

A Study On The Impact Of The Working Capital Management On The Profitability Of The Leading Listed Automobile Companies In India (2006-2012).

Dr. Navena Nesa Kumari, Dr. M. Victor Louis Anthuvan

LIBA, Loyola

Abstract

India's strategic objective for the manufacturing sector in the next 15 years should be to bring about quantitative and qualitative change through a set of policies and plans. Therefore, the cost associated with the strategy of doing business is much higher in India. Hence to overcome the difficulty and meet the challenges of manufacturing sector in India, Industries are encouraged to attract more investments into the stream in order to minimize the risk of liquidity and to maximize profitability. The liquidity and profitability trade off can be tackled efficiently by improving and adopting effective working capital management strategies into the manufacturing sector. This study takes into consideration the top S&P CNX 500 manufacturing firms within the geographical area of India.

The automobile sector accounts for 7.1 per cent of the country's gross domestic product (GDP). Working capital management is an important function of financial management which helps in maintaining an optimal balance between each of the working capital components. Industries can reduce their financing costs or increase the funds available for expansion of projects by minimizing the amount of investment tied up in current assets. In a broad-spectrum, current assets are considered as one of the important component of total assets of a firm.

The purpose of the research is to analyze whether working capital management can affect the company profitability of Automobile sector in India. Some Previous research might have studied the relation between working capital management and profitability, but those research failed to address the Sector-wise issues of working capital management. This study aims at fulfilling such gaps by considering the industry specific nature of working capital. This thesis will introduce the reader about diverse techniques used to measure working capital management. Previous studies in this area have used various methods to measure the effectiveness of working capital. This study has been framed to show how efficient working capital management impacts the corporate profitability of 10 leading listed automobile sector in Chennai (India). The main source of secondary data was collected through Government reports, official records, journals, books, websites of Internet and financial statements, such as income statements, balance sheets of S&P CNX top500 companies at NSE were collected for the period of 2006 – 2012 from CMIE Prowess Database.

Key words: Working capital management, Net Operating Profitability, Debtors turnover period, Inventory turnover period, Cash conversion cycle, Liquidity, Automobile sector analysis.

1. Introduction and its Background

India is well on its own way to become the premier manufacturing location for companies around the world (Manpreet and Ravi, 2008) ¹. India's share of industrial sector in GDP is 26 percent (FICCI survey, 2012-2013) ². Among which manufacturing sector is considered to be the most important sector in the overall economic growth, so the sector needs to have a deep analysis at industry level as well as firm level. There are a number of factors that affect the profitability of an enterprise. Their influence differs with the aspects of both short term, and long term. Understanding these factors will be very helpful in managing a business entity. In one hand the performance can be determined using the micro level and macro level factors. On the other hand, there will be some internal as well as external factors too, which decides the effectiveness of the

organizational profitability. At the same time an important role falls with the manager of the enterprise, who should take all efforts to improve the financial performance of the company.

Finance is the nerve center of every economic activity; therefore, it is considered to be vital for efficiency and growth of a business. Every Business concern undertakes an establishment, promotion, and expansion activity which requires adequate financial resources. Hence an effective utilization of capital is essential to increase the rate of development and to enhance the efficiency of production system of a business. Capital in a business is inclusive of both fixed and working capital. But then working capital should be given due importance than the fixed capital. However, working capital management is considered to be an inseparable segment of overall financial management.

Working capital is the major source of Financing that a manufacturing firm needs to deal with (Kim and Hyun, 2013) ³. According to Horne and Wachowitz (2000) ⁴ working capital management efficiency is crucial especially for manufacturing firms; hence a major part of assets is composed of current assets. Working capital is identified as one of the life giving forces for any economic unit and its management is considered to be the most important function of corporate management. All corporate entities irrespective of size and nature of business whether profit oriented or not, requires necessary amount of working capital for their survival. Working capital management is the most decisive factor for maintaining liquidity, solvency and profitability of business (Mukhopadhyay, 2004) ⁵. The firms may likely to face insolvency, if there is no any trade-off between liquidity and profitability with reference to working capital management (Kargar and Blumenthal, 1994) ⁶. Working capital management plays distinctive role for making the liquidity and profitability comparisons among various firms which includes the decision making composition of current assets financing. The proportion of the liquid assets should be high, so that lesser will be the risk of running out of Current asset and Liquid assets, being all other things equal. The components of working capital such as marketable securities, receivables, inventory and cash management play a critical role in the performance of any firm. (Eljelly, 2004) ⁷.

1.1. Operational Definition and meaning of working capital

According to Guthmann and Doughall (1955) ⁸ working capital is the excess of current assets over current liabilities. Similarly, Gerstenberg (1959) ⁹ stated “Any comprehensive discussion on the working capital includes the excess of current assets over current liabilities”. This view is completely endorsed by (Accountants Hand Book) ¹⁰.

Working capital typically means the firms holding of current or short – term assets such as cash, receivables, inventory and marketable securities (V. K. Bhalla. 2004) ¹¹. A Business unit needs to optimize and manage the working capital without effecting profits and sales volume. The issue with the working capital management is that the investments in working capital resources cannot be reduced to minimum level as it is affecting the other operational areas. The metrics and drivers which are used in a company are industry specific such as some industries like manufacturing sectors the operating cycle time may be much longer, than compared with the retail firms the cycle terms are very prompt. There is also a wide Inter - Industry variation in the operating activities of liquidity of the corporate enterprises. This leads to a situation where there is a need to study about working capital at Sector – wise which has been taken into consideration for the purpose.

1.2. The Concept of Working Capital Management

According to Bhattacharya (2009) ¹² the concept of working capital was perhaps first evolved by Karl Marx, though in a fairly different form and the term he used was “variable capital”. Park and Gladson (1963) ¹³ elaborated working capital as current assets minus current liabilities. This is also known as “Net working capital”. Current assets are called “Gross working capital”. The current assets are studied as four primary components: (i) Cash and cash equivalents; (ii) Marketable Securities (iii) Accounts receivable and

(iv) Inventory. The three major items of current liabilities are: (1) Accounts payable; (2) Expenses payable, including accrued wages and taxes and (3) Notes payable (Cheng et al., 2009).

1.3. The Importance of working capital management

Working capital management is a significant feature of financial management. Its importance stems from two reasons. Current Assets Investments represent a substantial portion of total Investment. Management of working capital refers to the management of current Assets and current liabilities. The foremost drive of course, is on the management of current Assets. Working Capital involves the proportion of the assets of a business, that are used, in current operation, which includes receivables, inventories (raw materials, work-in-progress and finished goods) merchandise, bill receivable and cash. The goal of working capital management is to manage, current asset in such a manner so that the satisfactory level would be maintained.

Working capital management is an important function of financial management. Its function I an organization is similar to that of heart in a human body. The financial manager must determine the satisfactory level of working capital funds and also the optimum mix of current assets and current liabilities. The management should ensure sources of funds which is used to finance working capital and should also see whether short term obligation of the business is met well in time. Whereas, liquidity is a precondition to ensure the firm's ability to meet its short-term obligations and its continued flow can be guaranteed from a profitable undertaking. There had been much of research work in the field of working capital management and its influence on overall profitability. Working capital management is important because of its effects on the firm's profitability and risk, and consequently its value (Smith, 1973) ¹⁵. Every business firm should maintain adequate working capital to meet its operational requirements. The management has to see that funds invested as working capital in their organization earn return at least as much as they would have earned return if it is invested anywhere else. At the time of increasing capital costs and scarce funds, the area of working capital management assumes added importance as it deeply influences a firm's liquidity and profitability.

1.3.1. The Need for Working Capital in automobile sector:

The automobile sector accounts for 7.1 per cent of the country's gross domestic product (GDP). The Two Wheelers segment, with 81 per cent market share, is the leader of the Indian Automobile industry. To meet the growing demand, several auto industries have started investing seriously in various segments of the industry during the forthcoming years.

In the recent past working capital management is a very important component of corporate finance because it directly affects the liquidity profitability and solvency of a business entity, which includes current assets and current liabilities. The research study on Working capital management is important due to various reasons.

(i) The current assets of a typical manufacturing firm accounts for over half of its total assets.

(ii) The objective of the financial decision making to maximize the shareholder wealth which is used to generate sufficient profits.

(iii) The extent to which profits earned will naturally depend upon the other things among the magnitude of sales. Therefore, there is a need for immediate realization of cash against goods sold. Hence sufficient working capital is necessary to sustain sales activity. The term cash cycle refers to the length of the working capital components to complete the following cycle of Events. They include (i) Conversion of cash to Inventory (ii) Conversion of Inventory to Receivables (iii) Conversion of Receivables into Cash. Since Cash inflows and outflows contradict each other,

firms have to essentially keep cash or invest in short-term securities, in order to meet the short – term obligations. Similarly, firms must have adequate inventory to guard against the possibility of not being able to meet demand for their company's products. Adequate Inventory therefore provides a cushion against being out of stock. If firms have to be competitive, they must sell goods to their customers on credit which

necessitates the holding of accounts receivable. It is in these ways that an adequate level of Working capital is absolutely necessary for smooth sales activity which in turn, enhances the proprietor's wealth.

2. Literature Review

The economic recession of 2007 once again started an increased interest on short-term financial management (Economic Survey 2007-2008) ¹⁶. Managing working capital is a significant part of short-term financial management. Working capital management is an important function of financial management which helps in maintaining an optimal balance between each of the working capital components. Industries can reduce their financing costs or increase the funds available for expansion of projects by minimizing the amount of investment tied up in current assets. In a broad-spectrum, the current assets are considered as one of the important component of total assets of a firm. A business entity may be able to reduce the investment in fixed assets by renting or leasing plant and machinery. But, the same strategy cannot be followed for the components of working capital. Since, the high level of current assets may diminish the risk of liquidity associated with the opportunity cost of funds that may have been invested for long-term assets. India's strategic objective of the manufacturing sector for the next 15 years should be brought to develop the quantitative and qualitative changes through a set of policies and plans (Manufacturing Industry survey 2008) ¹⁷. Therefore, the cost associated with the strategy of doing business is as much as high in India. Hence to overcome the difficulty and meet the challenges of manufacturing sector in India the Industries are encouraged to attract more investments into the stream in order to minimize the risk of liquidity and to maximize profitability. The liquidity and profitability trade off can be tackled efficiently by improving and adopting effective working capital management strategies with in the manufacturing sector.

2.1. Theories of WCM and Profitability in various sectors

Working capital management is mainly concerned with two factors, namely the first level of current assets to be held in the types of assets that are to be financed. Modern financial management aims at reducing the level of current assets without ignoring the risk of stock outs. This occupies much of the finance manager's time in taking operational decisions. The economic activities of a company are best judged by the value that is created by such performance which is benefitted by the value.

Sen and Oruc (2009) ¹⁸ investigated the efficiency of working capital management and its relationship with profitability in Istanbul Stock Exchange (ISE). They used three-month table data issued by 49 production corporations for the period from 1993 - 2007 over five production sectors, including white goods, electronic, Cement, food, chemical and textile. Their results showed that aggressive working capital management is represented by shorter Cash Conversion Cycle and the current ratio which results in increased profitability. This sector-wise investigation reveals that there is a significant similarity among sectors with regard to the relationship between working capital management and profitability except for the chemical sector.

Similarly, in India, Vijay Kumar (2011) ¹⁹ examined the relationship between working capital management and firm's profitability in automobile industries. The study includes a sample consisted of 20 firms for the period of 13 years from 1996-2009. The result of this study has shown that there is a negative relationship between the length of cash conversion cycle and the firm profitability. His findings are consistent with the recent literature in the area of working capital management and profitability. Abdul et al. (2010) ²⁰ study empirically estimated and compared the sector-wise impact of working capital management on the performance of manufacturing firms in terms of collection policy, inventory policy, payment policy and cash conversion cycle. The study was tested using the financial data of 204 firms listed into Karachi Stock Exchange classified into 9 sectors during the period of 1998-2007. The results indicate that there are variations in the sector-wise performance in terms of different measures of working capital management. The impact of working capital ratios on the other hand with Net Operating Profitability is significant and positive for all the sectors except for Energy sector.

Another, study on the effect of working capital management on firm's profitability with reference to Turkey was presented by (Samiloglu and Demirgunes, 2008) ²¹. The quarterly data was collected for a sample of manufacturing firms listed like Istanbul Stock Exchange for the period of 1998 - 2007. The results suggest that inventory period is associated with profitability.

Mohsen Zayanderoodi (2011) ²² conducted a research on comparative examination of the relationship between working capital management and profitability of food, mineral, and automobile companies listed in Tehran stock exchange from 2005 - 2008. The coefficient of all three industries show that there is a highly significant relation exists between the food and medicine industries but in automobile industry comparatively there is a very little significance. Therefore, it is clear that from all these studies managers can satisfy their share holders' desire for profits by reducing the over stocking of the inventory.

2.2. Strategies / Measurements of Working capital management and profitability

Vunyale et al. (2007) ²³ investigated the determinants of working capital management in cement industry in India. Authors used net liquidity balance and the working capital requirements as measure of investing the working capital management of the industry. The data consists of companies in cement industry for a period of 10 years from 1995 – 2006, compiled with CMIE Prowess database for a sample of 50 companies. It is clear from the survey that companies with the better firm performance had better working capital performance efficiency and will keep their working capital requirements relatively in a low level.

Similarly, to the above study Appuhami (2008) ²⁴ investigate the impact of firms' capital expenditure on their working capital management. The study was drawn using the data collected from listed companies in the Thailand Stock Exchange of 1613 firm-year observations for a period of 2000 - 2005. The study used the Net liquidity balance and working Capital Requirement as a proxy for working capital measurement and established multiple regression analysis. The research found that firms' capital expenditure, and operating cash flow had a significant impact on working capital management. The findings of the study can be concluded that the listed companies in Thailand change their working capital management policies based on many factors, such as working capital investment, capital expenditure and cash flow etc. Especially, the findings suggest that companies manage working capital efficiently when companies have the growth opportunities so that they can meet their required capital expenditure to expand their business. Talat Afza, et al. (2007) ²⁵ study investigated the relationship between the aggressive and conservative working capital policies for 208 public limited companies listed at Karachi Stock Exchange for a period of 1998-2005. The impact of aggressive and conservative working capital investment and financing policies has been examined through the regression models between the working capital policies and profitability of the firms. This study found a significant relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies. The study initiated that firm's yield returns when they follow an aggressive working capital policy.

James Sunday (2011) ²⁶ proposed the appropriate and effectiveness of working capital management on the solvency and liquidity of SME's. For the purpose of this study the standard working capital ratios were used to measure the effectiveness of working capital in the selected 8firms at Nigeria of Bolton Committee 1971 report has been considered. The firms show signs of over trading and illiquidity, of firms exhibit low debt recovery over credit payment. It was also revealed from this study that there is a poor liquidity in the small business unit in Nigeria. There is also poor record keeping system in most small firm which reduces the ability of the firm to monitor the proper flow of their working capital. From the study it was revealed that most Small business fail at most within 2 years, the strongest will fail within 6 years, while only few

surviving ones remain. It is recommended that for SMEs to survive within Nigeria economy that they must design a standard credit policy and ensure good financial report and control system. They must give an adequate cognizance to the management of their working capital to ensure continuity of the growth and the solvency.

Beaumont Smith and Begemann (1997) ²⁷ investigated the relationship between different working capital measures and return on investment (ROI) for a sample of South African industrial firms listed at Johannesburg Stock exchange. The study was conducted over 134 firms for a ten-year period of 1984 - 1993, includes Net Trading Cycle as measures of working capital management. The study showed a significant relationship exists between Net trading cycle and Return on investment. Based on their results they concluded that an improvement in ROI could be indicated by a decrease in the value of current liabilities. This study states that there is a significant sector effect in the working capital measures employed by the South African Listed Industrial Firms.

Iffet Gorkey and Gunay (2007) ²⁸ reveals the impact of the recent global economic crisis that triggered in 2007 and revealed in 2008, on the working capital of selected sectors in Turkey. The study analyzed financial statements of Turkish real sector firms with current Assets and Liabilities, quoted in the Istanbul Stock Exchange (ISE). Pre-crisis era has been compared with the present crisis era, were tested using two-tail significance through hypotheses testing. The results of this study draw conclusions from an empirical investigation showing that the 45 ISE companies, chosen among others had been affected on a limited basis.

3. Research Methodology

Managing the working capital is an important part of short-term financial management. The long-term financial management often receives more attention although many researchers, Jose et al. (1996) ²⁹, Deloof (2003) ³⁰ have shown that short-term financial management also has a clear effect on the profitability of a firm. Mulins (2004) ³¹ noted that the working capital management can be used to gain competitive advantage. In India the corporate sector seems to have an adequate and satisfactory level of working capital as reflected in their liquidity ratios. The foreign based companies are placed in a better relative to domestic companies. There is a wide inter-industry variation in liquidity ratios and performance of working capital of the corporate enterprises.

3.1. Concepts and Its Importance

The management of working capital is essential for a company to remain liquid, and to meet its short-term obligations. Continuous and efficient management of working capital will make the company more profitable. The company needs to know about the metrics and techniques which are used to manage the working capital in order to meet the competition as well as to maximize profitability. This article aims to concentrate on the different metrics and process around the working capital management in automobile sector and to find out how companies can manage the working capital in a better way. The method used in this study will be quantitative in nature of how the working capital management affects the profitability of automobile sector.

3.2. Objective for the study

To study the relationship between Working Capital Management and Profitability of Leading Listed Automobile companies at S&P CNX top 500 in India from (2006-2012).

3.3. Methods of Data Collection

The purpose of this research is to contribute towards a very important aspect of financial management known as the working capital management with reference to India. The research intends to reveal relationship between the working capital management and its effects on the profitability of 10 automobile manufacturing firms from CMIE prowess Database for a period of 2006 – 2012. This section of the paper discusses the firms and variables included in this study the distribution patterns of data and applied statistical techniques in investigating the relationship between the working capital management and the profitability. This is important as the Indian economy endured the 2008 financial crisis and it's after effects which drained liquidity out of the system. In addition, to that the annual reports of companies have been used in order to understand the company back ground and industry type. The study involves only secondary data.

3.3.1. The Secondary Sources

To achieve the above noted objectives, extensive use of libraries was done. This study is based on the secondary data. The secondary data were collected through the Government reports, official records, Journals, Books, websites of Internet and financial statements, such as income statements, balance sheets of S&P CNX 500 companies. For the purpose of arriving at meaningful inferences a six-year period beginning with 2006-2012 was derived from CMIE Prowess Database listed in NSE from the top S&P CNX 500 companies. There are about 10 automobile companies listed in the top S&P CNX 500 companies has been shortlisted which had similar business module and the financial information pertaining to income statements, balance sheets, and cash flow statements etc. and also supports the study variables. The other non-financial firms which lack in data were eliminated from this study.

4. Analysis and Interpretation

This chapter deals with the analysis and interpretation of data obtained from 10 automobile manufacturing companies from CMIE PROWESS DATABASE in India which is listed in National Stock Exchange. The secondary data includes Income Statements, balance sheets, Profit and Loss Accounts and Cash Flow Statements etc. The data collected has been dealt with the descriptive and inferential statistics on the sample which is based on the following tools like Mean, Standard deviation, Correlation, and Regression.

Descriptive Statistics and Correlation for Working capital components for the selected 15 manufacturing sectors

4.1. Table showing the Descriptive Statistics (Mean and Standard Deviation) of 162 Firms, (i.e) 15 Manufacturing Sectors, for a period of 2006-2012

AUTOMOBILE SECTOR	DCP	ITP	APP	CCC
MEAN	46.48	65.4	169.31	150.4
S.D	17.43	27.7	253.66	271.29

The above has arrived at the descriptive statistics (i.e) Mean and standard deviation for Working capital components such as DCP, ITP, APP, and CCC. Among the working capital components, the Average payment period has got the highest mean of 169.3, followed by the Cash conversion cycle 150.4, Inventory turnover period 65.4 and Debtors conversion period 46.48etc. This implies that automobile sector takes too long time to pay for its suppliers.

4.1.1. Table showing the Correlations between the Net Operating Profitability and the Working Capital Components of Automobile sector, for the period of 2006-2012.

		NOP	DCP	ITP	APP	CCC
NOP	Pearson Correlation	1	-.219	-.674**	.175	.219
	Sig. (2-tailed) p.value		.093	.000	.180	.093
DCP	Pearson Correlation	-.219	1	.331**	.558**	.552**
	Sig. (2-tailed)	.093		.010	.000	.000
ITP	Pearson Correlation	-.674**	.331**	1	-.254*	-.319*
	Sig. (2-tailed)	.000	.010		.050	.013
APP	Pearson Correlation	.175	.558**	-.254*	1	.997**
	Sig. (2-tailed)	.180	.000	.050		.000
CCC	Pearson Correlation	.219	.552**	-.319*	.997**	1
	Sig. (2-tailed)	.093	.000	.013	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

The Table No. 4.1.1 shows the relationship between the Net Operating Profitability and working capital components such as Debtors collection Period, Inventory turnover period, Average payment period, and the Cash conversion cycle.

From the above correlation table it has been observed that the coefficient of Debtors collection period is (-.219), has a P value of (.093) which is insignificant. Since the (P value > 0.05) the results shows that there is no relationship exist between the dependent variable Net Operating Profitability with the independent variable Debtors collection period. Hence the Null Hypothesis of Debtors collection period with the Net operating profitability is not rejected for Automobile sector.

From the above correlation table, the inventory turnover period has a coefficient of (-.674), and a P value of (0.00), which is highly significant at 1% and it is negatively correlated with Net operating profitability. It also indicates that if the firm takes more time in selling inventory, then it will adversely result in decrease in the net operating profitability. Since the (p-value < 0.05) there is a relationship exist between the dependent variable Net Operating Profitability with the independent variable ITP. Hence the Null Hypothesis of Inventory Turnover period with the Net operating profitability is rejected for Automobile Sector. From the above correlation table, it has been observed that the coefficient of Average payment period is (.175), with a P value of (.180) which is insignificant. Since the (P value > 0.05) there is no relationship existing between

the dependent variable Net operating profitability with the independent variable Average Payment Period. Hence the Null Hypothesis of Average Payment Period with Net operating profitability is not rejected for Automobile sector.

From the above correlation table, it has been observed that the coefficient of cash conversion cycle is (.219), with a P value of (.093) which is insignificant. Since the (P value > 0.05) there is no relationship exists between the dependent variable Net operating profitability with the independent variable cash conversion cycle. Hence the Null Hypothesis of cash conversion cycle with the Net operating profitability is not rejected for Automobile sector.

4.2. Table showing the Descriptive Statistics of Current Ratio and Quick Ratio 10 Automobile firms, 2007-2012 Observations

	Mean	Std. Deviation	N
NOP	.197	.078	10
CR	1.427	1.495	10
QR	1.376	1.370	10

From the above table 4.2 the descriptive statistics of Mean and standard deviation for the liquidity measure has been derived using Independent variable such as Current ratio; Quick ratio has been drawn for all the 15 sectors.

i. From the analysis it is found that the current and quick ratio which is a measure of liquidity in this study, the Current ratio has got the highest mean of 1.42, followed by Quick ratio is 1.37, in Automobile sector. This means the proportion of investment in the currents assets were high in this sector.

4.2.1. Table showing the Correlations for 10 Automobile firms, during 2006 - 2012, Dependent Variable: NOP, Independent Variable: CR, QR.

		NOP	CR	QR
NOP	Pearson Correlation	1	-.200	-.073
	Sig. (2-tailed)		.126	.578
CR	Pearson Correlation	-.200	1	.882**
	Sig. (2-tailed)	.126		.000

QR	Pearson Correlation	-.073	.882**	1
	Sig. (2-tailed)	.578	.000	

** . Correlation is significant at the 0.01 level (2-tailed).

The Table 4.2.1. shows the relationship between the Net operating profitability with the measures of liquidity (i.e) Current Ratio and Quick Ratio of the Automobile sector.

From the above table it is observed that the co-efficient of current ratio is (.200), has a P value of (.126) which is insignificant. Since the (p-value > 0.05) there is no relationship exist between the dependent variable Net operating profitability with the independent variable Current ratio. Hence the Null hypothesis of current ratio with the Net operating profitability is not rejected for the Automobile sector.

From the above table it is observed that the co-efficient of the Quick ratio is (.073), has a P value of (.578) which is insignificant. Since the (p-value > 0.05) there is no relationship exist between the dependent variable Net operating profitability with the independent variable Quick ratio. Hence the Null hypothesis of quick ratio with Net operating profitability is not rejected for the Automobile sector.

4.3. Regression Analysis for the working capital variables and Net operating Profitability for a period of 2006-2012

In order to identify the important working capital variables influencing dependent variable Net operating Profitability the study used regression analysis. The study identifies several cross sectional units observed over a period of time in a panel data method. This is used because many variables can be more accurately measured and identified at the micro level over firms or individuals. The study includes 15 sectors but the regression was done for 8 sectors which had more than 10 firms were considered for the analysis. They include Automobile, Electrical equipment, Steel and Aluminum, Pharmaceutical, Cement, Chemical, Textile and Construction sectors.

4.3.1. Regression Model - Pooled Least Square

A number of different regressions co-efficient are estimated for selected Dependent variables and Independent variables. This is estimated with pooled least squares method with no weights.

4.3. 2. Model Specified in the study

$$NOP = \beta_0 + \sum \beta_i X + \varepsilon$$

NOP : Net operating profitability of firm i at time t ; $i = 1, 2, \dots$ firms.

β_0 : The intercept of equation

β_i : Coefficients of X_{it} variables

X_{it} : The independent variables for working capital Management of firm i at time t

t : Time = 1, 2,.....6 years.

ε : The error term.

The model which the study applied for the Automobile sectors is as follows:

Eqn: 1

$$NOP_{it} = \beta_0 + \beta_1 (DCP_{it}) + 2 \beta (CR_{it}) + 3 \beta (QR_{it}) + 4 \beta (FS_{it}) + 5 \beta (FATA_{it}) + 5 \beta (DR_{it}) + \varepsilon$$

Eqn: 2

$$NOP_{it} = \beta_0 + \beta_1 (ITP_{it}) + 2 \beta (CR_{it}) + 3 \beta (QR_{it}) + 4 \beta (FS_{it}) + 5 \beta (FATA_{it}) + 5 \beta (DR_{it}) + \varepsilon$$

Eqn: 3

$$\text{NOP } it = \beta_0 + \beta_1 (\text{APP } it) + 2 \beta (\text{CR } it) + 3 \beta (\text{QR } it) + 4 \beta (\text{FS } it) + 5 \beta (\text{FATA } it) + 5 \beta (\text{DR } it) + \varepsilon$$

Eqn: 4

$$\text{NOP } it = \beta_0 + \beta_1 (\text{CCC } it) + 2 \beta (\text{CR } it) + 3 \beta (\text{QR } it) + 4 \beta (\text{FS } it) + 5 \beta (\text{FATA } it) + 5 \beta (\text{DR } it) + \varepsilon$$

This study used the model specified by (Deloof 2000), (Raheman and Nasr 2007). The equation specified above has been individually analysed for all the 8 sectors, which is discussed in the following chapter 4.3.2.1. Regression Analysis of Working capital variables on Net operating profitability of Automobile sector for a period of 2006-2012

REGRESSION	C	CR	QR	FS	FATA	DR	DCP	ITP	APP	CCC	R Square	Adjusted R Square
t Stat	0.754	-3.180	2.048	0.219	7.136	-0.743	-1.190				0.570	0.521
P-value	(0.454)	(0.002)	(0.046)	(0.827)	(0.000)	(0.461)	(0.239)					
t Stat	1.639	-4.049	3.220	0.812	4.210	-0.155		-3.886			0.657	0.618
P-value	(0.107)	(0.000)	(0.002)	(0.420)	(0.000)	(0.878)		(0.000)				
t Stat	-0.222	-4.275	2.909	0.894	5.539	-0.318			0.727		0.563	0.514
P-value	(0.825)	(0.000)	(0.005)	(0.375)	(0.000)	(0.752)			(0.470)			
t Stat	-0.349	-4.452	3.093	1.065	5.098	-0.249					1.074	0.568
P-value	(0.729)	(0.000)	(0.003)	(0.292)	(0.000)	(0.804)					(0.288)	

(P-value = within parenthesis)

The regression model 1 applied for Automobile sector – Results of Equation 1 The results of equation 1 is run using DCP, CR and QR as an Independent variable with DR, FS, and FATA as control variables. The results of this regression indicate that the co-efficient of Debtors conversion period is insignificant. The liquidity measure of current ratio has a negative co-efficient (-3.180) and significant at 5%. It implies that if

this ratio increases the profitability will decrease. FATA ratio has a significant positive relationship with profitability which reflects that if this ratio increases profits will also increase. The adjusted R^2 is 52%.

The regression model 2 applied for Automobile sector – Results of Equation 2

The second regression is run using the inventory turnover days as an independent variable, which is replaced for DCP in the previous equation. The other variables are the same as they have been in first regression. The result is shown below. The co-efficient of Inventory turnover days is negative and highly significant at 1%. It implies that increase in the inventory turnover days will affect the profitability; (i.e) profit will decrease. Other variables such as current ratio are highly significant and negatively correlated. Quick ratio is also significant, and positively correlated. The control variable FATA ratio is positively correlated and highly significant. Hence the positive correlation implies that increase in these ratios will increase the profitability. The adjusted R^2 is 61 % The regression model 3 applied for Automobile sector – Results of Equation 3 The results of equation are run using APP, CR and QR as an Independent variable with DR, FS, and FATA ratio as control variables. Here the result indicates that APP is not significant. But the independent variable current ratio is negative and highly significant at 1%. And the control variables FATA have a significant positive impact on profitability. It implies that increase in FATA ratio will increase the profits. The Adjusted $R^2 = 51\%$. The regression model 4 applied for Automobile sector –Results of Equation 4 The results of equation are run using CCC, CR and QR as an Independent variable with DR, FS, and FATA as control variables. The result indicates that CCC is not significant. But the independent variable such as current ratio is negative and highly significant at 1%. And the control variables FATA ratio had a significant positive impact on profitability. It implies that increase in FATA ratio will increase the profits. The Adjusted $R^2 = 51\%$.

5. Findings and Recommendation

On the whole the study identifies the issues related to the working capital management undertaken by manufacturing industries through various secondary data analysis. The findings of the sector – wise study based on the secondary data have been discussed below.

From the study it has been found that among the working capital components, inventory turnover period is affecting the Net Operating profitability of automobile sector. It has been found that there is a negative relationship exists (i.e) reduction in the inventory days will increase the company's profitability.

The Inference stated that an increase in the number of Inventory turnover days (i.e) if inventory takes more days to sell then it results in decrease in profitability or vice versa. Thus the storage and insurance cost can be increased and as a result the profitability may decrease. Highly expensive Inventories' tied up in the firm may cause severe lose in the business. So the study states that decrease in the inventory days will increase the profitability. So, the automobile firms should concentrate more on reducing then Inventory turnover days. Hence from the study it is evident that inventory plays a major role in automobile sector. The results for the Inventory turnover period are consistent with the studies of Kaddumi and Ramadan (2012), Ganesan (2007), Khamrui (2012), Bieniasz & Golas (2011). Whereas the study on the effect of independent variables such as current Ratio, Quick Ratio, Firm Size, Fixed Assets to total Assets and Debt to Equity Ratio on Net Operating Profitability.

5.1. Conclusion

The Government of India plans to make automobile manufacturing the main driver of "Make in India" initiative, as it expects the passenger vehicles market to triple to 9.4 million units by 2026, as highlighted in the Auto Mission Plan (AMP). In any sector efficient management of working capital has been recognized as one of the basic function of finance for successful conduct of business operation. This strategy not only influences profit earning capacity of business undertakings, but also includes the content of operation of

automobile sector. The present study pertaining to working capital management is an attempt to examine the structure of working capital in such a way to assess the performance of inventory management, investigate the credit periods, to examine the utilization of cash resources, to check periodically the payment received before and after the due date, to frequently prepare the inventory budgets, to assess the inventory levels, to verify the liquidity position and to identify to what extent working capital financing impacts the profitability of selected automobile companies in India. Also the implementation of inventory models such as JIT, EOQ, FSN will reduce the overstocking of inventories in the automobile companies in India. So, the automobile firms should focus more on managing and reducing the Inventory turnover days in order to maximize profitability and to withstand the competitive environment.

5.2. Scope for Future Research

The Present study aims to investigate the impact of working capital management and profitability considering the various parameters such as working capital components, Liquidity, solvency and profitability. The research was undertaken in 10 automobile companies, and the companies considered for the study falls under S&P CNX 500 companies alone. The area working capital is Vibrant and has its significance not only in top performing firms, but also in Small and medium sized firms. The idea or the framework adopted for the study can be applied to SME's as well as Distressed firms, to find out their performance in working capital management and also to test their significance. This framework will be helpful for future researchers to find out the issues relating to liquidity and profitability associated with management of working capital in detail and also by exploring more variables in various sectors.

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