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The Integrated Measuring of Working Capital Management Efficiency on Financial Performance in Indonesia Stock Exchange

Petrus Emanuel de Rozari*, Yuyus Suryana Sudarma, Rina Indiastuti, Erie Febrian
Padjadjaran University, Bandung, Indonesia
*rosaripeter@yahoo.com

Abstract: The purpose of this study is to determine the differences effect of working capital efficiency on financial performance during periods of crisis. The measurement is made during the crisis compared to the entire period of observation by using cash conversion cycle (CCC) and working capital policy (both investment policy and financing policy) on the profitability (by return on assets) and market value (by Tobin's Q). Using all annual financial data of 104 manufacturing firms listed in Indonesia Stock Exchange (IDX) over the period 2005-2013. These periods include the global financial crisis. The panel data set was developed for nine years, which produced 936 firms-years observations. This study uses multivariate regression models with hierarchical regression analysis approach. This approach uses the global financial crisis period as a dummy variable. The results showed that there were differences in the effect of the cash conversion cycle (and its components) and working capital policy on profitability during the crisis period compared to the whole period. In contrast, no differences effect the cash conversion cycle (and its components) and working capital policy on the value of the company in the crisis period compared to the whole period. The manufacturing industries do not apply the efficiency in the management of working capital. The global financial crisis tends the companies to change their working capital policy more efficiently. The researcher can extend this study by doing a qualitative research how to chief financial officers invest and finance day-by-day operation.

Keywords: *Working Capital Management, Working Capital Policy, Profitability, Market Value, Crisis*

1. Introduction

Working Capital (WC) efficiency of public firms during the global financial crisis that began in late 2007's is an important issue from theoretical and practical standpoint. According to Chaklader and Shrivastava (2013), WCM failure could threaten liquidity and profitability and become the most important and challenging aspect of the overall corporate performance. For that, Charitou et al., (2012) argues that capital market research is needed on the importance of organizational resources management, particularly WC management. The emphasis on firms' resource efficiency is, because it may have an important impact on financial performance. WC in financial decision making as being a part of the investment assets that require appropriate financing. These decisions have an impact on both short and long term performance. However, WC is often ignored in financial decisions because it has involved short term investment and financing (Ray, 2012). In fact, it is important to maintain short-term investment because it will ensure the company's ability in longer period (Zariyawati et al., 2008). The Development of WCM theories and empirical studies intensively conducted in the last two decades (Lazaridis and Tryfonidis, 2006). However, assets and short-term liabilities are an important component of the overall company's assets and must be analyzed carefully. According to Teruel and Solano (2007), investment in short-term assets and resources used within less than a year is a major part of the balance sheet. The composition and level of investment in current assets, determine the level of expenditure and source of short-term debt (Nazir and Afza, 2009). The management of short-term assets and liabilities requires more investigation as an important role in risk, profitability and value of the firm (Nazir and Afza, 2009).

This research was conducted with the assumption that investors are rational, so that fundamental aspects became the basis of the main assessment. Stock value reflects, not only the intrinsic value at a time, but also the company's ability expectation to increase its value in the future. Fundamental aspects are very complex and wide-ranging, covering macro fundamentals that are beyond of the company's control and micro fundamentals are in control of the company. This study emphasizes of company's internal factors that are often seen as an important factor for determining the share price. Various empirical studies have shown the impact of WCM on financial performance. Research in both developing countries and developed countries provide results that WCM has a significant impact on the company financial

performance. Most studies found a significant negative effect of WCM on profitability and value. This is demonstrated by increasing its cash cycle, less investment in current assets will increase profitability and market value, and vice versa. The application of aggressive WCM may be increased on financial performance. These results indicate that the company has implemented WC efficiency. However, research on manufacturing companies listed in Indonesia Stock Exchange (IDX) has found different results. Research conducted by Charitou et al. (2012) based on Indonesian Stock Exchange data during 1998 - 2010. The result of the study didn't support WC efficiency, because it turns the longer period of the WC funds actually increase profitability. Results of other studies also showed that companies are adopting an aggressive WC policy; it produces a lower rate of return than conservative policy (Nazir and Afza, 2009). So far, studies show that the results are still conflicting or inconsistent. The management of WC may have a negative or positive impact on the profitability and value. The efficiency of WC had a significant impact on the improvement of the company's financial performance turned out here is questionable. Besides, according to Gill et al. (2010) that should be assumed there is a certain level of WC requirements which has the potential to maximize the rate of return for the company. In addition, we have not found a comprehensive study with all WCM variables; there are no studies that differentiate the results of the performance during global financial crisis. Most comprehensive study by integrating the variables is expected to obtain richer information. This study is expected to be found the behavior of managers in dealing with a crisis that will be faced in the future.

2. Literature Review

WCM related to the management of current assets and current liabilities as well as the financing of the current assets (Gill et al., 2010). There are short-term financial decisions and management of the company's resources in less than one year, so it is also known as "short-term financial management" (Gitman and Zutter, 2012). A short-term financial decision is a "short-term investments" for financing the company's operations (day-by-day operation) is also intended to obtain a favorable outcome. So, WCM can also be referred to as "short-term investment management". Gitman and Zutter (2012) states that the purpose of WCM is to manage any current assets (inventory, accounts receivable, marketable securities, and cash) and current liabilities (notes payable, accruals, and accounts payable) of the company to achieve a contribution balance between profitability and risk to the value of the company. The efficiency of WCM is a fundamental part of the company's strategy to create shareholder value (Nazir and Afza, 2009). If company increases the profit by ignoring liquidity, it can be turned into serious problems. Thus, a company's strategy must maintain a balance between these two objectives.

WC policy refers to these decisions: 1) how much current asset level must be maintained? and 2) how current assets financed? (Brigham and Gapenski, 2007). Based on both decisions, then obtain the two basic policies, namely: investment policy and financing policy (Brigham and Gapenski, 2007), with the alternative approach can be used, namely: conservative approach and aggressive approach (Al-Shubiri, 2011). A company may adopt an aggressive WC policy by the percentage of current assets to total assets is low, or also can be use the company's financing decision in a high percentage of current liability to total liabilities. Excessive levels of current assets may have a negative effect on the profitability, while the low level of current assets that can cause lower liquidity level and stock-out. This can lead to difficulties in maintaining smooth operations (Nazir and Afza, 2009). Especially for manufacturing companies that number of current assets account include more than half of the total assets of the company (Raheman and Nazr, 2007).

Business success depends on the ability of the financial manager to manage accounts receivable, inventory, and short-term debt effectively (Kaur and Singh, 2013; Filbeck and Krueger, 2005). Companies can reduce funding costs and/or increase the funds available for expanding projects by minimizing the amount of investment that is tied up in current assets. The optimal level of WC occurs when the optimal balance between risk and efficiency is achieved. This requires continuously monitoring to maintain proper levels in the various components of working capital. Referring to the risk and return theory, riskiest investment will result in more returns. Companies with high liquidity of WC may have a low risk, low profitability. Conversely, companies that have a low liquidity at higher risk resulting in high profitability (Saghir et al., 2011). WCM is required to ensure that the company has sufficient cash flow to resume normal business operations in a way that minimizes the risk of inability to pay short-term obligations. In addition, managers should try to avoid not necessary WC investment because the company imposes opportunity costs and lower profitability. However, balancing the company's liquidity and profitability is not a simple task.

There is a long debate about trade-off between risk/return of the different WC policy. Studies in developing countries with the results negatively and significantly impact on financial performance occurred in Pakistan (Sadiamajeed et al., 2012), Turkey (Vural et al., 2012; Karaduman et al., 2011), Nigeria (Falope and Ajilore 2009), India (Ashraf, 2012), Iran (Mojtahadzadeh et al., 2011), and Malaysia (Azhar and Noriza, 2010). The similar results were also found in developing countries such as Singapore (Manoori and Mohammed, 2012), and Spain (Teruel and Solano, 2007). The study found a negative effect of WCM on financial performance show that the company has implemented a WCM efficient. This is demonstrated by increasing its short-period cash cycle resulting in increasing profitability and market value of the company, and vice versa. Study by Charitou et al. (2012) in any industrial sector of IDX over the period 1998 - 2010. However, the results of this study do not support the efficiency of WC to create the profitability, because it turns the longer period of the funds are embedded in the WC to the impact of increasing profitability. These results were obtained with a positive and statistically significant influence between the CCC on the financial performance. The same findings turned out to occur in emerging markets of Brazil (Ching et al., 2011) and Philippines (Magpayo, 2011). Likewise, the results of research in developed markets of USA (Gill et al., 2010) and European countries (Garcia et al., 2011).

Nazir and Afza (2009) investigated the relationship of WC policy on the company's profitability in Sri Lanka. The results of this study indicate that companies adopt an aggressive investment and financial policy produce a lower rate of return than conservative investment and financing. The same results also found in Jordan (Al-Shubiri, 2011) Iran (Ghaziani et al., 2012), Malaysia (Azhar and Noriza, 2010) and Philippine (Magpayo, 2011). However, the contradict results of risk and return theory on the above studies, that the aggressive WCP would increase the risk and improve company's performance. Only a few studies that produce influences such as that done by Alavinasab and Davoudi (2013) and Al-Shubiri (2011) for the performance by market value. Studied that use the data during the crisis period is done by Chaklader and Shrivastava (2013) in India over the period 2008 - 2011. The results showed statistically a positively un-significant effect on profitability, while the WC investment policy has a positive statistically significantly effect on profitability. This means that companies adopt a conservative WC policy in crisis years. However, research by Ghaziani et al. (2012) that the WCM turns negative and significantly effect on profitability (ROA) and market value (TQ). Similar results were found by Arbidane and Ignatjeva (2013) over the period 2004 up to 2010 in Latvian and research by Ashraf (2012) for the period 2006 to 2011 in the Indian market. These studies only focus on the global financial crisis period or combine the data during the period of non-crisis and crisis periods.

3. Methodology

Variables Used in the Study: In order to measure the efficiency of WCM using CCC and its components as used by Raheman and Nazr (2007) as follow: Cash Conversion Cycle (CCC) = (average collection period + inventory collection period – average payment period),where a lower period means a relatively management efficiency. The CCC components are calculated by: (1) Average collection period (ACP) = (account receivable/sales) x 365; and (2) Inventory turnover in days (ITD) = (inventory/cost of goods sold) x 365, where both lower periods mean a relative efficient management; and (3) Average payment period (APP) = (account payable/cost of goods sold) x 365, where a longer period means a relative efficient management. The degree of aggressiveness of WC investment policy measured by current assets/total assets (CA/TA), where a lower ratio means a relatively aggressive policy. On the other hand, the degree of aggressiveness of financing policy, the following ratio was used: current liabilities/total assets (CL/TA), where a higher ratio means a relatively aggressive policy.

The financial performance has been analyzed through accounting measures of profitability and market value, i.e., Return on Assets (ROA) and Tobin's Q. ROA = EBIT/Total Assets. TQ = market value of the firm/total assets. The market value of firm is the sum of book value of long plus short term debt and market value of equity. The market value of equity is calculated by multiplying the number of shares outstanding by the current market price of the stock in a particular year. This study has taken into consideration some control variables such as firm size, sales growth, and leverage. The firm size (*SIZE*) has been measured by the logarithm of total assets. The sales growth (*S-GROWTH*) is measured by the variation of annual sales value with reference to previous year's sales $[(Sales_t - Sales_{t-1})/Sales_{t-1}]$. Moreover, the leverage was taken as debt to equity ratio (*DER*) of each firm for the whole sample period.

Sample and Data Set: Our data set consist all annual financial data of 104 listed manufacturing firms listed in IDX over the period 2005-2013. The panel data set was developed for nine years, which

produced 936 firms-year observations. The required financial data were obtained from the respective firms' annual reports and publications of IDX, internet and websites of different firms. A firm must be in business for the whole of the study period, should neither have been delisted nor merged with any other firm, no new incumbents and firms must have complete data for the period of analysis.

Model Specifications: This study uses a hierarchical regression analysis model. This model uses the global financial crisis period as a dummy variable. The impact of CCC on the firm's profitability as this model:

$ROA_{it} = a_{0i} + a_1 ACP_{it} + a_2 ITD_{it} + a_3 APP_{it} + a_4 (D*ACP)_{it} + a_5 (D*ITD)_{it} + a_6 (D*APP)_{it} + a_7 Log\text{-}SIZE_{it} + a_8 S\text{-}Growth_{it} + a_9 DER_{it} + \varepsilon 1_{it}$ ……. *(Model-1)*

$ROA_{it} = b_{0i} + b_1 CCC_{it} + b_2 (D*CCC)_{it} + b_3 Log\text{-}SIZE_{it} + b_4 S\text{-}Growth_{it} + b_5 DER_{it} + \varepsilon 2_{it}$…. *(Model-2)*

The impact of CCC and its components on the firm's market value as follow:

$TQ_{it+1/2} = c_{0i} + c_1 ACP_{it} + c_2 ITD_{it} + c_3 APP_{it} + c_4 (D*ACP)_{it} + c_5 (D*ITD)_{it} + c_6 (D*APP)_{it} + c_7 Log\text{-}SIZE_{it} + c_8 S\text{-}Growth_{it} + c_9 DER_{it} + \varepsilon 3_{it}$……*(Model-3)*

$TQ_{it+1/2} = d_{0i} + d_1 CCC_{it} + d_2 (D*CCC)_{it} + d_3 Log\text{-}SIZE_{it} + d_4 S\text{-}Growth_{it} + d_5 DER_{it} + \varepsilon 4_{it}$…… *Model-4)*

The impact of investment policy on the firm's profitability and the market value:

$ROA_{it} = e_{0i} + e_1 CA/TA_{it} + e_2 (D*CA/TA)_{it} + e_3 Log\text{-}SIZE_{it} + e_4 S\text{-}Growth_{it} + e_5 DER_{it} + \varepsilon 5_{it}$…….*(Model-5)*

$TQ_{it+1/2} = f_{0i} + f_1 CA/TA_{it} + f_2 (D*CA/TA)_{it} + f_3 Log\text{-}SIZE_{it} + f_4 S\text{-}Growth_{it} + f_5 DER_{it} + \varepsilon 6_{it}$……*(Model-6)*

The impact of financing policy on the firm's profitability and market value:

$ROA_{it} = g_{0i} + g_1 CL/TA_{it} + g_2 (D*CL/TA)_{it} + g_3 Log\text{-}SIZE_{it} + g_4 S\text{-}Growth_{it} + g_5 DER_{it} + \varepsilon 7_{it}$…. *(Model-7)*

$TQ_{it+1/2} = h_{0i} + h_1 CL/TA_{it} + h_2 (D*CL/TA)_{it} + h_3 Log\text{-}SIZE_{it} + h_4 S\text{-}Growth_{it} + h_5 DER_{it} + \varepsilon 8_{it}$… *(Model-8)*

where:

ROA = Return on Assets, TQ = Tobin's Q, CCC = Cash Conversion Cycle, ACP = Average Collection Period, ITD = Inventory Turnover in Days, APP = Average Payment Period, CA/TA = Current Assets to Total Assets, CL/TA = Current Liabilities to Total Assets, Log-SIZE = Natural logarithm of total assets, S-Growth = Growth of annual sales, DER = Debt to Equity Ratio. D = Dummy (0 = non-crisis years, 1 = 2008– 2009 on global financial crisis years)

To accomplish its objectives, the current study test all the empirical models using panel data analysis, which can be estimated by either fixed effects or random effects models. Hausman test will be used to discriminate between fixed or random effect estimators.

4. Results

Table 1 present descriptive statistics for all firms over nine-year period 2005 – 2013 (936 firm-year observations). The average of CCC is longer at 110 days, with minimum value is -90 days and maximum value is 375 days. Length of the CCC as a consequence longer of both average inventory turnover period (98 days) and average receivable collection period (60 days) and shorter of average payment period (48 days). This result describes that manufacturing firms listed in IDX implemented conservative strategy for their WC management. The investment policy average measured by CA/TA is 54.11 percent, implying a conservative policy as more invest in the current assets to the total assets. The average value of financial policy, measured by CL/TA is 37.04 percent, implying that firms adopt a conservative policy by using less short term debt to finance their total assets. The average of profitability measured by ROA is 8.81 percent. Its standard deviation is 11.46 percent, which shows that there is high deviation in ROA among sampled firms in our analysis. Mean of firm's value measured by TQ is 1.2 with standard deviation is 1.2. These results showed less of the firm's market performance, although it must be compared with other ratio or industrial benchmarking. However, the TQ ratio showed the value of stocks is slightly higher than assets, implying that firm's stock price close to undervalued.

Table 1: Descriptive Statistics

Variables	N		Minimum	Maximum	Mean	Std. Deviation
1	2	3	4	5	6	7
ROA	936	%	-30.23	47.91	8.81	11.46
TQ	936	Ratio	-0.5	5.5	1.2	1.3
ACP	936	amount of the day	2	181	59	35
ITD	936	amount of the day	0	316	98	64
APP	936	amount of the day	1	163	48	34
CCC	936	amount of the day	-90	375	110	78
CA/TA	936	%	2.97	99.96	54.11	19.46
CL/TA	936	%	0.25	119.05	37.04	23.81
SIZE	936	in million rupiah	10,583	50,770,251	2,703,887	5,168,236
S-GROWTH	936	%	-54.67	73.45	12.92	19.60
DER	936	%	-231.06	708.97	143.05	192.13

Source: Calculated by the researcher, 2014

Similarly, the firm size that use of total assets amounted to an average of 2,703,887 million rupiah and sales growth average rate is 12.92 percent. Implying that there is a high rate of sales growth and assets over the research period. Leverage companies using average debt to equity ratio is 143.05 percent. This result showed that manufacturing firms operated by excess debt from their equity.

Table 2: Multiple Regression Coefficient of WCM on Financial Performance

Variables	Predicted sign	ROA		TQ	
		Model-1	Model-2	Model-3	Model-4
1	2	3	4	5	6
ACP	-	-0.0153*		-0.0035**	
ITD	-	0.0131		0.0026***	
APP	+	-0.0479*		-0.0043***	
(D*ACP)	+	-0.0062		0.0013	
(D*ITD)	+	-0.0129***		0.0002	
(D*APP)	-	0.0284		8.75E-05	
CCC	-		0.0106		0.0017**
(D*CCC)	+		-0.0075*		0.0006*
Log-SIZE	+	4.3971***	4.1915***	0.2567***	0.2573***
S-GROWTH	+	0.0924***	0.0940***	0.0026*	0.0023
DER	-	-0.0095***	-0.0101***	-0.0006***	-0.0007***
R^2		0.8247	0.8231	0.0875	0.0661
Adjusted R^2		0.8008	0.8000	0.0786	0.0610
F-statistic		34.5589	35.6267	9.8653	13,1563
Probability		0.0000	0.0000	0.0000	0.0000
Hausman Chi-Square		22.9773	16.6058	15.9499	8.8923
Probability		0.0062	0.0053	0.0679	0.1134

Source: Calculated by the researcher, 2015

***, **, * statistically significance levels at 1%, 5%, and 10%

Table 2 presents the impacts of the CCC and its component on profitability and value. As predicted, average collection period turns to negative effect on profitability and value, as well as the effect on crisis years, except to TQ. Otherwise, the result shows that average inventory turnover period has positively statistically un-significant effect on profitability, but turn to negatively affect (as predicted) in crisis years, except to TQ. The average payment period is the statistically negative significant effect on profitability in all year. Then, as expected, it changed into positive effect of the crisis years both ROA and TQ. The results confirm that the component of the CCC has increased to the firm's profitability by reducing of day's receivable collection period, increasing of day's inventory turnover and reducing the firm's day payment period efficiently. Not as expected, the result shows that CCC is positively statistically un-significant effect on ROA and TQ. These results indicate that Indonesian manufacturing firms have a conservative WCM in all year. These results are consistent with Ching et al. (2011) in Brazil, Bagchi et al. (2012) in India, Charitou et al. (2012) in Indonesia. The results show that CCC turns to negative statistically significant

effect in crisis years, except to TQ as the dependent variable. These results indicate that Indonesian manufacturing firms have a conservative WCM in all year, but it turns to aggressive in crisis years.

Table 3 presented the results of the multiple regression model in which the impact of WC policy on profitability and value. The coefficient of the WC investment policy, measured by CA/TA, is found to be positive both ROA and TQ; indicating that the relationship between conservative investment policy on profitability and value of the firm is positive. Hence, choosing to follow a conservative investment policy will positively affect firm's profitability and value. However, firms that follow the aggressive investment policy by using longer term investment may affect the firm's profitability and value negatively. These results are consistent with Chaklader and Shrivastava (2013) In India, Ghaziani et al. (2012) in Tehran Stock Exchange, Azhar and Noriza (2010) in Malaysia and Al-Shubiri (2011) in Jordan for ROA as the dependent variable. In the case of TQ as the dependent variable, these results are consistent with Ghaziani et al (2012) in Tehran Stock Exchange and Azhar and Noriza (2010) in Malaysia. On the contrary, the results inconsistent with Al-Shubiri (2011) in Tehran for TQ as the dependent variable.

Table 3: Multiple Regressions of Working Capital Policies on Financial Performance

Variables	Predicted sign	ROA		TQ	
		Model-5	Model-6	Model-7	Model-8
1	2	3	4	5	6
CA/TA	-	0.2139***		0.0063***	
D*(CA/TA)	+	-0.0034		0.0027***	
CL/TA	+		0.0253		0.0068***
D*(CL/TA)	-		0.0038		-0.0021*
Log-SIZE	+	2.8788***	4.1796***	0.1260***	0.1914***
S-GROWTH	+	0.0789***	0.0920***	0.0014	0.0020
DER	-	-0.0079***	-0.0097	-0.0003*	-0.0003*
R^2		0.8490	0.8231	0.7801	0.7815
Adjusted R^2		0.8293	0.8001	0.7513	0.7530
F-statistic		43.0450	35.6406	27.1578	27.3912
Probability		0.0000	0.0000	0.0000	0.0000
Hausman Chi-Square		21.4670	17.8362	12.2304	27.5268
Probability		0.0007	0.0032	0.0318	0.0000

Source: Calculated by the researcher, 2015
***, **,* statistically significance levels at 1%, 5%, and 10%

In case of separation effect by crisis using dummy variable, the results was inversely signed by ROA as dependent variable, but not be found in the TQ model. WC investment policies tend to aggressively affect the ROA in crisis year. Meanwhile, the WC investment policy remains conservative because its effect on TQ as the market value is positively and significantly. Regarding WC financing policies, the coefficient of the WC financing policy, measured by CL/TA, is found to be positive for ROA and TQ; indicating that using more current liabilities to finance firm's activities may positively affect the firm's profitability. However, using the conservative financing policy by more long term debt may affect the firm's profitability negatively. These results of ROA are consistent with Chaklader and Shrivastava (2013) In India, Ghaziani et al. (2012) in Tehran Stock Exchange, Azhar and Noriza (2010) in Malaysia, and Al-Shubiri (2011) in Jordan. These results of TQ are consistent with Nazir and Afza (2009) in Pakistan. Otherwise, these results are un-consistent with Ghaziani et al. (2012) in Tehran Stock Exchange and Azhar and Noriza (2010) in Malaysia.

Analysis separately effect by crisis using dummy variable show that WC funding policy is conservative, because its negative statistically significant effects of TQ as the market value of the firm. This may be attributed to the fact that the crisis has a significant effect on the manufacture firms in Indonesia Stock Exchange; furthermore, the firms have different policy when faced the crisis. The action has generated different performance of the firms. The results indicate that all of the control variables are found to be statistically significant. The firm size has a positive effect on a firm's profitability and value. This may be attributed that larger firms can take the advantage of any favorable investment opportunity. Sales growth also has been found a positive impact on profitability and value due to the fact that increasing the sales level will generate enough cash flow, keeping liquidity at an acceptable level. The leverage, measured by

debt to equity ratio, has negative impact on both profitability and market value. This may be related to the fact that increasing of debt makes a bad sense for the investors.

5. Conclusion

The results showed that there were differences in the effect of the cash conversion cycle (and its components) and working capital policy on profitability during the crisis period compared to the whole period. In contrast, no differences effect of the cash conversion cycle (and its components) and working capital policy on the value of the company in the crisis period compared to the whole period. The manufacturing firms listed on the IDX applying the conservative WC policy resulting in lower of profitability and value. However, during the period of the global financial crisis, the firms tend to be more aggressive to improve the profitability of the firms. But, the value of the company was not influenced by the policy to enhance shareholder value in crisis years. The WCM performance driven more by increasing of in size, sales growth and decreasing of debt. Finally, the manufacturing industry does not apply the efficiency of WCM. The global financial crisis has the company to change its strategy and policy WC more efficiently, so that, the profitability and value increased although in low level. These results could be acquired behavior of the firm's WCM and polices to retain the profitability and value when facing a further crisis. The researcher can extend this study by doing a qualitative research how to chief financial officers invest and finance day-by-day their operation.

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