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PRIVATE AND STATE-OWNED ENTERPRISES' PERFORMANCE; AN
EMPIRICAL STUDY OF THE OIL & GAS AND CONSUMER GOODS
COMPANIES IN INDONESIA

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Abstract

The purpose of this study is to compare the performances of private and state-owned companies listed for oil and gas, and consumer goods, in Indonesia. The study employs a comparative analysis based on 108 state-owned company-years and 116 privately-owned company-years observed between 2011 and 2014. Profitability testing is used to measure the difference on earnings ratio between state-owned and privately-owned companies; leverage testing was also employed to analyse the debt ratio of state-owned and privately-owned companies. Using corporate data from 224 annual financial reports from the Indonesian stock exchange, the study calculated profitability analysis using the t-test. The study found that the private companies performed better than the state-owned samples. In conclusion, even though insignificant, it was found that private ownership leads to lower levels of leverage and higher profitability and efficiency, when comparing the two industries. A further recommendation is that it would be robust to gather more industry types.

INTRODUCTION

Private and state-owned enterprises (hereafter POE and SOE) have drawn critical discussion in that they illustrate significant differences in financial performance. The financial crisis that hit the economy in Indonesia in 1997, and the majority of the world in 2007 may have a significant impact on the performance, and may well influence the political and economic milieu. The extent to which financial performance is influenced by such factors is pertinent to maintain the health of Indonesia's public finances. In

order to compare those performances between publically-owned and privately-owned firms, there are some difficulties in gathering the data needed, such as overlapping and misreporting that can affect the analysis results. According to Megginson and Netter (2001), there are specific methodological problems attributable to comparing public and private entities. It is difficult to construct comparison groups or bench marks, especially in small and developing economies. In some industries, public ownership is a consequence of market failure; therefore comparison cannot be done adequately. Extant studies confirm differences between state-owned companies and private companies. Some disparities include profitability, efficiency, and financial performance; these indicators thrive in companies with better performance. Others discuss privatization of state-owned enterprises that occurs worldwide, including Indonesia. In addition, the effort to privatize state-owned companies has been one of the effective procedures to gain public confidence and obtain additional and capital markets. As such, although the level of public confidence tends to be greater in state-owned companies, there is a notion that financial performance in such enterprises has greater risks compared with private ones. It is therefore necessary to make improvements to these problems in order to restore public both national and international confidence.

Consumer goods are one important industry in Indonesia. The industry will be thirty-two years old in 2020. Although it is fairly young compared to other countries, such as Japan, this attracts investors to do business as Indonesia is considered productive in terms of consumption. Price Waterhouse Coopers also predicts that Indonesia's retail sales will significantly increase from US\$330 in 2014 to \$639 in 2018 (PWC, 2015). In line with these conditions, there is a notion of greater financial reporting, as well as enterprises' performances, which will allow transparent and reliable information in Indonesia's capital markets. Competition in the fast-moving consumer goods (FMCG) industry cannot be avoided; competition exists not only between companies, but also between industries (Fisamawati, 2013). In addition, there is a tendency for the state-owned enterprises to have a less-managed financial performance (government failure), and that these companies must improve their performance in order to pitch to the banks (Omran, 2004). This is due to the fact that SOE are influenced by primordial culture and bureaucratic systems, which produce very high inefficiency (Pranoto, 2008).

On the other hand, research on the financial performance of the Indonesian mining public and private companies has not been entirely developed. However, evidence proves that the sector has significantly contributed to the nation's gross domestic product (GDP). As one of the significant players in the global mining industry, Indonesia is considered a strong prospect in terms of coal and minerals (Lieokomol, 2011) and contributed approximately 4% to the Indonesian GDP (PWC, 2016). Moreover, the industry represents a much larger share of the regional economies of many provinces including Papua, Central Sulawesi, Bangka-Belitung, West Nusa Tenggara and East Kalimantan. According to IM4DC (2013, p. 9), the growth of the mining sector is expected to be a "dominant exporter in Asia and retain its status as the largest global thermal coal and tin exporter in the world". Its production value doubled from \$82.6 billion in

2010 to \$143 billion in 2016, with a significant rise in coal and nickel production (BMI, 2012).

In terms of ownership structure, the mining sector is undertaken by both domestic companies (state-owned and private) and multinational companies. The mining prospects of Indonesia remain strong due to the country's extensive mineral reserves and exploration activities. The mining and utilities output in Indonesia is much larger than in neighbouring countries, and it has consistently contributed between 8 and 13 per cent of GDP since the late 1980s. Purbaningsih (2013), on the other hand, argues that competition requires companies to create innovation and develop concepts or new methods in the company. Thus, financial performance is one of the things that is important to increase the value of a company. The financial performance of a company can be obtained from the information presented by financial statements in the period. The financial statements can be used as the basis to determine or assess the company's financial position; financial reports are also needed to measure the results of operations and the development of the company to define how far the company has achieved its objectives. They can be used for assessing the ability of the company to meet its obligations, capital structure and businesses, effective use of assets, as well as other matters relating to the financial situation of the company. The performance of a company is measured based on ratios for a specific period.

The study attempts to respond to whether or not ownership is an important aspect for determining the performance of the company and whether it affects companies under both types of ownership to the same degree and extent. The analysis of private versus public company in Indonesia should allow an assessment of the effect of ownership in a dynamic environment. This study also compares the oil and gas and consumer good industries, because oil and gas is the industry which generates the majority of the economy in Indonesia and the consumer good could reflect the performance of other peripheral industries. Based on the above explanation, this study attempts to discover any differences, in terms of finding their profitability and efficiency. Thus, the research question is as follows: *Is there any difference in profitability between state-owned and private-owned enterprises in Indonesia?*

The paper is constructed as follows; there is a literature review, emphasizing the empirical evidence of state-owned enterprises (SOE) and private-owned enterprises (POE) performance comparison in terms of capital structure, profitability and efficiency. The next section describes the methodology and data gathering that are examined further in the paper. Findings and discussion analysis were followed based on the hypotheses testing. Lastly, interpretation of conclusion, recommendations, and limitations is described.

LITERATURE REVIEW

In general terms, it is assumed that privatization will increase the performance of state-owned companies. According to Savickaite, Rimkus, and Siyahhan (2011), state-owned enterprises have a strong degree of intervention from the government, which controls provision of basic public services, maintenance of order and law, enforcement of contracts, and information. Pranoto (2008) argues that the role of SOE in Indonesia is still

considered important, especially as *the backbone* of Indonesia's economy. Public needs such as electricity, energy, clean water, banking and telecommunication sectors, are still handled by SOE. Normally, there is a privilege associated with becoming a monopoly company from the government, which eventually leads to performance inefficiency. Megginson and Netter (2001) argue that government intervention may fail in some way, and then the government must resolve the market failure, and the company's decision-making process may also be interfered with. The presence of the government in the market, Sheshinski and López-Calva (2003) argue suggests that the mechanism of the market has failed when private-owned enterprises dominate "natural monopoly" sectors. There are also arguments for government intervention scale and efficiency consideration. On the other hand, Krueger (1990), explains that governments, as non-market organizations, generally manage larger scales of organization such as to taking control of public services, maintenance of order and law, enforcement of contracts and information. The government also control regulations such as pollution, natural resources, education and health policies.

There are some disadvantages of being a state-owned company. First, for the publicly-owned entity, it is more difficult to define the shareholder, whether the taxpayer, political party that represents the majority of citizens or the government. De Alessi (1996) argues that the critical difference between private and publically-owned companies is that ownership is non-transferable. The argument can also be interpreted that non-transferability of ownership will eliminate specialization. Second, the publically-owned entity faces difficulty in defining the company's goals. Dewenter and Malatesta (2001) and Megginson and Netter (2001) argue that the SOE must place social and political objectives in the first place while shareholder's wealth and firm's value maximization is the main objective of private firm. Moreover, Tian (2000) argues that the objective of a government is to improve social welfare rather than obtain profit. Furthermore, politicians possess their own goals in maximizing their political base by using the company resources for the purpose of the political needs. Third, it becomes problematic to measure the goals and use this as guiding policy, even though government may succeed in achieving their goal of providing social welfare (Simamora, Jerry, & Hartono, 2016). Based on Megginson and Netter (2001), a government's objective can changes from one administration to another, bringing more confusion to the long-term goals. Lastly, José Arcas and Bachiller (2008) state that a manager of a private company has to be responsible to shareholders while managers of SOE have two principals that are: voters and government.

Generally, the empirical evidence of both performances is still in a 'grey area', although most researchers found significant results regarding the superiority of one or other. Dewenter and Malatesta (2001) illustrated profitability, efficiency and capital structure between SOEs and POEs from the 500 largest non-US state-owned firms from three separate periods (1975, 1985, and 1995). They concluded that SOE perform less profitably than POE and utilize more leverage than private enterprises. They also found that the SOE are less efficient and use excess labor intensity. Univariate analysis and regression tests were used and found that the SOE possessed greater employee-to-sales ratios. This is due to the fact that SOEs are isolated

companies that stifle competition compared to those of public ownership. Moreover, comparing private and public firms cannot be considered as 'apple-to-apple' based. This is due to there being no benchmarks against which the performance of state-owned entities could be assessed (Vickers & Yarrow, 1991).

Savickaite et al. (2011) compared state and private-owned performances. They utilized profitability (ROA), efficiency, and leverage as dependent variables, while using tangibility, growth in GDP, corruption, inflation, size, age, future-growth opportunity, and non-debt tax shield as independent variables. Based on the results, they found that leverage, profitability and efficiency ratios are generally lower for publically-owned enterprises, compared with privately-owned. They suggest that ownership is an important aspect for financial performance. Moreover, although not significant, they also found that privatization leads to a lower level of leverage and higher profitability. For example, Davies (1971) compares the Australian airline industry that is dominated by the public and private airlines of Australia. The objective of the study is to examine the correlation between individual performance and rewards. The result shows very little difference between their performances in the same industry.

On the other hand, Omran (2004) studied performance of state-owned enterprises in Egypt. He analyzed 54 privatized Egyptian firms against the previous setting of SOE from 1994-1998. He found that privatized firms did not prove to be significant in terms of their performances. There was a question on whether privatization can influence the profitability or whether the change of ownership can improve efficiency. Kim and Chung (2007) examined the influence of government imposition and pressure on privatization in 22 SOEs. They found that these companies had relationships between the privatization pressure and the operating efficiency of hard budget constraints. In Indonesia, Asyikin and Tanu (2016) compared SOEs and POEs in the pharmaceutical industry. By employing variables such as gross profit margin (GPM), net profit margin (NPM), return on assets (ROA), return on investment, return on equity (ROE), and earnings per share (EPS). By using independent sample t-testing, they found that POE had indicators compared with SOE in the industry. This was due to the export market possessed by POE and better management, while the SOE limited the market to the domestic area of Indonesia and government's interference in their management.

Other studies also said that investors are highly attracted to stock prices and levels of dividend. Fajriyah (2008) argues that stock prices enable companies to show their information systems and company performance. For investors, the information is used to calculate potential profit based on it. The motive is to invest their funds on the security so they can maximize returns with certain risk. Based on her analysis, only *Debt to Equity Ratio/DER* showed no significant difference on dividend. Five variables of financial performance (EPS, DER, PER, ROE and ROA) all showed no connection with dividend.

Generally, privatization will cause firms to operate more productively. Managers are subjected to the financial markets and to the monitoring and disciplines of profit-oriented investors. Changing the ownership structure of privatized firms shifts the firm's objectives from

social and political objectives toward those that aim to maximize efficiency, profitability and stakeholder's wealth. As stated by Vickers and Yarrow (1991), there are three main factors that influence the privatization process: financial, political, and economical.

Hartley and Parker (1991) developed a conceptual framework based on property rights and public choice approaches; they showed that privatized firms are more efficient than SOEs because profit motivation was absent for public firms. The competitive environment and capital market disciplines also increased the efficiency of the firm (De Castro & Uhlenbruck, 1997).

Private firms are more efficient than SOEs in competitive environments. However, in non-competitive industries, the performance of privatized firms is ambiguous and results from empirical studies are inclusive (Boubakri & Cosset, 1998). D'Souza and Meggison (1999), indicated that privatized firms that work in competitive industries are more solid and rapid as long as there are economy-wide distortions that hinder competition.

In regards to the Indonesian case, there are similarities to the privatization effects on state-owned enterprises. Pranoto (2008), argues that SOE that have been privatized, are proven to increase their financial efficiency and operating performance. In addition, the share price for the privatized company also increased. The increase of the company value was achieved if the company was able to increase efficiency, both internally and externally. Moreover, he argued that inefficiencies are one of the factors behind the poor performance of Indonesian SOE. He explains that in 2001, Indonesian SOE showed a total income of Rp 200 trillion, compared to their total assets of Rp 850 trillion. Moreover, only 11 SOE obtained good performance and profit, while the other 134 companies did not show a satisfactory performance. Thus, there was a gap between SOE financial performance and POE, in that privatization can be a bridge to improve a company's efficiency. This is also in accordance with Megginson and Netter (2001) as a state-owned enterprise, there was improvement in efficiency in state-owned enterprises that listed on the Indonesian Stock Exchange.

It is difficult to compare SOE to privately-owned firms due to two methodological difficulties according to Megginson and Netter (2001). The first is related to the problem of determining the appropriate set of benchmarks especially in developing economies with limited private sectors; the second is that generally there are fundamental reasons why certain industries are government-owned and others are private owned. However, Boardman and Vining (1989) have successfully compared the performance of SOE and private firms and found that private firms and mixed ownership enterprises are more significantly profitable.

Hypothesis development

This paper analyzes the difference between POE and SOE based on profitability that will present significant results for all the profitable measures, confirming the hypothesis and implying that private companies are indeed more profitable than public companies in both the oil, and consumer goods industries. The difference between POE and SOE might be justified due to the persuasion of social goals at the expense of profit and shareholder value maximization under the latter ownership type. Overall it can be evaluated that the hypothesis can be accepted, with the results in line

with the majority of empirical studies in this field (Boardman & Vining, 1989; Dewenter & Malatesta, 2001; Tian, 2000).

This study employs Return on Assets (ROA), which is also often referred to as economic profitability; ROA can be seen as a measure of a company's ability to generate profits with all the assets owned by the company. ROA is often referred to as 'economic profitability', providing information on how efficient a company is conducting its business activities (Jensen & Meckling, 1976). This ratio shows the ability of the capital invested in the total assets to generate profits for investors (Megasari, 2015). This ratio measures the rate of return on the investments made by the company using all its assets. The higher the ROA, the higher the company's ability to generate profits. The higher profits produced by the company will make investors interested in the value of the stock. According to Omran (2004), state-owned entities are less profitable compared with privately-owned entities. Modigliani and Miller (1958) also argued that the higher the profitability of the company's assets, a positive influence shows that the more efficient the turnover of assets, the higher the profit margin obtained by the company, and will ultimately have an impact on increasing the company's efficiency. Thus, the study uses ROA and ROE as the profit measurements.

H1a: ROA in state-owned entities are less profitable than privately-owned.

H1b: ROE in state-owned entities are less profitable than privately-owned.

According to Savickaite et al. (2011), state-owned entities have higher leverage ratios compared with privately-owned entities. This study used total debt and total assets as the profit measurement. Moreover, Fitriani (2013) argued that leverage was significant in financial performance. Hence the second hypothesis is constructed as follows:

H2: Leverage in state-owned entities is higher than privately-owned entities

Based on to Fajriyah (2008), the consumer goods industry is one of the top profitable industries, compared to other industries, including oil & gas. Hence, the next hypothesis can be derived from this argument. This analysis will use ROA as the profit measurement.

According to Makni, Francoeur, and Bellavance (2009), the oil & gas industry has a higher ROA compared to consumer goods; hence, there is a significant difference of ROA between those two industries which is reflected in hypothesis 3. Richardson and Welker (2001) argued that sensitive industries such as oil & gas, have better financial performance compared with the non-sensitive ones.

H3: There is a significant difference in ROA between the oil & gas and consumer goods industries.

MATERIALS AND METHODS

The methodology used in this paper is quantitative analysis, where statistical data is used from performance measures, in order to allow for comparison between state-owned entities and privately-owned entities. Profitability is measured by three proxies, which are: net income, ROA, and ROE, that refers to net income divided by assets and sales. With respect to leverage, it is computed using total debt to total assets (TDTA). This research also used purposive sampling. Purposive sampling is a statistical technique

used to represent a group of different non-probability sampling techniques (Patton, 1990). It is also known as judgmental, selective or subjective sampling. Here, the study is purposefully selected two different groups, namely the oil & gas and consumer goods industries, comparing the performance of each, which will be defined by ROA.

All hypothesis testing will use the independent t-test testing. An independent t-test is used for examining two populations' means. A two sample t-test examines whether two samples are different and is commonly used when the variances of two normal distributions are unknown and when an experiment uses a small sample size. All samples were taken from the Indonesia Stock Exchange (*Bursa Efek Indonesia - BEI*). The study was limited to oil & gas, and the consumer goods industries, due to the fact these industries contributed highly to transactions in *BEI* and generated a large contribution to the GDP of Indonesia. Samples were selected from measurements for computing ratios were all taken from the financial highlights for the year 2011 to 2015. Due to data availability and annual report accessibility, and the omission of financial companies, the total sample collected was 224 company-years.

RESULTS AND DISCUSSIONS

The performance comparison between POE and SOE is one of the methods to assess the impact of government ownership on companies performance. Table 1 and 2 provide descriptive statistics and independent t-test for ROA and ROE between SOE and POE. The total sample taken was 224 consist of 108 SOE and 116 POE. ROA and ROE were used to measure the profitability performance. The following illustrates the statistical results.

Based on Table 1, ROA, that was used to calculate profit measurement, calculated net income over net assets. The results showed a mean between SOE and POE of 0.086 and 0.072 respectively. This indicated that the average from both group was relatively the same, with a differential that was not significant (0.014). The standard deviation also showed a close number between the two variables: 0.153 for SOE and 0.133 for POE. The same table depicts ROE, that was used to calculate profit measurement, and calculated net income over net equity. The results showed the mean between SOE and POE of 0.147 and 0.135 respectively. This indicated that the average from both groups was relatively similar, with a differential that was not significant (0.012). The standard deviation also showed a close number between the two variables: 0.404 for SOE and 0.470 for POE.

Table 1. Descriptive Statistics on ROA, ROE & Leverage

Company	N	Mean	Standard Deviation
Return on Assets (ROA)			
SOE	108	0.086	0.153
POE	116	0.072	0.133
Return on Equity (ROE)			
SOE	108	0.147	0.404

POE	116	0.135	0.47
Leverage			
SOE	108	0.438	0.19
POE	116	0.502	0.232

Table 1 also describes the independent sample test on ROA and ROE, which consisted of Levine's equality test of variance, F test, significance test, and significance test (2-tailed). Below is the explanation of the statistical result. Under the Levine's test for ROA, it showed that the difference between SOE and POE was not significant, with $F=0.308$ and the p-value of 0.579, which is greater than 0.05. For the independent t-test (2-tailed), the test shows that there was also no significant difference between state-owned and privately-owned enterprises. The value was 0.472, which was greater than the significance level of 0.05. Therefore, hypothesis 1 (h1a) was rejected.

The second test of Levine's test for ROE, the results also showed that the difference between SOE and POE was not significant with $F=0.683$ and the p-value of 0.409, which is greater than 0.05. This indicates that there was no significant difference between the privately-owned and state-owned entities. The next test on table 3 is the independent t-test (2-tailed). This test indicates whether two variables have different characters. The findings showed that there was also no significant difference between state-owned and privately-owned enterprises. With the significant level of 0.05, the resulting value of 0.873 was greater than it.

The conclusion for hypothesis 1b (h1b) was rejected.

Table 2 shows descriptive statistics and independent t-test for leverage ratio between SOE and POE. Leverage ratio is used to indicate the ability to cover total debt against total assets. The following illustrates the statistical results.

Table 2. Independent Sample on ROA, ROE & Leverage

Levine's test for equality of variance	F	Sig	Sig (2-tailed)
ROA	0.308	0.579	0.472
ROE	0.683	0.409	0.837
Leverage	4.561	0.034	0.026

There was a significant difference where the mean in private-owned enterprise was higher than SOE with a margin of 0.064, greater than the significance level of 0.05. The standard deviation of each were 0.19 and 0.23. The Levine's test also indicated significant difference between SOE and POE. This was shown with a significance test of 0.034 ($p\text{-value}<0.05$) with an F value of 4.561.

The independent t-test confirmed that there was a significant difference between SOE and POE. Using a 2-tailed test on both group, the

sig value was 0.006 (p-value <0.05). This proved that the leverage of SOE and POE had different values. Using ROA as the profit measurement, with the calculating of net income over assets, there was a significant difference whereby the mean in consumer goods was higher than oil & gas with a margin of 0.039 with a standard deviation of 0.11 and 0.16. The Levine's test also showed that the difference between them is significant with $F=5.217$ and the p-value of 0.023, which is less than 0.05. This indicated that there was a significant difference between the two industries.

Table 3. ROA between Oil & Gas and Consumer Industries

Company	N	Mean	Standard Deviation
Oil & gas	96	0.056	0.111
FMCG	128	0.958	0.160

For the independent t-test (2-tailed), the test showed that there was also a significant difference between the two industries ($0.041 < 0.05$). The conclusion for this test was that it can be inferred that the hypothesis 3 was accepted.

Based on the findings, there are several important factors to be discussed, in terms of explaining between SOE and POE in Indonesia. In general, there are arguments that support private-owned and privatization of SOE influencing the company's financial performance and efficiency (Megginson & Netter, 2001; Savickaite et al., 2011). The spirit of privatization is that the company is enabled to improve its efficiency and profitability, due to less interference of government and regulators. Moreover, the principle agents in SOE result in obscurity of ownership definition within the SOE, which eventually creates a political reasoning and harms the company (Pranoto, 2008).

According to the first finding, the ROA between state-owned enterprise and privately-owned enterprises were not significant. This shows that the net income over the total assets is relatively similar between these two groups. A possible reason is due to the fact that Indonesia is a developing country that may have less infrastructure and systems in place. The result is that companies' size in Indonesia are considered smaller on average compared with companies in developed countries. Based on Fitriani (2013), the size of the company is defined by the size of total assets and sales, which will also influence the net income. This matter is one of the criteria that is considered by investors in order to invest their money.

Other reason is that not all state-owned enterprises are fully-owned by the government. Some of them are led by former officials of state-owned enterprises, government, and military. This also aligns with the next finding, the ROE between state-owned enterprise and privately-owned enterprise was also considered insignificant, which means the net income over the equity for both state-owned enterprise and privately-owned enterprise was relatively close. Hence this hypothesis did not support Modigliani and Miller (1958), Megginson and Netter (2001) and Omran (2004).

However, hypothesis 2 described that the leverage between SOE and POE was relatively different. The hypothesis thus supports the arguments of

Savickaite et al. (2011), Asyikin and Tanu (2016) and Fitriani (2013). The findings suggested that there was a significant difference in total debt over total assets. This is due to the government's failure to handle financial problems. According to Pranoto (2008), the government failure in handling finance is related with the granting of monopolies right to the state-owned enterprise that often causing inefficiency to the company. Meanwhile the property rights that had been given to privately-owned company can create insensitivities that can foster efficiency in the company. An agency theory problem that is related to principal-agent relationship can obscure the ownership definition, which often is used as a political brickbat. The argument can be a possible reason for banks to provide more loans for privately-owned companies rather than state-owned companies.

With respect to the oil & gas and consumer goods industries, hypothesis 3 described that ROA between those two groups was different. According to the findings in table 3, there was a significant difference in return to assets ratio between the oil & gas and consumer goods industries. This aligns with arguments from Makni et al. (2009) and Richardson and Welker (2001), that oil & gas has a higher ROA than consumer goods, and that the oil & gas industry is more sensitive than others.

CONCLUSIONS

There are many methods in comparing state-owned enterprises (SOE) and privately-owned enterprises (POE). In measuring them, some studies prefer to use ROA and ROE to disclose profitability performance in their annual report, while others prefer to use the leverage profitability performance of SOE and POE. Similarly, there are many ratios to determine companies' profitability other than net profit margin, ROA and ROE. In this study, company's profitability does not have any significant differences with the comparison of SOE and POE. It appears that the POE has more efficiency than SOE. In order for SOE to have more efficiency than usual, they should be privatized.

As with all empirical studies, this study has limitations that may result in some inconsistencies. The first limitation is the subjective measurement of SOE and POE. It assumes no absolute result in determining the financial performance and efficiency, resulting in different conclusions, which inevitably generates biases in the calculating results. Secondly, the length of data collection can be considered short-term (below 5 years). This may result in a weak relationship between SOE and POE in terms of financial performance, which is believed to be of a long-term impact.

For future studies, this research should use more samples with a longer period, more variables and can add cultural conditions such as government interventions, political and social pressures and other non-monetary company disclosures. The selection of input and output for all the methods should reflect the performance of a company so that the calculations are more objective and reflect the real conditions.

In terms of suggestions that can be given, for investors making investments in order to get more optimal stock returns, they should consider the important profitability measurements such as ROA, ROE, and leverage; the values for these variables can predict the prospects and performance for the present and future.

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