



# The Impact of Working Capital Management on Firm's Profitability: Evidence from Malaysian Listed Manufacturing Firms

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## ABSTRACT

This study investigates the relationship between working capital management and firm's profitability of Malaysian listed manufacturing firms. It aims to examine the impact of working capital management from the aspects of aggressive working capital policy and efficiency of working capital management. Data is obtained from the annual reports of 122 firms listed in the industrial products sector of Bursa Malaysia Main board for the 6 year period from 2007 to 2012 to determine the relationships between the variables of working capital management and firm's gross operating income (GOI). The results indicate that GOI is negatively related to the degree of aggressiveness of investment policies but positively related with the degree of aggressiveness of financing policies. Moreover, as a comprehensive measure of the efficiency of working capital management, the study finds cash conversion cycle is positively related to GOI. It shows that an increase in inventory conversion period is positively related to firms' profitability. Likewise, firms can increase profitability by reducing the period of collecting account receivables.

**Keywords:** Working Capital Management, Profitability, Manufacturing Firms, Malaysia

**JEL Classifications:** G30, G31, L60

## 1. INTRODUCTION

The importance of working capital management to firm's performance has long been emphasized by scholars. For instance, Smith (1980) recognized the importance of role of good working capital management to ensure a firm's profitability and its future value. Shin and Soenen (1998) indicated that as an integral component of the overall corporate strategy, efficient working capital management also created value for shareholders. Moyer et al. (2005) stated that to increase the future value of firm, efficient management of working capital is able to ensure firm's survival for a longer period of time. However in spite of having equal importance as other financial activities, the management of working capital sometimes is neglected, which according to Sharma (2009) is because the decision making involved in working capital is a routine and frequent activity that is easily reversed.

Past experiences have shown that one of the main reasons for most poor profitable firms is the mismanagement of working capital.

The economic recession caused by the financial crisis in 2008 had brought the attention of efficient working capital management to the forefront. The 2016 PwC Annual Global Working Capital Survey (2016) on the performance of working capital management in 13000 businesses found that the focus on optimizing cash and working capital management by these companies is short-lived after the 2008 financial crisis and slight improvement had been made since then. The survey also noticed that €1.1 trillion that were tied up in working capital could be released if they managed working capital efficiently.

Ernst and Young (2013; 2014; 2015) conducted a study on the performance of working capital in 2600 top companies. Besides the many companies from Europe and the U.S, 600 companies were selected from the Asian region that includes China, Indonesia, Malaysia, Singapore, South Korea, Taiwan and Thailand. Their reports clearly indicated the deteriorating performance of working capital management among Asian companies. This is due mainly to the significant influence of the oil and gas industries as well as

the metal and mining industries, because this type of companies deals with significant share of total sales. In addition, the survey also indicated that in the Malaysian context, the average cash conversion cycle (CCC) increased from 51 to 59 days between 2012 and 2015.

Another survey conducted by PricewaterhouseCoopers (2014) on the performance of the management of working capital involving 1175 large global manufacturing companies. This survey indicated that although the performances of the management are varied, an average improvement of 2.2% in days compared with 2013 was shown. Conversely the survey also noticed a deterioration of working capital management occurring since 2010. Generally, the survey highlighted that if these manufacturing companies could manage their working capital efficiently, there would be an estimated range of €100-162 billion of cash released from it.

In Malaysia, the contribution of the manufacturing sector plays a significant role in its economic growth. Since the collapse of the tin market in the early 1980s, the government of Malaysia was forced to focus on the importance of diversifying the economy of the country. A series of economic transformations had been taken in industrialization to improve the country's economic growth. As the consequence, Malaysia has developed from a country mainly agriculture country to become an increasing industrial nation (Chang, 2012).

Today the manufacturing sector still retains its large and essential position in the development of the Malaysian economy. As the second largest contributor to the economy, the manufacturing sector accounts for 24.7% of GDP and contributes 1.5 out of 5.5 of GDP growth in 2014. Meanwhile, driven by both external and resilient domestic demand, the value-added from manufacturing sector expanded 7.1% during the first half of 2014 (Ministry of Finance Economic Report 2014-2015, 2015). Apart from its contribution to the economy, the manufacturing sector also accounts for a significant 16.5% of total Malaysian workforce (Productivity Report 2014/2015, 2015). Although several studies have been undertaken to study the impact of working capital management on profitability in the Malaysian context, the results still lack empirical evidence.

From the perspective of the importance of the manufacturing sector in Malaysia in general, and the importance of the role of working capital management to profitability of manufacturing in particular, the following research questions will then be raised:

1. Whether working capital management affects the profitability of Malaysian manufacturing firms?
2. If so, what is the relationship between working capital management and profitability of Malaysian manufacturing firms?

To answer these two questions, the objective of this study therefore is to analyze and establish the relationship between working capital management and profitability of Malaysian listed manufacturing firms.

The rest of this paper proceeds as follows: Following the introduction is Section 2 which discusses the related literature

and the corresponding hypotheses. Section 3 describes the data and methods used. Section 4 presents the analysis and findings. Section 5 concludes.

## 2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Van-Horne and Wachowicz (2000) emphasized that the efficient working capital management is imperative, especially for manufacturing firms. Inventory, as a form of current assets forms a large share of the total assets in these firms to ensure continued production purposes. Similarly, account receivables also contribute a large portion to current assets in manufacturing firms, because their sales are often offered by credits. When necessary, an extension in credit period to important and loyal customers is necessary to ensure smooth and continuous sales.

Arunkumar and Ramanan (2013) emphasized the wide recognition of the potential of manufacturing sector to the economy of developing countries. In view of this, several studies have been conducted to investigate the working capital management of and profitability of manufacturing firms in many developing nations. For example, Padachi (2006) studied the impact of working capital management on profitability for small firms in Mauritian. The finding suggested that efficient working capital management is an absolute necessity for the financial manager to improve profitability.

Raheman et al. (2010) studied the important role of working capital management in Pakistan's manufacturing firms. Their results indicated that generally most Pakistani manufacturing firms face problems with their collection and payment policies. They also pointed out that efficient management of working capital was able to increase the profitability of these firms as well as the value creation for shareholders. Another study by Nzioki et al. (2013) pointed out that the profitability of Kenyan manufacturing firms depended largely on effective working capital management.

Furthermore, the study by Singhania et al. (2014) on working capital management of manufacturing firms in Indian context concluded that the profitability of Indian manufacturing firms is affected by the management of working capital. They highlighted a longer time period taken to recover debts from customers hurts profitability, while a longer time period for companies to pay debts benefits profitability.

Working capital policy can be understood from two perspectives: Investment and financing. The investment perspective is the decision that a firm takes based on the overall investment in current assets. The financing perspective refers to how a firm finances its current assets from short-term debt (Sharma, 2009). Therefore all the categories of working capital policy can be understood from these two perspectives.

Aggressive investment policy (AIP) refers to minimizing the holding of current assets in order to generate higher returns by releasing more capital from current assets into higher yielding assets such the interest income that can be earned (Ross et al.,

2012). Also AIP is associated with higher risk because holding lower level of current assets results in inadequate liquidity and higher potential of stock-out (Nazir and Afza, 2009).

From another perspective, aggressive financing policy (AFP) refers to the high proportion of short-term liabilities held by the firm. The benefits is the flexibility of borrowing short-term liabilities, low usage conditions, fewer restrictions, and lower interest rates compared to long-term debt (Sharma, 2009). The implementation of AFP is also associated with higher risk, because a short-term loan must be paid off upon reaching its short period maturity. This increases the probability of default. It is also associated with the fluctuating interest rates (Sharma, 2009). All three policies, aggressive, moderate and flexible policy can be defined from the perspectives shown in Table 1.

In the study by Nazir and Afza (2009), they investigated the impact of aggressive working capital policy on firms' profitability. In order to measure firm's working capital policy, the degrees of aggressiveness of working capital policy from both investment and financing perspectives are implemented. In investment policy, when the management is more aggressive, it causes a lower ratio of current assets to total assets. Conversely, when the management becomes more flexible in investment policy, greater proportion of capital will be invested in current assets which results in the opportunity cost of less profitability.

On the other hand, when management uses AFP, it attempts to utilize more current liabilities rather than long-term liabilities, which result in a higher ratio of current liabilities to total assets. In contrast, a flexible financing policy tends to use more long-term liabilities.

Delving further into their study, they used data collected from 204 Pakistani listed firms during the period of 1998-2005 and found that the return on assets is negatively related to the degree of aggressiveness of working capital investment policy as well as financing policy. In another study, Kaur and Singh (2014) investigated the impact of working capital policy on profitability in Indian context, using data from 164 listed companies during the period of 2000-2010. From their analysis, they found that the degree of aggressiveness of investment is negatively related to return on assets and positively related to risk of variation of sales and profitability. On the other hand, they also found that the degree of aggressiveness of financing policy is positively related to returns on assets as well as variation of profitability. Furthermore they suggested that in order to improve profitability, firms should reduce the investment in current assets.

Accordingly, in order to investigate the relationship between aggressive working capital and profitability of Malaysian listed manufacturing firms, the following hypotheses are proposed:

H<sub>1a</sub> : In the context of working capital management, the degree of aggressiveness of investment policies is positively related to the profitability of Malaysian listed manufacturing firms.

H<sub>1b</sub> : In the context of working capital management, the degree of aggressiveness of financing policies is positively related to the profitability of Malaysian listed manufacturing firms.

### 2.1. Efficiency of Working Capital Management

CCC is a very common measure of the efficiency of working capital management. In the traditional view, a longer CCC will hurt a firm's profitability. One reason is that a longer period of investment in working capital forces a firm to seek external financing which is always associated with higher cost compared with its internal resources. On the other hand, under the cash management objective, a firm needs to minimize working capital to provide sufficient funds and support its daily operations (Sharma, 2009).

Shin and Soenen (1998) studied the impact of working capital management on the U.S. firms' profitability involving a large sample of 58,985 financial years' data during 1975-1994. Under the hypothesis that net trade cycle is negatively related to firm's profitability, their findings support the hypothesis, that is relatively short net trading cycles are more profitable and able to generate higher risk-adjusted stock returns per unit of total stock.

Further study was carried out by Deloof (2003) on the relation between working capital management and the profitability of Belgian firms with a large sample of 1009 Belgian firms for the period of 1992-1996. In his view, a shorter CCC resulted in a higher profit gain. He used CCC as a measure of management of working capital. As for the components of CCC, he found there is a negative relation between account payable and profitability which explains why firms with less profitability prefer to wait longer to pay their bills. Besides he indicated that the negative relation between receivables collection period (RCP) and profitability could be due to the longer time taken by customers to assess the product quality. Moreover as control variables in the study, he also found gross operating income (GOI) is positively related with control variables of firm size measured by the logarithm of sales, sales growth (SG) and fixed financial assets, financial debt is inversely related with it.

In order to examine the effect of working capital management on profitability of Pakistani firms, Raheman and Nasr (2007) selected 94 firms listed on Karachi stock exchange from different sectors during the period of 1999-2004. Using CCC as a comprehensive measure for the efficiency of working capital management, they found firm's profitability is significantly affected by CCC. A longer CCC brought about a lower the lower profitability. Besides they found the significant negative relation between current ratio that current assets divided by current liabilities and firm's profitability. They also found the size of firm is significantly and positively associated with firm's profitability and the debt ratio (DR) is negatively related.

With data collection of 255 listed firms from seven industries during 2007-2009, Napompech (2012) investigated the impact

**Table 1: Profitability and liquidity of different working capital policy**

Working capital policy	Profitability	Liquidity	Risk
Aggressive policy	High	Low	High
Moderate policy	Medium	Medium	Medium
Flexible policy	Low	High	Low

of working capital management on listed firms in Thailand. In his study, CCC together with its components is used as measures for working capital. The results indicated that gross operating profit is negatively related to CCC and some of its components via inventory conversion period (ICP) and RCP. Moreover he also suggested that in order to increase a firm's profitability, managers can shorten the CCC, ICP and RCP rather than lengthen the account payables period. Besides he result also indicated that larger firms that are based on their logarithm of sales are more profitable, as well as the negative impact of DR on GOI.

Gill et al. (2010) attempted to investigate the relationship between working capital management of the U.S. manufacturing companies and their profitability during the period of 2005-2007. In order to examine the success or failure of firm's operation, they used gross operating profit for measuring profitability instead of earnings before interest tax depreciation and amortization. Except for the negative relationship between RCP and firms' profitability, they found no statistically significant relationship between account payable period and profitability as well as no significant relationship between ICP and profitability. However they found a positive relationship between CCC and gross operating profit.

In the study by Lazaridis and Tryfonidis (2006), they examined the impact of working capital management on Greece listed firms. With data collected from 131 listed companies in the Athens stock exchange during the period of 2001-2004. They found that GOI is negative associated with firm's CCC. They also found less profitable firms have longer account payables period as well as a negative relationship between firm's account receivables period and GOI. Furthermore, their findings indicated the negative relationship between ICP and firm's profitability and firm's profitability is positively affected by firm size and with the increase of DR, profitability decreases.

Abuzayed (2012) studied the impact of working capital management on the performance of Jordan listed firms with data collected from 52 firms during the period of 2000-2008. He found there is a positive relationship between CCC and firm's profitability which explains that firms with more profit tend to be less motivated to manage their working capital and the failure of market to panelize such firms with inefficient management of working capital.

## 2.2. Malaysian Context

Ashhari et al. (2009) studied the impact of working capital management on firm's profitability in the context of Malaysia using the financial statements of 148 listed firms during the period of 1996-2006. The evidences provided from the findings gave a strong support for the negative relation between CCC and firm's profitability. Even though the current ratio is positively related to profitability in this study, it is not a significant relation. Further investigation into whether the relationship is affected by the types of industry, they found that except for the industrial product sector, the negative relationship between CCC and its components with profitability exists in all in other sectors.

Using a random selection of 172 Malaysian listed firms between 2003 and 2007, Mohamad and Saad (2010) studied the topic from

the view of the stockholder. Using CCC and current ratio as the measures, the investigation of the relationship between working capital management and the returns on assets, returns on invested capital of firm and market value of firm is studied. They found that CCC is significantly and negatively related to all the measures of profitability, that is it is negatively related to firm's return on assets, return on invested capital and market value. Besides they also found that the current ratio is negatively related to returns on assets and return on invested capital, and these relations are significant.

In order to investigate on whether there is an impact of customers' late payment on Malaysian firms' profit, Paul et al. (2012) selected 287 public-listed manufacturing firms using cross-sectional sample for the 2007 financial year. Under the hypothesis of more days of late payment will hurt profitability, they chose RCP as the measure for late payment. They found that the firm's profitability is significantly related to the firm's efficiency in collecting account receivables. A longer time taken to collect their receivables resulted in a lower profit. Further as control variable, firm size is positively related with firms' profitability.

For a long-term measure of firms' performance, Wasiuzzaman (2015) investigated the relationship between efficiency of working capital on firms' value by considering the influence of financing constraints. Through analyzing a selection of 192 public listed firms during the period of 1999-2008, he found that by reducing the investment in working capital to improve the efficiency working capital, the firms' value improved. Additionally he indicated that the relationship is affected by financial constraints of a firm. In constrained firms, the working capital efficiency significantly increases the firm's value, and *vice versa*.

Considering the purpose of this study is to explore the relationship between working capital management and profitability of Malaysian listed manufacturing firms. Simultaneously based on the results of previous studies in Malaysia context (Ashhari et al., 2009; Mohamad and Saad, 2010; Paul et al., 2012) in which they found as a comprehensive measure of efficiency of working capital, CCC is negatively related to profitability, therefore the second hypothesis of this study is:

H<sub>2</sub>: CCC is negatively related to the profitability of Malaysian listed manufacturing firms.

Apart from CCC, a firm's shorter ICP, RCP and shorter account payables period proves that the firm's cash is released quickly from inventory and account receivables, also trade payables can be paid off as quickly (Napompech, 2012). Hence, working capital management will become more efficient when the components of CCC, ICP, RCP and account payables period are shorten. Therefore, the following sub-hypotheses are proposed:

H<sub>2a</sub>: ICP is negatively related to the profitability of Malaysian listed manufacturing firms.

H<sub>2b</sub>: Account receivables period is negatively related to the profitability of Malaysian listed manufacturing firms.

$H_{2c}$ : Account payables period is negatively related to the profitability of Malaysian listed manufacturing firms.

### 3. DATA AND METHODS

The sample of this study is companies listed in industrial products sector of Bursa Malaysia Main market. In order to calculate the variables used in this study, the data of sales revenue, cost of goods sold, inventory, trade receivables, other receivables, trade payables, other payables, income before taxation, total assets, total liabilities, current assets and current liabilities will be collected from financial statements published by companies on Bursa Malaysia website during the period of 2007-2012. Some companies were excluded from the sample due to the missing financial statements during the period of 2007-2012 and unavailability of data for calculating variables at any year of the study period. The final sample consists of 122 companies listed in the industrial products sector of Bursa Malaysia Main Board. Multiple regression analysis that uses pooled panel data over the 6 years with 732 firm-year observations is then applied in order to investigate the relationship of working capital management and firm's profitability.

#### 3.1. Variables

GOI is used as the measure of profitability. Deloof (2003), Lazaridis and Tryfonidis (2006), Gill et al. (2010) used GOI as proxy for firms' profitability rather than earnings before interest, taxes, depreciation and amortization. Napompech (2012, p. 228) stated that "GOI is more related to study CCC and its components, as well as various measurement of working capital management." Aggressive working capital policy in this study is measured by both AIP and AFP as per Salawu (2007), Nazir and Afza (2009) and Kaur and Singh (2014). To measure the efficiency of working capital management, CCC is used as a comprehensive measure. The periods of inventory collection, account receivables, account payables are then used in order to investigate the management of each component of the CCC.

The concept of economic scales views firm size as a primary concern and is always included in the study of a firm's profitability (Niresh and Velnampy, 2014). Based on previous studies on working capital management and profitability (Deloof, 2003; Raheman and Nasr, 2007; Paul et al., 2012), firm size which is measured by the natural logarithm of sales is implemented as a control variable.

Previous studies used DR, which is measured by the ratio of total debt to total assets as a proxy for leverage. According to the pecking order theory which suggests that due to the cost associated with external financing and the increasing attention from both creditors and shareholders, firm should utilize internal resources for financing before seeking for external resources. Therefore firms with relatively high level of debt are able to operate more efficiently under this theory. Apart from firm size and DR, to be consistent with previous studies, SG is also employed as the control variable. Table 2 shows the variables, their abbreviations and operationalization.

#### 3.2. Model Specifications

The model used in regression analysis is expressed in the general form as given in equation below:

$$GOI_{it} = \beta_0 + \sum_{\text{all}}^n \beta_1 X_{it} + \varepsilon$$

$GOI_{it}$ : Gross operating Income of firm  $i$  at time  $t$ ;  $i=1, 2, \dots, 122$  firms

$\beta_0$ : The intercept of equation

$\beta_1$ : Coefficients of  $X_{it}$  variables

$X_{it}$ : The different independent variables of firm  $i$  at time  $t$

$t$ : Time of firm,  $t=1, 2, \dots, 6$  years

$\varepsilon$ : The error term.

Specifically, in order to test the impact of aggressive working capital policy on firm's profitability, the degree of aggressiveness of investment and financing policies are regressed respectively against GOI as follows:

$$GOI_{it} = \alpha + \beta_1(AIP_{it}) + \beta_2(SIZE_{it}) + \beta_3(SG_{it}) + \beta_4(DR_{it}) + \varepsilon \quad (1)$$

$$GOI_{it} = \alpha + \beta_1(AFP_{it}) + \beta_2(SIZE_{it}) + \beta_3(SG_{it}) + \beta_4(DR_{it}) + \varepsilon \quad (2)$$

In order to test the impact of the efficiency of working capital management on profitability, firstly the CCC is regressed against GOI. Then the components of CCC, (i.e. ICP, RCP and account payables period) are regressed respectively against GOI as follows:

$$GOI_{it} = \beta_0 + \beta_1(CCC_{it}) + \beta_2(SIZE_{it}) + \beta_3(SG_{it}) + \beta_4(DR_{it}) + \varepsilon \quad (3)$$

$$GOI_{it} = \beta_0 + \beta_1(ICP_{it}) + \beta_2(SIZE_{it}) + \beta_3(SG_{it}) + \beta_4(DR_{it}) + \varepsilon \quad (4)$$

$$GOI_{it} = \beta_0 + \beta_1(RCP_{it}) + \beta_2(SIZE_{it}) + \beta_3(SG_{it}) + \beta_4(DR_{it}) + \varepsilon \quad (5)$$

$$GOI_{it} = \beta_0 + \beta_1(APP_{it}) + \beta_2(SIZE_{it}) + \beta_3(SG_{it}) + \beta_4(DR_{it}) + \varepsilon \quad (6)$$

### 4. FINDINGS

Table 3 shows the descriptive statistics based on the data collected from 122 Malaysian manufacturing firms for the period of 2007-2012 with total 732 firm-year observations. The mean value of GOI is 17.25% of total assets and the standard deviation shows volatility of 15.80% with a range between -26.62% and 161.86%. The degree of aggressiveness of investment policies shows the average current assets is 50.65% of total assets. While the degree of aggressiveness of financing policies shows the average current liabilities is 27.54% of total assets.

As a comprehensive measure to check the efficiency of management of working capital, CCC shows an average of 530 days and standard deviation of 488 days. Meanwhile both negative and positive figures ranging from -253 to 9136 days were shown. According to Hutchison et al. (2007), a positive CCC indicates that a firm must borrow or tie up capital while awaiting payment from customers. On the other hand, a negative figure indicates that a firm has received cash from credit sales before making payment to suppliers.

**Table 2: Measurement of variables and abbreviation**

Variable	Definition	Operationalization
Dependent variable		
GOI	Gross operating income	(Sales–cost of goods sold)/Total assets
Independent variables		
AIP	Aggressive investment policy	Total current assets/Total assets
AFP	Aggressive financing policy	Total current liabilities/Total assets
ICP	Inventory conversion period	Average inventory*365/Cost of sales
RCP	Receivables collection period	Average receivables*365/Sales
APP	Accounts payable period	Average payables*365/Cost of sales
CCC	Cash conversion cycle	Inventory conversion period+Receivables collection period–Account payables period
Control variables		
SIZE	Size of firm	The natural logarithm of sales
SG	Sales growth	(Current year sales–Last year sales)/Last year sales
DR	Debt ratio	Total debt/Total assets

Moreover firms take an average of 549 days to sell their inventories with a standard deviation of 610 days. The minimum time taken by a firm is 14 days and the maximum is 9453 days, which is considered to be a very long time period to convert its inventory into sales. Besides, firms waited an average of 92, days, with a volatility of 115 days, to receive payment from customers. The maximum time taken to collect from account receivables is 2531 days and the minimum is less than a day. Furthermore, firms waited an average of 110 days to make payment to suppliers with a standard deviation of 231 days. Among these firms, the longest time recorded was 3944 days and the shortest was 2 days to make their payments.

For control variables, a firm size, which is measured by the natural logarithm of sales, shows a mean value of 17.24, a maximum value of 21.53 and a minimum of 9.77. Moreover DR shows an average of 38.8% of firm's total asset being financed by debts. Meanwhile SG is 15.02% with a range of –96.7% to 15.02%. It also shows showing a high variation of 2474.98% during the study period.

**4.1. Aggressive Working Capital Policy and Profitability**

The regression analysis of the impact of aggressive working capital policy on firm's profitability is investigated from two aspects. Firstly the impact of AIP on profitability is investigated by using model 1 and the results are presented in Table 4.

The F value of 13.126 (P = 0.000) shows that this regression model is significant when the t-test of AIP shows a positive coefficient of 0.137 with a significant level of 1%. This result indicates that there is a negative relationship between the degree of aggressiveness of investment policy and GOI. As the AIP increases, the degree of aggressiveness of investment policies decreases, firms' GOI increases. Therefore based on the result, the hypothesis H<sub>1a</sub> is not supported.

The effect of AFP on profitability is examined by model 2 and the result is shown in Table 5.

The F value of 10.954 (P = 0.000) show this regression model is significant. The t-test of AFP shows a positive coefficient of 0.146 with a significant level of 1%. It indicates that there is a positive relationship between the degree of aggressiveness of financing

**Table 3: Descriptive statistics of variables of the study**

Variable	Minimum	Maximum	Mean±SD
GOI	-26.62	161.86	17.25±15.80
AIP	2.64	92.55	50.65±17.04
AFP	0.95	78.17	27.54±16.11
CCC	-252.95	9135.87	529.86±487.03
ICP	13.59	9452.07	548.21±609.71
RCP	0.34	2530.06	91.09±114.73
APP	1.88	3943.92	109.44±230.04
SIZE	9.77	21.53	17.24±3.02
DR	3.25	52.43	38.82±20.60
SG	-96.70	2474.98	15.02±100.36

SD: Standard deviation

**Table 4: Regression results between aggressive investment policy and profitability**

Regression analysis of profitability and working capital investment policy				
Variables	GOI			
	β	t value	P value	VIF
AIP	0.137	3.958**	0.000	1.095
SIZE	0.698	3.367**	0.000	1.055
DR	-0.076	-2.707**	0.007	1.051
SG	-0.002	-0.296	0.767	1.005
R	0.260			
R <sup>2</sup>	0.067			
F value	13.126**			
P value	0.000			
N	732			

\*Correlation is statistically significant at 5% levels. \*\*Correlation is statistically significant at 1% levels

policy and firms' GOI. With an increase of AFP, the degree of aggressiveness of financing policy increases and yields more GOI. Therefore this result supports H<sub>1b</sub>.

**4.2. Efficiency of Working Capital Management and Profitability**

The relationship between relationship between CCC (i.e. the comprehensive measure of efficiency of management of working capital) and firms' profitability is investigated using model 3 and the result is shown in Table 6.

The F value of 29.595 (P = 0.000) shows that this regression model is significant. The t-test of CCC shows a positive coefficient of 0.010 with a significant level of 1%. It indicates a positive

relationship between firms' CCC and GOI. When there is an increase in CCC, the firm's GOI increases. Therefore based on the result, H<sub>2</sub> is not supported.

The components of CCC, (i.e. ICP, RCP and accounts payable period [APP]) are respectively regressed to study their relationships with GOI. ICP is examined by using model 3 and the result is shown in Table 7.

**Table 5: Regression results between aggressive financing policy and profitability**

Regression analysis of profitability and working capital financing policy				
Variables	GOI			
	β	t value	P value	VIF
AFP	0.146	2.717**	0.007	2.327
SIZE	0.851	4.511**	0.000	1.008
DR	-0.185	-4.366**	0.000	2.345
SG	0.000	-0.67	0.947	1.005
R	0.238			
R <sup>2</sup>	0.052			
F value	10.954**			
P value	0.000			
N	732			

\*Correlation is statistically significant at 5% levels. \*\*Correlation is statistically significant at 1% levels

**Table 6: Regression results between cash conversion cycle and profitability**

Regression analysis of profitability and cash conversion cycle				
Variables	GOI			
	β	t value	P value	VIF
CCC	0.010	8.856**	0.000	1.004
SIZE	0.900	4.994**	0.000	1.009
DR	-0.097	-3.665**	0.000	1.011
SG	0.002	0.324	0.746	1.007
R	0.374			
R <sup>2</sup>	0.140			
F value	29.595**			
P value	0.000			
N	732			

\*Correlation is statistically significant at 5% levels. \*\*Correlation is statistically significant at 1% levels

**Table 7: Regression results between inventory conversion period and profitability**

Regression analysis of profitability and inventory conversion period				
Variables	GOI			
	β	t value	P value	VIF
ICP	0.007	8.331**	0.000	1.007
SIZE	0.837	4.817**	0.000	1.008
DR	-0.101	-3.801**	0.000	1.011
SG	0.003	0.507	0.612	1.011
R	0.360			
R <sup>2</sup>	0.125			
F value	27.143**			
P value	0.000			
N	732			

\*Correlation is statistically significant at 5% levels. \*\*Correlation is statistically significant at 1% levels

The F value of 27.143 (P = 0.000) shows that this regression model is significant. The t-test of ICP shows a positive coefficient of 0.007 with a significant level of 1%. The result indicates a positive relationship between firms' ICP and GOI. Therefore based on this result, H<sub>2a</sub> is not supported.

The relationship between RCP and GOI is investigated by using model 5 and the result is shown in Table 8.

The F value of 11.844 (P = 0.000) shows that this regression model is significant. The t-test of RCP shows a negative coefficient of 0.017 with a significant level of 1%. It indicates a negative relationship between firms' ICP and GOI. Firms that collect debt efficiently from customers will increase profitability. Hence the result supports H<sub>2b</sub>.

Lastly, the relationship between account payables period and GOI is investigated by model 6 and the result is showed in Table 9.

The F value of 9.715 (P = 0.000) shows that this regression model is significant. The result of the t-test of RCP indicates a positive relationship between account payables period and profitability. However this relationship is weak because the result was be not statistically significant.

**Table 8: Regression results between receivables collection period and profitability**

Regression analysis of profitability and receivables collection period				
Variables	GOI			
	β	t value	P value	VIF
RCP	-0.017	-3.283**	0.001	1.060
SIZE	0.778	4.095**	0.000	1.025
DR	-0.090	-3.228**	0.001	1.019
SG	0.002	0.383	0.702	1.033
R	0.247			
R <sup>2</sup>	0.061			
F value	11.844**			
P value	0.000			
N	732			

\*Correlation is statistically significant at 5% levels. \*\*Correlation is statistically significant at 1% levels

**Table 9: Regression results between account payables period and profitability**

Regression analysis of profitability and account payables period				
Variables	GOI			
	β	t value	P value	VIF
APP	0.004	1.632	0.103	1.010
SIZE	0.869	4.558**	0.000	1.009
DR	-0.102	-3.651**	0.000	1.020
SG	-0.001	-0.145	0.885	1.004
R	0.225			
R <sup>2</sup>	0.051			
F value	9.715**			
P value	0.000			
N	732			

\*Correlation is statistically significant at 5% levels. \*\*Correlation is statistically significant at 1% levels

Furthermore, the control variables of firm size measured by the natural logarithm of sales, and DR as proxy for leverage are also regressed in all the models. The results show that the coefficients of firm size are significant and have positive relationship with GOI in all of the models. The results translated to consistency with the previous studies. It means that firms with bigger size are more profitable with respect to the logarithm of sales.

Regarding DR, it is found that DR is negatively related with GOI in all models and the results are all statistically significant at 1% level. This means that increasing debt levels will weaken the firms' profitability by reducing GOI. This result implies that when increasing debt level, as a kind of external financing, the cost related to debt will negatively affect firms' GOI. Overall the findings on firm size and DR is consistent with the studies of Deloof (2003), Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007) and Napompech (2012).

## 5. DISCUSSION

Financial managers need to efficiently manage the level of investments in current assets and current liabilities, it is expected that a well-designed working capital policy can help Malaysian manufacturing firms increase their profitability. The investigation of the relationship between working capital management and firm's profitability begins with the examination of aggressive working capital policy. The findings is in consistent with the study of Kaur and Singh (2014) who agreed that firm's profitability is negatively related with aggressive investment policies and positively related with aggressive financing policies. The results also suggest the relatively low degree of aggressive investment working capital policy by increasing investment in current assets will increase firms' profitability. On the other hand firms that apply relatively high degree of financing working capital policy by increasing investment in current liabilities will increase their GOI.

The relationship is further examined by using the efficiency of working capital management which uses CCC and its components as measures. The findings regarding CCC contradicts with the studies by Shin and Soenen (1998), Deloof (2003), Raheman and Nasr (2007) and Napompech (2012), as well as the studies in Malaysian context such as Ashhari et al. (2009), Mohamad and Saad (2010). While these studies show that CCC is negatively associated with firm's profitability, the study conducted here showed otherwise. The results of this study is consistent with that of Abuzayed (2012) and Gill et al. (2013), in which they used data from listed manufacturing firms as sample, and found CCC is positively related to GOI.

As for the components of CCC, this study finds firm's profitability is positively associated with ICP. The result is consistent with the finding of Abuzayed (2012) who concluded that increase of inventory is related with product demand which is further linked to increasing sales and firm's profitability. The declining profitability is because customers take a longer time to assess product quality (Deloof, 2003). Also found in this study is the negative relationship between GOI and RCP. The results suggest a firm's profitability can be increased by reducing RCP. Finally this study find firms'

profitability is positively related to APP. Even though this result is not statistically significant, it still makes sense from the economic perspective that is, it can be used as a kind of financing resource. A longer a firm waits for the payment to suppliers resulted in a higher level of working capital which can be reserved for increased profitability purposes.

## 6. CONCLUSION

The primary goal of a financial manager is to maximize the profit of a firm. However the increase profit at the cost of liquidity is a serious problem. Therefore achieving an optimal working capital level by trading off between liquidity and profitability is important in a firm's day-to-day operation. A high level of efficiency of managing working capital ensures a firm continuous operation for a longer period of time. As the second largest sector of the Malaysian economy, manufacturing sector plays a significant role in its economic growth. Hence the management of working capital will have a very significant impact on the profitability of Malaysian manufacturing firms.

The study has explored the relationship between working capital management and profitability of Malaysian manufacturing firms from the aspects of aggressive working capital policy and efficiency of working capital management. The investigation is based on the 732 firm-year observations from 122 manufacturing firms listed in industrial sectors on Bursa Malaysia Main Board for the period of 2007-2012. It finds that the degree of aggressiveness of investment policy has a negative relationship with firms' GOI, implying that firm's profitability can be increased by increasing the investment of current assets. On the other hand, the positive relationship between the degree of aggressiveness of financing policy and GOI implies that more profitable firms tend to apply AFP.

Moreover, most previous studies across various industries found CCC to be negatively related to profitability. However this study, by focusing on listed manufacturing firms, found a positive relationship. It implies that firms' profitability can be improved by increasing the CCC. This study also suggests that financial managers can increase firms' profitability by improving the efficiency of collecting account receivables. The resulting positive relationship between account payables period and GOI, although not statistically significant, suggests that extending the account payable period may be regarded as an attractive source of financing. Firms can reserve working capital by delaying the payment to suppliers for the purpose of increased profitability.

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