

# Do Capital and Business Volume Matter for Productivity of the Cooperatives in Indonesia?

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Received: 20<sup>th</sup> August 2019/ Revised: 2<sup>nd</sup> October 2019/ Accepted: 17<sup>th</sup> October 2019

**How to Cite:** Majid, M. S. A., Azhari, Faisal, & Fahlevi, H. (2020). Do Capital and Business Volume Matter for Productivity of the Cooperatives in Indonesia? *Binus Business Review*, 11(1), 1-8. <https://doi.org/10.21512/bbr.v11i1.5918>

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## ABSTRACT

The research explored and analyzed the determinants of productivity of the cooperatives in Indonesia. These determinants included own capital, external capital, and business volume. The aggregate data of cooperatives were at the provincial level across 33 provinces in Indonesia. The data were gathered from the report of the Kementerian Koperasi dan Usaha Kecil dan Menengah Republik Indonesia (Ministry of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia) over the 2010-2015 period. The data were analyzed using the panel regression technique. The result shows that own capital and business volume have a significant positive effect on the productivity of cooperatives. However, external capital has an insignificant effect on the productivity of cooperatives. To further improve their productivity, the cooperatives should increase the capital from internal sources as well as their business volume through more diversified business activities.

**Keywords:** capital, business volume, cooperative productivity

## INTRODUCTION

The establishment of the cooperative is to improve the welfare of members and society in general. The cooperatives have values based on self-help, self-responsibility, democracy, equality, equity, and solidarity (International Cooperative Alliance, 2016; Hilson, 2018; Bhukuth, Roumane, & Terrany, 2018). It means that the cooperative is an entity that reflects human values. Humans need each other. Cooperatives are unique. The members are users of the services provided by cooperatives (Xaba, Marwa, & Mathur-Helm, 2018). The cooperative member is the owner and service user. The dual roles of Cooperatives were

first introduced by Draheim (1955) and developed by Puusa, Mönkkönen, and Varis (2013), Borda-Rodriguez, Johnson, Shaw, and Vicari (2016), and Tefera, Bijman, and Slingerland (2017). It comprised of a business venture and social groups.

Although the cooperatives in Indonesia have increased for the last few decades, almost 30% of them have been inactive (Kementerian Koperasi dan Usaha Kecil dan Menengah Republik Indonesia, 2016). The existence of cooperatives in Indonesia has been contributed trivially to the Indonesian economy. According to the Kementerian Koperasi dan Usaha Kecil dan Menengah Republik Indonesia (2016), the contribution of the cooperatives to Indonesia's Gross

Domestic Product (GDP) is only 1,7%. It is smaller compared to the contribution of other economic sectors (Rayanti, 2016). However, cooperatives are an important entity in the developing economy in Indonesia. It has a significant contribution to the welfare of the middle-lower income group, poverty reduction, and job creation (Azhari, Syechalad, & Majid, 2017; Bhukuth *et al.*, 2018).

The cooperatives in Indonesia at the end of 2015 reached 212.135 units. However, only 70% were active, and the rest 30% (62.000 units of cooperatives) were frozen due to their inefficiencies. From the number of existing cooperatives, around 37 million people have been members of cooperatives. In other words, about 15% of the population in Indonesia had been the members of cooperatives in 2016 (Kementerian Koperasi dan Usaha Kecil dan Menengah Republik Indonesia, 2016).

In the last six years, most of the cooperatives have experienced an increase in their productivity level from year to year. It was marked by the increase in their surplus (Kementerian Koperasi dan Usaha Kecil dan Menengah Republik Indonesia, 2016). Over the period, the cooperatives have recorded an increasing trend in their surpluses. In 2010, the cooperatives' surplus reached IDR 5,6 trillion, IDR 6,3 trillion in 2011, IDR 6,6 trillion in 2012, and IDR 8,1 trillion in 2013. It sharply increased to IDR 14,9 trillion and IDR 17,3 trillion in 2014 and 2015, respectively.

In carrying out the business, the cooperatives develop the economic business for the welfare of members. According to Hasan, Azhari, and Majid (2018), the cooperatives will return the income obtained or the number of patrons that will be allocated to members. It can also be saved as a future capital. To maintain business continuity, cooperatives need to make a profit known as Sisa Hasil Usaha (SHU – cooperatives' surplus). According to the Article 45 of the Law No. 25 of the Republic of Indonesia (1992), Paragraph 1, "Cooperative's surplus is the income earned in one year minus production costs, depreciation, and other obligations, including the taxes in the relevant year." The cooperative's surplus is very dependent on two aspects, namely financial and non-financial factors (Republik Indonesia, 1992).

The establishment of cooperative is to empower not only the economy but also the social and psychological aspects of society (Riswan, Suyono, & Mafudi, 2017). This means that cooperatives do not have the sole purpose of seeking profit, but it wants to achieve mutual prosperity. The cooperatives have a priority in maximizing the welfare of members, not the capital (Martini, Lasmi, Jaya, & Sutrisni, 2017).

According to Colombijn and Morbidini (2017), cooperatives are membership organizations that can determine their businesses. The members run the cooperatives as users of goods and services and owners of the business. According to Law No. 25 of 1992 in Republik Indonesia (1992), the success of cooperatives is determined mainly by financial and non-financial factors.

Capital adequacy is one of the financial factors determining the productivity of cooperative. The capital of cooperative is from its capital (voluntary member savings, mandatory member savings, reserves, and grants), and external capital (debt) that can come from members, other cooperatives or members, banks, and other financial institutions. The other examples of external adequacy are the issuance of bonds and other securities, and another source of legal income and business goods and services to cooperatives.

Moreover, the cooperative's performance is also influenced by non-financial factors. Those are the number of employees, members, and business units. Even though cooperatives have good financial performance, without the support of good non-financial factors, cooperatives will certainly not fulfill their objectives of maximizing surplus. In turn, it will cause the co-operative to go bankrupt (Syamni & Majid, 2016).

Many previous studies have been conducted to investigate the cooperative's performance worldwide. For examples, the efficiency and productivity of cooperatives have been conducted in Kenya (Gweyi & Karanja, 2014; Kinya, Shavulimo, Chepkoech, & Langat, 2015; Mathuva, 2016), Brazil (Colombijn & Morbidini, 2017), Mexico (Davila & Molina, 2017), Germany (Yildiz *et al.*, 2015), China (Liang, Hendrikse, Huang, & Xu, 2015; Ma & Abdulai, 2016), Mexico (Bennett, 2017), Europe (Lang, Signore, & Gvetadze, 2016), Latin America and the Caribbean (Renard, 2015), Pakistan (Ahmad, Chani, & Afzal, 2018; Rehman, Chandio, Hussain, & Jingdong, 2017), Sri Lanka (Galappaththi, Kodithuwakku, & Galappaththi, 2016; Amarasinghe & Bavinck, 2017), India (Kumar, Wankhede, & Gena, 2015; Nag & Sharma, 2017), Ethiopia (Chagwiza, Muradian, & Ruben, 2016), the Philippine (Quilloy, 2015), Malaysia (Suhaimie *et al.*, 2015; Aris, Marzuki, Othman, Rahman, & Ismail, 2018), Thailand (Sathapatyanon *et al.*, 2018; Sathapatyanon & Kuwornu, 2019), and Vietnam (Phon & Yamaji, 2016). In general, these researchers find a lack of managerial skills in cooperatives. It also has low productivity levels in cooperatives. Both financial and non-financial factors are recorded as significant factors determining the success of the cooperatives.

In Indonesia, there have been few previous studies measuring the productivity of the cooperatives and their determinants (Lukman, 2011; Syamni and Majid, 2016; Widiartin, Suwendra, & Yudiaatmaja, 2016; Saputra, 2017). However, they only focus on certain types of cooperatives in specific regions in Indonesia. For example, Lukman (2011) and Syamni and Majid (2016) explored the performance of the saving and credit cooperatives in Lhokseumawe, Aceh. They documented low level of their productivity level. Moreover, Saputra (2017) analyzed the performance of cooperatives in Pekanbaru. Then, Suputra, Susila, and Cipta (2016) and Widiartin *et al.* (2016) investigated the performance of the saving and credit cooperatives in the Buleleng, Bali. Overall, these studies recorded evidences of low level of cooperatives' performance

and their productivity.

As the most significant number of the cooperatives and the largest populous membership in cooperative in the world, the research on the productivity of the cooperatives in Indonesia will provide an important policy ramification. It can empower the cooperatives to become the pillar and backbone of the national economy. Particularly, the findings of the research are expected to encourage the Kementerian Koperasi dan Usaha Kecil dan Menengah Republik Indonesia (Ministry of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia), the cooperative management, and other cooperative stakeholders to enhance the productivity of the cooperatives in Indonesia. Consequently, it will also contribute to the economy nationwide.

This research explores and analyzes the productivity of the cooperatives and their determinants across 33 provinces in Indonesia. The researchers use the variable of own capital, external capital, and business volume in determining those effects on the productivity of cooperatives.

## METHODS

The researchers explore and analyze the influences of own capital, external capital, and business volume on the productivity of the cooperatives in Indonesia. All units of cooperatives across 33 provinces in Indonesia over the period 2010-2015 are investigated. The aggregate data of cooperatives at the provincial level across 33 provinces in Indonesia are used. In other words, the researchers use the census as a sampling technique since all populations are selected as the sample.

Moreover, the researchers use the panel data (a combination of time series data from 2010 to 2015) and cross-section data of the cooperatives in 33 provinces in Indonesia. The data are obtained from the report of the Ministry of Cooperatives and Small and Medium Enterprises of the Republic of Indonesia. The use of panel data can substantially reduce the problem of omitted variables. It also overcomes the multicollinearity problem. Thus, it produces a robust regression estimation (Lewis, 2015). This combination will improve the quality and quantity of data with an approach that is not possible using only one of these data.

As this research uses the panel data to examine the factors affecting the productivity of cooperatives in Indonesia, the panel regression equation based on the GLS model is used. The general form of the estimated panel regression model in this research is written as follows:

$$PR_{it} = \alpha + \beta_1 MS_{it} + \beta_2 ML_{it} + \beta_3 VU_{it} + \varepsilon_{it} \quad (1)$$

PR is the productivity of cooperatives proxied by the cooperatives' surplus. Then, MS is the

cooperatives' own capital sourced from the member savings, reserves, and grants, while ML is the cooperatives' external capital from loans. Next, VU is the business volume measured by the number of cooperative turnovers. Then,  $\alpha$  is the constant,  $\beta_i$  is the estimated coefficient,  $\varepsilon$  is the error term,  $i$  is the co-operative in the province  $i$ , and  $t$  is the time period.

There are two common models used in the GLS, namely Fixed Effects Model (FEM) and Random Effects Model (REM) (Clark & Linzer, 2015). To identify which model is the most appropriate to be used, the researchers conduct the Hausman test. If the p-value of the estimated Hausman test is insignificant or its probability of the Chi-square is larger than the confidence level, it indicates that the REM will be a more appropriate model to be adopted.

On the other hand, if the p-value of the estimated Hausman test is significant, the FEM should be utilized in the GLS estimation model. The FEM allows a different intercept in its panel regression model among the cooperatives. Thus, the proposed Equation (1) can be re-written in the view of FEM equation, as follows:

$$PR_{it} = \alpha_i + \beta_1 MS_{it} + \beta_2 ML_{it} + \beta_3 VU_{it} + \varepsilon_{it} \quad (2)$$

In Equation (2), the subscript  $i$  is incorporated in the intercept term ( $\alpha$ ) to represent the possibility of having different intercepts in the estimated model. These differences can be due to unique features of each cooperative such as managerial style and management philosophy (Majid & Hamid, 2017; Hamid, Majid, & Khairunnisah, 2017; Arfan *et al.*, 2017; Syamni, Rasyimah, Ratnasari, & Majid, 2018). In this context, the dummy variables are used to capture the varying intercepts in the GLS model. Thus, the FEM is the most appropriate approach to be used in the research to anticipate the existence of a correlation between the cooperatives' specific intercept and regressors.

However, the FEM is not free from its shortcomings. The use of FEM for a small number of observations leads to a smaller degree of freedom. It consequently reduces parameter efficiency. This shortcoming shall be resolved by adopting the error term variable with the use of the REM. In this model, the panel data are estimated by incorporating the error term that may be related from one to another. Thus, unlike FEM assuming that each cooperative has its own and dissimilar intercept, the REM assumes that intercepts are random or stochastic. The REM is a very useful panel regression model to be adopted when the sample of the study is found to be random or stochastic. Based on the Equation (1), the panel regression model of REM can be re-written as follows:

$$PR_{it} = \alpha + \beta_1 MS_{it} + \beta_2 ML_{it} + \beta_3 VU_{it} + \varepsilon_{it} + u_{it} \quad (3)$$

Before the researchers estimate the relationship between capital and business volume of the

productivity of the cooperatives in Indonesia, they conduct first the meticulous classical assumption tests of normality, multicollinearity, autocorrelation, and heteroscedasticity. For the normality test, the Jarque-Bera (JB) test is conducted. If the value of the JB test is smaller than the specified significance level, the data are said to be normally distributed. For the multicollinearity test, It checks for the existence of a high correlation among the independent variables. So, the Variance Inflation Factor (VIF) is used. If the VIF is smaller than 10, the data are categorized to be non-multicollinearity. Next, the Durbin-Watson (DW) test is used to check for autocorrelation. If the DW value is around two, the data are free from the autocorrelation problem. Finally, the Breusch-Pagan (BP) test is to test the heteroscedasticity of the data. If the value of BP test is higher than the specified probability value, the data are homoscedastic (Gujarati, 2014).

## RESULTS AND DISCUSSIONS

Table 1 shows the descriptive statistics of the variables. As illustrated in Table 1, the highest value of surplus in cooperatives is IDR 6.755 trillion obtained by the cooperatives in East Java. Meanwhile, the lowest value is IDR 1,33 billion, recorded by the cooperatives in West Sulawesi. Moreover, the highest value of the cooperative's own capital is by the cooperatives in West Java with IDR 32,88 trillion. However, the lowest value is from the cooperatives in Bangka Belitung with IDR 7,42 billion. Next, for external capital, the cooperatives from the Central Java record the highest (IDR 28,46 trillion). The lowest amount of external capital is IDR 9,11 billion from West Sulawesi. Finally, in terms of business volume, the highest value is IDR 103,9 by the cooperatives in East Java. Meanwhile, the lowest value is by the cooperatives in Maluku.

Based on the Hausman test, REM is the best panel regression model to estimate the effects of own capital, external capital, and business volume on the productivity of the cooperatives. It is done in 33 provinces in Indonesia with the period of 2010-2015. It is indicated by the significant value of the Hausman test at the 5% level. The findings of the estimated

random effect model of panel regression are in Table 2.

The researchers conduct the classical assumption tests before estimating the effect of capital and business volume on the productivity of the cooperatives in Indonesia. In Table 2, the researchers find that all variables investigated are normally distributed. It is shown by the significant p-value of the Jarque-Bera test (0,000 – 0,021). It also has no multicollinearity problem shown by the VIF value between 1,074-1,431. It is homoscedastic indicated by the BP p-value, and non-autocorrelated using the DW value of 1,901. These findings confirm that the investigated variables have fulfilled all classical assumptions. Therefore, it can be used in the model for further estimation.

In Table 2, the changes in own capital, external capital, and business volume can explain about 67,05% variations in the productivity of the cooperatives in 33 provinces in Indonesia. It is indicated by the adjusted R<sup>2</sup> value of 0,6705. Other changes than the investigated variables explain only 32,95% of the changes in the productivity of the cooperatives. For example, it can be the number of members, and employees, number of management and annual member meetings, and others. These findings provide evidence on the importance of capital and business volume to promote the cooperatives' performance. Thus, to further promote the performance of the cooperatives in Indonesia, the cooperatives' manager should focus on enhancing their capital and business volume. Capital from cheaper sources that provide more benefits for their cooperative members, particularly from internal sources, should be increased. For example, it can be done by providing more profit sharing to the members.

Moreover, the cooperatives' manager should also expand their business volume by diversifying their businesses into various types of business activities. By having a business expansion, the cooperatives will enjoy economies of scale and economies of scope. In turn, it will minimize the costs of production. These findings are in line with several previous studies, including Gweyi and Karanja (2014), Kinya *et al.* (2015), Syamni and Majid (2016), and Widiartin *et al.* (2016). They stated the significant influences of capital and business volume on cooperative performance.

Table 1 Descriptive Statistics of the Variables (in IDR)

Descriptive Statistics	Dependent variable		Independent variable	
	Surplus	Own capital	External capital	Business volume
Mean	297.807.732.000	2.193.390.153.030	2.059.269.359.379	4.414.938.000.000
Median	9.892.200.000	58.200.286.000	66.830.970.000	1.596.713.000.000
Std Deviation	683.611.000	500.068.000	430.185.000	10.063.573.000
Minimum	1.326.000.000	7.418.340.000	9.108.000.000	30.291.520.000
Maximum	6.755.911.000.000	32.882.917.000.000	28.459.029.000.000	103.903.968.400.000

Table 2 The Results of Effect of Capital and Business Volume on the Productivity of Cooperative

Variable	Coefficient	t-stat.	P-value
Constant	47.464,57	0,8818	0,3790
Own capital	0,0193**	2,5288	0,0122
External capital	-0,0079	-0,9360	0,3504
Business volume	0,0507***	15,8322	0,0000

R<sup>2</sup> = 0,6755; Adj-R<sup>2</sup>=0,6705; F-statistic = 12,768\*\*\*; P-value = 0,000; JB (p-value) = 0,000 – 0,021; VIF = 1,074 – 1,431; BP (p-value)= 0,154; DW = 1,901

Note: \*\*\* and \*\* indicate significance at the 1% and 5% levels. JB is the Jarque-Bera test for normality; VIF is the Variance Inflation Factor test for multicollinearity; BP is the Breusch-Pagan test for heteroscedasticity; and DW is the Durbin-Watson test for autocorrelation.

Table 2 also shows that own capital has a positive and significant effect on the productivity of cooperatives. The estimated value is 0,0193 at the significance level of 5%. It indicates that a 1% increase in own capital has caused a 1,93% increase in the productivity of cooperatives in Indonesia. Similarly, the business volume is also found to have a positive and significant influence on the productivity of cooperatives in Indonesia. The estimated value is 0,0507 at the significance level of 1%. It illustrates that a 1% increase in business volume causes an increase in the productivity of cooperatives by 5,07%.

These findings indicate the importance of the cooperatives to have more capital from the internal sources. It can be from the cooperatives' compulsory membership participation fees or voluntary membership participation fees. It is because this capital is cheaper compared to external capital from bank loans and other external borrowings. Additionally, at the end of the year, the profits gained by the cooperatives will be finally shared with their members.

By considering the positive influence of internal capital on the productivity of the cooperatives in Indonesia, it is suggested that the cooperatives' manager should work hard to attract more citizens to become the members of the cooperatives. It can be done by socializing and promoting the benefits of joining cooperatives. It can improve the welfare of all members of cooperatives. The cooperatives' manager should also improve its strategic business action and managerial skills to enhance the profitability of the cooperative that can be enjoyed by all members. Therefore, it creates a good image and reputation of the cooperatives as profitable small business enterprises. The good image and reputation of cooperatives will attract more citizens to join the cooperatives. Then, by joining the cooperative membership, it will finally increase the internal capital of the cooperatives in Indonesia.

Next, the positive significance of business volume to the productivity of the cooperatives in

Indonesia also shows the importance of having higher business volume for the cooperatives to become more productive. The business activity should be expanded and diversified. It will be contributed to the cost minimization. As the co-operative improve their output and sales, it will enjoy economies of scale, which is the total average of cost minimization due to higher level of production and sales. It will lead the cooperatives to accumulate higher annual profit.

These findings are in line with Gweyi and Karanja (2014) and Kinya *et al.* (2015). They agreed that the higher the business volume or activities carried out by the cooperatives is, the higher the possibility for cooperatives to become more productive will be. The findings are also supported by Widiartin *et al.* (2016), Syamni and Majid (2016), Suputra *et al.* (2016), and Saputra (2017).

Unlike own capital and business volume, the result shows an insignificant effect of external capital on the productivity of cooperatives in Indonesia. Although the capital is important for the cooperatives, only own capital contributes to the cooperatives' performance. The external capital does not contribute. Since the members of the cooperatives are the sole owner, their productivity is very much dependent on their members, including the capital. This result is different from the findings of the previous studies in other countries such as Gweyi and Karanja (2014) and Kinya *et al.* (2015) for the cooperatives in Kenya. The larger number of members of cooperatives who contribute larger proportion to the total capital can be one of the reasons for the significance of own capital on the productivity of cooperatives in the country. A cooperative's power is dependent on the strength of its members contributing their capital, not the power of external capital. Cooperatives prioritize members' strengths rather than capital strength (Azhari *et al.*, 2017; Bhukuth *et al.*, 2018). In addition, capital from outside parties caused a burden to the cooperatives in Indonesia as they need to pay relatively higher interest for their external borrowing.

To further promote the productivity of the cooperatives, the own capital and business volume need to be enhanced. The cooperative should increase the participation of members because cooperatives' members are both owners and users of products and services of the cooperatives. This can be done by increasing the education of the members. Furthermore, the government should support the development of human resources in cooperatives through continuous assistance. In addition, there is also a need for synergy between other business sectors, government, and academics with the cooperatives to expand participation of the Indonesians to the cooperatives based on mutual prosperity collaboration.

## CONCLUSIONS

This research analyzes the effects of own capital, external capital, and business volume on the productivity of cooperatives. It is done in 33 provinces in Indonesia for 2010 - 2015. Using the panel regression model, the researchers find a significant influence of own capital and business volume on the productivity of cooperatives in Indonesia. However, external capital has no significant effect on the productivity of cooperatives in Indonesia. Therefore, cooperatives should increase their own capital more than external capital in financing business activities. These findings suggest the importance of the cooperatives to accumulate more capital from own sources and offer more diversified business activities. By having higher own capital and business volume, it is expected that there will be synergy between the cooperatives, the government, the private sector, and academicians to increase the productivity of cooperatives in Indonesia.

Future researchers on the productivity of the cooperatives and their determinants are expected to consider the data of different types of individual cooperatives across the nation. It is to enrich the existing literature and findings. Finally, by considering more variables into the analysis, both characteristics of cooperatives and macroeconomic determinants can enhance the existing empirical evidence and sharpen the policy recommendation to materialize the cooperatives in the country as the backbone of the national economy. It is as mandated by Article 33 of the 1945 Indonesian constitution.

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