WORKING CAPITAL MANAGEMENT AND EXTENT OF INFLUENCE ON PUBLIC LISTED FIRMS' PERFORMANCE IN INDUSTRIAL PRODUCT INDUSTRY

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ABSTRACT

Due to the turbulent global environment, an effective working capital management has accentuated ever since the manifestation of global financial crisis wherein the eventuality of the unforeseen plight is immensely affecting both firms' profitability and liquidity risk. The purpose of this study is to examine the influence of working capital management on firm performance, likewise furnishing insight on the pertinence of the theories that are applicable to exemplify the management of short-term resources in a firm. This study adopts dynamic panel data methodology, one-step system generalised method of moments (GMM) to capture for the endogeneity issues arising from the unobserved time-invariant firm-specific elements as well enhance the data efficiency. Adopting a sample of 156 Malaysian public companies listed on bursa Malaysia in industrial products economy sector with the time period of 10 years (i.e. from 2007 through 2016), the researcher discovers evidence as follows: the coefficient results implying significant negative linkage between working capital proxy (i.e. ccc) and firm performance indicators. The firm size has been signified as a remarkable control variable that might affect firm profitability as well as firm market valuation due to the competitive edges that could gain through economies of scales. The novelty verdict endeavours to accommodate intuitions for finance managers as well prospective investors in envisaging the momentous of working capital management in trading-off liquidity and returns, particularly in the region of emerging countries such as Malaysia.

1.0 Introduction

Working capital management (hereafter calls as WCM) prevails upon the efficiency in managing short-term resources wherein possession of dual objectives, i.e. profitability and liquidity. Forasmuch as the pair of objectives is now and then being appraised to have trade-off appositeness, by way of explanation if a firm decides to utilise its surplus cash to invest in forms of investments would ensue in increasing returns when set against maintaining its surplus cash at an idle level. On the other hands, the firm may possibly encounter the liquidity problem on the occasion that some contingencies happen such as fire the firm's warehouse, the major customer is unable to pay off debts and etc., in which may presume the firms to suffer insolvency predicament. Furthermore, WCM has emerged as one of the most crucial affairs in any firms wherein Lamberson (1995) points out that financial managers had revealed that the complexity in identifying the ultimate dominant determinant that influences the aptitude of firms to maintain the optimum level of working capital. What's more, past empirical evidence has affirmed working capital management as one of the most prominent yet least apprehend drivers of corporate performance (Losbichler & Mahmoodi, 2012). Despite the fact, there is still a minimal level of knowledge up till now, in order to determine the optimal level of liquidity (Brealey, Myers & Allen, 2011).

As reported by PWC in their 2018 study which deals with more than 400 listed companies, there is a slight leap of improvement among Malaysian firms in shortening the length of cash conversion cycle (i.e. from 55 days in 2017 to 54 in 2018). In short, the firms consume 51 days to convert their raw materials or work-in-progress inventories into a ready sales product, and followed by another 55 days to collect outstanding receivables from their customers, and use 55 days to pay off the debts owed to their suppliers. Despite the fact, there is still RM133 billion remains idle which means that the firms put aside the surplus cash in their book merely for the purpose of working capital requirements, though it would generate nothing

at the end. As an illustration, the cash conversion cycle for the consumer products sector has been deteriorated by 4 days in the year 2018 as corresponding to previous year whereby the firms situated in this industry have held their inventories three days longer, side by side the unrealised, idle cash has been up to RM10,000,000,000 been tied up in their book accounts which may due to the inefficiency in payables management.

In other respects, diverging from the underpinning of prominent theories that are much more relevant in long-term corporate financial decision-making for instance, distribution of dividends, capital budgeting, capital structure and corporate valuation, working capital management (Almeida & Eid Jr, 2014). In like manner, Palombini and Nakamura (2011) have accentuated on the measly enlightenment on the premises that are applied to explain the consanguinity between working capital management and firm performance (Zariyawati, Annuar, Taufiq & Abdul Rahim, 2009). On top of this, the efforts and time spent in managing the effectiveness of short-term resources has long been losing sight of among finance managers and treasurers, after all lacking apposite commitment from chief financial officers largely in multinational conglomerates (PWC, 2017). This point of dispute may due to the WCM's attribute of daily and redundancy routine, which to certain degree even if any occurrence of erroneous behaviour is oftentimes taken lightly and merely regarded as one of the restorable matters (Singh & Kumar, 2014). Despite of this, previous study revealing that working capital management has been identified as one of the most prominent yet least comprehended antecedents for firm performance (Losbichler & Mahmoodi, 2012) irrespective of the firms' size, economic sector, industry, and the development of country (Bhatia & Srivastava, 2016). Abundant of empirical groundwork has been attested on the effectiveness of working capital management, unveiling that it's compelling to the succession of firms explicitly in the relentlessly turbulent and complex business environment (Raheman, Qayyum & Afza, 2011; Padachi & Howorth, 2014).

As one of the emerging nations, Malaysia is still relying on the industrial production outputs wherein composition of three major sectors i.e. mining, manufacturing and electricity. Amid the three sub-sector, manufacturing sector contributes a sizeable weight in Malaysia gross domestic production (GDP) stake which is 23.0% in year 2017 with the value of gross output or RM1,275.8 billion (Department of Statistics Malaysia, 2019). Unequivocally, the manufacturing industry contributes substantially in spurring job creation as well as be a catalyst for foreign direct investments, coupled with the forecast of increment of RM138 billion contribution from the manufacturing sector to the national economy. In conjunction with the positions of 17th out of 40 nations for the Global Manufacturing Competitiveness Index 2016 as well as 37th among 127 worldwide countries the Global Innovation Index 2017, Malaysia indeed gaining the competitive edge as persisting over its versatility.

In spite of the facts the manufacturing industry is in the proliferation stage, three junctures that may impair its progression including of the shifting of plantations to low labour cost producing countries such as Vietnam, technological disruption with higher cost of investment in automation, and inadequate of high skilled labour which merely consist of 18% of total employment coupled with the minimal enhance of labour productivity (3 – 4%). Nonetheless, the opportunities come along with the emergent of business opportunities due to the relocation of factories from China due to the intensifying trade war between China and the U.S. as well as government stimulus policies in encouraging the firms to be embracing in fourth Industrial revolution for pursuant of boosting productivity and less reliant on human labour (Ministry of International Trade and Industry, 2018).

A well–grounded adoption of working capital policy is importunate for each and every organisation, in particular in emerging economic entities. The effect of working capital management is extensively affected by nature of industry. For instance, the level of working capital requirements for manufacturing sector is much higher as comparing to services industry in view of the practical norms of manufacturers to hold more inventories for production purpose as well as granting more credit to their customers with lengthier credit terms. In such state of affairs, the firms are need additional cash to run business daily operations (e.g. payment to suppliers) or else they may grapple with the difficulties in securing cash to pay off debts, at this point they may face complications such as liquidation, financial distress and even insolvency in the end (Al-Mawsheki, Ahmad & Nordin, 2019). Henceforth, the efficiency of working capital management is crucial particularly for manufacturers to counterbalance the trading-off of dual essential goals which are profitability and liquidity risk. Therefore, this study proposes to investigate the influence of working capital management on corporate performance specifically in industrial product industry albeit supplementing the scant contemporaneous literature.

2.0 Literature Reviews

Effective management of short-term resources is pivotal for a business to remain competitiveness, specifically for manufacturing firm whereabouts the greatest amount of the current assets comprises of inventories with regard to prevent the disruption of production processes (Van-Horne & Wachowisc, 2000). Numerous of former researchers has been piloted in other regions which ratifies the momentousness repercussion of WCM on firms' performance (Nzioki, 2013; Onodje, 2014; Padachi, 2006; Raheman et al., 2010; Ukaegbu, 2014). The aim of WCM is to warren that a firm is commensurate in fulfilling its financial commitments for instance disbursement to suppliers and other creditor e.g. financial institutions immediately upon the maturity date (Ukaegbu, 2014). As evidenced by previous empirical investigations, a vigorous formulation of

working capital policy by the finance manager is crucial for a firm to effectively manage their cash conversion cycle components (i.e. accounts receivable, inventories and accounts payable), and the implementation of policies is varied across different industries (Nazir & Afza, 2009; Filbeck & Krueger, 2005). Numerous of determinants has been ascertained as variables that would influence the working capital requirement of a firm (Ross, Westerfield & Jordan, 2010) which comprise of the extent of business that is conditional to seasonal fluctuation, the length of firm's operating cycle, the nature and size of the firm, the amount of working capital required to do maintenance on non-current assets, the degree of rigorousness of trade credit policy, the magnitude of prospective growth and expansion, the dividend policy and the stability of macroeconomic indicators such as rate of borrowing.

A firm working capital policy is intrinsically scrutinised from two perspectives which are investment and financing in three approaches towards risk undertaking i.e. aggressive, moderate and conservative. Aggressive investment policy implies the practices of curtailing the holding of current assets, thereafter releasing the surplus resources into high-yield investments. Howbeit, this sort of approach is allied with higher liquidity risk at which point the firm might have problem to settle debts on schedule as well as failure to retain customers due to greater likelihood of having stock-outs and imposing stringent trade credit policy by requesting the customers to pay earlier (Nazir & Afza, 2009).

Table 1. *Profitability and Liquidity of Working Capital Approaches*

Working Capital Approach	Returns	Liquidity	Risk
Aggressive	High	Low	High
Moderate	Medium	Medium	Medium
Conservative	Low	High	Low

Source: Ng, et al., (2017)

A disputable point of view on the empirical investigation as regards the length of cash conversion cycle which the conventional view point that typically demonstrating the shorter the CCC, the better the firm performance. In spite of majority of the results validating the shorter length of CCC are inclined to enhance firm profitability, yet Shin and Soenen (1998) counterclaims firms with comparative liberal trade credit policy is more likely to generate higher level of sales revenue, and consequently the level of profitability. Meanwhile, the positive interrelation between cash conversion cycle and firm performance is confirmed by Nobanee, Abdullatif & AlHajjar (2011) and Onodje (2014). The justification provided by such prior outcome exemplifying that level of economic development such as level of gross income per capita is influential in fostering the adoption of optimal working capital strategy in specific industries (Onodje, 2014).

The effective integration between cash conversion cycle components indubitably an injudicious decision that might affect firm profitability (Sartosis & Hill, 1983), for instance ordering too many raw materials inventories may imperil the performance of other two components of CCC (i.e. receivables and payables) as while compelling to clear the stock, the firm may culminate in loosening its trade credit policy whereas the deferred debt collection from customers will prolong the disbursement to the suppliers. Moreover, the firm has to bear with other negative incidents that might result in deterioration of firm profitability such as escalating holding cost, risk of spoiled and unused inventories, accelerating the occurrence of irrecoverable debts, impairing the rapport with suppliers. Table 2 summarises prior studies conducted as regards the influence of working capital management towards firm performance specifically in industrial products industry.

Table 2. *Summary of Previous Investigations about Influence of WCM towards Manufacturing Firms*

Author (year)	Panel Units	Time	Dependent Variables	Independent Variables	Control Variables	Findings
Ukaegbu (2014) / Multiple Regression Analysis	102 manufacturing firms in 4 countries (i.e. Egypt, Kenya, Nigeria & South Africa)	2005 - 2009	Gross Operating Profit (GOP)	CCC; DSO; DIO; DPO	Firm Size; Board Size; GDP	CCC: -ve, sig; DSO: -ve, sig; DIO: -ve, sig; DPO: -ve, sig (except for Egypt); GDP: +ve, sig at 10%; Firm Size: +ve, sig; Board Size: -ve, sig.
Onodje (2014)	75 Nigerian manufacturing PLCs	2002 - 2011	Operating income to sales & one period lag	CCC; DSO; DIO; DPO; quick ratio; Debt equity ratio; Sales growth rate	Nil	CCC: -ve, sig; DSO: +ve, sig; DIO: +ve, sig; DPO: -ve, sig; Sales growth: not sig; Debt equity ratio: -ve, sig.

Wasiuzzaman (2015)	160 manufacturing PLCs in Malaysia	2005 - 2010	ROA	Net working capital	Sales Growth; Firm Size; Leverage; ln(GDP)	DIO: -ve, not sig; DSO -ve; sig; DPO: -ve, sig; NWC: -ve, not sig; Sales Growth +ve, sig; Firm Size +ve, sig; Leverage -ve; sig; ln(GDP): +ve, sig.
Jakpar et al., (2017)	164 Malaysian manufacturing PLCs	2007 - 2011	ROA	ln CCC; ln DSO; ln DIO	Leverage; Firm Size	ln CCC: not sig; ln DSO: +ve sig; ln DIO: +ve sig; Leverage: -ve, sig; Firm size: +ve, sig.
Kasozi (2017)	69 Manufacturing Firms listed in Johannesburg Securities Exchange	2007 - 2016	ROA	CCC, DSO, DIO, DPO,	Firm Size, Sales Growth, Leverage,	CCC: +ve, not sig; DSO: -ve, sig; DIO: +ve, sig; DPO: -ve, sig; firm size: +ve, not sig; sales growth: +ve, sig; Leverage: -ve, sig.
Ng, Ye, Ong & Teh (2017)	122 Malaysian industrial products PLCs	2007 - 2012	Gross Operating Income	CCC; DSO; DIO; DPO; Current assets ratio (CAR); Current liabilities ratio (CLR).	Firm Size; Sales Growth; Leverage	CCC: +ve, sig; DSO: -ve, sig; DIO: +ve, sig; DPO: not sig; CAR: -ve, sig; CLR: +ve, sig;

Source: Author (2020)

3.0 Variables Definition and Development of Hypothesis

3.1 Proxy for Firm Performance: Return on Assets (ROA) & Tobin's Q

This study constructs both accounting- and market-based firm performance indicators which are return on assets (ROA), return on equity (ROE) and Tobin's Q. ROA is signified by profits before interest and tax divided by total assets, meanwhile ROE is defined as net profits for the year divided with total equities. As both of these estimators are used to measure financial performance of a firm, they are crucial for quantifying financial health position as well as financial risk management. In contempt of the disputation arisen by previous studies stating on the feasibility of ROA as an appropriate estimator which by virtue of the deliberation sets forth of considerable high proportion of total assets among firms that might comprise of financial assets, howbeit numerous of prevailing studies has still adopted ROA as their firm performance measurement (Nazir & Afza, 2009; Zariyawati, et al., 2009; Banos-Caballero, Garcia-Teruel & Martinez-Solano, 2014; Wasiuzzaman, 2015; Jakpar, et al., 2017; Kasozi, 2017). Another book-value-based firm performance indicator, ROE is commonly use to interpose the rate of returns realised by the business owners subsequent the subtraction of all operational expenses, interest costs, and tax payables. The past studies that adopt ROE as one of their dependent variables are Afrifa and Padachi (2016); Ahmadpour, Zare & Rostami (2012); Hassan, Imran, Amjab & Hussain (2014); and Majeed, Makki, Saleem & Aziz (2013).

Meanwhile, Tobin's Q is defined as market capitalisation of total ordinary shares outstanding plus total debts and divided by total assets. The conspicuousness of Tobin's Q has been taken into accounts by prior researchers, on the ground of its propensity to mitigate the demerit of accounting profit ratios which merely focusing on historical achievements (Banos-Caballero et al., 2014). Whereas Tobin's Q places weightier on future orientation as one of the gauged elements, market capitalisation portrays the confidence level of investors towards firm's capability in dealing with matters such as financial constraints, strategic alliances as well as the stability of international capital market (Demsetz & Villalonga, 2001).

3.2 Proxy for Working Capital Management: Cash Conversion Cycle

The proxy of working capital management adopted in this study is cash conversion cycle (CCC). CCC has been extensively used in assessing the short-term operational efficiencies as well as liquidity position of a firm (Jose, Lancaster & Steven, 1996). The definition of the regressors are as follows: (i) days of inventory outstanding (DIO), calculated as average inventories divided by cost of sales, then multiply 365 days; (ii) day of accounts receivable outstanding (DSO), calculated as accounts receivables divided by sales, then multiply 365 days; (iii) days of accounts payable outstanding (DPO), calculated as accounts payable divided with purchases, then multiply 365 days; (iv) cash conversion cycle is computed as CCC equal to DIO plus DSO then subtracting DPO. The following is the first hypothesis.

Hypothesis 1: *Working capital management has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.*

3.3 Control Variables

3.3.1 Firm Size (SIZE)

Prior empirical studies have validated the positive effect of firm size on firm's performance, depends on the rationales of large firms are inclined to hold lower level of cash holdings, specifically the firms with good credit ratings which securing the financing from the financial markets. Moreover, larger firms are likely to experience better growth opportunities, and later leading to superior firm performance. Hitherto, empirical evidences denote that firms with the mounted growth opportunities are probable undergoing greater extent of fluctuations of cash flows, inducing the need to hold a greater amount of cash (Opler, Pinkowitz, Stulz & Williamson, 1999). Over-and-above, higher growth rate of expansion is typically linked with improved firm performance (Aktas, Croci & Petmezas, 2015). The expected outcome is positive interrelation with firm performance due to large firms with higher credit rating are generally easier to obtain capital hence they would be more generous in granting credit to their business customers. As per aforementioned points, the following is the second hypothesis.

Hypothesis 2: *Firm size has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.*

3.3.2 Financial Leverage (LVRG)

Financial leverage is signified as total debts divided by total shareholders' equities. Incessantly, the ideal mixture of debt-equity source of capital has caught the limelight of the scholars as well as practitioners (Lazaridis & Tryfonidis, 2006). As illustrated by one of the ultimate theories that is used to exemplify working capital financing, pecking order theory (POT), a firm which is shortage of funding would opt for internal source of capital (i.e. retained profits) before proceeding with the issuance of external supply of financing (i.e. long-term debts and equity). Excessive utilisation of debts implying lower amount of free cash flow available for operational use, as a result the firm might suffer with high business risk. Accordingly, prior findings demonstrate negative relationship between leverage ratio and firm performance. Alternatively, a group of researchers claims that via mounting level of debts may well lead to augmented business growth occasion. The higher level of gearing would induce greater monitoring from external creditors, ensuring that an optimum working capital policy being adopted in order to increase firm's profitability. Thence, the finance manager has committed in shortening the duration of cash conversion cycle (CCC) as the cost of debt is generally higher as compared with the utilisation of internal capital (Banos-Caballero et al., 2014). As per above-mentioned discussion, the following is the third hypothesis.

Hypothesis 3: *Financial leverage has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.*

3.3.3 Annual Sale Growth Rate (GROWTH)

Sales growth is denoted as the increment or reduction of sales revenue wherein the formula is sales for current year minus sales for previous year and divided by sales for previous year. Sales growth has been identified as one of the cogent variables to be controlled due to the reasoning that sales could generate income as well as being one of the essential supplies of financial resources (Singhania & Metha, 2017). Furthermore, a firm with higher sales growth is often linked with greater cash requirements used to fund their operational needs. In other word, it would elongate the cash conversion cycle considering a higher storage of inventories and elevated amount of receivables eventuating succeeding higher transaction volume. Thence, the prior results indicating a positive association between sales growth and firm performance (Abuzayed, 2012; Wasiuzzaman, 2015; Kasozi, 2017). In accordance with the above discussion, the following is the fourth hypothesis.

Hypothesis 4: *Annual sales growth has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.*

3.3.4 Current Assets Ratio (CATA)

The contentious point of observation on the disparity management of asset-liability albeit might resultant in growth of turnover margin, however inducing the escalating risk of insolvency at the expense of shareholders' wealth (Padachi, 2006). As a proxy of working capital investment, current assets ratio signifies by amount of current assets divided by total assets. Unorthodoxly, other scholars explicate the aforesaid ratio implying the risk appetite of top management towards short-term investments (Nazir & Afza, 2009; Sharma & Kumar, 2011), yet there is lacking of consensus on the optimal composition of current assets as divergent regions and economic sector likely to affect the working capital requirements (Kasozi, 2017).

Hypothesis 5: *Current assets ratio has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.*

3.3.5   Current Liabilities Ratio (CLTA)

Current liabilities ratio (CLTA) denotes as current liabilities divided by total liabilities. CLTA is applied to scrutinising the financing policy of short-term obligations. CLR is used to measure the degree of aggressiveness in term of financing approach which prevails upon the firm is recurrently utilising the short-term source of capital to fund their investments in current assets. The prevalence of this strategy permits firms to have more flexibility when comes to utilisation of funding facilities, which predisposes to be subjected with less restrictions and lower financing cost. Nonetheless, the drawback of this sort of strategy implicates the heightening of default risk due to the shorter maturity of obligations which might constrain the firms' ability to do settlement explicitly there is any deviation of unexpected cash flows during the hiking of interest rates (Sharma, 2009; Weinraub & Visscher, 1998; Walker, 1964). Based on the aforementioned elucidation, the following is the sixth hypothesis.

Hypothesis 6: *Current liabilities ratio has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.*

3.3.6   GDP Annual Growth Rate (GDP)

In this study, external factor i.e. gross domestic production (GDP) annual growth rate has been taken into consideration as working capital requirements might varied across different economic cycle as well as industries. Previous empirical attestation validates that macroeconomic indicator have asserted certain influence on the practice of how firms are managing their receivables (Smith, 1987) and their level of investment in inventories (Mansoori & Muhammad, 2012). In addition, Lamberson (1995) concedes that economic cycle is forcible in influencing the level of working capital investment as further illustration as booming economy inclines to stimulate a firm's sales revenue resultantly enhance the level of profitability or else vice versa. The indicated line of reasoning is affirming by Garcia-Teruel and Martinez-Solano (2007) manifesting that general business environment ought to be contemplated as control variables in view of the fiscal loop might affect the amount of working capital requirements. As per aforementioned discussion, the following is the seventh hypothesis.

Hypothesis 7: *GDP growth rate has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.*

4.0 Sample, Data and Methodology

4.1   Sample Selection and Data Filtration

This study adopts panel units i.e. cross-sectional study encompasses Malaysian public-listed companies consisting of both main and secondary (i.e. ACE) markets as well as longitudinal data over 10 years which comprising from the period of financial years of 2007 to 2016. The sources of secondary data that are used to run empirical testing on the research hypotheses including the audited financial statement of firms listed on the Bursa Malaysia and financial analysis from Morningstar Incorporation. Conceding the fact that it is challenging to collect data from SMEs, for that reason the research scope is merely focusing on public listed firms which are commonly larger-scale firms. Moreover, Afrifa (2013) concedes that SMEs are unwilling to reveal information due to the concern of the disclosure might make known to its competitors.

The main source of data is retrieved from the annual financial reports published on Bursa Malaysia website, which is deemed as a reliable yet extensive source of information, concerning pecuniary as well as submission of the reports or announcements to keep investors and the public fully informed of all facts and information in the approach of full, accurate and timely disclosure (Bursa Malaysia, 2019). Supplementary to the financial reports, other source of data i.e. Morningstar Inc. also being employed as the independent investment research provider furnishes both the quantitative and non-financial data and information about a company's performance, for instance, ratios analysis, shareholding analysis, stock performance, valuation, announcement, analysis of financial statement and etc. Morningstar is deliberated as one of the useful and unbiased sources of information in order to assist investors to make their investment decision (Kamal, 2013).

For the screening task, the researcher has filtered the companies with no lost values or no values for the entire time period (2007 -2016) in order to establish the consistency for the data set. Subsequently, the data filtration takes into account of selection criteria such as consistent financial month ended for the fitted time frame of ten years (i.e. 2007 - 2016), absence of abnormal financial figures i.e. negative shareholder equity amount, and without missing numbers for data file compilation.

4.2   Methodology

The researcher intends to test the hypothesis as regards the influence of working capital management on firm performance, through dynamic panel data which is defined as the pooling of observations on a cross-section of studies objects i.e. public listed companies (PLCs) throughout several time periods (Baltagi, 2005). Panel data analysis has been extensively adopted in former studies for data estimation and modelling, undertaking of the following benefits: (i) it allows researchers to control for unobservable firm-specific or time-invariant variables which could eliminate the exposure of biased outcomes wherein may perhaps arise from the heterogeneous firm explicit features that resultant the erroneousness of estimation due to its complexity in approximation or even hard to access the data; (ii) it improves the efficiency of the econometrics estimations by taking into consideration individual differences between cross sections as well as the time differences between the periods

inclusive dummy variables (Hsiao, 2003). Dynamic panel estimators are constructed with the following proviso: (i) small T, large N panels, indicating small number of time periods and large number of cross-section units; (ii) a linear functional relationship; (iii) one dependent variable that is dynamic, depend upon its peculiar prior accomplishment; (iv) independent variables are permitted not be strictly exogenous, signifying explanatory variables are conceded to be correlated with elapsed and plausibly recent realizations of the errors; (v) fixed individual effects; and (vi) heteroscedasticity and autocorrelation within individuals but not across them (Roodman, 2009). Dynamic panel data allows for one left-hand-side variables to be dynamic i.e. relying on its own historical realizations, whereby y is not required to be strictly exogenous, i.e. y could correlate with past and likely present realization of the errors. In addition, dynamic panel estimators permit Heteroscedascity and autocorrelation within individuals, however not across them (Roodman, 2009). The researcher therefore gauges the model using the one-step generalised method of moments (GMM) estimator (Arellano & Bond, 1991), whereby it permits the controlling of endogeneity problem by inserting instrumental variables.

In furtherance of shedding light on the association of working capital management on firms' performance, the researcher applies more than one estimation to produce more robust evidence. In this study, one endogenous variable (i.e. firm's performance) is regressed against seven exogenous variables. The regressors are cash conversion cycle, firm size, annual sales growth rate, financial leverage, current assets ratio, current liabilities ratio and gross domestic production (GDP) growth rate. This research includes control variables to augment the robustness of the study. Control variables enable the model specification to be greater extent of explicit in providing justification for interpreting the findings. The data analysis is done through STATA/MP 14.0 software. The delineation of the model estimation is as follows:

$$FP_{i,t} = \beta_0 + \beta_1 CCC_{it} + \beta_3 SIZE_{it} + \beta_4 GROWTH_{it} + \beta_5 LVRG_{it} + \beta_6 CATA_{it} + \beta_7 CLTA_{it} + \beta_8 GDP_{it} + \eta_i + \upsilon_{it}$$

Notes: *FP = Measurement of firms' profitability (i.e. accounting firm measurement: return on assets & returns on equities and market firm measurement: Tobin's Q); CCC = Cash Conversion Cycle; SIZE = Firm Size; GROWTH = annual sales growth rate; LVRG = Financial Leverage; CATA = current assets ratio; CLTA = current liabilities ratio; GDP = annual GDP growth rate; i = firm; t = time; the measurement errors components are υ = individual error component (a particular characteristics of each firm), and η_i= unobserved time-invariant firm-specific effect.*

5.0 Empirical Analysis

5.1 Descriptive Analysis

Descriptive analysis is often being used as a fundamental analysis in order to describe the attributes of a phenomenon that occurs in a particular population i.e. sample. Table 3 demonstrates the descriptive analysis of the criterion variables and regressors for unbalanced panel units with total of 1,559 observations. The mean values for ROA, ROE and Tobin's Q are 2.63%, 3.55% and 1.65 respectively. In the interval, the average length of cash conversion cycle is 112 days, at which point consists of using average 106 days to convert raw materials inventories into finished goods inventories, follows by 92 days used to collect outstanding receivables from their customers, and finally deducts 78 days i.e. the period of deferment of payment to their suppliers. Looking at this fact, the findings may imply that the firms may well still require additional financial resources to fund their working capital investment seeing the positive CCC would possibly imply that the firms are required to pay to their suppliers 112 days earlier before they receiving cash from their customers. The findings are not coherent with prior outcomes (Ng et al., 2017; Kasozi, 2017).

The average firm size (i.e. log of total assets) specifies 19.00 times and annual sales growth rate is 16.84%. The average financial leverage is 1.87, indicating mean value of approximately 47% of total assets are funded using debts. Due to the nature of industry, the firms hold more than half of their total assets in the form of current assets i.e. 51.2% and current liabilities comprise of 45.24% out of total assets owned by the firms. The finding points toward a substantial composition of current assets out which exceeding one half of the total assets. Henceforth, effective management of short-term assets particularly inventories appears to be much relevant in realising enhanced level of profitability.

Table 3. *Descriptive Analysis*

Variable	No. of observations	Mean	Standard Deviation
ROA	1559	2.63%	8.497783
ROE	1559	3.55%	17.01282
Tobin's Q	1559	1.6505442	12.81929
DIO	1559	105.76 days	130.4491
DSO	1559	91.90 days	82.42135
DPO	1559	77.82 days	103.397
CCC	1559	112 days	134.8702
SIZE	1559	19.00234	1.417791
GROWTH	1559	16.835 %%	421.9806
LVRG	1559	1.870638	2.465701

CATA	1559	51.20%	17.01555
CLTA	1559	45.24%	52.02123
GDP	1559	4.77%	2.268

Source: Author (2020)

5.2   Correlation Analysis

Correlation analysis is one of the most all-embracing estimations that gauges the intensity of relationship between variables as with the appositeness of one variable that is inclined to change when associates it with other variables. In other words, correlation is an estimation of a monotonic relationship between two variables. Although the results are usually used to scrutinise the relationship, yet the interpretation of findings is always being regarded as very restricted and even come with the discontentment of absence of precise underlying grasp as there is no a clear-cut rule of thumb inducing the inconsistencies results. Yet, the researcher still continues with this analysis due to the essentiality of performing fundamental analysis first prior proceeds to more advanced ones. In this part, the researcher adopts Spearman Rank-Order correlation to measure the intensity and direction of monotonic association between two variables.

As demonstrated by the table 4, CCC and all working capital components except DPO have negative and significant correlation with both accounting-based (i.e. ROA and ROE) and market valuation indicators. It implies that the magnitude of predisposition between DIO and firms' performance indicators (i.e. ROA, ROE and Tobin's Q) have very feeble and inverse magnitude of predisposition i.e. -0.0953, -0.136, and -0.0849 respectively. In other word, the increase in the days used to convert materials into finished goods would result in the decrease in firm's financial performance and market value.

On the side, the magnitude of the efficient debts collection from customers manifests slightly greater propensity on firms' performance as comparing with DIO, at which the finding still portrays a very weak association i.e. ROA: -0.1854, ROE: -0.184 and Tobin's Q: -0.1146). Other than, the relationship between ROA and DIO demonstrates a very frail magnitude which is -0.0682, at which point the deferment would bring about negative consequences such as interruption of production due to unavailability of materials, imperil rapport with suppliers, lose reputation, and so on. On the other hand, DPO has no correlation with ROE and Tobin's Q. In like manner, the CCC has significant and inverse connection with both accounting and market firm's performance estimators, which are ROA, ROE, and Tobin's Q have magnitude of -0.1232, -0.1658, and -0.1074 (at p-value of 0.01) respectively, with the exposition of notably frail of how CCC relates with firm's performance.

Table 4. *Spearman Rank Correlation*

	ROA	ROE	Tobin's Q	CCC	DIO	DSO	DPO	SIZE	GROWTH	LVRG	CATA	CLTA	GDP
ROA	1.0000												
	1559												
ROE	0.9618	1.0000											
	1559	1559											
	0.0000												
Tobin's Q	0.1729	0.1858	1.0000										
	1559	1559	1559										
	0.0000	0.0000											
CCC	-0.1232	-0.1658	-0.1074	1.0000									
	1559	1559	1559	1559									
	0.0000	0.0000	0.0000										
DIO	-0.0953	-0.1360	-0.0849	0.6975	1.0000								
	1559	1559	1559	1559	1559								
	0.0002	0.0000	0.0008	0.0000									
DSO	-0.1854	-0.1840	-0.1146	0.4906	0.2565	1.0000							
	1559	1559	1559	1559	1559	1559							
	0.0000	0.0000	0.0000	0.0000	0.0000								
DPO	-0.0682			-0.2864	0.0505	0.3957	1.0000						
	1559			1559	1559	1559							
	0.0071			0.0000	0.0462	0.0000							
SIZE	0.3494	0.3964	0.0636	-0.2675	-0.2596	-0.3576	-0.1526	1.0000					
	1559	1559	1559	1559	1559	1559	1559	1559					
	0.0000	0.0000	0.0120	0.0000	0.0000	0.0000	0.0000						
GROWTH	0.3224	0.3463	0.0965	-0.1411	-0.1560	-0.1437	-0.0829	0.1737	1.0000				
	1559	1559	1559	1559	1559	1559	1559	1559	1559				
	0.0000	0.0000	0.0001	0.0000	0.0000	0.0000	0.0010	0.0000					
LVRG	-0.2417	-0.0871	0.1422	-0.1896	-0.1729		0.1455	0.2675	0.0941	1.0000			
	1559	1559	1559	1559	1559		1559	1559	1559	1559			
	0.0000	0.0006	0.0000	0.0000	0.0000		0.0000	0.0000	0.0002				
CATA	0.2085	0.1929		0.2954	0.1455	0.1590	-0.1757	0.0597		-0.1294	1.0000		
	1559	1559		1559	1559	1559	1559	1559		1559	1559		
	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0184		0.0000			
CLTA	-0.1922	-0.0504	0.0648	-0.0883	-0.1164	0.0668	0.1099	0.1638	0.1267	0.8307		1.0000	
	1559	1559	1559	1559	1559	1559	1559	1559	1559	1559		1559	
	0.0000	0.0466	0.0105	0.0005	0.0000	0.0084	0.0000	0.0000	0.0000	0.0000			
GDP	0.0555	0.0583	0.0470				-0.0551	0.1870			0.1039	1.0000	
	1559	1559	1559				1559	1559			1559	1559	

	0.0283	0.0214	0.0638	0.0296	0.0000	0.0000

In other respect, firm size has positive and significant correlation with ROA, ROE, and Tobin's Q at which the correlation coefficients (R) are 0.3494, 0.3964, and 0.0636 respectively. Correspondingly, the coefficient of determination (R^2) for the aforementioned DVs are equivalent with 0.12, 0.16, 0.0041, which point in direction of about 12%, 16%, and 0.4% of changes of ROA, ROE, and Tobin's Q can be "explained" by the association with the size of firm. Meanwhile, other regressors which are sales growth, leverage, CATA, CLTA and GDP all are having very weak relationship with firm's performance indicators with the range of coefficient determination value between 0.002 to 0.12. The VIF mean value is 1.07, indicating the absence of multicollinearity issue as it is below the general applied threshold of 10.0 (Hair, Black, Babin, Anderson & Tatham, 2014).

5.3   Dynamic Panel Regression Analysis

Table 5, Table 6 and Table 7 exhibit the five panel regression outcomes which are as follows: ordinary least square model (column two), within groups or fixed-effect model (column three), Arellano-Bond first-differenced, t-2 GMM (column four), Arellano-Bond first-differenced, t-3 GMM (column five), Blundell-Bond one-step, t-2 system GMM (column six), and Blundell-Bond one-step, t-3 system GMM (column seven) for the DVs of ROA, ROE, and Tobin's Q respectively.

Table 5. *Estimation of the Model Specification for Returns on Asset (ROA)*

Regressors	OLS levels	Within groups	1st DIF GMM t-2	1st DIF GMM t-3	1st SYS GMM t-2	1st SYS GMM t-3
ROA$_{t-1}$	0.5145***	0.1860***	0.1748***	0.0425	0.4656***	0.5065***
	(0.0456)	(0.0417)	(0.0401)	(0.0735)	(0.0478)	(0.0623)
CCC	-0.0037	-0.0040	-0.0073	-0.0067	-0.0019	-0.0025
	(0.0043)	(0.0068)	(0.0127)	(0.0147)	(0.0061)	(0.0064)
SIZE	5.8938***	5.5888***	4.2278**	5.2865**	4.8613***	5.8594***
	(1.0494)	(1.3668)	(1.6658)	(2.2190)	(1.2969)	(1.4698)
GROWTH	-0.0009***	-0.0004	-0.0000	-0.0000	-0.0007	-0.0012*
	(0.0003)	(0.0004)	(0.0006)	(0.0008)	(0.0006)	(0.0007)
LVRG	-0.0310	-0.0015	0.0305	0.0815	0.0112	0.1556
	(0.1560)	(0.1224)	(0.0654)	(0.1045)	(0.0961)	(0.1518)
CATA	0.1221***	0.1382***	0.1298***	0.1352**	0.0669	0.0821
	(0.0435)	(0.0464)	(0.0480)	(0.0673)	(0.0448)	(0.0552)
CLTA	-0.0436***	-0.0399***	-0.0364**	-0.0388***	-0.0373**	-0.0445***
	(0.0121)	(0.0120)	(0.0142)	(0.0145)	(0.0147)	(0.0152)
GDP	1.2868	-0.1005	-0.0527	-0.0551	-0.0470	-0.0583
	(1.3841)	(0.0921)	(0.0755)	(0.0792)	(0.0842)	(0.0904)
No. of observation	1402	1402	1,246	1,246	1,402	1,402
m1	-1.58	4.03	-6.23	-4.84	-6.38	-6.07
m2	1.54	5.69	-0.22	-0.88	0.85	0.96
Sargan			0.000	0.000	0.000	0.000
Diff-Sargan					1.000	1.000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

NOTES: ROA = RETURN ON ASSETS; CCC = CASH CONVERSION CYCLE; SIZE = FIRM SIZE; GROWTH = ANNUAL SALES GROWTH RATE; LVRG = FINANCIAL LEVERAGE; CATA = CURRENT ASSETS RATIO; CLTA = CURRENT LIABILITIES RATIO; GDP = ANNUAL GDP GROWTH RATE

For first methodology i.e. pooled OLS, the R^2 of the proxies for firm's accounting performance measurements which are ROA, ROE and Tobin's Q are 0.4632, 0.4919 and 0.2585 respectively, signifying that all regressor able to depict at least one-fourth of the aftereffect on firms' financial performance. Although CCC is not significantly affecting the financial performance, despite the fact the negative indication manifests that the protracted duration of cash conversion cycle would somehow deteriorate firms' performance. Despite the fact, Tobin's Q is much greatly being affected by its own lagged variables instead of other variables attested in the model.

Over and above, firm size is strongly significant in affecting accounting estimators wherein finding is conforming with the earlier studies (Abuzayed, 2012; Bhatia & Srivastava, 2016; Jakpar et al., 2017; Siraj, Mubeen & Sarwat, 2019; Ng et al., 2017; Soukhakian & Khodakarami, 2019). Therefore, the elucidation may appertain to the larger the size of the firm, it has much preeminent bargaining power with its suppliers and customers likewise nobility to have better efficiency in term of resources utilisation in contemplation of lower unit cost of production. Moreover, the previous evidence has been upholding that firm size is one of the most prominent antecedents that appertain to firm performance (Kieschnick, LaPlante & Moussawi, 2013).

Apart from that, financial leverage has been ascertaining as negative and significant influence but merely on ROE (Abuzayed, 2012; Bhatia & Srivastava, 2016; Hassan, Imran, Amjad & Hussain 2014; Jakpar et al., 2017; Kasozi, 2017; Makori & Jagongo, 2013; Ng et al., 2017; Pais & Gama, 2015; Wasiuzzaman, 2015). Conceding that a firm is superior in managing its operational efficiencies or in other words able to keep its level of working capital at an optimal level will then possess more retained earnings, and making the firm less reliance on external capital to fund its working capital requirements. In other respects, leveraged firms are usually linked with higher degree of financial risk that compelling higher cost of funding that are required by the financial providers and resultantly brings about decline of the shareholders' yields.

In like manner, the sales growth conjointly exhibits negative and significant effect on ROA and ROE with the exception only applicable in static panel data methodologies. The plausible exposition is with the growth in sales, it may well set off the upsurge of working capital requirements that could result in glitches such as overtrading which might trigger undesired consequences on firms' profitability in particular the firms that are inferior in liquidity management. To add to that, the insignificant and negative influence of sales growth on accounting performance indicators are established in other methodologies wherein the verdict is coherent with preceding researches (Bhatia & Srivastava, 2016; Ng et al., 2017). In spite of this, GDP has insignificant yet positive influence on all estimators of firm's performance whereabouts the finding is coherent with previous research (Zariyawati, Annuar & Pui-San, 2016).

Table 6. *Estimation of the Model Specification for Returns on Equities (ROE)*

Regressor	OLS levels	Within groups	1st DIF GMM t-2	1st DIF GMM t-3	1st SYS GMM t-2	1st SYS GMM t-3
ROE_{t-1}	0.3476***	0.0679	0.0754	-0.0408	0.3007***	0.2722***
	(0.055)	(0.0583)	(0.0634)	(0.0748)	(0.0505)	(0.0869)
CCC	-0.0065	-0.0046	-0.0018	-0.0241	-0.0035	-0.0141
	(0.0102)	(0.0166)	(0.0329)	(0.0297)	(0.0162)	(0.0138)
SIZE	10.2161***	9.6498***	5.0120*	-0.0241	7.7630***	9.1731***
	(1.502407)	(1.9157)	(2.7709)	(0.0297)	(1.7974)	(2.3422)
GROWTH	-0.0016***	-0.0011*	0.0002	-0.0241	-0.0009	-0.0021
	(0.0006)	(0.0006)	(0.0013)	(0.0297)	(0.0010)	(0.0015)
LVRG	-2.4885	-2.6081***	-2.3644***	-2.2365***	-2.2941***	-2.1251***
	(0.5240)	(0.4536)	(0.2200)	(0.2047)	(0.3094)	(0.2662)
CATA	0.2565***	0.3062***	0.3656***	0.3421***	0.1926**	0.1780
	(0.0767)	(0.0829)	(0.0978)	(0.1122)	(0.0940)	(0.1130)
CLTA	-0.0377	-0.0316	-0.0056	-0.0183	-0.0083	-0.0241
	(0.0328)	(0.0329)	(0.0312)	(0.0319)	(0.0358)	(0.0341)
GDP	4.2101	-0.2874	-0.1776	-0.1694	-0.1324	-0.1325
	(3.5370)	(0.2114)	(0.1395)	(0.1359)	(0.1443)	(0.1381)
No. of observation	1402	1,402	1,246	1,246	1,402	1,402
m1	-1.98	7.4106	-4.04	-3.40	-4.56	-3.99
m2	2.83	11.1257	0.05	-0.29	1.17	1.36
Sargan			0.000	0.000	0.000	0.000
Diff-Sargan					1.000	1.000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Author (2020)

Notes: ROE = return on equities; CCC = Cash Conversion Cycle; SIZE = Firm Size; GROWTH = annual sales growth rate; LVRG = Financial Leverage; CATA = current assets ratio; CLTA = current liabilities ratio; GDP = annual GDP growth rate

Through scrutinising findings of both ROA and ROE, current asset ratio validates a positive and significant effect whereas to put it in another way, the result implies that in a situation whereby a firm holds more proportion of current assets, the higher the firm's earning capacity would be. The finding is consistent with previous studies (Al-Mawsheki et al., 2019; Soukhakian & Khodakarami, 2019). Nonetheless, the results are contradictory with other precedent evidences (Garcia-Teruel & Martinez-Solano, 2007; Lyngstadaas & Berg, 2016; Wasiuzzaman, 2015), even supposing corroborations conducted in the identical industry (Jakpar, 2017; Kasozi, 2017; Ng et al., 2017). To add to that, it may pertain to the nature of industrial products industry itself in which the adoption of conservative working capital investment strategy may well prevent the disruption of production as well as implementing lenient trade credit policy. Nevertheless, the finding reveals that the effect of CATA on Tobin's Q is negative and significant, wherein indicating that a higher level of current assets would reduce firms' market valuation which may due to higher opportunity costs which caused by idle cash tie up in the short-term assets' investment. The disputation of results as comparable with prior studies (Vural, Sokmen & Cetenak, 2012; Yunos, Ghapar, Ahmad & Sungip, 2018).

Table 7. *Estimation of the Model Specification for Tobin's Q*

Regressor	OLS levels	Within groups	1st DIF GMM t-2	1st DIF GMM t-3	1st SYS GMM t-2	1st SYS GMM t-3
Tobin's Q_{t-1}	0.4587*** (0.0252)	0.3972*** (0.0303)	0.4578*** (0.0136)	0.0205** (0.0089)	0.4589*** (0.0250)	0.0293** (0.0113)
CCC	0.003747 (0.0038)	0.0063 (0.0063)	0.0150 (0.0151)	0.0047 (0.0062)	0.0061 (0.0054)	0.0035 (0.0039)
SIZE	0.5923 (0.6497)	0.2762 (0.4185)	0.1444 (0.4229)	-0.1294 (0.5582)	0.4105 (0.5432)	0.0036 (0.3999)
GROWTH	-0.0001 (0.0002)	-0.0000 (0.0002)	-0.0001 (0.0003)	-0.0000 (0.0002)	-0.0001 (0.0002)	-0.0001 (0.0002)
LVRG	-0.0048 (0.1072)	0.0029 (0.0082)	0.0137 (0.0253)	0.1305 (0.2157)	0.0076 (0.0163)	0.1375 (0.1942)
CATA	0.0010 (0.0074)	-0.0048 (0.0062)	-0.0130 (0.0157)	-0.0433** (0.0194)	-0.0099 (0.0129)	-0.0294* (0.0175)
CLTA	-0.0009 (0.0014)	-0.0048 (0.0062)	0.0031 (0.0044)	0.0027 (0.0033)	0.0025 (0.0028)	0.0042 (0.0039)
GDP	1.0560 (0.7304)	-0.1411 (0.2386)	-0.1731 (0.2624)	-0.1172 (0.1334)	-0.1837 (0.2701)	-0.1278 (0.1371)
No. of observation	1402	1,402	1,246	1,246	1,402	1,402
m1	0.99	2.7911	-1.22	-1.02	-1.19	-1.24
m2	-0.97	8.7144	-1.01	-1.01	-1.00	-1.01
Sargan			0.000	1.000	0.000	1.000
Diff-Sargan					1.000	1.000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Author (2020)

Notes: CCC = Cash Conversion Cycle; SIZE = Firm Size; GROWTH = annual sales growth rate; LVRG = Financial Leverage; CATA = current assets ratio; CLTA = current liabilities ratio; GDP = annual GDP growth rate

In much the same way, CLTA exhibits a negative and significant on ROA considering that it will deteriorate firms' profitability in the case that firms adopt aggressive working capital financing strategy whereabouts in case that a greater extent of short-term financing being employed to fund assets would engender higher financial risks, due to shorter duration is provided to fulfil its financial obligations. In such situation, investors are more inclined to require for higher returns to trade-off the elevated risks and propagating higher cost of financing (Bolek, 2014).

6.0 Conclusion

This research aims to attest the empirical evidences in lieu of the influence of working capital management and firm performance, among 156 Malaysian PLCs in the industrial product economic sector for the time period of 10 years (i.e. years 2007-2016). Two model specifications has been developed with regard to validate the inferential hypothesis, whereby employing both accounting-based firm performance proxy, return on assets (ROA) and market-based performance indicator,

Tobin's Q synchronous WCM estimator (i.e. cash conversion cycle) and control variables (i.e. firm size, sales growth, financial leverage, current assets ratio, current liabilities ratio and GDP growth rate) which has been a priori validation having likelihood to overshadow the antecedences that influencing firm performance. Dynamic panel data methodology (i.e. one step system generalised method of moments) has been employed to conduct data analysis, with the reasoning to control unobserved heterogeneity, greater efficiency likewise catering for possible endogeneity problem. The results indicate the substantial influence of working capital management towards firm performance proxies, in spite of the exertion of opposite direction i.e. inversed association with ROA and positive appositeness with Tobin's Q. In other words, shortening the duration of cash conversion cycle would increase the efficiency of assets utilisation howbeit slightly deteriorating the expectation of investors towards the firms' future earnings ability.

The market firm performance indicator, Tobin's Q implies that investors may placing less concern on the effectiveness of working capital management. Yet the positive association between Tobin's Q and CCC conforms to prior studies. Firm size is positive significantly linked with ROA, signifying large industrial products companies are inclined to take more initiatives in managing short-term resources in pursuant of economies of scales as well as preserving adequate level of cash holdings in furtherance of prospective development. Nonetheless, the annual sales growth rate and GDP are positive insignificant related with any of performance indicators, coupled with the elucidation stating the actualisation of industrial product firms' performance may possibly depend on the economic progression of other emerging nations (e.g. China and India) as well as supplementary to other industries (e.g. construction, electric and electronic economic sectors). Table 8 summarises the findings in brief.

Table 8. *Validation of Hypothesis*

	ROA	ROE	Tobin's Q
Hypothesis 1: Working capital management has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry	*no*	*no*	*no*
Hypothesis 2: Firm size has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry	*yes*	*yes*	*no*
Hypothesis 3: Financial leverage has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry.	*no*	*yes*	*no*
Hypothesis 4: Annual sales growth has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry	*yes*	*no*	*no*
Hypothesis 5: Current assets ratio has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry	*no*	*yes*	*yes*
Hypothesis 6: Current liabilities ratio has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry	*yes*	*no*	*no*
Hypothesis 7: GDP growth rate has significant influence on firm performance indicators (i.e. ROA, ROE & Tobin's Q) for the PLCs in industrial products industry	*no*	*no*	*no*

This study intends to provide certain insight for the finance managers and investors in emerging nations such as Malaysia due to the meagre literatures putting forward the momentous of working capital management towards firm performance. In short, firms with more aggressive short-term investment policy in conjunction with conservative financing policy are inferred with the postulation of attaining better returns in book value. Apropos of the distinctiveness of industrial products economic sector, a greater extent of short-term source of funding e.g. trade credit and short-term bank credit facilities would increase market valuation with the rationale of lower cost of capital. For the prospective researches, there are some antecedents such as ownership structure, agency costs, firm ages might be worthwhile to be further explored.

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