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Improving firm value: The role of profitability-liquidity trade-off

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Abstract

The purpose of this study is to investigate the firm value associated with profitability and liquidity trade-off. This study is different from previous studies that focus on the trade-off between liquidity and profitability, as well as the relationship between liquidity and profitability, partially with firm value. This study examines the liquidity and profitability trade-off and is associated with firm value in one model by adding the role of sales growth to the liquidity and profitability trade-off. The data used is data from manufacturing companies listed on the Indonesia Stock Exchange, with an observation period from 2016 to 2023. The results showed that liquidity has a partial and negative impact on profitability, profitability has a positive impact on firm value, increased sales moderate the trade-off of profitability and profitability, and profitability mediates liquidity on firm value when the liquidity and profitability trade-off is moderated by sales growth. The practical implications of this study are that in making decisions regarding liquidity, sales growth is an important aspect to consider; increasing company productivity, as indicated by sales growth, is an ideal condition to increase liquidity, which means the company uses internal funding rather than external funding, which is difficult to obtain and costly, so that profitability increases and company value will increase.

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1. Introduction

Capital market players are making investment decisions based on published information from firm financial reports. Investors consider this information as a signal before making an investment. Additionally, signaling theory is used to increase the link of information on business and performance. This is useful for determining the behavior of the two parties providing information (Connelly, Certo, Ireland, & Reutzel, 2011). The theory explains that firm management provides signals in the form of financial report information with long-term prospects. In this context, a performance in good condition increases firm value.

Liquidity and profitability are financial information that shows firm performance. While liquidity relates to meeting short-term obligations with current assets, profitability closely aligns with the ability to generate profits. The information obtained can affect investor responses but cannot be analysed separately. The level of profitability is significantly influenced by liquidity. Therefore, investors should also consider liquidity level

when analyzing profitability. When considering long-term investments, evaluate financial security in conjunction with profitability (Suteja et al., 2023).

Several previous results show an inconsistent link between profitability and liquidity. The negative link has been confirmed by Baser, Gokten, Kucukkocaoglu, and Ture (2016); Kumar, Namita, and Chaitrali (2018); Mohanty and Mehrotra (2018); Hristova, Stevcevska-Srbinoska, Mileva, and Zafirova (2020) and Li et al. (2020). Meanwhile, a positive correlation of liquidity and profitability has been reported empirically, including (Akindele & Odusina, 2015; Soda, Hassan Makhlouf, Oroud, & Al Omari, 2022; Taha, Al-Omush, & Al-Nimer, 2023). Prior studies tested the correlation between firm value and trade-off. In contrast to previous results, this research aims to build a model to address the trade-off of liquidity and profitability in connection to firm value.

Variations in the relationship are a strong rationale for stating that some factors affect the variables. Meanwhile, limited research has discussed the phenomenon. Based on Feng, Lu, and Wang (2020) firms with high productivity avoid expensive external financing to maintain higher liquidity. In high productivity conditions, high liquidity increases the ability to generate profitability. Therefore, the trade-off between liquidity and profitability becomes irrelevant. This explanation reinforces the explanation (Pham, Van Vo, Le, & Le, 2018) that liquidity reduces capital costs and avoids high cash flow uncertainty as an important determinant.

Productivity is needed for firm to obtain a high liquidity position, and the variable is proxied by sales growth in liquidity and profitability trade-off. Increased sales growth shows higher current and future business activity. Therefore, the firm obtains profitable investment opportunities and is motivated to increase liquidity to finance without external funding (Jaworski & Czerwonka, 2021).

The aim of this paper is to assess the use of sales growth moderation to overcome trade-off of liquidity and profitability, thereby having a positive influence on firm value. Prior studies have proven that liquidity directly has a negative impact on firm value, including (Ahmad, Shah, Ijaz, & Ghouri, 2023; Deloof, 2003; Keter, Cheboi, & Kosgei, 2024). Meanwhile, profitability has a positive effect (Baños-Caballero, García-Teruel, & Martínez-Solano, 2014; Dhole, Mishra, & Pal, 2019; Zeidan & Shapir, 2017). Part of the research involved a direct connection between these variables and firm value. Liquidity is related to firm value through moderating sales growth.

The contribution of this study is to integrate the sales growth as a moderator and profitability as a mediator in the connection between liquidity and firm value. This was based on trade-off and signalling theory, providing an opportunity for academics from the financial management discipline to explain the relationship between variables comprehensively. Liquidity, profitability, and sales growth were potential drivers of firm value. Previous literature examined the relationship between these variables partially. The developed conceptual model underwent empirical testing, representing another academic contribution. The results showed that profitability was directly related to firm value and sales growth.

The rest of this study follows this structure. Section 2 presents the relevant literature and the formulation of hypotheses. Section 3 delineates the employed technique. Section 4 examines the empirical findings. Section 6 presents the discourse. Section 6 concludes.

2. Literature Review and Hypothesis Development

Spence introduced the concept of signaling theory in 1973 and developed it into a grand theory in different fields of science, including financial management. This theory explains the relationship between internal and external parties. Internal parties provide signals in the form of relevant information regarding good growth opportunities or prospects to increase shareholder prosperity (Alghifari, Gunardi, Suteja, Nisa, & Amarananda, 2022). In this research, the signals are in the form of information on liquidity, profitability, and the trade-off between both variables, as well as sales growth.

The main indicators of a firm's financial performance are liquidity and profitability, which should be maximized optimally. However, extreme concern causes bankruptcy, and holding liquid assets can affect profitability (Hristova et al., 2020). Liquidity and profitability are contradictory due to negative effects (Kumar et al., 2018). Liquidity and profitability have an inverse connection according to trade-off theory. Excessive investment in current assets can reduce profitability and cause liquidity problems. Several previous research studies explaining liquidity and profitability trade-off include (Bolek, Pluskota, & Wolski, 2021; Eljelly, 2004; Panigrahi, 2023). Hypothesis H1 is formulated as follows, as indicated by the explanation.

H_1: There is the trade-off between liquidity and profitability.

The direct link between profitability and firm value is a positive. Signalling Theory, as articulated by Karaman, Kilic, and Uyar (2020) pertains to the signals employed to mitigate information asymmetry and facilitate the conveyance of image, intentions, behaviour, and performance. According to Bae, Masud, and Kim (2018) this theory pertains to the necessity of transmitting signals of commitment to stakeholders and the market in order to communicate information. The profitability performance, which provides an overview of the current and future condition, is an important form of information. In signalling theory, this information will be responded to positively with an increase in firm value. (Tao, Zahid, Mughal, & Shahzad, 2022) relate the information to the size of the profits obtained from investments or sales. This shows good prospects (Yondrichs, Laupe, Mayapada, & Jurana, 2021) and reputation (Handayati, Sumarsono, & Narmaditya, 2022) in increasing firm value. Additionally, Sudiyatno, Puspitasari, Nurhayati, and Rijanti (2021) stated that profitability as a proxy for return on assets (ROA) had a positive and significant influence on firm value (Chiu

& Chen, 2017). A high ROA suggests that firm is using assets efficiently to increase value. Therefore, better financial performance increases share prices and firm value.

H_2: Profitability has a significant positive effect on firm value.

A direct connection between liquidity and firm value can have negative or positive effects. Additionally, Baños-Caballero et al. (2014) and Dhole et al. (2019) found that firms can avoid financial constraints. High liquidity can reduce the negative effect of financial constraints on firm value. According to Zeidan and Shapir (2017), liquidity availability helps firms navigate bad economic periods and increase shareholder value. The positive relationship is also supported by Soukhakian and Khodakarami (2019) where liquidity problems create an inability to fulfil short-term obligations promptly. This increases liquidity and causes a reduction in the cost of capital. Another research explained that a higher current ratio was correlated with the ability to pay debt more quickly (Ha & Minh, 2020) and increase firm value.

H_3: Liquidity affects firm value.

Based on Deloof (2003) and Keter et al. (2024) money is locked in working capital when firm maintains a high liquidity level. Therefore, large investments in working capital also hinder the ability to take on other projects to increase firm value. Meanwhile, Ramli, Latan, and Solovida (2019) explained that there is no guarantee for firm with high liquidity to perform better. According to Boshnak, Alsharif, and Alharthi (2023) when assets exceed liabilities, investment opportunities generate profits and reduce firm value.

According to Samuel (2016) liquidity and profitability can be targeted to benefits of handling cash and balancing the costs, such as the possibility of tax burdens. Meanwhile, the benefits of holding cash do not include the use of resources to meet commitments. The liquid resource, which is liquidity, is internal funding. To measure liquidity level, the current ratio can be used as a comparison between current assets consisting of cash components, trade receivables, and inventory, and current liabilities consisting of trade payables and portion of long-term debt (Mun & Jang, 2015). Internal financing availability significantly and positively affects firm productivity in China (Chen & Guariglia, 2013).

Based on Samuel (2016) and Chen and Guariglia (2013) increasing sales will expand productivity. Therefore, high liquidity is needed to support growth firms without external funding to optimize profitability. Growing firms should optimize internal funds (Yeo, 2016) due to higher cash flow to replace debt financing with internal funding. The risk of external capital will be high when using external funds, as stated by Myers (1977) hence, growing firms face a greater risk of bankruptcy when financial difficulties occur. Thus, hypothesis four (H4) is formulated as follows.

H_4: Sales growth moderates the link between liquidity and profitability, leading to higher profitability.

According to Tarczyński, Tarczyńska-Łuniewska, and Majewski (2020) firm value is an important issue reported by stakeholders, such as investors, employees, managers, customers, or suppliers. This variable also has an important meaning when relating to long-term investments. Stakeholders are interested in increasing firm value to strengthen position in the market. Increasing profitability positively affects value as explained in signalling theory and supported by previous research (Bae et al., 2018; Handayati et al., 2022; Keter et al., 2024; Sudiyatno et al., 2021; Tao et al., 2022; Yondrichs et al., 2021).

Liquidity can increase profitability and firm value when moderated by sales growth. According to Hung and Dinh (2022) sales growth can be an indicator of survival. Meanwhile, Breivik (2019) reported that the variable was positively related to inventory turnover. Based on research conducted by Aboagye-Otchere and Boateng (2023) sales growth significantly has a positive link with profitability, where a rise in revenue increases sales growth. Additionally, Feng et al. (2020) explained that firms with high productivity avoided expensive external financing. Baños-Caballero et al. (2014) and Dhole et al. (2019) stated that firms could avoid financial constraints by having high liquidity to reduce the cost of capital (Soukhakian & Khodakarami, 2019). This explanation was confirmed by Samuel (2016) and Chen and Guariglia (2013) that high liquidity supported sales growth when productivity increased as a proxy. Based on the explanation, hypothesis H5 is formulated.

H_5: Profitability has a positive and significant impact as a mediator between liquidity and firm value.

3. Research Methods

3.1. Sample and Data

The sample of this study comprised manufacturing industrial firms listed on the Indonesia Stock Exchange (ISE) from 2016 to 2023. The manufacturing industrial sector remained listed and had complete data consisting of 105 firms and 840 observations. We select the industrial sector because it is significant for Indonesian economy.

3.2. Variable Measurement

3.2.1. Dependent Variable

According to Chiu, Chen, and Che (2021) Price Book Value (PBV) is the ratio of price per share to book value. According to Hutauruk (2024) PBV is a proxy for measuring the ratio of activity and business value.

3.2.2. Independent Variable

Liquidity ratio shows current assets compared to liabilities. This ratio reflects firm capability to meet short-term and long-term needs. Several researchers have used the this ratio as a proxy for liquidity, including

(Afiezan, Wijaya, & Claudia, 2020) and Ahmad et al. (2023).

3.2.3. Intervening Variable

Profitability is a firm's ability to generate profits, measured as ROA to total assets. A high ROA means firm is using the assets efficiently to generate value. Many researchers adopted ROA as a proxy for profitability, including (Chiu & Chen, 2017) and Keter et al. (2024).

3.2.4. Moderating Variable

According to Phuong and Tra My (2024) the income statement displays the change in firm current revenue from the previous period, which is referred to as sales growth. This is indicative of past investment success and can be employed to predict future factors. Sales growth is the ratio of a change in sales in percentage, as per (Aboagye-Otchere & Boateng, 2023).

3.3. Research Framework

That's why the PROCESS macro for SPSS was used to do a moderated mediation analysis on the theoretical model shown in Figure 1. Sales growth is placed as a moderator of the relationship between liquidity and profitability, as well as profitability and firm value. The Hayes Process model is used to test (1) the influence of liquidity on firm value directly and indirectly through profitability, (2) the influence of liquidity on profitability as moderated by sales growth, and (3) the influence of profitability on firm value.

The conditional indirect influence of liquidity on firm value through profitability is estimated in this analysis by combining mediation and moderation, as moderated by sales growth (Model 7 by Hayes (2018) Figure 1). The bias-corrected confidence intervals (Cis: 95%) with SEs consistent with heteroscedasticity were generated by using 10,000 bootstrap samples (Hayes, 2018).

The research model includes testing the indirect impact of variable X on Y through mediator M using Hayes's model 4. In this model, there is the first stage of moderation where W moderates the effect of X on M. In the second stage, M mediates X against Y, carried out using the Hayes model 7. The conceptual model and statistical equations in the Hayes Model 7 are:

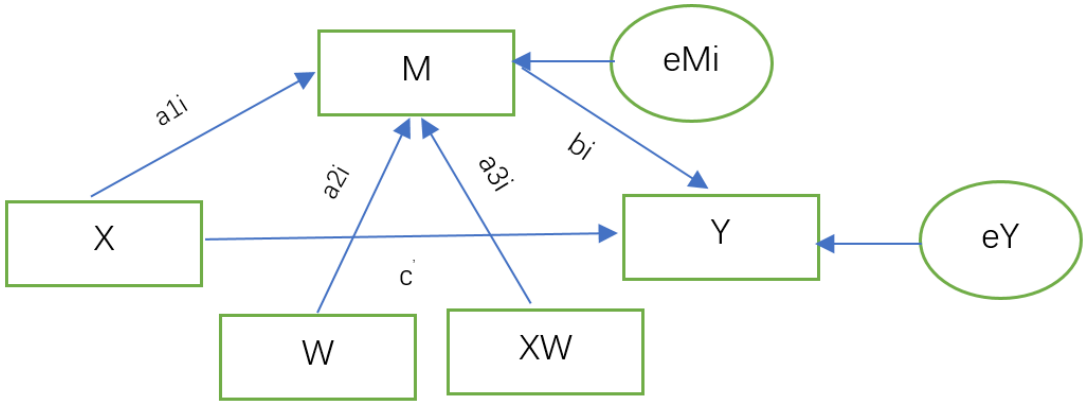

Figure 1. Research model (Hayes model 7).

$$Mi = iM + a1iX + a2iW + a3iXW + eMi$$
$$Y = iY + c'X + biMi + eY$$

Hayes (2018) stated that the effects in model 7 are as follows:

Indirect impact of X on Y by Mi = (a1i + a3iW) bi

Direct impact of X on Y = c'

This calculation produces the coefficient, t, R^2, and F values. The coefficient represents the unstandardised regression (B), whereas the t value indicates significance. R^2 The R^2, indicates the variation of the dependent variable that is elucidated by the independent variable. Simultaneously, F demonstrates the model's importance (Hayes, 2018) while the t-test necessitates a significance threshold of $p < 0.05$.

4. Empirical Results

4.1. Descriptive Statistics

This research presents descriptive data as shown in Table 1. Average ROA is 0.033023 or 3.30%, minimum = -1.049800 or -104.98% and maximum 0.910000, standard deviation = 0.117332 or 11.73%. In general, ROA of more than 5% is considered good, and more than 20% is excellent, as stated by Talha, Wang, Maia, and Marra (2022).

The average firm value, which is proxied by PBV, is 2.63, with a minimum of -4.90 and maximum of 79.68, with standard deviation of 7.08. A price-to-book value ratio of less than 1 reports that firm shares are cheap and lower than book value. Therefore, PBV listed on the BEI from 2016 to 2023 is on average higher than the book value.

Sales growth has a mean of 0.0190, a minimum of -1.690 and a maximum of 2.701174, with a standard deviation of 0.658593. On average, firms in the sample experienced sales growth during the period 2016 to 2023. Sales growth is an indicator that shows firm's ability to maintain its economic position in the economy and business sector.

Table 1. Descriptive statistics.

Variables	N	Minimum	Maximum	Mean	Std. deviation
Liquidity	840	0.000	208.443	2.619	7.954
S_growth	839	-16.905	2.704	0.019	0.658
Profitability	840	-1.053	0.997	0.033	0.117
Firm_value	840	-4.902	79.679	2.637	7.081
Valid N (Listwise)	839	839	839	839	839

4.2. Hypothesis Test

Hayes Process with model 4 is used to test the mediating impact of profitability on the link of liquidity and firm value. Table 3 shows that liquidity has a significant relationship with profitability (β= -0.009, p= 0.0813), which means the variable has a significant negative link with profitability at p <0.10. The results support the first hypothesis that there is the trade-off between profitability and liquidity. The variable profitability and firm value have a significant relationship, as reported by value (β= 16.9744, p= 0.000). Therefore, profitability has a significant positive link to the value of firm at p <0.10. Liquidity firm value has an insignificant and negative relationship. This is shown by value (β= -0.6314, p= 0.5280), and the results do not support the third hypothesis.

Table 2. Result of model 4.

Model	Coefficient	T	P	LLCI	ULCI	Outcome
Liquidity →Profitability	-0.001	-1.745	-0.081	-0.002	0.001	Profitability
Model	Coefficient	T	P	LLCI	ULCI	Outcome
Liquidity→ Firm value	-0.018	-0.631	0.528	-0.076	0.394	Firm value
Profitability→ Firm value	16.974	0.463	0.000	3.038	20.910	Firm value

The Hayes Process Model 7 data processing output is shown in Table 2 to test mediation and moderation. The interaction between liquidity and sales growth was a significant predictor of profitability (liquidity × sales growth: β = 0.26, SE = 0.03, p < 0.01). Therefore, sales growth moderates the relationship between liquidity and profitability, supporting the fourth hypothesis. The moderating effect is caused by sales growth on profitability, where the variable has a positive effect as shown by β = 0.208, p <0.0079). Before including sales growth as moderation, liquidity and profitability have a negative relationship.

Table 3. Result of model 7.

Model	Coefficient	T	P	LLCI	ULCI	Outcome
Liquidity → Profitability	0.001	0.096	0.923	-0.001	0.001	Profitability
S. growth → Profitability	0.208	3.158	0.016	0.008	0.033	Profitability
Moderation → Profitability	0.030	1.690	0.090	-0.001	0.006	Profitability

The test was carried out to determine the indirect effect of liquidity variables on firm value. Based on Table 3, there is an increase in indirect effect on sales growth. The result obtained with the moderator at the average level is 0.000 within the confidence interval at p < .05. Additionally, there is an interaction at a standard deviation below and above the mean. The indirect effect is 0.0327 when the moderator is low, and the result is significant since CI is not zero (-0.2530/0.1626). In contrast, when the moderator is high, the indirect effect is 0.0351, which is also significant since CI is not zero (-0.1155/0.3723). Moreover, the test results evaluate the indirect moderation of sales growth using the mediation value index. Table 4 shows the significant difference in the slopes from zero, suggesting the presence of moderated mediation. The index is significant at 0.0514, 95% CI = [-0.1630/0.4433]) since 95% CI does not include zero (index ≠ 0). Therefore, the indirect effect is moderated by sales growth, and the fifth hypothesis can be proven. Profitability did not mediate the relationship between liquidity and firm value as reported by the magnitude of the direct effect (-0.0187) being greater than the indirect (-0.0009 X 16.9744 = -0.01528), as shown in Table 4.

Table 4. Direct dan indirect result of model 7.

	Effect	SE	T	P	LLCI	ULCI	Moderate	Effect	SE	B-SE	B-LLCI	B-ULCI	INDEX
Direct	-0.019	0.029	-0.648	0.513	0.072	0.038							
Indirect							S.growth	0.658	0.032	0.092	-0.253	0.162	
							S.growth	0.000	0.001	0.042	-0.056	0.126	
							S.growth	0.656	0.035	0.114	-0.115	0.372	
Moderation-mediation index										0.135	-0.172	0.451	0.051

5. Discussion

The research shows that liquidity has a significant negative effect on profitability of manufacturing sector firms. Meanwhile, firm is considered to have non-optimal working capital through the possession of cash, inventories, receivables, and other liquid assets greater than current liabilities (Boshnak et al., 2023). These results also demonstrate that a suboptimal investment in working capital does not minimize the costs associated with it, thereby reducing profitability. This reinforces Aminu and Zainudin (2015) which states the need for effectiveness of current assets and liabilities to ensure financial performance. This study adds to the body of evidence from the liquidity and profitability trade-off theory and backs up earlier findings (Li et al., 2020; Mohanty & Mehrotra, 2018; Musah & Kong, 2019).

Profitability affects firm value positively and significantly. These results confirm Keter et al. (2024) a direct proportionality between profitability and value. High value is associated with profitability performance because increasing the variable is a signal to investors regarding prospects. Therefore, high performance is a positive signal that firm will have better prospects in the future from a signal theory perspective. The results support (Handayati et al., 2022; Tao et al., 2022; Yondrichs et al., 2021) where positive information affects firm value. This is in line with Sudiyatno et al. (2021) that ROA has a significant positive effect on firm value. In this context, good financial performance increases share prices and value.

This research demonstrates that when sales growth supports liquidity, profitability increases. The results report liquidity and profitability trade-off theory. Liquidity level is related to the provision of liquid assets such as cash and inventory receivables to cover liabilities. Excessive provision of current assets provides positive benefits and negative effects in cash (Deloof, 2003; Keter et al., 2024). This will lead to high costs in inventory, increase the risk of uncollectibles, and create cash flow difficulties in receivables. Meanwhile, the benefit of holding cash is not related to obtaining resources to fulfill commitments since firms can adopt liquid resources to fund businesses. Another positive benefit is the guarantee of smooth production and sales due to inventory availability and debt policies, respectively.

The provision of internal funds from current assets such as cash, inventories, and receivables can have positive benefits when the activity or productivity is increasing. Therefore, to support or fund sales growth, a firm needs productivity, a strong liquidity position, cash availability, high inventory, and receivables that exceed current liabilities. According to Feng et al. (2020) firms with high productivity avoid expensive external financing to maintain higher liquidity. Firm does not need to look for external funding, which is not easy to obtain but has capital costs to optimize profitability. These results support (Samuel, 2016) and Chen and Guariglia (2013) that productivity requires a high liquidity position to support sales growth in optimizing internal funding. Previous empirical research that tested sales growth as a moderator in the relationship between liquidity trade-off and profitability has not been found. This research contributes to the trade-off theory in proving the effect of sales growth as a moderating variable.

Liquidity mediated by profitability has a significant effect on firm value, and this is strengthened by sales growth. In this context, when sales growth supports liquidity, profitability will increase firm value. This research confirms the signalling theory on the relationship between profitability and firm value explained by Karaman et al. (2020) and confirmed by Bae et al. (2018); Tao et al. (2022); Yondrichs et al. (2021) and Handayati et al. (2022).

According to the theoretical trade-off, a high firm liquidity level prevents increasing profitability. Therefore, the trade-off is not relevant when firm has a high sales growth rate. The proxy for firm productivity requires high liquidity to achieve increased profitability. Meanwhile, efficient and cheap financing leads to increased sales growth. The availability of current assets greater than liabilities, such as cash, inventory, and other liquid assets, supports funding needs compared to external financing (Aboagye-Otchere & Boateng, 2023; Breivik, 2019; Chen & Guariglia, 2013; Feng et al., 2020; Mun & Jang, 2015; Samuel, 2016; Soukhakian & Khodakarami, 2019; Yeo, 2016).

6. Conclusion

In conclusion, this research provided a new method for liquidity and profitability trade-offs, as well as the relationship with firm value. A data sample of 840 observations was synthesized from 240 firms listed on the BEI during the 2016-2023 period. This research systematized a theoretical review and proposed models for the relationship of liquidity and profitability with sales growth moderation. Therefore, the mediating effects of profitability on relationship of liquidity and firm value were considered. There was a negative relationship between liquidity and profitability. In the context of sales growth, there was a positive moderation of the relationship between the variables. Profitability had a positive influence on firm value when comprehensively moderated by sales growth.

High liquidity caused low profitability, but the trade-off could be overcome by moderating sales growth. The moderating variable succeeded in explaining the positive correlation between liquidity and profitability. Increased liquidity did not cause profitability to decrease with high sales growth. In signaling theory, excess liquidity was not a negative signal because the relationship became positive with moderation in sales growth. The research showed that sales growth had a significant positive moderation on profitability. Therefore, there was a direct proportionality between liquidity and profitability when moderated by sales growth.

6.1. Implication

The implication for policymakers was the implementation of liquidity strategies to increase profitability and firm value. The strategy of maintaining high liquidity was a profitable choice with increased sales growth. Conversely, when declining sales growth characterized the activity, the strategy of maintaining high liquidity proved to be unprofitable. For investors, concerns about liquidity risk could be overcome by analyzing growth.

6.2. Limitation

The limitations of this research certainly could not be avoided. The empirical results were limited to manufacturing sector firms registered in the period 2016 to 2023. Therefore, further research should be conducted to add observations and increase the precision of the results. This research was carried out on the BEI as a developing country. The results may not be generalized to capital markets in developed countries due to differences in financing access and business situations.

6.3. Future Research

Future research could test the model on capital markets in developed countries.

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