Does working capital management affect profitability? Empirical evidence from Indonesia listed-firms

by Abdul Basyith

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Abdul Basyith, Abid Djazuli & Fitriya
Universitas Muhammadiyah Palembang, Indonesia

Abstract

This study attempts to xamine the impact of working capital management on profitability and also examine the working capital conditions of several companies in the Indonesia Stock Exchange (IDX). The sample used is 21 listed firms in the Indonesian Stock Exchange that is selected from each sector such as plantation, pharmaceutical, telecommunication, investment, retail, cement and metal industry from 2000 to 2019. The variables employed in this study is 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 Square (OLS) is employed. The results reveal that (1) Working Capital Investment Approach has a positive and significant effect on Return on Assets in all regression models used; (2) Working capital Financing Approach has a negative effect on ROA but not significant; (3) The working capital investment approach to the gross profit margin in all models shows a negative and significant coefficient; (4) 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 use a conservative working capital investment approach are the consumer goods industry, the basic chemical & industry and the miscellaneous industry.

Keywords Working capital management, profitability, listed-firms, Indonesia

1. Introduction

A fundamental of corporate finance is how a firm can raise funds and allocate the funds obtained thus will optimize firm financial performance, firm value and shareholders' wealth. Optimizing the firm value will require an effective financing decision, a profitable investment decision and an appropriate payout decision. Working capital is related to financing decision in which the firm should manage cash conversion cycle, receivable turnover, inventory turnover, the tenor of current liabilities and choose the right kind of debt that matches the tenor of the firm assets.

Working capital is required for a firm to carry its daily operation. Working capital is the overall value of firm current assets which consist of cash, receivable, inventory, and other liquid assets. This current asset is also referred to as gross working capital. 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 hence it creates receivables. Insufficient current assets will also distract the firm in maintaining daily operations (Van Horne & Wachowicz, 2000). Further, sales are determined by the number of raw material inventory and supporting material inventory which can be purchased by cash or credit. Credit purchase of material from suppliers will create account payable in which it will bring some benefits and setbacks thus harmonizing between current assets and current liabilities require good working capital management.

One of the favourite sources of financing for the firm is accounts payable which means delaying payment to suppliers. However, if the firm is offered an early payment discount, then late payment of invoice can be very costly. A cash conversion cycle is used to measured working capital management (WCM) 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) asserts that the longer this time lag, the larger the investment in working capital and higher sales and profitability but a 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) find a strong negative relation between cash conversion cycle and profitability using a large sample of listed American firms fro the 1975-1994 periods. It indicates that reducing the cash conversion cycle to a reasonable minimum leads to higher firm value.

Working capital management, if managed properly, has an important role in achieving the success of a firm. Good working capital management will make a firm having good economic fundamentals so that the firm will have the ability to adapt to market changes such as changes in raw material prices, interest rates and ultimately can compete in the market (Appuhami, 2008). In the end, ultimately good working capital management can be a competitive advantage and this has been implemented by General Electric (GE) which is called the bridges liquidity gap program between product build-up and customer payments (Boisjolya, Conine & McDonald, 2020).

The results of a survey conducted by the Annual Global Working Capital Survey (2019/2020) 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 per cent decline from 2017 in Europe and NWC experienced a 5.6% per cent decrease from 2017 in the USA and Canada, NWC also experienced a decrease in Austrasia by 4.9% 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) reports 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 flow efficiency (CCE) when compared to medium and small companies. Large companies have CCE of 77.6%, medium companies have CCE of 72.9 and small companies have CCE of 71.2%.

On the other hand, if the working capital is poorly managed, then many companies cannot fulfil finances, while the ability to manage finances must be owned by large companies and small companies. One of the factors that can lead to bankruptcy is a continuous deficit in cash flow from operation in a particular period.

Furthermore, Dwommor and Nasiru (2017) assert that poor working capital management is the main cause of company bankruptcy. Current assets are a component of working capital. If the company has too few current assets, it will cause difficulties in the company's operational activities (Van Horne & Wachowicz, 2000). Companies that have low inventory turnover indicate that the company has poor sales as well or the company has a lot of unsold inventory (Ruichao, 2013). Working capital is also related to liquidity. Companies that have low liquidity will be the cause of company 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 and a conservative working capital approach (Weinraub & Visscher, 1998). The aggressive working capital approach is used when the company uses more foreign capital to finance its current assets, while the working capital is conservative when the company uses current assets more than its current debt. Though the returns are increasing due to maintaining a high operating cycle of current assets using an aggressive strategy approach, however, the risk is extremely high as the company attempts to keep a minimum-set of cash

and marketable securities and reduce the amount of investment in inventory. Thus the company cannot pay obligations. Moreover, maximum utilization of short term debt to finance current assets may induce higher risk as there is a probability of failing to pay it on its due date. A conservative manager prefers long-term debt or equity over short term debt to finance current assets hence 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 the shareholder's 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; Tran, Abbott & Yap, 2017; Hadri & Dhiyaullatief, 2018; Nastiti, Atahau & Supramono, 2019). A high level of investment in current assets and greater reliance on short-term financing is mostly in the manufacturing sector as it determines the continuity of manufacturing firms (Raheman, Qayyum & Afza, 2011). For example, in Indonesia, account receivables, inventory and account 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 the firm's day to day operation. In the last few decades, research on working capital management is significantly arising, such as Guthmann & Dougall (1948), Mueller (1953), Sagan (1955), Gole (1959), Park and Gladson (1963), Gupta (1969), and Gupta and 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 minimise the risk of delivery disruptions, price changes and business losses due to shortages of inventory (Blinder & Maccini, 1991), and likewise trade credit policy will likely affect a good relationship with customers thus can increase sales (Long, Malitz & Ravid, 1993; Shah, 2009). Appropriate management of working capital will affect firms' financial stability. In the end, it affects the firm's profitability and success and firm value (Shin & Soenen, 1998).

Working capital focuses on the time length of converting all input (raw materials) to output (finished goods) and the proceeds from the sale of output to be used to purchase the input. 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 Cash Conversion Cycle (CCC) (Richards & Laughlin, 1980), Cash to Cash (C2C) Cycle (Theodore Farris & Hutchison, 2002). The shorter the time length of CCC which indicates a good working capital management, the higher the firm's profitability (Shin & Soenen, 1998; Deloof, 2003; Lazaridis &Tryfonidis, 2006; Grosse-Ruyken, Wagner & Jonke, 2011).

2.1 Relationship between negative working capital and profitability

There have been many studies conducted on the effect 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 economic development, research on working capital can be classified into research conducted in developed economies and developing economies. When viewed from the point of view of profitability, working capital management research can be classified into research using accounting-based (book value), market-based and mixed based on 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 with the object of research on companies listed on stock exchanges were conducted in Pakistan (Raheman & Nasr, 2007; Iqbal & Zhuquan, 2017), India (Shrivastava, Kumar & Kumar, 2017); Bangladesh (Quayyum, 2012); Indonesia (Hadri & Dhiyaullatief, 2018; Utia, Dewi & Sutisna, 2018; Setianto & Pratiwi, 2019; Purwoto, 2019; Prafitri, Rachmina & Maulana, 2017), Malaysia (Jakpar, Tinggi, Siang, Johari, Myint & Sadique, 2017), Thailand (Napompech, 2012), Vietnam (Dong & Su, 2010; Hoang, 2015), Singapore (Mansoori & Muhammad, 2012), Nigeria (Salman, Folajin & Oriowo, 2014), Kenya (Nzioki, Kimeli, Abudho & Nthiwa, 2013). In the other hand, there are several studies on the effect of working capital management on profitability in developed countries, such as the UK (Goncalves, Gaio & Robles, 2018), Spain (Charitou, Elfani & Lois, 2010). All of these studies show a negative and significant effect of working capital management on profitability as a higher excess working capital leads to lower performance.

Several studies that use book value measures such as ROA (Goncalves, Gaio & Robles, 2018; Hadri & Dhiyaullatief, 2018; Utia, Dewi & Sutisna, 2018; Jakpar, Tinggi, Siang, Johari, Myint & Sadique, 2017; Pestonji & Wichitsathian, 2019; Hoang, 2015; Mansoori & Muhammad, 2012); Iqbal & Zhuquan, 2017; Quayyum, 2012; Salman, Folajin & Oriowo, 2014), ROE (Purwoto, 2019), ROI (Prafitri, Rachmina & Maulana, 2017), ROIC (Dong & Su, 2010), Gross Operating Profitability (Dong & Su, 2010; Napompech, 2012; Shrivastava, Kumar & Kumar, 2017; Nzioki, Kimeli, Abudho & Nthiwa, 2013), Net Operating Profit (Raheman & Nasr, 2007), Operating Profit to Sales (Afeef, 2011), Net Profit Margin (Quayyum, 2012). Further, Setianto and Pratiwi (2019) utilise market-based measured as profitability proxy. Meanwhile, Ogundipe, Idowu and Ogundipe (2012) utilise mix based measured (Tobin's Q) as profitability proxy. Several studies that SMEs as a sample such as Afeef (2011), Pestonji and Wichitsathian (2019).

2.2 Relationship between positive working capital and profitability

Some studies that show a positive and significant effect of working capital management on profitability such as Ali (2011), Charitou, Lois & Santoso (2012), Ponsian, Chrispina, Tago and Mkiibi (2014), Gill, Biger and Mathur (2010). Moreover, these research using book value measured such as Net Operating Profitability (Usama, 2012), ROA (Ali, 2011; Afeef, 2011; Charitou, Lois & Santoso, 2012), Gross Operating Profit (Ponsian, Chrispina, Tago and Mkiibi, 2014), ROE (Akoto, Awunyo-Vitor & Angmor, 2013), Gross Operating Profit (Gill, Biger & Mathur, 2010).

2.3 Aggressive and Conservative Working Capital Management Approach

Two strategies in working capital management are aggressive strategy and conservative strategy. The aggressive strategy is used when the manager employs a short term financing, and conservative strategy is used when the manager employs a long term financing to fund the firm operational activities. In other words, an aggressive strategy maintains a minimal investment in current asset meanwhile a conservative strategy maintains a higher level of current assets. The discussion of the aggressive and conservative strategy of working capital has been investigated in different industries in the last few decades. A company that utilizes an aggressive strategy expects high returns and higher risks (Weinraub & Visscher, 1998). While Afza and Nazir (2008) found that a conservative strategy is positively related to firm's profitability and in contrast, Qian (2016) found that a conservative strategy leads to a negative effect on firm

profitability. vb Besides, firms seek to maintain an optimal level of working capital to maximize their firm value (Deloof, 2003) but thus far to what is the optimum level of working capital and risk/return trade-off between the different working capital strategy in which a more aggressive working capital policy is associated with higher returns and higher risks, while more conservative policies for working capital are related with lower risks and returns, remains a debate.

One measure to determine whether the company utilize an aggressive or a conservative strategy is 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 WCIS is less than 0.5 and WCFS is more than 0.5 then the firm tends to have an aggressive strategy while if WCIS is more than 0.5 and WCFS is less than 0.5 then the firm tend to use a conservative strategy.

2.4 Account Receivable and Profitability

One way to create firm value through working capital management is achieved from reducing the number of days account receivable and inventories, and from shortening the cash conversion cycle. Previous studies on the effect of the average collection period are mixed, that is positive, negative and not significant. Deloof (2003), Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007), Mansoori and Muhammad (2012), Dong (2010) and Shubita (2013), found that average collection period has a significant negative effect on profitability, in contrast, the number of accounts payables days needs to be as large as possible. In contrast, Ponsian, Chrispina, Tago and Mkiibi (2014) found that the average collection period has a significant positive effect on profitability.

2.5 Inventory and Profitability

Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007), Falope and Ajilore (2009), Mansoor and Muhammad (2012), Ruichao (2013) found a negative effect of inventory on profitability meanwhile Gill, Biger and Mathur (2010), and Mathuva (2010) found a positive effect of inventory on profitability.

2.6 Account Payable and Profitability

According to the cash conversion cycle, the number of accounts payables days needs to be as large as possible. However, the result of previous studies is mixed, some studies find a positive effect (Mathuva, 2010; Gill, Biger and Mathur, 2010; Ruichao, 2013) while some find a negative effect (Deloof, 2003; Raheman & Nasr, 2007; Saghir, Hashmi & Hussain, 2011; Vural, Sökmen & Çetenak, 2012) and even inconclusive result (Garcia-Teruel & Martinez-Solano, 2007).

2.7 Cash Conversion Cycle and Profitability

Richards and Laughlin (1980) introduced the concept of cash conversion cycle (CCC) which refers to the length of converting all input and output to cash. When utilizing an input that 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 payables days needs to be as large as possible. However, the result of previous studies is mixed, some studies find a positive effect (Gill, Biger & Mathur, 2010; Ponsian, Chrispina, Tago & Mkiibi, 2014) while some find a negative effect (Shin & Soenen, 1998; Deloof, 2003; Lazaridis & Tryfonidis, 2006; Raheman & Nasr, 2007; Garcia-Teruel & Martínez-Solono, 2007; Falope & Ajilore, 2009; Dong & Su, 2010; Mathuva, 2010; Grosse-Ruyken, Wagner & Jonke., 2011; Saghir,

Hashmi & Hussain, 2011; Quayyum, 2012; Mansoor & Muhammad, 2012; Napompech, 2012; Vural, Sökmen & Çetenak, 2012).

A negative effect means that the company should shorten the CCC to increase profitability. However, some argue that long CCC minimises the risk of delivery, price changes and business losses if the availability of the product is uncertain (Blinder & Maccini, 1991). Further, reducing the period of accounts receivable, increasing the inventory turnover, delaying payment to creditors will increase the 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 in the Indonesian Stock Exchange (IDX). This study analyses 21 listed firms in the Indonesian Stock Exchange that is selected from each sector such as plantation, pharmaceutical, telecommunication, investment, retail, cement and metal industry. Those 21-listed firms are Astra Aggro Lestari Tbk. (AALI), Sinar Mas Agro Resources and Technology (SMAR), Tunas Baru Lampung Tbk. (TBLA), Indocement Tunggal Prakarsa Tbk. (INTP), Sierad Produce Tbk, (SIPD), Kalbe Farma Tbk. (KLBF), Unilever Indonesia Tbk. (UNVR), Indosat Tbk. (ISAT), Hexindo Adiperkasa, Tbk. (HEXA), Matahari Putra Prima, Tbk. (MPPA), Bakrie & Brothers Tbk. (BNBR), Aneka Tambang (Persero) Tbk. (ANTM), Telekomunikasi Indonesia (Persero) Tbk. (TLKM), Eratex Djaja Tbk. (ERTX), Astra International Tbk. (ASII), Tambang Batubara Bukit Asam, Tbk. (PTBA), Indah Kiat Pulp & Paper Tbk. (INKP), Champion Pacific Indonesia, Tbk. (IGAR), Ekadharma International Tbk. (EKAD), Mulia Industrindo Tbk. (MLIA), Lion Metal Works Tbk. (LION). These firms are chosen because they represent each sector and have complete financial statement reports for study periods that are 20 years spanning from 2000 to 2019. The data were collected from the Indonesia Stock Exchange (IDX) website that is https://www.idx.co.id/perusahaan-tercatat/laporan-keuangan-dan-tahunan/.

There are three measures to assess the firm value that is book value, market value and mix measure which is a combination of book value and market value. Previous studies using book value as a proxy for firm value such as Charitou, Lois and Santoso (2012), Ulil, Dewi and Sutisna (2018), Hadri and Dhiyaullatief (2018), Prafitri, Rachmina and Maulana (2017), Jakpar, Tinggi, Siang, Johari, Myint and Sadique (2017), Purwoto (2019), Raheman and Nasr (2007), Quayyum (2012), Napompech (2012), while Setianto and Pratiwi (2019) use market value and Ogundipe, Idowu and Ogundipe (2012) use mix measured. According to the previous studies, thus the variables employed in this study is 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). 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 WCIS is less than 0.5 and WCFS is more than 0.5 then the firm tends to have an aggressive strategy while if WCIS is more than 0.5 and WCFS is less than 0.5 then the firm tend to use a conservative strategy. Days sales outstanding (DSO) is derived from receivables divided from sales (365). Days inventory outstanding (DIO) is derived from inventories divided from sales (365). Days payable outstanding (DPO). CCC is derived from DSO + DIO – DPO. Debt ratio is derived from total debt divided by total assets. Size is derived from log natural of total assets. Age is derived from the number of the year since the firm has been established. Current ratio (CR) is derived from current assets divided by current liabilities. Return on Assets

(ROA) is derived from income to total assets. Gross profit margin (GPM) is derived from gross profit divided by total sales. Below is the equation model:

$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + CCC_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (1)$$
$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DSO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (2)$$
$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DIO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (3)$$
$$ROA_{it} = \alpha + WCIS_{it} + WCFS_{it} + DPO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (4)$$
$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + CCC_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (5)$$
$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DSO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (6)$$
$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DIO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (7)$$
$$GPM_{it} = \alpha + WCIS_{it} + WCFS_{it} + DPO_{it} + Debt_{it} + Size_{it} + Age_{it} + CR_{it} + \varepsilon_{it} \quad (8)$$

4. Finding and Discussion

The descriptive statistics are shown in the Table 1. The mean value of ROA is 0.0631 (6 per cent) with a range of -313 to 8.70 and it indicates that most firms have lower ROA. The mean value of GPM is 0.2896 (29.96 per cent) with a range of -5.38 to 1, and it 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 balanced amongst firms that utilising an aggressive and a conservative working capital investment strategy. 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 relatively a short period of assets turnover. The mean value of DSO is 47.99 days with a range of 0 to 639 days which indicates that most firms have relatively a 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 relatively a 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 relatively a short period of account payable. The mean value of the debt ratio is 0.5738 with a range of 0.01 and 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. The mean value of CR is 2.69 times with a range of 0.01 to 428.57 which indicates that most firms have more 2.69 times of current assets than current liabilities.

Table 1. Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation
ROA	1620	-3.13	8.70	.0631	.27657
GPM	1620	-5.38	1.00	.2896	.30640
WCIS	1620	.02	3.79	.5060	.26437
WCFS	1620	.00	498.00	6.2926	17.43693
CCC	1620	-740.00	1016.00	74.0265	167.82723
DSO	1620	.00	639.00	47.8352	46.57520
DIO	1620	.00	1002.00	101.7969	139.10047
DPO	1620	.00	874.00	75.9130	80.54762
DR	1620	.01	10.27	.5738	.65332
SIZE	1620	2.20	12.77	7.9983	1.80117
AGE	1620	1.00	114.00	35.1963	16.21550
CR	1620	.01	428.57	2.6937	12.22305
Valid N (listwise)	1620				

4.1 Working Capital and Return on Assets

The statistical result for the impact of working capital management on profitability (ROA) is shown below for four regression models:

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

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

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

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

Table 2. Regression Result for ROA as the dependent variable

Variables	Reg 1		Reg 2		Reg 3		Reg 4	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
(Constant)	.015	.688	.051	.191	.017	.653	.034	.376
WCIS	.125	.000	.137	.000	.129	.000	.118	.000
WCFS	-.001	.119	-.001	.173	-.001	.114	-.001	.083
CCC	-1.636E-5	.685						
DSO			-.001	.000				
DIO					-6.590E-5	.167		
DPO							.000	.000
DR	-.111	.000	-.113	.000	-.111	.000	-.100	.000
SIZE	.000	.926	-.001	.715	.001	.879	-1.248E-6	1.000
AGE	.002	.000	.002	.000	.002	.000	.002	.000
CR	-.002	.000	-.002	.000	-.002	.000	-.002	.000
R Square	.092		.100		.093		.100	
F	23.258	.000[b]	25.709	.000[b]	23.532	.000[b]	25.717	.000[b]

4.1.1 Working Capital Investment Strategy and Return on Assets

Based on the regression results, it shows that the working capital investment strategy has a positive and significant effect on Return on Assets in all regression models. This means, 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 current assets, the better 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 Strategi dan Return on Assets.

The regression results show that in all regression models, although WCFS has a negative effect on ROA, the effect is not significant. The average value of WCFS is 6.30, this 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 (71 per cent) observations which indicate that companies use an aggressive working capital financing strategy. Then, there were 645 observations from a total of 939 observations that obtained ROA ranging from 0 to 10 per cent. This uneven spread can cause an insignificant effect on ROA. This can also be seen from the fewer companies using aggressive working capital financing strategies so that the ROA level is increasing.

4.1.3 Cash conversion Cycle and Return on Assets

The regression results show that the cash conversion cycle has a negative but not significant effect. Cash conversion turnover that reaches 74 days or 2 months has no direct effect on the 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 a ROA of between 0 and 10 per cent. Of the companies that received a ROA of between 0 - 10 per cent, the CCC spread patterns varied from -30 days to 180 days and some even had CCCs of more than 2 years.

4.1.4 Day's sales outstanding and Return on Asset

The regression results show that DSO has a negative and significant effect on ROA. This means that if the company can perform receivables collection efficiency, 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 2 months. From 1193 observations, the company's DSO is in the range of fewer than 2 months, and there are even 645 observations of companies that have a DSO of less than 1 month. This indicates that the company's receivables policy for collection has been running efficiently because many receivables are repaid in less than 1 month (40 per cent).

4.1.5 Day's Inventory Outstanding and Return on Assets

Based on the regression results, it shows a negative effect between days inventory outstanding (DIO) on ROA but the effect is not significant. Inventory is an element that only affects the company's gross profit. The purchase of raw materials and the process of making products are elements of the cost of goods sold or the cost of goods manufactured. So that inventory does not directly affect ROA. The average DIO is 102 days, which indicates a relatively long time to make the product, which is approximately 3 months. However, this is in line, because some of the companies observed are companies in the real estate and building sector which require a relatively long time to complete a construction project.

4.1.6 Day's Payable Outstanding and Return on Assets

The regression results show that days payable outstanding have 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 on trade payables, the more opportunities the company has to use the available cash for investment in working capital. So that there is an opportunity to increase production and sales, thus ROA will also increase. With an average DPO of more than 76 days or 2 months, the company has the opportunity to use the available cash for reinvestment.

4.1.7 A 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. Besides, there are 1547 observations which indicate that the company's debt ratio is at a value of less than 1, this indicates that the company's equity is greater than total assets. This is also indicated by the average debt ratio value of 0.5738. The low debt ratio shows the company's relatively low risk. Companies that have a debt ratio of less than 1 have a ROA value of up to 50 per cent, while companies that have a debt ratio of greater than 1 have a maximum ROA of 10 per cent. It can be concluded that the lower the debt ratio, the greater the profitability.

4.2 Working Capital and Gross Profit Margin

The statistical result for the impact of working capital management on profitability (GPM) is shown below for four regression models:

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

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

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

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

Table 3. Regression Result for GPM as the dependent variable

Variables	Reg 1		Reg 2		Reg 3		Reg 4	
	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.	Coef.	Sig.
(Constant)	.335	.000	.409	.000	.329	.000	.338	.000
WCIP	-.138	.000	-.096	.001	-.148	.000	-.119	.000
WCFP	-.001	.002	-.001	.008	-.001	.003	-.001	.003
CCC	.000	.002						
DSO			-.001	.000				
DIO					.000	.000		
DPO							7.253E-5	.454
DR	.019	.107	.008	.486	.016	.154	.010	.393
SIZE	.004	.420	.000	.919	.002	.585	.004	.393
AGE	.000	.546	.000	.409	.000	.443	.000	.398
CR	-.003	.000	-.003	.000	-.003	.000	-.003	.000
R Square	.042		.060		.060		.036	
F	9.982	.000[b]	14.770	.000[b]	14.760	.000[b]	8.618	.000[b]

4.2.1 Working Capital Investment Strategy and Gross Profit Margin

The regression results show that the effect of WCIS on NPM in all models shows a negative and significant coefficient. This means that if the company reduces the ratio of current assets to fixed assets, the company's 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 small inventory will make working capital turnover faster so that 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 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 greater the company uses current debt compared to long-term debt, the lower the net profit margin will be. The greater the trade payables in current liabilities with short-term payments, the company needs to prepare sufficient cash to fulfil these obligations. Many companies make purchases of raw materials on credit with days of payable outstanding in 75 days. Meanwhile, the day's of inventory outstanding is 102 days. This indicates that the company must pay debts faster than the inventory used for sales.

4.2.3 Cash Conversion Cycle and Gross Profit Margin

The regression results show that the CCC variable has a positive effect on NPM. This indicates that the longer the turnover time of cash flows, the greater the company's gross profit margin. This means that the longer the accounts receivable collection period and the inventory period as well as the debt payment period, the greater the company's gross profit margin. 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 (Setianto & Pratiwi, 2019), (Pratowo, 2019), (Kusuma & Bachtiar, 2018), (Utia, Sutisna, & Dewi, 2018), (Prafitri, Rachmina, & Maulana, 2017) generated coefficients that were different from the results of this

study where the difference was the number of observations, such as Setianto and Pratiwi (2019) which only used 425 observations and Purwoto used 226 observations.

4.2.4 Day's Sales Outstanding 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. In average, the company's DSO is 48 days or one month and 18 days. If the company can speed up the accounts receivable collection period again, the GPM will be even greater.

4.2.5 Day's Inventory Outstanding and Gross Profit Margin

The regression results show that DIO has a positive effect on GPM. This indicates that the longer the product manufacturing process takes until it 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 more than 3 months. The highest number of company DIO is at 2 months (393 observations), while the highest gross profit margin is at the GPM level of 20 per cent (413 observations). It can be concluded that the companies that get a GPM of 20 per cent are companies that have a DIO of 1 to 3 months. This means that a fast DIO contributes to a low GPM.

4.2.6 Day's 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 2 months. There were 887 observations or 55 per cent of observations having a GPM ranging from 10 per cent to 30 per cent while the DPOs of companies whose payments were less than 2 months reached 881 observations or 54 per cent. This shows that the relatively fast DPO period will lead to low GPM and vice versa. This is because the company can hold cash disbursements for longer so that cash can be used for other investing 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 debt and long-term debt) affects GPM, this effect does not have a sufficient impact on the increase in GPM. From 1547 observations or 96 per cent of 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 or 30 per cent of companies that have a debt ratio of <= 1 and receive GPM ranging from 20 to 30 per cent. Conversely, many companies that have a debt ratio <= 1, get a GPM that is greater than 30 per cent. 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 the GPM value ranges from 10 per cent to 70 per cent. However, companies that have an asset size of around 1 to 10 trillion have a GPM ranging from 10-70 per cent, 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 company 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 10 years old. The 30-year-old industry is dominated by the food & beverage industry with 192 observations, trade, service and investment with 189 observations and basic industry & chemical. Seen from the relationship between the age of the company and the GPM, companies that have age above 30 years and companies that have 10 to 20 years and 20 to 30 years, have a distribution of GPM values that are relatively the same, namely the GPM value ranges from 10 to 80 per cent. Likely, the company's age does not have a significant effect. Maturity and company experience has no effect on working capital efficiency.

4.2.10 Current Ratio and Gross Profit Margin

Based on the regression results which 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 GPM will decrease. This means that if the company invests a lot in current assets, there will be idle assets so that the 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 day's inventory value that reaches more than 110 days or 3 months. Meanwhile, the average value of the current ratio is 2.7, where this value is relatively large so that it can indicate an idle asset. 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 this industry is very important. Industries that have a current ratio of less than 1, which means that current debt is greater than current assets, is dominated by the infrastructure, utility and transportation industries as well as the miscellaneous industry.

5. Conclusion

Based on the regression results, it shows that the Working Capital Investment Approach has a positive and significant effect on Return on Assets in all regression models used. If we look at the WCIA average value of 0.5056, this indicates that the 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 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 not significant. Average cash conversion turnover reaches 74 days or 2 months. Day's sales outstanding have a negative and significant effect on ROA, the average DSO is 47 days. Day's inventory outstanding against return on assets shows the result that the DIO coefficient has a negative but insignificant coefficient sign. The average DIO was 102 days. Day's payable outstanding has a significant positive effect on ROA. With the average DPO reaching 76 days or 2 months. Debt ratio has a negative and significant effect on ROA. This 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 not significant either. Company age has a positive and significant effect on the return on assets for all models used. 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. 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 day's sales outstanding (DSO) has a negative and significant coefficient on gross profit margin. Day's Inventory Outstanding (DIO) regression coefficient has a positive and significant coefficient on gross profit margin. The effect of day's 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 and DIO models, and DPO. Firm size has a positive but not significant effect on GPM, and 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.

In conclusion, 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 use a conservative working capital investment approach are the consumer goods industry, the basic chemical & industry and the miscellaneous industry.

References

Adekola, A., Samy, M., & Knight, D. (2017). Efficient working capital management as the tool for driving profitability and liquidity: A correlation analysis of Nigerian companies. *International Journal of Business and Globalisation, 18*(2), 251-275.

Afeef, M. (2011). Analyzing the impact of working capital management on the profitability of SME's in Pakistan. *International Journal of Business and Social Science, 2*(22).

Afza, T., & Nazir, M.S. (2008). Working capital approaches and firm's returns. *Pakistan Journal of Commerce and Social Sciences, 1*(1), 25-36.

Akoto, R.K., Awunyo-Vitor, D., & Angmor, P.L. (2013). Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms. *Journal of Economics and International Finance, 5*(9), 373-379.

Ali, S. (2011). Working capital management and the profitability of the manufacturing sector: A case study of Pakistan's textile industry. *The Lahore Journal of Economics, 16*(2), 141-178.

Appuhami, B. (2008). The impact of firms' capital expenditure on working capital management: an empirical study across industries in Thailand. *International Management Review*, 8-21.

Bhattacharya, H. (2001). *Working capital management: Strategies and techniques*. New Delhi: Prentice Hall.

Blinder, A.S., & Maccini, L.J. (1991). The resurgence of inventory research: What have we learned? *Journal of Economic Surveys, 5*(4), 291–328.

Boisjolya, R.P., Conine, T.E., McDonald, M.B. (2020). Working capital management: Financial and valuation impacts. *Journal of Business Research, 108*(C), 1-8.

Charitou, M. S., Elfani, M., & Lois, P. (2010). The effect of working capital management on firms profitability: Empirical evidence from an emerging market. *Journal of Business & Economics Research (JBER)*, *8*(12). https://doi.org/10.19030/jber.v8i12.782.

Charitou, M., Lois, P., & Santoso, H. B. (2012). The relationship between working capital management and firms profitability: An empirical investigation for an emerging asian country. *International Business & Economics Research Journal (IBER)*, *11*(8), 839-848. https://doi.org/10.19030/iber.v11i8.7162.

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance and Accounting, 30*, 573-588.

Dong, H.P., & Su, J.T. (2010). The relationship between working capital management and profitability: A Vietnam case. *International Research Journal of Finance and Economics, 49*, 59-67.

Dunn, P., & Cheatham, L. (1993). Fundamentals of small business financial management for start-up, survival, growth, and changing economic circumstances. *Managerial Finance, 19*, 1-13.

Dwommor, J.Y., & Nasiru, I. (2017). Do firms manage working capital for survival or for success: An empirical evidence from literature review? *The International Journal of Business & Management, 5*(4), 173 – 183.

Falope, O. I., & Ajilore, O. T. (2009). Working capital management and corporate profitability: Evidence from panel data analysis of selected quoted companies in Nigeria. *Research Journal of Business Management, 3*, 73-84.

Garcia-Teruel, P.J., & Martínez-Solono, P. (2007). Effects of working capital management on SME profitability. *International Journal of Managerial Finance, 3*(2), 174-177.

Gill, A., Biger, N., & Mathur, N. (2010). The relationship between working capital management and profitability: Evidence from the United States. *Business and Economics Journal, 10*, 1-9.

Gole, V.L. (1959). The management of working Capital. *Australian Accountant, 229-250*.

Goncalves, T., Gaio, C., & Robles, F. (2018). The impact of working capital management on firm profitability in different economic cycles: Evidence from the United Kingdom. *Economics and Business Letters, 7*(2), 70-75.

Grosse-Ruyken, P., Wagner, S., & Jönke, R. (2011). What is the right cash conversion cycle for your supply chain? *International Journal of Service and Operations Management, 10*(1), 13-29.

Gupta, M. C. (1969). The effect of size, growth and industry on the financial structure of manufacturing companies. *Journal of Finance, 24*(3), 517–529.

Gupta, M. C., & Huefner, R. J. (1972). A cluster analysis study of financial ratios and industry characteristics. *Journal of Accounting Research, 10*(1), 77–95.

Guthman, H.G., & Dougall, H.E. (1948). *Corporate financial policy, 2nd ed*. New York: Prentice-Hall. Inc.

Hadri, K., & Dhiyaullatief, B.A. (2018). Working capital management and corporate performance: Evidence from Indonesia. *Journal of Management and Business Administration Central Europe, 26*(2), 76-88.

Hoang, T.V. (2015). Impact of working capital management on firm profitability: The case of listed manufacturing firms on Ho Chi Minh Stock Exchange. *Asian Economic and Financial Review, 5*(5), 779-789.

Iqbal, A., & Zhuquan, W. (2017). Working capital management and profitability evidence from firms listed on Karachi Stock Exchange. *International Journal of Business and Management, 10*(2), 231-235.

Jakpar, S., Tinggi, M., Siang, T.K., Johari, A., Myint, K.T., Sadique, M.S. (2017). Working capital management and profitability: Evidence from manufacturing sector in Malaysia. *Journal of Business & Financial Affairs, 6*(2).

Lazaridis, I., & Tryfonidis, D. (2006). Relationship between working capital management and profitability of listed companies in the Athens stock exchange. *Journal of Financial Management and Analysis, 19*(1).

Long, M.S., Malitz, I.B., & Ravid,S.A.(1993). Trade credit quality guarantees and product marketability. *Financial Management, 22*(4), 117-127.

Mansoori, E., & Muhammad, J. (2012). The effect of working capital management on profitability: Evidence from Singapore. *Interdisciplinary Journal of Contemporary Research in Business, 4*(5), 472-486.

Mathuva, D. M. (2010). The influence of working capital management components on corporate profitability: A survey on Kenyan listed firms. *Research Journal of Business Management, 4*(1), 1-11.

Mueller, F. (1953). Corporate working capital and liquidity. *The Journal of Business of the University of Chicago, 26*(3), 157-172. Retrieved June 30, 2020, from www.jstor.org/stable/2350135.

Napompech, K. (2012). Effects of working capital management on the profitability of Thai listed firms. *International Journal of Trade, Economics and Finance, 3*(3), 226 – 232.

Nastiti, P. K. Y., Atahau, A. D. R., & Supramono, S. (2019). The determinants of working capital management: the contextual role of enterprise size and enterprise age. *Business, Management and Education*, *17*(2), 94-110.

Nzioki, P.M., Kimeli, S.K., Abudho, M.R., & Nthiwa, J.M. (2013). Management of working capital and its effect on profitability of manufacturing companies listed on Nairobi securities exchange (NSE), Kenya. International Journal of Business and Finance Management Research, 1(4), 35-42.

Park, C., & Gladson, J.W. (1963). Working capital. New York: Macmillan.

Pestonji, C., & Wichitsathian, S. (2019). The impacts of working capital policy on firms' performances: An Empirical study on Thai listed companies in production sector. *International Symposia in Economic Theory and Econometrics, in: William A. Barnett & Bruno S. Sergi (ed.), Asia-Pacific Contemporary Finance and Development, 26*, 39-51.

Ponsian, N., Chrispina, K., Tago, G., & Mkiibi, H. (2014). The effect of working capital management on profitability. *International Journal of Economics, Finance and Management Sciences, 2*(6), 347-355.

Prafitri, T., Rachmina, D., & Maulana, T.NA. (2017). The effect of working capital on the profitability of palm oil plantation companies. *Indonesian Journal of Business and Entrepreneurship (IJBE), 3*(2), 111. https://doi.org/10.17358/ijbe.3.2.111.

Purwoto, L. (2019). Manajemen modal kerja, kendala keuangan, dan profitabilitas pada perusahaan manufaktur indonesia. *EKUITAS (Jurnal Ekonomi dan Keuangan)*, *3*(1), 112-129.

Qian, L. (2016). Working capital management and its effect on the profitability of Chinese listed firms. *Thesis submitted as partial requirement for the conferral o Master in finance Instituto Universitario de Lisboa*.

Quayyum, S.T. (2012). Effects of working capital management and liquidity: Evidence from the cement industry of Bangladesh. *Journal of Business and Technology (Dhaka), VI*(1), 37-47.

Raheman, A., & Nasr, M. (2007). Working capital management and profitability – Case of Pakistani firms. *International Review of Business Research Papers, 3*(1), 279-300.

Raheman, A., Qayyum, A., & Afza, T. (2011). Sector-wise performance of working capital management measures and profitability using ratio analysis. *Interdisciplinary Journal of Contemporary Research in Business, 3*(8), 285-310.

Richards, V. D., & Laughlin, E. J. (1980). A cash conversion cycle approach to liquidity analysis. *Financial Management, 9*(1), 32-38.

Ruichao, L. (2013). *Impact of working capital management on profitability: The case of Canadian firms*. Canada: Unpublished Master Thesis, Saint Mary's University.

Sagan, J. (1955). Toward a theory of working capital management. *Journal of Finance, 10*, 121-129.

Saghir, A., Hashmi, F, M., & Hussain, M. N. (2011). Working capital management and profitability: Evidence from Pakistan firms. *Interdisciplinary Journal of Contemporary Research in Business, 3*(8), 1092 – 1105.

Salman, A. Y., Folajin, O.O., & Oriowo, A.O. (2014). Working capital management and profitability: A study of selected listed manufacturing companies in Nigerian Stock Exchange. *International Journal of Academic Research in Business and Social Sciences, 4*(8), 287-295).

Setianto, R. H., & Pratiwi, A. (2019). Working capital management in Indonesia: An analysis on overinvestment and underinvestment firms. *Gadjah Mada International Journal of Business, 21*(1), 1-18.

Shah, N.H. (2009). Optimisation of pricing and ordering under the two-stage credit policy for deteriorating items when the end demand is price and credit period sensitive. *International Journal of Business Performance and Supply Chain Modelling, 1*(2/3), 229–239.

Shin, H. H., & Soenen, L. (1998). Efficiency of working capital and corporate profitability. *Financial Practice and Education, 8*(2), 37-45.

Shrivastava, A., Kumar, N., & Kumar, P. (2017). Bayesian analysis of working capital management on corporate profitability: evidence from India. *Journal of Economic Studies, 44*(4), 568-584. https://doi.org/10.1108/JES-11-2015-0207.

Shubita, M.F. (2013). Working capital management and profitability: A case of industrial Jordanian companies. *The Special Issue on Contemporary Research in Business and Social Science, 4*(8).

Theodore Farris, M., & Hutchison, P. D. (2002). Cash-to-cash: The new supply chain management metric. *International journal of physical distribution & logistics management*, *32*(4), 288-298.

Tran, H., Abbott, M.J., & Yap, C.J. (2017). How does working capital management affect the profitability of Vietnamese small and medium sized enterprises? *Journal of Small Business and Enterprise Development, 24*(1), 2-11.

Usama, M. (2012). Working capital management and its affect on firm's profitability and liquidity: In other food sector of (KSE) Karachi Stock Exchange. *Oman Chapter of Arabian Journal of Business and Management Review, 1*(12).

Utia, V., Dewi, N., & Sutisna, S. The impact of working capital management to profitability of manufacturing company listed in Indonesian Stock Exchange. *Hasanuddin Economics and Business Review, 2*(1).

Van Horne, J.C., & Wachowicz, J.M. (2000). Fundamentals of financial management, 11th ed. New Jersy: Prentice Hall Inc.

Vural, G., Sökmen, A.G., & Çetenak, E. H. (2012). Affects of working capital management on firm's performance: Evidence from Turkey. *International Journal of Economics and Financial Issues, 2*(4), 488-495.

Weinraub, H. J., & Visscher, S. (1998). Industry practice relating to aggressive conservative working capital policies. *Journal of Financial and Strategic Decision, 11*(2), 11-18.

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