



## DOES WORKING CAPITAL MANAGEMENT AFFECT PROFITABILITY? EMPIRICAL EVIDENCE FROM INDONESIA LISTED FIRMS



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### ABSTRACT

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This study attempts to examine the impact of working capital management (WCM) on profitability and examine the working capital conditions of several companies listed on the Indonesia Stock Exchange (IDX). The sample used is 135 listed firms and were selected from each sector, such as plantation, pharmaceutical, telecommunication, investment, retail, and the cement and metal industries from 2000 to 2019. The variables employed in this study are working capital investment strategy (WCIS), working capital financing strategy (WCFS), cash conversion cycle (CCC), days sales outstanding (DSO), days inventory outstanding (DIO), days payable outstanding (DPO), debt ratio (DR), size, age, and current ratio (CR). The ordinary least squares (OLS) was employed to analyze the data. The results revealed that the working capital investment approach has a positive and significant effect on return on assets (ROA) in all regression models used; the working capital financing approach has a negative effect on ROA but not significant; the working capital investment approach to the gross profit margin in all models shows a negative and significant coefficient; and the working capital financing approach shows a negative and significant sign for all capital used. Based on the type of industry, companies that use a lot of aggressive working capital investment approaches are the agriculture industry and the infrastructure, utility and transportation industries. Meanwhile, companies that mostly take a conservative working capital investment approach are the consumer goods industry, the basic chemical industry and the miscellaneous industry.

**Contribution/Originality:** This study is one of very few studies that have investigated working capital management on profitability and also examines the working capital conditions of several companies on the Indonesia Stock Exchange (IDX) using considerable and diverse firms as the sample.

## 1. INTRODUCTION

The basis of corporate finance is how a firm can raise and allocate funds obtained to optimize a firm's financial performance, value and shareholders' wealth. Optimizing a firm's value requires effective financing decisions, profitable investment decisions and appropriate payout decisions. Working capital is related to financing decisions, which the firm should manage, regarding cash conversion cycle, receivable turnover, inventory turnover and the tenure of current liabilities and choose the right kind of debt that matches the tenure of a firm's assets.

Working capital is required for a firm to carry out its daily operations. Working capital is the overall value of a firm's current assets, which are also referred to as gross working capital, and consist of cash, receivables, inventory

and other liquid assets. The difference between current assets and current liabilities is referred to as networking capital. Working capital plays a vital role in determining the number of goods produced and sold to consumers. Proceeds from sales are not always in cash but also in credit, therefore receivables are created. Insufficient current assets will also distract a firm from maintaining efficient daily operations (Van Horne & Wachowicz, 2000). Further, sales are determined by the number of raw materials and supporting materials on the inventory, which can be purchased with cash or credit. Credit purchases of materials from suppliers will create accounts payable, which will bring both benefits and setbacks, so harmonizing between current assets and current liabilities requires good working capital management.

One of the favorite sources of financing for a firm is accounts payable, which means delaying payments to suppliers. However, if a firm is offered an early payment discount, then late payment of invoices can be very costly. A cash conversion cycle is used to measure working capital management that is referred to as the time lag between the expenditure for purchasing raw materials and the revenue from sales of finished goods. Deloof (2003) asserted that the longer this time lag, the larger the investment in working capital and the higher the sales and profitability, but the likelihood of declining profitability occurs if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers. Shin & Soenen (1998) found a strong negative relation between cash conversion cycle and profitability using a large sample of listed American firms from 1975 to 1994. It indicates that reducing the cash conversion cycle to a reasonable minimum leads to higher firm value.

Working capital management, if managed properly, plays an important role in achieving success. Good working capital management will ensure a firm has good economic fundamentals, which will give them the ability to adapt to market changes, such as changes in raw material prices and interest rates, and ultimately allow them to compete in the market (Appuhami, 2008). Ultimately, good working capital management can offer a competitive advantage; a program has been implemented by General Electric (GE) which aims to bridge the liquidity gap between product build-up and customer payments (Boisjoly, Conine Jr., & McDonald IV, 2020).

The results of Annual Global Working Capital Survey 2019/2020 conducted by PwC of managers of large companies in the US and Europe stated that managers have paid more attention to working capital performance. This is evident from the improvement in working capital management, where net working capital (NWC) experienced a 2% decline from 2017 in Europe, a 5.6% decrease from 2017 in the USA and Canada, and a 4.9% decrease in Austrasia from 2017. Meanwhile, the NWC in Latin America, the Middle East, Asia and Africa experienced an increase. The decline in NWC means that the turnover of working capital days is getting shorter or faster, which can lead to efficiency in working capital management. The Annual Global Working Capital Survey (2015) reported the development of cash cycle efficiency in large companies in general, however, small businesses have not followed this condition of improvement in working capital management performance. Large companies have better cash conversion efficiency (CCE) compared to medium and small companies; large companies have a CCE of 77.6%, medium companies have a CCE of 72.9% and small companies have a CCE of 71.2%.

The ability to manage finances must be owned by large companies and small companies, but if the working capital is poorly managed, many companies will not be able to fulfil finances. One of the factors that can lead to bankruptcy is a continuous deficit in cash flow.

Furthermore, Dwommor & Nasiru (2017) asserted that poor working capital management is the main cause of company bankruptcy. Current assets are a component of working capital and if a company has too few current assets, it will cause difficulties in the company's operational activities (Van Horne & Wachowicz, 2000). A low inventory turnover indicates that a company has poor sales or has a lot of unsold inventory (Ruichao, 2013). Working capital is also related to liquidity; low liquidity can be a cause of bankruptcy (Dunn & Cheatham, 1993), but high liquidity can also reduce the potential for high profits (Bhattacharya, 2001).

Working capital management can be carried out using two approaches, namely an aggressive working capital approach or a conservative working capital approach (Weinraub & Visscher, 1998). The aggressive working capital approach is used when a company uses more foreign capital to finance its current assets, and the working capital is conservative when a company uses current assets more than its current debt. Although returns increase due to maintaining a high operating cycle of current assets using an aggressive strategy approach, the risk is extremely high as the company attempts to keep a minimum amount of cash and marketable securities and reduce the amount of investment in inventory. Thus, the company cannot pay its obligations. Moreover, maximum utilization of short-term debt to finance current assets may induce higher risk as there is a probability of failing to make payments by their due dates. A conservative manager prefers long-term debt or equity over short-term debt to finance current assets as it decreases the risk of bankruptcy, however, this preference also has some drawbacks, such as an increase in the cost of capital and a decrease in shareholders' returns.

Working capital management affects firms' liquidity as it relates to current assets and current liabilities (Adekola, Samy, & Knight, 2017) and in the end, it affects firm's profitability (Deloof, 2003; Hadri & Dhiyaullatief, 2018; Nastiti, Atahau, & Supramono, 2019; Tran, Abbott, & Yap, 2017). A high level of investment in current assets and greater reliance on short-term financing is mostly found in the manufacturing sector as it is determined by the continuity of manufacturing firms (Raheman, Qayyum, & Afza, 2011). For example, in Indonesia, account receivables, inventory and accounts payable accounted for 18%, 21% and 11% of total assets, respectively, from 2010 to 2017.

## 2. LITERATURE REVIEW

Working capital management plays a crucial role in maintaining a firm's day-to-day operations. In the last few decades research on working capital management has risen significantly, including Guthman & Dougall (1948); Mueller (1953); Sagan (1955); Gole (1959); Park & Gladson (1963); Gupta (1969) and Gupta & Huefner (1972). Working capital is defined as the difference between current assets and current liabilities. The components of current assets include cash and marketable securities, inventory, trade policy and trade credit. A long inventory cycle can minimize the risk of delivery disruptions, price changes and business losses due to inventory shortages (Blinder & Maccini, 1991), and trade credit policy will likely generate good relationships with customers thus increasing sales (Long, Malitz, & Ravid, 1993; Shah, 2009). Appropriate management of working capital will affect a firms' financial stability and, ultimately, it affects profitability, firm value and success (Shin & Soenen, 1998).

Working capital focuses on the length of time it takes to convert input (raw materials) to output (finished goods) and the proceeds from the sale of output used to purchase more raw materials. In other words, working capital is a continuous cycle of input and output. The longer this time length, the larger the investment in working capital (Deloof, 2003; Dong & Su, 2010).

The literature on working capital management shows a variety of approaches, such as using the cash conversion cycle (CCC) (Richards & Laughlin, 1980) and the cash-to-cash (C2C) cycle (Theodore Farris & Hutchison, 2002). A shorter the time length of the CCC indicates good working capital management and higher profitability (Deloof, 2003; Grosse-Ruyken, Wagner, & Jönke, 2011; Lazaridis & Tryfonidis, 2006; Shin & Soenen, 1998).

### 2.1. Relationship between Negative Working Capital and Profitability

There have been many studies conducted on the effects of working capital management on profitability. Judging from the research object, previous research can be divided into three object categories, namely companies listed on the stock exchange, companies not listed on the stock exchange and small business enterprises. However, when viewed from an economic development point of view, research on working capital can be classified into research conducted in developed economies and developing economies. When viewed from a profitability point of

view, working capital management research can be classified into accounting-based (book value), market-based and mix-based accounting and market. Research on the effect of working capital management on profitability can also be grouped based on research results, namely research with positive, negative and insignificant results.

Several studies conducted in developing economies, such as Asia and Africa, focused on companies listed on stock exchanges in Pakistan (Iqbal & Zhuquan, 2015; Raheman & Nasr, 2007), India (Shrivastava, Kumar, & Kumar, 2017), Bangladesh (Quayyum, 2011), Indonesia (Hadri & Dhiyaullatief, 2018; Prafitri, Rachmina, & Maulana, 2017; Purwoto, 2019; Setianto & Pratiwi, 2019; Utia, Dewi, & Sutisna, 2018), Malaysia (Jakpar et al., 2017), Thailand (Napompech, 2012), Vietnam (Dong & Su, 2010; Hoang, 2015), Singapore (Mansoori & Muhammad, 2012), Nigeria (Salman, Folajin, & Oriowo, 2014) and Kenya (Nzioki, Kimeli, Abudho, & Nthiwa, 2013). There were also several studies conducted on the effect of working capital management on profitability in developed countries, such as the UK (Gonçalves, Gaio, & Robles, 2018) and Spain (Charitou, Elfani, & Lois, 2010). All of these studies showed a negative and significant effect of working capital management on profitability, as a higher excess working capital leads to lower performance.

Several studies that used book value measures, such as ROA (Gonçalves et al., 2018; Hadri & Dhiyaullatief, 2018; Hoang, 2015; Iqbal & Zhuquan, 2015; Jakpar et al., 2017; Mansoori & Muhammad, 2012; Pestonji & Wichitsathian, 2019; Quayyum, 2011; Salman et al., 2014; Utia et al., 2018), ROE (Purwoto, 2019), ROI (Prafitri et al., 2017), ROIC (Dong & Su, 2010), gross operating profitability (Dong & Su, 2010; Napompech, 2012; Nzioki et al., 2013; Shrivastava et al., 2017), net operating profit (Raheman & Nasr, 2007), operating profit to sales (Afeef, 2011) and net profit margin (Quayyum, 2011). Further, (Setianto & Pratiwi (2019) utilized market-based measures as a profitability proxy. Meanwhile, Ogundipe, Idowu, & Ogundipe (2012) utilized a mixed-based measure (Tobin's q) as the profitability proxy. Several studies used small and medium enterprises (SMEs) as a sample, such as Afeef (2011) and Pestonji & Wichitsathian (2019).

## *2.2. Relationship between Positive Working Capital and Profitability*

Some studies showed a positive and significant effect of working capital management on profitability, such as Ali (2011); Charitou, Lois, & Santoso (2012); Ponsian, Chrispina, Tago, & Mkiibi (2014) and Gill, Biger, & Mathur (2010). Moreover, these researchers used book value measures such as net operating profitability (Usama, 2012), ROA (Afeef, 2011; Ali, 2011; Charitou et al., 2012), gross operating profit (Ponsian et al., 2014), ROE (Akoto, Awunyo-Vitor, & Angmor, 2013), gross operating profit (Gill et al., 2010; Ponsian et al., 2014).

## *2.3. Aggressive and Conservative Working Capital Management Approaches*

The two strategies in working capital management are aggressive strategy and conservative strategy. The aggressive strategy is used when a manager employs short-term financing, and the conservative strategy is used when a manager employs long-term financing to fund the firm's operational activities. In other words, an aggressive strategy maintains minimal investment in current assets, while a conservative strategy maintains a higher level of current assets. These strategies of working capital have been investigated in different industries over the last few decades. A company that utilizes an aggressive strategy expects high returns and higher risks (Weinraub & Visscher, 1998). While Afza & Nazir (2008) found that a conservative strategy is positively related to a firm's profitability, Qian (2016) found that a conservative strategy leads to a negative effect on firm profitability. Firms seek to maintain an optimal level of working capital to maximize their firm value (Deloof, 2003) but thus far what the optimum level of working capital and risk/return trade-off is between the different working capital strategies, and if a more aggressive working capital policy is associated with higher returns and higher risks, and if more conservative policies are related to lower risks and returns remains a topic of debate.

One measure to determine whether a company utilizes an aggressive or a conservative strategy is by analyzing the financing policy in short-term assets (working capital investment strategy or WCIS) and in short-term

liabilities (working capital financing strategy or WCFS). WCIS is derived from the ratio of total current assets and total assets and WCFS is derived from the ratio of total current liabilities and total assets. If the WCIS is less than 0.5 and the WCFS is more than 0.5 the firm tends to have an aggressive strategy, while if the WCIS is more than 0.5 and the WCFS is less than 0.5 then the firm tends to use a conservative strategy.

#### *2.4. Accounts Receivable and Profitability*

One way to create firm value through working capital management is achieved by reducing the number of days accounts receivable and inventories and by shortening the cash conversion cycle. Results from previous studies on the effects of the average collection period have been mixed – positive, negative and not significant. Deloof (2003); Lazaridis & Tryfonidis (2006); Raheman & Nasr (2007); Mansoori & Muhammad (2012); Dong and Su (2010) and Shubita (2013) found that the average collection period has a significant negative effect on profitability and the number of accounts payable days needs to be as large as possible. In contrast, Ponsian et al. (2014) found that the average collection period has a significant positive effect on profitability.

#### *2.5. Inventory and Profitability*

Lazaridis & Tryfonidis (2006); Raheman & Nasr (2007); Falope & Ajilore (2009); Mansoori & Muhammad (2012) and Ruichao (2013) found a negative effect of inventory on profitability, meanwhile Gill et al. (2010) and Mathuva (2010) found a positive effect of inventory on profitability.

#### *2.6. Accounts Payable and Profitability*

According to the cash conversion cycle, the number of accounts payable days needs to be as large as possible. However, the results of previous studies are mixed, with some studies finding a positive effect (Gill et al., 2010; Mathuva, 2010; Ruichao, 2013), while some found a negative effect (Deloof, 2003; Raheman & Nasr, 2007; Saghir, Hashmi, & Hussain, 2011; Vural, Sökmen, & Çetenak, 2012) and some even achieved an inconclusive result (Garcia-Teruel & Martínez-Solono, 2007).

#### *2.7. Cash Conversion Cycle and Profitability*

Richards & Laughlin (1980) introduced the concept of the cash conversion cycle (CCC), which refers to the length of converting all input and output to cash. When utilizing an input, of which some were purchased on credit, the payment period to pay the accounts payable should be carefully considered. According to the cash conversion cycle, the number of accounts payable days needs to be as large as possible. However, the results of previous studies are mixed; some studies found a positive effect (Gill et al., 2010; Ponsian et al., 2014) and some found a negative effect (Deloof, 2003; Dong & Su, 2010; Falope & Ajilore, 2009; Garcia-Teruel & Martínez-Solono, 2007; Grosse-Ruyken et al., 2011; Lazaridis & Tryfonidis, 2006; Mansoori & Muhammad, 2012; Mathuva, 2010; Napompech, 2012; Quayyum, 2011; Raheman & Nasr, 2007; Saghir et al., 2011; Shin & Soenen, 1998; Vural et al., 2012).

A negative effect indicates that the company should shorten the CCC to increase profitability. However, some argue that long a CCC minimizes the risk of delivery, price changes and business losses if the availability of the product is uncertain (Blinder & Maccini, 1991). Furthermore, reducing the period of accounts receivable, increasing the inventory turnover and delaying payment to creditors will increase profitability.

### **3. RESEARCH METHOD**

The need for working capital needs to be maintained so that it is not excessive and not lacking so that the company's activities are not disturbed by the inadequacy of available working capital funds. This paper attempts to investigate the impact of working capital management on profitability and also examine the working capital conditions of several companies on the Indonesia Stock Exchange (IDX). This study analyzed 135 listed firms on

the Indonesia Stock Exchange that were selected from the plantation, pharmaceutical, telecommunication, investment, retail, cement and metal industries. These firms were chosen because they represent each sector and have complete financial statements for the study period, spanning from 2008 to 2019, with a total of 1,620 observations. The data were collected from the Indonesia Stock Exchange website: <https://www.idx.co.id/perusahaan-tercatat/laporan-keuangan-dan-tahunan/>.

Table 1. Distribution of Observations

Industry		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	108	6.7	6.7	6.7
	Mining	108	6.7	6.7	13.3
	Basic Industry & Chemical	288	17.8	17.8	31.1
	Miscellaneous Industry	192	11.9	11.9	43.0
	Food and Beverage	252	15.6	15.6	58.5
	Property, Real Estate & Building	144	8.9	8.9	67.4
	Infrastructure, Utility and Transportation	132	8.1	8.1	75.6
	Trade, Service and Investment	396	24.4	24.4	100.0
	Total	1620	100.0	100.0	

There are three measures to assess the firm value – book value, market value and mixed measure, which is a combination of book value and market value. Some previous studies used book value as a proxy for firm value, such as Charitou et al. (2012); Utia et al. (2018); Hadri & Dhiyaullatief (2018); Prafitri et al. (2017); Jakpar et al. (2017); Purwoto (2019); Raheman & Nasr (2007); Quayyum (2011) and Napompech (2012), while Setianto & Pratiwi (2019) used market value, and Ogundipe et al. (2012) used mixed measure. According to the previous studies, the variables employed in this study are working capital investment strategy (WCIS), working capital financing strategy (WCFS), cash conversion cycle (CCC), days sales outstanding (DSO), days inventory outstanding (DIO), days payable outstanding (DPO), debt ratio (DR), size, age and current ratio (CR). Days sales outstanding (DSO) is derived from receivables divided from sales and multiplied by 365 (days), days inventory outstanding (DIO) is derived from inventories divided from cost of goods sold and multiplied by 365 (days), and days payable outstanding (DPO) is derived from average short term debt divided from total purchasing and multiplied by 365 (days). CCC is derived from DSO + DIO – DPO, debt ratio is derived from total debt divided by total assets, size is derived from the natural log of total assets, age is derived from the number of years since the firm was established, current ratio (CR) is derived from current assets divided by current liabilities, return on assets (ROA) is derived from income to total assets, and gross profit margin (GPM) is derived from gross profit divided by total sales. Equation 1 regressed the WCIS, WCFS, CCC, debt, size, age and CR toward ROA; Equation 2 regressed the WCIS, WCFS, DSO, debt, size, age and CR toward ROA; Equation 3 regressed the WCIS, WCFS, DIO, debt, size, age and CR toward ROA; Equation 4 regressed the WCIS, WCFS, DPO, debt, size, age and CR toward ROA; Equation 5 regressed the WCIS, WCFS, CCC, debt, size, age and CR toward GPM; Equation 6 regressed the WCIS, WCFS, DSO, debt, size, age and CR toward GPM; Equation 7 regressed the WCIS, WCFS, DIO, debt, size, age and CR toward GPM; and Equation 8 regressed the WCIS, WCFS, DPO, debt, size, age and CR toward GPM. The equation models are below:

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + CCC_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (1)$$

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DSO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (2)$$

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DIO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (3)$$

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DPO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (4)$$

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + CCC_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (5)$$

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DSO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (6)$$

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DIO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (7)$$

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DPO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (8)$$

#### 4. FINDINGS AND DISCUSSION

The descriptive statistics are shown in Table 2. The mean value of ROA is 0.0631 (6%) with a range of -3.13 to 8.70 and indicates that most firms have a lower ROA. The mean value of GPM is 0.2896 (29.96%) with a range of -5.38 to 1 and indicates that most firms have a moderate gross profit margin. The mean value of WCIS is 0.5056 with a range of 0.02 to 3.79, which indicates a proportional balance among firms that utilize aggressive and conservative working capital investment strategies. The mean value of WCFS is 6 with a range of 0 to 498, which indicates that most firms have higher short-term liabilities compared to long-term liabilities. The mean value of CCC is 74.02 days with a range of -740 to 1016 days, which indicates that most firms have a relatively short period of asset turnover. The mean value of DSO is 47.99 days with a range of 0 to 639 days, which indicates that most firms have a relatively short period of credit policy. The mean value of DIO is 101.79 days with a range of 0 to 1002, which indicates that most firms have a relatively short period of inventory turnover. The mean value of DPO is 75.9 days with a range of 0 to 875 days, which indicates that most firms have a relatively short period of accounts payable. The mean value of the debt ratio is 0.5738 with a range of 0.01 to 10.27, which indicates that most firms have a moderate debt policy. The mean value of age is 35 years with a range of 1 to 114 years. This firm age is counted from the year that the firms were listed on the stock exchange. Since the study focused on the period from 2008 to 2019, the firms that were listed in 2018 explain the firm age of 1 in this observation. The mean value of CR is 2.69 with a range of 0.01 to 428.57, which indicates that most firms have more than 2.69 times current assets than current liabilities.

Table 2. Descriptive Statistics.

Variable	No.	Minimum	Maximum	Mean	Std. Deviation
ROA	1620	-3.13	8.70	0.0631	0.27657
GPM	1620	-5.38	1.00	0.2896	0.30640
WCIS	1620	0.02	3.79	0.5060	0.26437
WCFS	1620	0.00	498.00	6.2926	17.43693
CCC	1620	-740.00	1016.00	74.0265	167.82723
DSO	1620	0.00	639.00	47.8352	46.57520
DIO	1620	0.00	1002.00	101.7969	139.10047
DPO	1620	0.00	874.00	75.9130	80.54762
DR	1620	0.01	10.27	0.5738	0.65332
SIZE	1620	2.20	12.77	7.9983	1.80117
AGE	1620	1.00	114.00	35.1963	16.21550
CR	1620	0.01	428.57	2.6937	12.22305
Valid N (listwise)	1620				

#### 4.1. Working Capital and Return on Assets

The statistical results for the impact of working capital management on profitability (ROA) are shown below for four regression models, for which explanations are presented in point 4.1.3 for Equation 9, point 4.1.4 for Equation 10, point 4.1.5 for Equation 11 and point 4.1.6 for Equation 12. Meanwhile, points 4.1.1 and 4.1.2 explain all WCIS and WCFS for all regression models below:

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + CCC_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (9)$$

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DSO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (10)$$

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DIO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (11)$$

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DPO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (12)$$

Table 3. Regression results for ROA as the dependent variable.

Variable	Reg. 1		Reg. 2		Reg. 3		Reg. 4	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
(Constant)	0.015	0.688	0.051	0.191	0.017	0.653	0.034	0.376
WCIS	0.125	0.000	0.137	0.000	0.129	0.000	0.118	0.000
WCFS	-0.001	0.119	-0.001	0.173	-0.001	0.114	-0.001	0.083
CCC	-1.636E-5	0.685						
DSO			-0.001	0.000				
DIO					-6.590E-5	0.167		
DPO							0.000	0.000
DR	-0.111	0.000	-0.113	0.000	-0.111	0.000	-0.100	0.000
SIZE	0.000	0.926	-0.001	0.715	0.001	0.879	-1.248E-6	1.000
AGE	0.002	0.000	0.002	0.000	0.002	0.000	0.002	0.000
CR	-0.002	0.000	-0.002	0.000	-0.002	0.000	-0.002	0.000
R Square	0.092		0.100		0.093		0.100	
F	23.258	0.000 <sup>b</sup>	25.709	0.000 <sup>b</sup>	23.532	0.000 <sup>b</sup>	25.717	0.000 <sup>b</sup>

##### 4.1.1. Working Capital Investment Strategy (WCIS) and Return on Assets

The regression results show that the working capital investment strategy has a positive and significant effect on return on assets in all regression models. This means that if the company increases the value of WCIS or the company uses more conservative working capital strategies, the ROA will be even greater. Cash accounts receivable and inventory as a company's investment in current assets have a direct effect on the company's total assets. Likewise, if there is an increase in accounts receivable, sales will also increase. This is in line with a large inventory, so the number of goods available for sale will increase, which will increase sales. On the other hand, the more the current assets, the better the liquidity, meaning that the company can fulfil its current obligations so that transactions with suppliers are not disrupted. If seen from the WCIS average value of 0.5056, this indicates that the company is using relatively more conservative working capital strategies.

##### 4.1.2. Working Capital Financing Strategy (WCFS) and Return on Assets

The regression results show that in all regression models that, although WCFS has a negative effect on ROA, the effect is not significant. The average value of WCFS is 6.30, which means that on average the number of companies observed is using more aggressive working capital financing. It can also be seen that there are 1157 observations (71%), which indicates that companies use an aggressive working capital financing strategy. Furthermore, there were 645 observations from a total of 939 observations that obtained ROA ranging from 0% to



10%. This uneven spread can cause an insignificant effect on ROA. This can also be seen from the few companies using aggressive working capital financing strategies to increase the ROA level.

#### *4.1.3. Cash Conversion Cycle (CCC) and Return on Assets*

The regression results show that the cash conversion cycle has a negative but insignificant effect. Cash conversion turnover that reaches 74 days or two months has no direct effect on a company's net profit because CCC has a more direct effect on gross profit. This is because the size of the inventory value as a component of working capital will affect the cost of goods sold or the cost of goods manufactured. Furthermore, the relationship between ROA and CCC with 939 observations indicates that the industry has an ROA of between 0% and 10%. Of the companies that received an ROA of between 0% to 10%, the CCC spread patterns varied from -30 days to 180 days and some even had CCCs of more than two years.

#### *4.1.4. Days Sales Outstanding (DSO) and Return on Assets*

The regression results show that DSO has a negative and significant effect on ROA. This means that if the company can perform receivables collection efficiently, the company will be able to increase ROA. Sales are one component that can directly affect the increase in company profits where profit itself is the main element of ROA. The average DSO of the companies being observed was 48 days or less than two months. From 1193 observations, the companies' DSO is in the range of fewer than two months, and there are 645 observations of companies that have a DSO of less than one month. This indicates that the companies' receivables policies for collection have been running efficiently as many receivables were repaid in less than one month (40%).

#### *4.1.5. Days Inventory Outstanding (DIO) and Return on Assets*

The regression results show a negative effect between days inventory outstanding (DIO) on ROA but the effect is not significant. Inventory is an element that only affects a company's gross profit. The purchase of raw materials and the production process are elements of the cost of goods sold or the cost of goods manufactured, so inventory does not directly affect ROA. The average DIO is 102 days, or approximately three months, which indicates a relatively long time to make the product. However, this is expected because some of the companies observed are in the real estate and building sectors, which require a relatively long time to complete a transaction or construction project.

#### *4.1.6. Days Payable Outstanding (DPO) and Return on Assets*

The regression results show that days payable outstanding has a significant positive effect on ROA. This shows that the longer the payment of trade payables, the greater the return on assets will be. The longer the company holds cash to make payments for trade payables, the more opportunities the company has to use the available cash for investment in working capital. Therefore, there is an opportunity to increase production and sales, thus increasing ROA. With an average DPO of more than 76 days or two months, the company has the opportunity to use the available cash for reinvestment.

#### *4.1.7. Debt Ratio and Return on Assets*

Based on the regression results, it shows that the debt ratio has a negative and significant effect on ROA. This means that the smaller the debt ratio, the greater the ROA value. There are 1547 observations which indicate that the companies' debt ratio is at a value of less than 1, this indicates that the companies' equity is greater than their total assets. This is also indicated by the average debt ratio value of 0.5738. The low debt ratio shows the companies' relatively low risk. Companies that have a debt ratio of less than 1 have an ROA value of up to 50%,

while companies that have a debt ratio of greater than 1 have a maximum ROA of 10%. It can be concluded that the lower the debt ratio, the greater the profitability.

#### 4.2. Working Capital and Gross Profit Margin

The statistical results for the impact of working capital management on profitability (GPM) are shown below for four regression models; the explanations are presented in point 4.2.3 for Equation 13, point 4.2.4 for Equation 14, point 4.2.5 for Equation 15 and point 4.2.6 for Equation 16. Meanwhile, points 4.2.1 and 4.2.2 explain WCIS and WCFS for all regression models below:

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + CCC_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (13)$$

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DSO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (14)$$

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DIO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (15)$$

$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DPO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (16)$$

Table 4. Regression Results for GPM as the dependent variable.

Variable	Reg. 1		Reg. 2		Reg. 3		Reg. 4	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
(Constant)	0.335	0.000	0.409	0.000	0.329	0.000	0.338	0.000
WCIP	-0.138	0.000	-0.096	0.001	-0.148	0.000	-0.119	0.000
WCFP	-0.001	0.002	-0.001	0.008	-0.001	0.003	-0.001	0.003
CCC	0.000	0.002						
DSO			-0.001	0.000				
DIO					0.000	0.000		
DPO							7.253E-5	0.454
DR	0.019	0.107	0.008	0.486	0.016	0.154	0.010	0.393
SIZE	0.004	0.420	0.000	0.919	0.002	0.585	0.004	0.393
AGE	0.000	0.546	0.000	0.409	0.000	0.443	0.000	0.398
CR	-0.003	0.000	-0.003	0.000	-0.003	0.000	-0.003	0.000
R Square	0.042		0.060		0.060		0.036	
F	9.982	0.000 <sup>b</sup>	14.770	0.000 <sup>b</sup>	14.760	0.000 <sup>b</sup>	8.618	0.000 <sup>b</sup>

##### 4.2.1. Working Capital Investment Strategy (WCIS) and Gross Profit Margin

The regression results show that the effect of WCIS on NPM in all models have a negative and significant coefficient. This means that if a company reduces the ratio of current assets to fixed assets, their gross profit margin will be even greater. A current asset ratio that is less than the ratio of fixed assets to total assets indicates that the company is using an aggressive working capital strategy. Accounts receivable and a small inventory will make working capital turnover faster, so even though a small inventory can cause a high cost of goods sold, due to the fast turnover of working capital the gross profit margin ratio is smaller.

##### 4.2.2. Working Capital Financing Strategy (WCFS) and Gross Profit Margin

Based on the regression results, WCFS shows a negative and significant impact on GPM for all regression models used. This means that the more a company uses current debt compared to long-term debt, the lower the net profit margin (NPM) will be; and the greater the trade payables in current liabilities with short-term payments, the more a company needs to prepare sufficient cash to fulfil these obligations. Many companies purchase raw materials on credit with days payable outstanding at 75 days. Meanwhile, the days of inventory outstanding is 102 days. This indicates that a company must pay debts faster than the inventory used for sales.

#### 4.2.3. Cash Conversion Cycle (CCC) and Gross Profit Margin

The regression results show that the CCC variable has a positive effect on net profit margin. This indicates that the longer the turnover times of cashflows, the greater the company's gross profit margin. This means that the longer the accounts receivable collection period, inventory period and debt payment period, the greater the company's gross profit margin will be. When viewed from the relatively long average CCC, which is 74 days, companies need to make efforts to reduce this CCC. Some of the studies conducted in Indonesia (Pratitri et al., 2017; Setianto & Pratiwi, 2019; Utia et al., 2018) generated coefficients that were different from the results of this study, the difference being the number of observations, such as Setianto & Pratiwi (2019), who only used 425 observations, and Purwoto, who used 226 observations.

#### 4.2.4. Days Sales Outstanding (DSO) and Gross Profit Margin

Based on the regression results, DSO has a negative effect on GPM. This indicates that the longer the DSO, the smaller the GPM and vice versa. On average, a company's DSO is 48 days or one month and 18 days. If the company can speed up the accounts receivable collection period, the GPM will be even greater.

#### 4.2.5. Days Inventory Outstanding (DIO) and Gross Profit Margin

The regression results show that DIO has a positive effect on GPM. This indicates that the longer it takes from the product manufacturing process until a product is sold, the greater the gross profit margin will be. This condition indicates inefficiency in the product manufacturing process. On average, the process of making a product until the product is sold takes 102 days or just over three months. The highest number of company DIO stands at two months (393 observations), while the highest gross profit margin is at a GPM level of 20% (413 observations). It can be concluded that the companies that have a GPM of 20% are companies that have a DIO of one to three months. This means that a fast DIO contributes to a low GPM.

#### 4.2.6. Days Payable Outstanding (DPO) and Gross Profit Margin

The regression results show that days payable outstanding has a positive effect on gross profit margin but the effect is not significant. The average DPO value is 76 days or more than two months. There were 887 observations (55%) with a GPM ranging from 10% to 30%, while the DPOs of companies whose payments were less than two months reached 881 observations (54%). This shows that a relatively fast DPO period will lead to a low GPM and vice versa. This is because the company can hold cash disbursements for longer so that cash can be used for other investment activities.

#### 4.2.7. Debt Ratio and Gross Profit Margin

Based on the regression results, the effect of debt ratio as a control variable has a positive but insignificant effect on GPM in all the models used, namely the CCC, DSO, DIO and DPO models. This means that although total debt (short-term and long-term debt) affects GPM, this effect does not have a sufficient impact on the increase in GPM. From 1547 observations, 96% of the companies have a debt ratio below or equal to 1. This indicates that companies use more of their capital to finance the company's operational activities. Furthermore, there are 462 (30%) of companies that have a debt ratio of  $< 1$  and achieve a GPM ranging from 20% to 30%. Conversely, many companies that have a debt ratio of  $< 1$ , achieve a GPM that is greater than 30%. All industries have debt ratios below 1 indicating a low level of corporate debt so that the company risk is relatively small because the amount of debt is reasonable.

#### 4.2.8. Firm Size and Gross Profit Margin

Based on the regression results, it shows that size has a positive but not significant effect on GPM. This means that the size of assets does not have a significant effect on GPM. This is supported by the distribution of the size of the assets followed by a relatively similar GPM pattern, namely a GPM value that ranges from 10% to 70%. However, companies that have an asset size of around 1 to 10 trillion have a GPM ranging from 10% to 70%, and this is more when compared to industries that have assets below 1 trillion and above 10 trillion.

#### 4.2.9. Firm Age and Gross Profit Margin

Based on the regression results, it shows that company age has a positive but insignificant effect on the gross profit margin. Company maturity has no significant effect on the efficiency of working capital management. The average age of the companies is 35 years with a distribution of 960 observations of companies over 30 years old. This means that companies listed on the Indonesia Stock Exchange have been around for a long time and already have experience. Only 32 observations were less than ten years old. The 30-year-old companies are dominated by the food & beverage industry with 192 observations, trade, service and investment with 189 observations, and basic industry & chemical with 172 observations. Seen from the relationship between the age of the company and the GPM, companies that have an age of above 30 years and companies that have been operating for 10–20 years and 20–30 years have a distribution of GPM values that are relatively the same, with the GPM value ranging from 10% to 80%. It is likely that company age does not have a significant effect, and maturity and company experience has no effect on working capital efficiency.

#### 4.2.10. Current Ratio and Gross Profit Margin

The regression results show that the current ratio has a negative and significant effect on the gross profit margin in all regression models. This indicates that the greater the current ratio value, the more GPM will decrease. This means that if a company invests a lot in current assets, there will be idle assets, so working capital operation is not optimal. This results in a large ending inventory value so that the gross profit margin is small. This is supported by the outstanding days inventory value that reaches more than 110 days or three months. Meanwhile, the average value of the current ratio is 2.7; this value is relatively large and indicates idle assets. Furthermore, there are 758 observations of companies whose current ratio values range from 1 to 2. Industries that have a current ratio value of less than 2 are the trade, service and investment industries. This shows that the liquidity of these industries is very important. Industries that have a current ratio of less than 1 means that current debt is greater than current assets; this dominates the infrastructure, utility and transportation industries as well as the miscellaneous industry.

## 4. CONCLUSION

Based on the regression results, it shows that the working capital investment approach (WCIA) has a positive and significant effect on return on assets (ROA) in all regression models used. If we look at the WCIA average value of 0.5056, this indicates that a company uses relatively more aggressive working capital strategies. The regression results show that in all the regression models used, although the working capital financing approach (WCFA) has a negative effect on ROA, this effect is not significant. The average WCFA value is 6.30, meaning that on average the companies observed are using more aggressive working capital financing. The cash conversion cycle has a negative effect on the return on assets but is not significant. Average cash conversion turnover reaches 74 days or two months. Days sales outstanding have a negative and significant effect on ROA; the average DSO is 47 days. Days inventory outstanding against return on assets shows the result that the DIO coefficient has a negative but insignificant coefficient sign; the average DIO is 102 days. Days payable outstanding has a significant positive effect on ROA, with the average DPO reaching 76 days or two months. Debt ratio has a negative and significant

effect on ROA, which is also indicated by the average debt ratio value of 0.5738. Company size has a positive but not significant effect for model 1, model 3 and 4, but for model 2, company size has a negative effect on ROA but also not significant. Company age has a positive and significant effect on the return on assets for all models used, and the current ratio has a significant negative effect on the return on assets.

The working capital investment approach to the gross profit margin in all models shows a negative and significant coefficient, and the working capital financing approach shows a negative and significant sign for all capital used. The cash conversion cycle has a positive and significant effect on gross profit margin; the coefficient of days sales outstanding (DSO) has a negative and significant coefficient on gross profit margin; the days inventory outstanding (DIO) regression coefficient has a positive and significant coefficient on gross profit margin; the effect of days payable outstanding on gross profit margin is positive but not significant; the effect of debt ratio as a control variable has a positive but insignificant effect on GPM in all models used, namely the CCC, DSO, DIO and DPO models. Firm size has a positive but not significant effect on GPM, company age has a positive but insignificant effect on gross profit margin, and the current ratio regression coefficient has a negative and significant effect on gross profit margin in all regression models.

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