitability of the recipient's business with products produced by micro-enterprises in the form of goods and services. Capital strengthening for micro-enterprises can increase productivity; this is in line with Chimai et al. (2011) who found the increase in technical efficiency in the production of sorghum was influenced by several characteristics of households and farms, access to credit, the presence of dependents, plantation production, capital value and income from livestock activities.

So, we need a good production technique to create production efficiency for micro-enterprises. Production efficiency is expected to create business and increase revenue. So, micro-enterprises in the production process should be able to increase production efficiency. If production efficiency can be achieved, the income earned by micro-enterprises can increase. The increase in micro-enterprises' income will increase the business and meet the needs of entrepreneurs. Thus, micro-enterprises are growing and can mitigate entrepreneurs of micro-enterprises. The changes in poverty status are also influenced by factors that affect production efficiency.

2. Literature Review

2.1. Small and medium enterprises

Gebremariam et al. (2004) examined the role of small enterprises in economic growth and poverty reduction in West Virginia using Ordinary Least Square analysis and 2 Stage Least Square regressions and showed a positive relationship between small enterprises and economic growth. Strong inverse relationships also exist between poverty and small enterprises and economic growth. Hence, the empirical results of this study link between small enterprises, economic growth and poverty. But this study does not show systematic linkages between creating jobs and company size and the data used

are for a specific state. One of the important roles of Small and Medium Enterprises in this context is to provide job opportunities to the people. They found a strong, positive relationship between the size of the Small and Medium Enterprises sector and the economic growth. However, they found that Small and Medium Enterprises led growth. In addition, the comparison does not indicate that Small and Medium Enterprises have a substantial impact on poverty or income distribution.

2.2. Microcredit

Microcredit is given to the poor to help them build new business projects or to help small enterprises that already have their business grow bigger (Johnson & Rogaly, 1997). Usually the term of the short-term loan is a maximum two years, with conditions to be used in productive projects such as agriculture, industry and trade. Usually, interest rates are higher than traditional bank loans (Jaffer, 1999).

2.3. Technical efficiency

In economic theory, there are two general concepts of efficiency, efficiency in terms of economic concepts and efficiency in terms of production concepts. Efficiency reviewed with economic concepts has broader macro coverage, while production angle efficiency is seen from a micro perspective. Economic efficiency is widely seen in the allocation of resources in an economy that brings prosperity in society (Sukirno, 2008), whereas the concept of efficiency in production tends to assess technical and operational, so that efficiency in production concepts is usually viewed from a technical aspect and cost. According to Sukirno (2008), in the production process, efficiency can be divided into two types, namely productive efficiency and allocative efficiency.

3. Methods

In this study, the sample was 135 industrial micro-enterprises in the industrial sector. Based on the scope of the study, the sample was taken from seven cities in East Java Province. The criteria for selecting the seven cities were based on the high, simple and low gross regional product of Gross Regional Domestic Product. To obtain research data, observation has been conducted, with a direct survey on the research location of micro entrepreneurs in seven cities in East Java selected as sample areas.

Analysis conducted in this study uses the methods. The first is Data Envelopment Analysis (DEA) to estimate the frontier production function of a micro-enterprise. The second method is Tobit regression used to analyze determinants factors of technical efficiency. The last method is logistic regression to find out the factors that determine probability of poverty status in the study area

4. Results

4.1. Technical efficiency

The average of technical efficiency (TE) based on the estimation of the DEA model can be seen in Table 1. The average of technical efficiency with the assumption of a variable return to scale (TE DEA-VRS) is 0.86. This value of efficiency shows that the average performance that entrepreneurs can achieve with existing technology in the industry is 86% of the maximum potential yield of this field. This result means that the performance of industrial micro-enterprises can still increase by about 14% to achieve maximum revenue potential. The average technical efficiency of micro-enterprises in East Java is 0.8 when calculated using a constant return to scale (TE DEA-CRS). This suggests that industrial micro-enterprises produce 80% of the potential output using CRS. Based on efficiency using CRS, the industrial micro-enterprises in East Java can still increase by about 20% to achieve maximum output by using a constant return-to-scale technology.

TABLE 1: Technical efficiency of micro-enterprises.

	N	Average	Min.	Max.	Standard Deviation
TE-DEA VRS	135	0.86	0.1	1	0.21
TE-DEA CRS	135	0.8	0.1	1	0.23
Scale CRS/VRS	135	0.93	0.4	1	0.13

Source: Data analysis.

The results of DEA-VRS are shown in Appendix Figure 1. The DEA-VRS estimates of micro-enterprises (TE = 1) says that 100% efficiency can be achieved by only 72 entrepreneurs or 53.33% of total industrial micro-enterprises. This explains that there are still many industrial micro-enterprises that are not technically efficient at 46.67% with a variation of efficiency between 0.1 to 0.99. Estimated DEA-CRS shows that, in industrial micro-enterprises, a 100% efficiency (TE = 1) is achieved by only 48 enterprises or 35.55% of the total micro-enterprise of this industry. This explains that

there are still many industrial micro-enterprises that are not technically inefficient, at 64.45% with varying efficiency between 0.1 to 0.99.

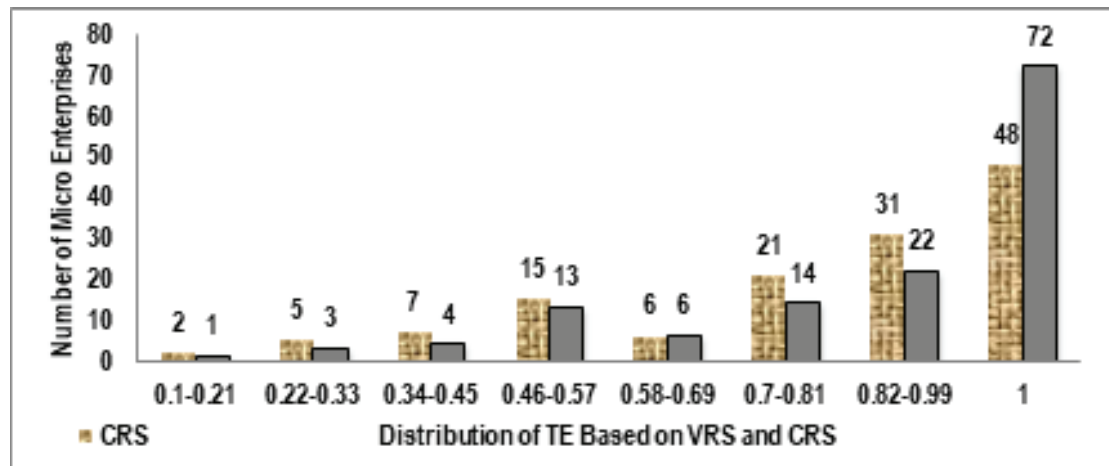


Figure 1: Distribution of technical efficiency of micro-enterprises based on assumptions of VRS and CRS. Source: Data analysis.

In general, real income from industrial micro-enterprises can still increase up to the maximum potential yield with the use of existing technology. Estimates of micro-enterprises' income with the DEA model can be seen in Table 2. In this context, estimation of the DEA-VRS model provides anticipated results based on the technology used. Based on DEA-VRS estimates, the actual entrepreneur's income is expected to increase from Rp 3,030,659.26 to Rp 3,329,822.22 or Rp 299,162.96 with an increase of 9.9%. Based on the DEA-CRS budget, the average income of industrial micro-enterprises is expected to increase from Rp 3,030,659.26 to Rp 3,538,125.93 with an increase of 16.7%.

TABLE 2: Average real output and expected output of micro companies.

	Number of Observations	Real Output	Expected Output	Change of Output	
				(Rp)	%
DEA-VRS	135	3.030.659,26	3.329.822,22	299.162,96	9,9%
DEA-CRS	135	3.030.659,26	3.538.125,93	507.466,67	16,7%

Source: Data analysis.

Micro-enterprises input expectations can be seen in Table 3. Estimates of the DEA-VRS model provide input expectations based on the technology used. The biggest reduction in cost of input is at machine cost (33.05%), and capital cost is expected to decrease by 29.22%. Based on the DEA-CRS estimates, the average input cost of micro-enterprises is expected to decline in input costs of 1,2,3,4 and 5. Estimated decrease

in inputs is the cost of raw materials (58.75%), and machine costs are expected to decrease by 58%.

TABLE 3: Average real input and expected input of micro companies.

	Real Input	Expected Input		Percentage of Expected Input	
		DEA-VRS	DEA-CRS	DEA-VRS (%)	DEA-CRS (%)
I1 (Capital)	36,338,692.59	25,720,444.47	24,139,525.93	-29.22	-33.57
I2 (Supplementary Material)	4,658,087.65	4,375,925.93	3,757,725.93	-6.06	-19.32
I3 (Raw Material)	27,841,933.33	18,113,637.04	11,484,340.74	-35	-58.75
I4 (Machine Cost)	25,397,592.59	17,003,414.81	10,671,925.93	-33.05	-58
I5 (Labor)	2	2	1	00	-50

Source: Data analysis.

4.2. Factors determinant of technical efficiency

The Likelihood Ratio (LR) test yields a statistical value of LR 1370.08 with a probability value of 0.000 less than α (0.01). Based on the LR test results, the null hypothesis (H_0) states that the independent variable simultaneously has no effect on the dependent variable ($H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$) and H_0 is rejected. In other words, independent variables simultaneously have a significant effect on the level of technical efficiency at the level of 0.01 significance. Separately, the profits, education, experience, capital, credit amount, government credit program access and credit realization period individually have a positive and significant effect on the technical efficiency level of industrial micro-enterprises, whereas the independent variable of age shows a significant negative effect to the level of technical efficiency at the level of 0.1 significance. However, there are three independent variables that have no significant effect on the level of technical efficiency, that is, gender, labor and business location variables.

This study suggests that the amount of credit has positive and significant effect on the technical efficiency of micro-enterprises. This is in line with the results of a study conducted by the government of Java Province in cooperation with the University of Airlangga in 2016, which found that the higher the level of Small and Medium Enterprises' external capital, the income of Small and Medium Enterprises increased. This study is in accordance with previous studies conducted by Paselli and Mazzarelli (2013) that the higher the lending ratio to capital, the technical efficiency will be higher. The result of the study shows the credit of the royal program has a positive and significant impact on the micro-enterprises' susceptibility, which is in line with previous study. Gustika (2015) pointed out that the Kredit Usaha Rakyat has a positive and

TABLE 4: Estimation results of Tobit regression model.

Change		Coefficient	dy/dx	Standard Error	Statistic -z	Probability
Constants	C	0.359		0.04	9.29	0.000***
Profit	Z1	0.009	0.009	0.002	3.91	0.000***
Age	Z2	-0.001	-0.001	0.0007	-1.84	0.069**
Education Level	Z3	0.049	0.49	0.02	2.45	0.016**
Experience	Z4	0.009	0.009	0.005	1.86	0.065*
Capital	Z5	0.003	0.003	0.0009	3.63	0.000***
Gender	Z6	0.008	0.008	0.014	0.55	0.582
Labor	Z7	-0.003	-0.0025	0.007	-0.36	0.723
Geographical Location	Z8	-0.0009	-0.0009	0.014	-0.07	0.946
Number of Credit	Z9	0.0009	0.0009	0.0004	2.17	0.032**
Access of Credit Program	Z10	0.04	0.039	0.018	2.19	0.031**
Realization Period	Z11	0.068	0.067	0.023	2.97	0.004**
LR					370.8	0.000***
Log Likelihood					122.71	
Jarque-Bera					0.851	0.024

Source: Data analysis.

significant impact on the income of the Small and Medium Enterprises. Results of this study are also in line with the previous study conducted by Sibrani (2011), that the Kredit Usaha Rakyat is positively and significantly related to the development of Small and Medium Enterprises.

4.3. Factors determinant of poverty status

The Likelihood Ratio (LR) test obtained the statistical value of LR 111.01 with the probability value 0.000 less than α (0.01). Based on the findings of the LR test, the null hypothesis (H_0) stating that the variable independent simultaneously has no effect on the dependent variable ($H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$) is rejected by H_0 . In individual test, the independent variables simultaneously have a significant effect on the poverty status at the 0.01 level of significance. Individually, five out of nine independent variables show positive significance, as expected, to poverty status at different levels of significance between 0.01 and 0.1. Thus, technical efficiency, government credit program, expenditure, gender and geographical location individually have a positive and significant impact on the poverty status of entrepreneurs. However, the household size shows a significant negative impact on poverty status, as expected, at the

significance level of 0.05. Income, education and house area have no significant effect on the poverty status.

TABLE 5: Estimation results of Logistic regression model.

Change		Coefficient	Odds Ratio	Standard Error	Statistics	Probability
Constants	C	-3.0008		1.73	-1.73	0.083*
Technical Efficiency	X1	2.5	12.1	0.65	3.81	0.000***
Household Size	X2	-0.79	0.45	0.332	-2.38	0.017**
Income	X3	0.051	1.052	0.034	1.5	0.134
Government Credit Program	X4	2.37	10.714	0.668	3.55	0.000***
Education Level	X5	1.3	3.642	0.788	1.64	0.1
Expenditure	X6	0.045	1.046	0.025	1.79	0.074*
Gender	X7	1.853	6.382	0.663	2.8	0.005***
Geographical Location	X8	1.24	3.462	0.699	1.78	0.076*
House Area	X9	-0.01	0.99	0.007	-1.38	0.17
LR					111.01	0.000***
Log Likelihood					38.065	

Source: Data analysis.

5. Discussion

The Government of East Java Province can provide mentoring to micro entrepreneurs in planning business management and good production techniques. This is necessary to achieve a good productivity level through the use of minimum input and maximum output. In addition, governments need to maintain marketing assistance to micro-enterprises in the form of e-commerce, product packaging and exhibition facilities at various national level events.

The government needs to increase the maximum credit ceiling for micro-enterprises and reduce the value of credit collateral. In addition, interest rate reduction of the government program credit should be reduced to 6%. The realization period also should be accelerated for a maximum of two weeks, because the faster the credit realization process, then the quicker entrepreneurs can make production. Last but not least, government should facilitate micro-enterprises to easily apply credit, so that entrepreneurs can expand their business and improve the welfare of their family.

6. Conclusion

Generally, the technical efficiency of micro-enterprises in East Java can still be improved to achieve its maximum potential in the long run with the assumption of VRS or CRS. Industrial micro-enterprises in East Java can improve technical efficiency by reducing inputs and increasing output. Additionally, estimates of efficiency determinants can also be a control variable to improve technical efficiency. The findings show that eight variables can determine the technical efficiency of industrial micro-enterprises in East Java, namely, income, age, education, experience, capital, credit amount, government credit program access and realization period. Furthermore, logistic regression estimation findings show that the technical efficiency of micro-enterprises can determine their poverty status in the industrial sector in East Java. This means micro entrepreneurs can increase technical efficiency by observing eight different technical efficiency determinants to rise above the poverty line.

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