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Influence of Key Performance Indicators on Firm Value Using Leverage as an Intermediate Variable

Abstract. Introduction. The value of the company can describe the state of a company because with good firm value, the company will be categorized as good by the investors through the firm value, and vice versa. Thus, it is very important to identify any factors that will affect and consider the use of leverage to increase firm value. This research applied a time series design with the sample of 45 companies LQ45 list on Indonesia Stock Exchange (IDX) in 2016-2020 period. This research used purposive sampling method. To analyze the data, conducted Structural Equation Modeling (SEM) path analysis with the application AMOS software.

Purpose. The value of the company can describe the state of a company because with good firm value, the company will be categorized as good by the investors through the firm value, and vice versa. Thus, it is very important to identify any factors that will affect and consider the use of leverage to increase firm value. This research applied a time series design with the sample of 45 companies LQ45 list on Indonesia Stock Exchange (IDX) in 2016-2020 period. This research used purposive sampling method. To analyze the data, conducted Structural Equation Modeling (SEM) path analysis with the application AMOS software.

Results. The results showed that profitability and liquidity had a positive and significant direct effect on firm value; size did not show any significant direct effect on firm value. In other discussions leverage can significantly mediate the impact of size on firm value, while leverage cannot significantly mediate the impact of profitability and liquidity on firm value.

Conclusions. It is expected that this study contributes to the relationship among variables, especially profitability, size firm, liquidity, firm value, leverage. To some extent, the findings of this study could give positive impacts to the advancements of company value, the prospective investments and to the future researchers.

Keywords: profitability; size firm; liquidity; firm value; leverage.

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Вплив основних показників діяльності на вартість фірми з використанням кредитного плеча як проміжної змінної

Анотація. Досліджено дизайн часових рядів із вибіркою 45 компаній зі списку LQ45 на Індонезійській фондовій біржі (IDX) у період 2016-202 років. У статті використовувався метод цілеспрямованої вибірки. Проаналізовано напрям моделювання структурних рівнянь (SEM) за допомогою програмного забезпечення AMOS. Результати показали, що прибутковість і ліквідність мали позитивний і значний прямий вплив на вартість фірми; розмір не виявив істотного прямого впливу на вартість фірми. З'ясовано, що кредитне плече може значно опосередковувати вплив розміру на вартість фірми, тоді як левверидж не може істотно опосередковувати вплив прибутковості та ліквідності на вартість фірми.

Доведено взаємозв'язок між змінними: прибутковістю, розміром фірми, ліквідністю, цінністю фірми, леввериджем.

Ключові слова: рентабельність; розмір фірми; ліквідність; вартість фірми; важіль.

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Formulation of the problem. A competitive advantage is a feature that allows a business to outperform its rivals. This helps a firm to outperform its competitors in terms of profit margins, creating value for the company and its shareholders. A competitive advantage sets a firm apart from its rivals. Higher prices, more consumers, and brand loyalty are all benefits. One of the most essential aims of every firm is to achieve such an edge. It is critical to corporate success in today's environment. It will be difficult for businesses to thrive without it. To fulfill the business's aims, primarily the welfare of shareholders, a competitive advantage is maintained through optimizing corporate value. The share price can be used to determine the company's worth. A rise in the stock price on the market typically

corresponds to an increase in the company's worth, and vice versa. Investors' perceptions of a company's ability to earn and expand profits in the future are reflected in its stock price. The state and financial situation of any firm, which frequently fluctuates over time, might affect the ups and downs of stock prices. There have been some factors that contribute to the ups and downs of stock prices. Simply, it can be stated that the impact of profitability, size firm, and liquidity on firm value with leverage as intervening variable are intercorrelated. Referring to the results of several previous studies which show mixed and inconsistent results, this study aims to examine and analyse the effect of profitability, size firm and liquidity on firm value with leverage as intervening variable.

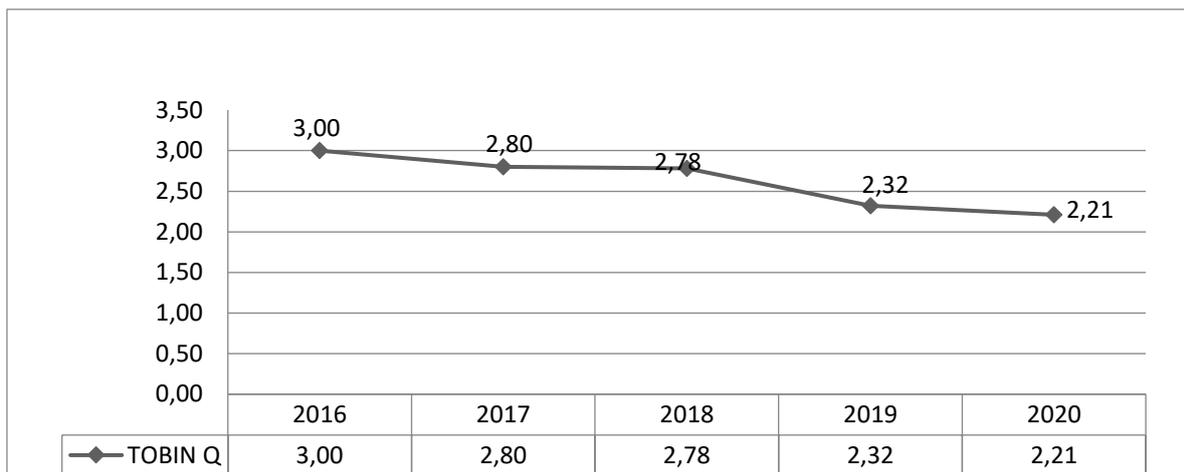


Figure 1 – Average of firm value LQ45

Source : *idx.co.id (data processed)*

Analysis of recent research and publication. Nowadays, it is commonly identified that significant studies in the world of economics are discussing about profit, size firm, liquidity on firm value with leverage in an Indonesian stock exchange. This has triggered the emergence of trends in the world of economics studies. Several previous related studies investigate the four variables. A study conducted by Widiyanti et al. (2019). It showed that profitability has a positive influence on firm value. Dang et al. (2019), Chabachib et al. (2020), Sakr & Bedeir (2019), Zuhroh (2019); Siringoringo & Hutabarat (2019), Indasari & Yadnyana (2018), and Patricia et al (2018) reported the findings alike. Ironically, investigations done by Ngurah et al. (2020) & Sondakh (2019) resulted on the reverse. Each study suggested that profitability has no effect on firm value. Clearly, the ratio of profitability and activity will be higher if it is influenced by rising stock prices and results on an increase in firm value.

Other arguments appear the link between liquidity and firm value. Dewi & Sujana (2019) & Mulyani et al.,

(2017) found that liquidity has a significant relationship to firm value in Transportation Sector companies on the Indonesia Stock Exchange, indicating that transportation companies experience difficulties to earn profits and are generally liquid. Meanwhile, studies by Renaldi et al., (2020), Zuhroh, (2019) & Patricia et al. (2018) described different findings.

The relevance between firm size and firm value was explored by Chabachib et al. (2020) and Tandanu & Suryadi (2020). The studies showed that firm size has a positive and significant effect on firm value. the greater the total assets or firm size, firm value will increase. states that firm size significantly affects firm value while Endri & Fathony (2020) & Widiyanti et al. (2019) found the vise versa.

Then, manufacturing industrial companies listed on the Indonesia Stock Exchange (IDX) for the 2016-2018 observation period mentioned that the variable leverage has an influence on firm value (Renaldi et al.; 2020 & Setyowulan et al; 2020). However, Endri & Fathony (2020) & Dang et al. (2019) suggested that leverage is

one of the variables that does not have a significant effect on firm value.

Several studies on the effect of leverage as an intervention variable in mediating profitability, firm size, liquidity on firm value were conducted by Sari & Sedana (2020), Jemani & Erawati (2020), Zuhroh (2019), Hermuningsih (2017) & Chen & Chen (2016). However, Wijaya (2019), Ifada et al. (2019) & Azmi (2018) stated that leverage is not a variable that intervenes in mediating factors of profitability, firm size, liquidity on firm value.

Studies above investigated the interlink variables some countries. This study is different from the studies above, namely in the research context. This study tries to explore how each variable is related to one to another in LQ45 Company List on Indonesia Stock Exchange (IDX) In 2016-2020 Period because there has been no research on this topic recently.

Formulation of research goals. This research investigating the empirical evidence about the impact of profitability, size firm, liquidity on the firm value with leverage as intervening variable at LQ45 company list on Indonesia Stock Exchange (IDX).

Outline of the main research material. The signal theory states that the profitability is one of the factors that can be a signal to investors on the value of the company. Profitability shows a positive correlation with firm value, firm value can be influenced by the size of the profitability generated by the company Missy et al., (2016). The results of this study suggest that the higher the level of profitability, the higher the value of the company because the greater the wealth that will be distributed to shareholders, so that the level of profitability has a positive effect on firm value. The positive effect that profitability has on firm value will be more positive and stronger if financial performance also increases Patricia et al. (2018). This is in line with research from Chabachib et al. (2020), Sakr & Bedeir (2019), Zuhroh, (2019), Siringoringo & Hutabarat (2019), (Dang et al., 2019), Indasari & Yadnyana (2018), Pardiyanto (2016).

H1 : Profitability had a positive effect on firm value.

The signal theory states that the size of the company is one of the factors that can be a signal to investors on the value of the company. Firm size has a positive and significant effect on firm value. the greater the total assets or the size of the company, the value of the company will increase Chabachib et al. (2020). Tandanu & Suryadi (2020) state that firm size significantly affects firm value. This is in line with research from Dang et al. (2019), Sakr & Bedeir (2019).

H2 : size firm had a positive effect on firm value.

The signal theory states that the liquidity of the company is one of the factors that can be a signal to investors on the value of the company. Liquidity has a significant relationship to firm value in the company. indicating that companies experience difficulties in their ability to earn profits and are generally liquid.

Siringoringo & Hutabarat (2019), Dewi & Sujana (2019), Sakr & Bedeir, (2019), Mulyani et al. (2017) found that liquidity (CR) has a significant relationship to firm value.

H3 : liquidity had a positive effect on firm value.

The trade off theory states the use of leverage has a positive effect on firm value, considering the benefits and costs of debt simultaneously, leverage is positively related to firm value before reaching the firm's optimal capital structure. The positive effect of leverage on firm value tends to be stronger when the company's financial quality is better Cheng & Tzeng (2015). This is in line with the research of Renaldi et al. (2020), Setyowulan et al. (2020).

H4 : leverage had a positive effect on firm value.

The trade off theory states that in considering the benefits and costs of debt simultaneously, leverage is positively related to firm value before reaching the firm's optimal capital structure. The positive effect of leverage on firm value tends to be stronger when the company's financial quality is better. Companies can determine the amount of debt, because the presence of debt to a certain extent will be able to increase the value of the company. This is in line with the trade off theory which explains that if the position of the capital structure is below the optimal point, any additional debt will increase the value of the company. On the other hand, if the position of the capital structure is above the optimal point, any additional debt will reduce the value of the company. Research by Hermuningsih (2017), Chen & Chen (2016) and Sari & Sedana, (2020) shows that profitability has a positive effect on firm value (Firm Value) of a company with capital structure as an intervening variable.

H5 : profitability had a positive effect on firm value mediated by leverage

The trade off theory states that in certain circumstances the company can use external sources of funds in the form of debt, the company will be able to increase the size of the company so that the value of the company will also increase. Company size is a reflection of the total assets owned by a company. The larger the size of the company, the greater the assets owned and the more funds needed by the company to maintain its operational activities. The larger the size of the company will affect management decisions in deciding what funding will be used and optimized by the company so that funding decisions can increase the value of the company. Zuhroh (2019) shows that firm size has a positive effect on firm value (firm value) of a company with leverage as an intervening variable.

H6 : size firm had a positive effect on firm value mediated by leverage

Liquidity of large company indicates that a company has sufficient funds to finance the company's operations without having to add debt. A large profit level is a sign that the company is in a steady state which will have an impact on the high value of the company. However, the company must also be able to determine the size of the

debt to increase or decrease the value of liquidity, because the presence of debt to a certain extent will be able to increase liquidity and later it will also affect the value of the company. Chen & Chen (2016), (Zuhroh, 2019) show that liquidity has a positive effect on the firm value of a company with leverage as an intervening variable. The effect of leverage as an intervening variable in mediating profitability, firm size, liquidity on firm value was carried out by Sari & Sedana, (2020), Zuhroh (2019), Hamarzonanda et al., (2018), (Robiyanto et al., 2020) , (Jemani & Erawati, 2020), (Wijaya, 2019), (Purnomo, 2018), (Azmi, 2018), (Mulyani et al., 2017), (Purwohandoko, 2017), (Nugraha, 2016).

H7 : liquidity had a positive effect on firm value mediated by leverage.

This correlational quantitative statistical method was designed to the link of two or more variables, namely Profitability had a positive effect on firm value, size firm had a positive effect on firm value, liquidity had a positive effect on firm value, leverage had a positive effect on firm value, profitability had a positive effect on firm value mediated by leverage, size firm had a positive effect on firm value mediated by leverage, and liquidity had a positive effect on firm value mediated by leverage.

A statistical approach for determining the strength of a link between two quantitative variables is correlation analysis. A high correlation indicates a significant link between two or more variables, whereas a poor correlation indicates that the variables are barely related. This study chose all LQ45 index firms registered on the Indonesia Stock Exchange from 2016 to 2020. Purposive sampling was used by researchers in order to reach a certain group of people, as all the participants were chosen because of specific profile. Purposive sampling was utilized in this study, with the condition that the business was still included in the LQ45 index during the study period and possessed all of the data needed for the study. Secondary data in the form of the company's yearly financial statements was collected from www.idx.co.id. Multiple Linear Regression Analysis was utilized to analyse the data in this study. The population used in this study were 45 companies LQ45 list on Indonesia Stock Exchange (IDX) during the period 2016-2020. This research used purposive sampling method and applied a time series design with the sample of 45 companies LQ45 in 2016-2020 period. Table 1 shows the criteria of research sampling in this investigation.

Table 1. Criteria for Research Sampling

Creteria	Amount of
1. Company include in the LQ45 company from 2016-2020	63
2. Companies that inconsistently in LQ45 company from 2016-2020	34
Amount Research Sample	29

Source : idx.co.id (data processed)

Table 1 above presents to get better results, the sample used in this study is only companies that are consistently in LQ45 during 2016-2020 and ignore companies that inconsistently listed in LQ45

Table 2. List of LQ45 Companies that are Sampled

1. ADRO	Adaro Energy Tbk
2. AKRA	AKR Corporindo Tbk
3. ASII	Astra International Tbk
4. BBKA	Bank Central Asia Tbk
5. BBNI	Bank Negara Indonesia (Persero) Tbk
6. BBRI	Bank Rakyat Indonesia (Persero) Tbk
7. BBTN	Bank Tabungan Negara (Persero) Tbk
8. BMRI	Bank Mandiri (Persero) Tbk
9. BSDE	Bumi Serpong Damai Tbk
10. GGRM	Gudang Garam Tbk
11. ICBP	Indofood CBP Sukses Makmur Tbk
12. INCO	Vale Indonesia Tbk
13. INDF	Indofood Sukses Makmur Tbk
14. INTG	Indocement Tunggul Prakasa Tbk
15. JSR	Jasa Marga (Persero) Tbk
16. KLBF	Kalbe Farma Tbk
17. LPPF	Matahari Department Store Tbk
18. MNCN	Media Nusantara Citra Tbk
19. PGAS	Perusahaan Gas Negara
20. PTBA	Tambang Batubara Bukit Asam (Persero) Tbk

21. PTPP	PP (Persero) Tbk
22. SCMA	Surya Citra Media Tbk
23. SMGR	Semen Indonesia (Persero) Tbk
24. SRIL	Sri Rejeki Isman Tbk
25. TLKM	Telekomunikasi Indonesia (Persero) Tbk
26. UNTR	United Tractors Tbk
27. UNVR	Unilever Indonesia Tbk
28. WIKA	Wijaya Karya (Persero) Tbk
29. WSKT	Waskita Karya (Persero) Tbk

Source : *idx.co.id* (data processed)

A list of LQ45 companies is displayed in Table 2. The number of samples were determined by the purposive sampling method which the number of panel analysis units in this study was 145 (29 companies in 5 years).

To analyze the data, conducted Structural Equation Modeling (SEM) path analysis with the application AMOS software.

The research path model is:

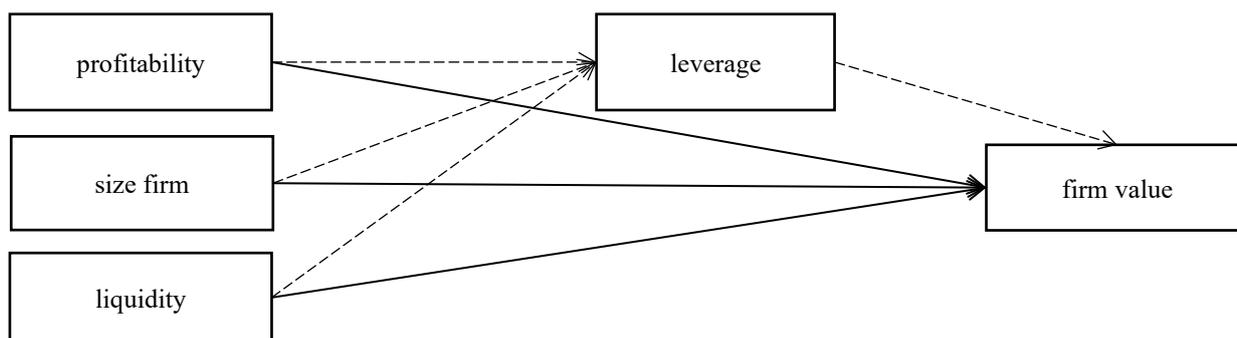


Figure 1 – Modeling (SEM) path analysis with the application AMOS software

Source: generated by the authors

The research regression model is:

$$D\varepsilon \rightarrow Y = \alpha + \beta_1 ROA + \beta_2 Ln + \beta_3 CR + \varepsilon \quad (1)$$

$$I\varepsilon \rightarrow Y = \alpha + \beta_1 ROA + \beta_2 Ln + \beta_3 CR + DER + \varepsilon \quad (2)$$

where,

$D\varepsilon$ - is direct effect;

$I\varepsilon$ - is indirect effect;

Y - is firm value;

α - is constant;

β_1 - is regression coefficient of ROA;

β_2 - is regression coefficient of Ln;

β_3 - is regression coefficient of CR;

β_4 - is regression coefficient of DER;

ε - is error term.

The dependent variable was firm value proxied by TOBIN Q value, a measure of firm value is the present value of future free cash flows at a discount rate according to the weighted average cost of capital. (Brigham & Ehrhardt, 2016). The independent variables were profitability proxied by ROA, size firm proxied by Ln and liquidity proxied by CR. Profitability is defined as a measure in percentage used to assess the extent to which the company is able to generate profits at an acceptable level (Lyn M Fraser & Aileen Ormiston, 2019; Prihadi, 2019). Herry (2018) defined size firm as a ratio that describes the scale of the company seen from the

total assets of the company at the end of the year. Then, liquidity was a ratio that shows the company's ability to meet obligations or pay short-term debt (Brigham & Houston, 2019; Prihadi, 2019). Again, Prihadi (2019) stated that leverage, as an intervening variable, was a ratio that describes the level of the company's ability to use assets and or funds that have a fixed burden (debt and or special shares) in order to realize the company's goal of maximizing the wealth of the owner of the company.

The research mediated model is:

$$Z\text{ Value} = \alpha * b / \text{SQRT}(b^2 * sa^2 + a^2 * sb^2) \quad (3)$$

where,

sa - is standard error coefficient of a;

sb - is standard error coefficient of b;

α - is raw (unstandardized) regression coefficient for the association between independent variable and mediator;

b - is raw coefficient for the association between the mediator and the dependent variable (when the independent variable is also a predictor of the dependent variable).

The results of testing the hypothesis are presented in Table 3 as follows.

Table 3. Hypotheses Testing Results

TobinQ <--- ROA	0,214	0,013	16,019	***
TobinQ <--- Ln	0,003	0,085	0,033	0,974
TobinQ <--- CR	0,182	0,069	2,633	0,008
TobinQ <--- DER	0,085	0,041	2,058	0,040
	0,214	0,013	16,019	***

Source: generated by the authors

Table 3 above presents the results of hypothesis testing consisting of the coefficient of the relationship between the independent variable and the dependent variable, estimate, standard error, critical ratio, and the P value or probability. The research hypothesis is accepted if the probability value is below 0.05 and estimated value which shows the path coefficient which is positive or negative.

Thus, the first hypothesis (H1) of this study which states that profitability has a positive effect on firm value

can be accepted. The second hypothesis (H2) which states that size firm has a positive effect on firm value is rejected because the probability value does not meet the requirements. The third hypothesis (H3) which states that liquidity has a positive effect on firm value can be accepted. The results of the hypothesis test also show leverage has a positive effect on firm value so that the fourth hypothesis (H4) of this study can be accepted.

The results of mediation testing the hypothesis are presented in Table 4. as follows.

Table 4. Z-Sobel Testing Results

Variable	Raw Coefficient	Z-Sobel Value
Pofitability (ROA) on firm value (TobinQ) with leverage (DER)	0,001148	-0,07138621
Size firm (Ln) on firm value (TobinQ) with leverage (DER)	0,085510	1,976044155
Liquidity (CR) on firm value (TobinQ) with leverage (DER)	-0,004930	-0,39804831

Source: generated by the authors

Table 4 above presents the results of hypothesis testing consisting of the coefficient of the relationship between the independent variable and the dependent variable are mediated by the intervening variable. The research hypothesis is accepted if the Z-Sobel value is below 1.96 and raw coefficient value which shows the path coefficient which is positive or negative.

The fifth hypothesis (H5) stated that leverage can significantly mediate the impact of profitability on firm value and the seventh hypothesis (H7) mentioned that leverage can significantly mediate the impact of liquidity on firm value are rejected because the probability value does not meet the requirements. While, sixth hypothesis (H6) reported that leverage can significantly mediate the impact of size firm on firm value.

Conclusion. Based on the discussion and research results described above, the following conclusions can be drawn that profitability had a significant positive effect on firm value. The low profitability of the company

affected the low value of the company. The influence was in line with the higher the profitability of the company, and vice versa. Firm size had no significant effect on firm value. The high size of the company did not affect the high and low value of the company. Liquidity had a significant positive effect on firm value. The high liquidity of the company affected the low value of the company. This influence was in line with the higher the liquidity value of the company, and vice versa. Leverage had a significant positive effect on firm value. The high level of corporate debt affected the low value of the company.

Thus, discussions of how the link of leverage and other variables is described as follows. Leverage could not mediate the effect of profitability on firm value. Leverage could mediate the effect of firm size on firm value and leverage could not mediate the effect of liquidity on firm value.

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