

## **WORKING CAPITAL MANAGEMENT AND FIRM PROFITABILITY DURING AND AFTER THE ECONOMIC CRISIS AMONG MALAYSIAN LISTED COMPANIES**

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**ABSTRACT:** *The main aim of this paper is to explore the working capital management components and examine their relationship with firm profitability among Malaysia listed companies during and after the global financial crisis of 2008-2009 and 2012-2013. Based on the descriptive results, Malaysian firms practice conservative working capital management techniques due to the fact that current ratio is high and debt ratio is low compared with prior studies. The multiple regression analysis on the 260 listed Bursa Malaysia companies shows a negative relationship between working capital management components (i.e. average collection period and average payment period) and firm profitability during and after the crisis periods. Moreover, cash conversion cycle negatively relates with firm profitability after the crisis. Inventory turnover days indicate a positive and significant relation with firm profitability during the crisis period. These findings suggest that Malaysian firms should try and collect cash from customers faster, pay bills as soon as possible and minimise the gap between initial investment and the time cash is collected from customers during both crisis and non-crisis periods. Nevertheless, management should maintain considerable level of stock to avoid shortage and supply interruption during the crisis.*

**KEYWORDS:** Working Capital Management, Profitability, Malaysia

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### **INTRODUCTION**

The worldwide financial crisis of 2008-2009 that started in the United States brought many negative consequences to the global economy in general. It began as an asset bubble created by many new financial derivatives that, together with other issues, compounded the problems and drove the subprime loan (Krugman, 2009). Malaysian economy felt the global economic crisis in two main broad areas, export and foreign direct investment. Impacts on manufacturing sector exports were the most noticeable during the crisis in the country (Abidin and Rasiah, 2009).

This study is based on the trade-off theory which argued that companies should balance profitability and liquidity to avoid income reduction. Thus, Falope and Ajilore (2009) states, profitability improves due to working capital reduction. Similarly, Asia magazine reported that Malaysian firms overall working capital began to be in problem in 2006 with billions of dollars tied up unnecessarily. This condition was further worsened by an increase in day's working capital by 27.5% (Wasiuzzaman & Arumugam, 2013). The report further stated that the situation did not improve up to year 2007 with Asia pacific region's top companies having up to \$833 billion in unutilized productive working capital. However, the problem started recovering in 2010, and the improvement was more in area of payables compared to receivables and inventories but billions still remained tied up in working capital. Therefore in Malaysia, a need existed to test the ways in which companies manage working capital.

Prior studies in Malaysia focused on working capital management and profitability during non-crisis period with emphasis on traditional liquidity measures such as current ratio, current assets to current liability ratio, and cash to current assets ratio etc. (Mohamad and Saad, 2010; Zariyawati, Taufiq, Annuar, & Shazali, 2010).

Therefore, the main objective of this paper is to explore the working capital management components and examine their relationship with firm profitability among Malaysian listed companies during and after the global financial crisis of 2008-2009 and 2012-2013. Thus, the paper wants to examine if the relationship changes in working capital management and firm profitability during the crisis and after the crisis in Malaysian listed companies. The remaining part of the paper is organised into the following Sections: prior studies and hypothesis development, research method, results and discussion and lastly, conclusion of the study.

## **Prior Studies and Hypothesis Development**

### **Cash conversion cycle and profitability**

Working capital management techniques include aggressive and conservative approaches (Baveld, 2012). Uremadu Egbide and Enyi (2012) posits that working capital management should balance liquidity and profitability of a firm mainly through the use of cash management, inventory management and creditor management techniques. Without proper management of working capital components, the company will find it difficult to run a smooth operation (Mekonnen, 2011). In addition, Brigham and Houston (2011) state that corporate financial managers spent about 60% their time on working capital management.

Zariyawati, Annuar, Taufiq, and Abdulrahim (2009) investigate Malaysian listed companies for the period of 11 years during the period from 1996 to 2006. The study using regression analysis on a 148 sample companies documents a significant negative relationship between the cash conversion cycle and a firm's profitability. Similarly, Ahmadi, Arasi, and Garajafary (2012) find a significant inverse relationship between the cash conversion cycle and net operating income. Using a Tehran listed companies with a sample of 33 firms for the period from 2006 to 2011 in which they used Pearson correlations and regression analysis to analyze the data.

Contrarily, Akinlo and Olufisayo (2011) recorded a positive relationship between cash conversion cycle and firm profitability using general moment method. The study uses 66 Nigerian companies for the period of nine years from 1999 to 2007. Similarly, Baveld (2012) study showed a positive but insignificant relationship during the crisis period of 2008-2009. However, he documented similar negative and significant relationship during the non-financial crisis period from 2004 to 2006 in The Netherlands with a sample of 37 companies covering before the crisis and during the crisis periods. Likewise, Mekonnen (2011) analysed Addis Ababa listed companies and found a significant negative relationship between the cash conversion cycle and gross operating profit representing profitability with a sample of 13 firms for the period from 2005 to 2009.

Hence, based on the above discussion the following hypothesis is proposed:

**H1: There is a negative relationship between the cash conversion cycle and profitability during and after the crisis period.**

### **Average collection period and profitability**

Malik and Iqbal (2012) investigated the relationship between accounts receivables and firm profitability. The result showed a significant adverse relationship of account receivables and net operating income (NOI) proxying profitability on Pakistan listed companies with a sample of 19 firms for the period from 1990 to 2001. These results agreed with Mekonnen's (2011) finding on Addis Ababa listed companies with a sample of 13 firms for the period from 2005 to 2009. Similarly, Dong and Su (2010) reported a substantial negative relationship between accounts receivable and profitability on Vietnam listed companies with a sample of 130 firms for the period from 2006 to 2008, and he used gross operating profit in measuring firm profitability.

However, Baveld (2012) examined the Netherland listed companies for the period from 2008 to 2009 during a financial crisis. The study, using a sample of 37 firms, found a positive relationship between account receivables and firm profitability using return on assets (ROA) and gross operating profit (GOP) as profitability measurements. Similarly, Akinlo and Olufisayo (2011) found a substantial positive relationship between average collection period and firm profitability using the general moment method on a 66 selected Nigerian companies for the period of nine years from 1999 to 2007.

Therefore, based on the above discussion the following hypothesis is proposed:

**H2: There is a negative relationship between average collection period and profitability during and after the crisis period.**

### **Inventory turnover days and profitability**

Raheman Afza, Qayyum and Bodla (2010) conducted research on Pakistan manufacturing companies using net operating profit as a measure of profitability with a sample of 204 companies covering a period of ten years from 1998 to 2007. The results show a significant negative relationship between inventory turnover days and profitability on the selected companies. Moreover, Malik and Iqbal (2012) examined the Pakistan sugar industry and discovered a significant negative relation of inventory turnover days and net operating profit as a measure of profitability. The study uses a sample of 19 firms for the period from 1990 to 2001. Similarly, Ahmadi et al. (2012) discovered similar negative relation on Tehran stock exchange listed companies with a sample of 33 firms for the period from 2006 to 2011.

However, Uremadu et al. (2012) found a contrary result, that of a positive relationship between inventory conversion periods (ICP) and return on assets (ROA) on Nigerian quoted production industry with a sample of 25 companies for the period from 2005 to 2006. Furthermore, Soekhoe's (2012) study of 70 Dutch listed companies documented a similar positive relationship for the period from 2006 to 2010, although the result found an insignificant relationship between inventory turnover days and return on assets (ROA) using a fixed effects model. Similarly, Mathuwa (2010) found a significant positive relationship between inventory conversion period and firm profitability on 30 sample Kenyan companies from 1993 to 2008.

Therefore, based on the above discussion the following hypothesis is proposed:

**H3: There is a negative relationship between inventory turnover days and profitability during and after the crisis period.**

### **Average payment period and profitability**

Soekhoe (2012) examined the Dutch listed firms for the period of five years from 2006-2010 with a sample of 70 companies. The study showed an inverse relationship between the number of day's for accounts payables (NDAP) as a measure of time taken to pay creditors and return on assets (ROA) that represents firm profitability. Ahmadi et al. (2012) studied Tehran listed food companies with a sample of 33 firms for the period from 2006 to 2011 and documented the same result. Similarly, Sabri (2012) examined Amman stock exchange listed companies in Jordan for the period of eight years from 2000 to 2007. The study documented a similar inverse relationship between average payment period and profitability.

However, Mansoori and Muhammad (2012) found significant positive relationship between account payables and return on assets (ROA) as a measure of profitability. The study used a sample of 92 Singaporean listed firms for the period from 2004 to 2011 using similar tools of analysis. Similarly, Uremadu et al. (2012) recorded a positive relationship of day's collection period (DCP) on firm profitability measured through return on assets (ROA) on a sample of twenty-five (25) Nigerian listed companies for the period of two years from 2005 to 2006. Rehn (2012) also reported a significant positive relationship between profitability and account payables days outstanding on a sample of Finnish and Swedish companies.

Therefore, based on the above discussion the following hypothesis is proposed:

**H4: There is a negative relationship between average payment period and profitability during and after the crisis period.**

### **RESEARCH METHOD**

The research uses correlational descriptive research design that aligns with the research purpose, which investigates the relationship of working capital management components with firm profitability among Malaysian listed companies. The study collects data on both the working capital variables and the profitability measures based on the model of the study.

**Table 1: Sample Selection**

<b>SECTOR</b>	<b>POPULATION</b>	<b>SAMPLE</b>
Construction	43	14
Hotels	5	2
Consumer products.	138	46
Industrial production	249	82
Plantations	44	14
Properties	89	29
Technology	33	10
Trading/services	188	63
<b>Total</b>	<b>789</b>	<b>260</b>

The derived 260 sample was further distributed between the eight relevant sectors by dividing each sector population with the total 789 population of the study and multiplied by the 260

selected companies' inline with Krejcie and Morgan (1970). The data is collected from Thompson Reuters Data stream in 2014.

**Regression Models**

The model is derived from the research of Baveld (2012), Mohamad and Saad (2010), and Hayajneh and Yassine (2011). Several studies on working capital management have used four models from which this research is drawn. According to Rehn (2012) analysing working capital management components individually shows a clear relationship between profitability and management style. Furthermore, Baveld (2012) advised researchers to study the individual relationships between working capital management and profitability during crisis periods.

$$\pi_{it} = \beta_0 + \beta_1 ACP_{it} + \beta_2 CR_{it} + \beta_3 DR_{it} + \beta_4 SG_{it} + \varepsilon_{it} \dots \dots \dots \text{Model I}$$

$$\pi_{it} = \beta_0 + \beta_1 ITD_{it} + \beta_2 CR_{it} + \beta_3 DR_{it} + \beta_4 SG_{it} + \varepsilon_{it} \dots \dots \dots \text{Model II}$$

$$\pi_{it} = \beta_0 + \beta_1 APP_{it} + \beta_2 CR_{it} + \beta_3 DR_{it} + \beta_4 SG_{it} + \varepsilon_{it} \dots \dots \dots \text{Model II}$$

$$\pi_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 CR_{it} + \beta_3 DR_{it} + \beta_4 SG_{it} + \varepsilon_{it} \dots \dots \dots \text{Model IV}$$

**RESULTS AND DISCUSSION**

Table 3 and 4 below report the regression results of the independent variables against the two profitability measures of operating profit margin (OPM) and return on assets (ROA) based on the four models specified under the regression models.

**Table 3**  
**Regression results of Working Capital Management Components and profitability**

Variables	Dependent Variable = OPM				Dependent Variable = ROA			
	During Crisis 2008-2009				After Crisis 2012-2013			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
ACP	.000*** {-5.018} [-.197]				.000*** {-4.578} [-.191]			
ITD		.006*** {2.776} [.111]				0.538 {.617} [.027]		
APP			0.168 {-1.382} [-.056]				0.125 {-1.539} [-.067]	
CCC				0.421 {-.805} [-.033]				.023** {-2.272} [-.100]
CR	.016** {2.418} [.114]	.031** {2.165} [.106]	.020** {2.337} [.116]	.004*** {2.882} [.142]	.000*** {5.008} [.257]	.000*** {4.464} [.236]	.000*** {4.155} [.222]	.000*** {5.060} [.272]

<b>DR</b>	.000*** {-3.592} [-.169]	.001*** {-3.439} [-.165]	.001*** {-3.406} [-.166]	.002*** {-3.140} [-.152]	0.868 {.166} [.009]	[.982] {-.023} [-.001]	0.904 {-.121} [-.006]	0.775 {.286} [.015]
<b>SG</b>	.000*** {8.144} [.320]	.000*** {9.090} [.357]	.000*** {8.864} [.352]	.000*** {8.859} [.353]	.005*** {2.835} [.118]	.005*** {2.802} [.119]	.006*** {2.785} [.118]	.006*** {2.753} [.117]
<b>Anova</b>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>
<b>Adj</b>	22.8%	20.3%	19.4%	19.2%	9.9%	6.3%	6.6%	7.1%

Note: \* significant at the 0.10 level; \*\* significant at the 0.05 level; and \*\*\* significant at the 0.01 level.

**Table 4**  
**Regression results of Working Capital Management Components and Profitability**  
**Dependent Variable = ROA**

Variables	During Crisis 2008-2009				After Crisis 2012-2013			
	Model 1	Model 2	Model 3	Model 4	Model 1	Model 2	Model 3	Model 4
<b>ACP</b>	.002*** {-3.049} [-.117]				.000*** {-4.632} [-.189]			
<b>ITD</b>		0.800 {.254} [.010]				0.249 {-1.153} [-.048]		
<b>APP</b>			.016** {-2.425} [-.095]				.015** {-2.444}	
<b>CCC</b>				0.334 {-.967} [-.038]			[-.104]	.001*** {-3.256} [-.138]
<b>CR</b>	.019*** {2.359} [.109]	.013** {2.488} [.118]	.057* {1.909} [.091]	.006*** {2.742} [.130]	.000*** {4.525} [.226]	.000*** {4.262} [.219]	.001*** {3.496} [.182]	.000*** {4.865} [.254]
<b>DR</b>	.000*** {-6.001} [-.276]	.000*** {-5.779} [-.269]	.000*** {-6.129} [-.286]	.000*** {-5.679} [-.264]	.075* {-1.787} [-.089]	.071* {-1.808} [-.092]	.034* {-2.124} [-.108]	0.128 {-1.523} [-.077]
<b>SG</b>	.000*** {8.650} [.332]	.000*** {9.280} [.354]	.000*** {9.097} [.346]	.000*** {9.127} [.350]	.000*** {5.000} [.203]	.000*** {4.877} [.202]	.000*** {4.922} [.203]	.000*** {4.890} [.201]
<b>Anova</b>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>	.000 <sup>a</sup>
<b>Adj</b>	26.4%	25.1%	26%	25.3%	14.3%	11%	11.8%	12.6%

Note: \* significant at the 0.10 level; \*\* significant at the 0.05 level, and \*\*\* significant at the 0.01 level.

Model 1 had an adjusted R-square of 22.8% and 9.9% in Table 3 above while 26.4% and 14.3% in Table 4 above, which represent during and after the crisis periods respectively. This pattern of lower adjusted R-squared after the crisis compared to the crisis period is similar in models 2, 3 and 4. This suggests that working capital management variables had a stronger

relationship with profitability during crisis than after the crisis period. Hence, working capital management explains changes in firm profitability the most during the crisis period. Therefore, managing working capital was more important during the crisis than after the crisis period for the relationship with profitability. The models in both periods of study are capable of explaining changes in the dependent variable based on the significant Anova p-value of 1% throughout. Therefore, the models can explain part of the changes in the examined variables while keeping other variables constant.

In addition, Model 1 during the global crisis of 2008-2009, showed a significant inverse relationship between the account receivables collection period and both profitability measures of OPM and ROA at 1% level in Table 3 and 4 above. This result aligned with trade-off theory that predicts a negative relationship between components of working capital management and firm profitability to which average collection period. Even though, the finding is contrary to Baveld's (2012) results on long-term profit relationships in the Netherlands listed companies. Thus, based on this finding, Malaysian firms did not change their account receivables collection system even during the crisis period of 2008-2009. The reason why Malaysian listed companies did not change the collection policy can be attributed to the fact that Malaysian government had pumped many funds into the economy in form of loans with the motive of insulating the economy from the effects of the crisis (Abidin & Rasiah, 2009). They further stated that Malaysian banks were not affected enormously by the crisis because Bank Negara introduced many policies previously learned from the Asian crisis. Finally, this finding did not support hypothesis 3, which expected a positive relationship between profitability and the account receivables collection period during the crisis.

Moreover, model 1 after the crisis shows a significant inverse relationship between the average collection period (ACP) and operating profit margin (OPM) at the 1% level in Table 3 above whereas in Table 4 above the model reveals a negative relationship between the average collection period and return on assets (ROA) (the second profitability measure), and significant at 1% level. Thus, the less time a business takes to collect payment from customers the higher the benefits. This finding aligns with the Fisher separation theorem and trade-off theory of working capital management. Malik and Iqba (2012) found the same results for Pakistan companies using net operating profit.

The standardized beta value of [-.191] and [-.189] is recorded for ACP relationship with profitability measures of OPM and ROA in Table 3 and Table 4 respectively. On a final note, hypothesis 2 is supported and fails to be rejected based on the sufficient t-value of {-4.578} in Table 3 and {-4.632} in Table 4.

Model 2 reported the result of inventory turnover days relationship with operating profit margin (OPM) during crisis in Table 3 above and is direct and significant at 1% level while it is insignificant on return on assets (ROA), the second profitability measure although positive in Table 4. This positive finding is aligned with the Fisher separation theory that says an optimal investment policy normally is based on the achievement or maximisation of the present value of the firm. It is independent of the decision-maker's preferences and financing decisions and choices. Hence, working capital management policy should be flexible and solely centred on earning preferences.

Nevertheless, Baveld (2012) reported a significant inverse relationship between inventory turnover days and profitability in Netherlands during the global crisis of 2008 to 2009. This disagreement might be explained due to the fact that the crisis impacted these countries

differently. According to Abidin and Rasiah (2009), the Malaysian government introduced various policies that helped companies and banks during this crisis period.

Hypothesis 4 was not supported during the crisis period based on the t-value of (2.776) in Table 3 above and the standardized beta value in the table is [.111]. Mathuwa (2009) posited that firms tend to have high inventory in their operating cycle to reduce supply chain bottlenecks and reduce customer disappointment.

Furthermore, Model 2 reports an insignificant relationship between inventory turnover days and both two profitability measures of operating profit margin (OPM) and returns on assets (ROA) during the non-crisis period (after the crisis). Thus, inventory turnover days have no implication on profitability level. Similarly, Ching, Novazzi and Gerab, (2011) documented an insignificant relationship between inventory turnover days and return on equity on Brazilian listed firms.

In Model 3 during the crisis period, the average pay period is significantly and inversely related with return on assets (ROA) at the 5% level but the result of the profitability measure of operating profit margin (OPM) was insignificant although negative. This result is in conformity with trade-off theory that argued an inverse relationship between creditors pay period and firm profitability. Similarly, Baveld (2012) study on Netherlands listed companies during the global crisis of 2008-2009 documented negative relationship between average collection period and firm profitability.

The Beta value of average pay period was [-0.095] lower than that of non-crisis period. The t-value of {-2.425} sufficiently supports hypothesis 5.

After the crisis Model 3 showed a significant inverse relationship between average pay period and the second measure of profitability (ROA) at the 5% level in Table 4 above during non-crisis period. While, the first measure of profitability (OPM) revealed an insignificant negative relation. This finding indicates that any delay in paying creditors would lead to a reduction in firm profitability. Thus, standardized beta value of [-0.104] in Table 4 above means that a return on assets of 6% for example would be reduced to 5.896% if the average payment period increased by one day.

Based on Model 4, the result during the crisis shows an insignificant relationship between cash conversion cycle and both measures of firm profitability although negative. Similarly, Baveld (2012) reported the same result during the crisis on the selected Netherlands companies. Baveld further asserted that studying individual working capital management variables is more efficient during a crisis rather than the combined effect. Therefore, this study supports the assertion.

In addition, cash conversion cycle had a significant inverse relationship with firms' profitability during the non-crisis period of 2012-2013 (after the crisis) on both measures of profitability (OPM and ROA) at the 5% and the 1% level respectively. This negative finding aligns with both theories of Fisher separation arguing about optimal investment decision should solely on profit determination and the trade-off theory that claims on negative relation between components of working capital management and firm profitability.

The standardized beta value of [-0.138] in Table 4 above is higher than recorded in Table 3 above ([-0.100]). Moreover, the t-value of {-3.256} supports hypothesis 1.



### **Implication of the paper**

This paper examines working capital management relationship to firm profitability during both the crisis and after the crisis periods. Very few studies have examined the relationship between working capital management and profitability in Malaysia, and none to the best of our knowledge have studied the relationship during and after the crisis period. Because of this the study has expand literature on working capital management and firm profitability during the crisis and after the crisis periods.

The paper supports further the trade-off theory based on the findings that firms have efficient and effective collection and payment policies could enhance profitability due to the fact that cash could be available for reinvestment to earn more profit. The paper proves evidence that, shortening the gap between initial purchases of raw materials down to the collection of sales proceeds could improve firm profitability, based on the significant inverse relationship between cash conversion cycle and firm profitability.

Practically this paper proves that to improve credit policy, management should collect cash from customers faster during both crisis and non-crisis period based on the significant negative relationship between collection period and profitability. Moreover, firms in Malaysia could use techniques such as factoring and credit insurance for faster cash collection and minimize the risk brought by uncertain customers. The earlier collection of money from customers helps management to have enough cash for contractual obligations and daily operation requirements, which in turn enhance profitability

### **CONCLUSION**

The study aims at examining the relationship between working capital management components and firm profitability during and after the crisis periods among Malaysian listed companies. To fulfil the above objective, the study used a sample of 260 quoted Malaysian companies for the two periods from 2008 to 2009 and from 2012 to 2013. The data was collected from the Thompson Reuters Data stream and analysed using SPSS to compute OLS regression.

Average collection period, one of the working capital management components, showed a sufficient inverse relationship with the two employed measures of profitability during both periods of study. However, during the crisis the relationship between inventory turnover days and the profitability measure of operating profit margin (OPM) was positive and significant.

Average payment period had a negative relationship with the profitability measure of return on assets (ROA) during both crisis and after crisis periods while the other profitability measure showed no significant relationship with average payment period. Similarly, the cash conversion cycle showed an inverse relationship with profitability measures of return on assets and operating profit margin during the after crisis period.

Future research should be undertaken to compare the crisis period with pre-crisis period in order to see whether they might be different.

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