Empirical Study of Relationship of Working Capital Management and Profitability of Indian Passenger Car Manufacturing Sector

Dr. Ashvin R. Dave, M.B.A., Ph. D.,

Professor at SLS - PDPU,
Gandhinagar, Gujarat, India.

Miss. Avani Raval,

Ph. D. Scholar, Department of Business Administration and Commerce, School of Liberal Studies, PDPU, Gandhinagar, India.

ABSTRACT

In this research paper attempts have been made to examine the role played by working capital management in terms of contributing towards profitability of passenger car manufacturing sector in India. The variables considered are Debtors, Inventory, Cash, Bank, Marketable Securities, Creditors and Profitability. The data was analyzed using various statistical techniques including multiple regression analysis. Auto- correlation test was carried out using Durbin Watson Statistics and Multi co-linearity test was carried out using matrix of coefficients of correlations and VIF statistics. The study revealed that inventory, debtors, cash, bank, and marketable securities have a very little role to play in determining the profitability. However, creditors' velocity has negative association with profitability of the company but it is the most important factor influencing the profitability. This finding signals a shift of focus from current assets to the sources of working capital as far as profitability perspective is concerned.

Keywords: Working Capital, Creditors' velocity, Profitability.

INTRODUCTION:

Balance sheets prepared for management's use invariably show a figure called working capital. Working capital is defined as difference between current asset and current liabilities of a company. Working capital will help us in knowing the operational efficiency and short term financial health of a company. A company should maintain an optimum level of working capital for caring out day to day activities. The working capital ratio will help the business owner to know whether the company has short term assets to pay short term debt. Appropriateness of working capital ratios differ from industry to industry. However, working capital ratio lesser than 1.0 gives an alert about probable liquidity problems. On the other hand if the ratio is more than 2.0 it gives an alert that company may reconsider utilization of current assets to yield optimum revenue. In financial terminology, the term current assets refers to such assets which were intended to be converted into cash within the span of one year without suffering any diminution in value. It may also not disturb the day to day operations of the firm. Current assets include cash, bank, inventory, debtors and marketable securities. Current liabilities are those liabilities which were intended to be paid within a span of one year. They are expected be paid out of current assets and earning of the concerned year. Account payable, Bank overdraft and Bill payables are included under the umbrella term current liabilities.

Normally level of current assets should be higher than the level of current liabilities to ensure a reasonably smooth operation. Each and every aspect of financial sources has to be clearly examined. It is imperative for any company to maintain satisfactory level of working capital to avoid short term liquidity problem and to ensure proper utilization of company's assets for better revenue generation. Thus the major force behind the theory of management of working capital is to manage interaction between current assets and current liabilities of any business with a focus on profitability and support to better utilization of company's fixed assets as well. The norms of different levels of working capital components differ from industry to industry and therefore a

research based approach to locate key variables is more likely to give better guidance points to handle the matters at ground level. In this research study we have considered the following variables:

1. Debtors Turnover Ratio(DR)
2. Inventory Turnover Ratio(IR)
3. Cash, Bank and Marketable Security to Sales Ratio (CBMSR)
4. Creditors Velocity Ratio(CRV)
5. Current Ratio(CR)
6. Profit After Tax Sales Ratio (PATSR)

LITERATUTRE REVIEW:

The academia has widely visited working capital management and profitability. The literature review I pertinent to this study is presented below:

V. S. Kaveri (1985) in his study of large public limited companies over a period eight years (1975-1983) observed that Indian industry by and large did not charge the pattern of working capital financing. Steven M. Fazzari and Bruce C. Petersen(1993) in their study of U.S. manufacturing firm observed that working capital investment is extremely sensitive to cash flow fluctuations. They further observed that when working capital investment is included in fixed investment regression as a use or source of funds it has a negative co-efficient. Kesseven Padachi (2006) studied 58 manufacturing cos. For a period of six years i,e. 1998-99 to 2003-04. The variables considered are cash conversion cycle, inventory, receivables and payables. It was noticed that high amount of investment in inventories and receivables give low profit. Cash conversion cycle, inventory, receivables and payables had negative relationship with profitability. Abdul Raheman and Mohamed Nasr (2007) analysed the performance of 94 Pakistani firms for 6 years from 1998-99 to 2004-05. They have taken receivable collection period, stock turnover ratio, cash conversion cycle and current ratio. As variables using Kal Pearson's correlation, and regression analysis. They found negative relationship between working capital and profitability. However also positive association was noticed between size of the firm and profitability. Kesseven Padachi, C. Howorth, M. S. Narasimhan and R. Durbarry(2010) in their study analysed the working capital pattern and financing method of 101 small to medium Mauritian manufacturing firms for six years (1998 to 2003)using multivariate analysis. The researcher noticed inconsistent trend in investment is current asset and sales. They observed that major part of working capital is financed through payable and Short-term bank credit. Here, short term funds are first use through Working Capital Fund and then long-term funds are used. Ahmad Ahmadpour, Mohammad JavadZare, Keramatollah Heydari Rostami (2012) in their study analysed how performance of firms iseffected by working capital management. They studies 112 Iranian firms for a period of 10 years (2000-01 to 2009-10). Cash conversion cycle, average collection period, average payment period and inventory turnover ratio were taken as independent variable and financial performance is taken dependent variable. The cross-sectional regression analysis pointed out that and there existed a negative andsignificant relation among the average collection period, cash conversion cycle, inventory turnover ratio, average payment period and profit of the firm. It is recommended that if company want optimum cash conversion cycle, then they decrease accounts receivable, and should manage inventories through payment at correct manner. J. Aloy Niresh (2012) in his studies examined working capital management performance of 30 manufacturing firms accounting for 78% of total population.Which were listed in Colombo Stock Exchange for the period of 4 years (2008-2011). Working capital performance was analysed using the variable Current assets, total assets, current liability, total assets, Cash Conversion Cycle, Return on Assets and Return On Equity. Negative relation was identified among Cash Conversion Cycle and financial performance. The researcher observed that try the conservative working capital management policy was followed companies in SriLanka and recommended to improve upon inventory management process, to accelerated receivables collection and delayed payment to suppliers to make Cash Conversion Cycle shorter which in turn will entrance profitability. Tom Jose V, Akhilesh Jayakumar, Sijo M T (2013), in their study analysed various inventory control techniques like economic order quantity, safety stock method, ABC analysis and FSN analysis.One company 40 item of inventory performance through various methods of inventory control. Researcher observes inventory management is dissatisfied to company because there is difference between EOQ and number of units buys. Using safety stock method recommended that what should be save stock for the company. Researcher observe ABC analysis; A category having more than 100 Rs value, 35% items of B category value between Rs.25 to 100 and 30% C category items value less than Rs.25. fast moving component 43 % , slow moving components 57% and non-moving components item are nil. Richard Kofi Akoto, DadsonAwunyo-Vitor and PeterLawerAngmor(2013) in their study examined relationship between working capital management practices and profitability.The analysed 13

listed manufacturing firms in Ghana for the duration of 5 years (2005-06 to 2009-10). Using the panel data method they found that profitability and accounts receivables were negative related. However firms' cash conversion cycle, current asset ratio, size, and current asset turnover were found to have positive association with profits of the company. N.SureshBabu and Prof. G.V.Chalam (2014) examined relationship among components of working capital viz cash conversion cycle, receivable collection period, inventory conversion cycle, account payables period and the profitability. In Indian leather industry for the duration of 14 years (1997-98 to 2010-11).Using regression analysis they noticed that profitability has insignificant positive relationship with inventory conversion period but has significant positive relationship with average collection period. The average payment period and cash conversion cycle had significant negative association with profitability. Samuel Mongrut, Darcy Fuenzalida O'Shee, Claudio Cubillas Zavaleta and JohanCubillas Zavaleta (2014) in their study of Latin American companies for a period of 13 years noticed that CCC is negatively correlated with size of the firm. They further observed that companies in Argentina, Brazil, Chile and Mexico hold excess cash which has the potential to adversely affect firm value. They also noticed that CCC country risk and company's market power have influence on the way the companies manage their working capital.

HYPOTHESES DEVELOPMENT:

The preceding literature review and the above stated variables lead to the development of following hypotheses:
1. **Ho:** DR does not have influence on PATSR
   H1: DR does have influence on PATSR
2. **Ho:** IR does not have influence on PATSR
   H1: IR have influence on PATSR
3. **Ho:** CBMSR does not have influence on PATSR
   H1: CBMSR have influence on PATSR
4. **Ho:** CRV does not have influence on PATSR
   H1: CRV have influence on PATSR
5. **Ho:** CR does not have influence on PATSR
   H1: CR does have influence on PATSR

RESEARCH METHODOLOGY:

Research Objectives:
(1) To comprehend the association of DR, IR, CBMSR, CRV and CR with PATSR of the business enterprise in the passenger car sector
(2) To evaluate the extent of the influence DR, IR, CBMSR, CV and CR exercise on PATSR of the business enterprise in the passenger car sector
(3) To gain meaningful insight into management of working capital with reference to its role as a determinant of profitability of the enterprise in the passenger car sector.

Research Techniques:
In this research study we have considered only passenger car manufacturing companies listed on Bombay Stock Exchange and/or National Stock Exchange. The historical and voluminous data for the variables were collected for a period of ten years to remove cyclical effects of the economy. The required data was collected from audited annual reports and data base such as CAPITAline. The companies for which full data for the complete time frame was not available were dropped in order to shun statistical inaccuracies in data analysis. The data was then processed using The various statistical techniques were used to analyze the for examining the relationship of independent variables with dependent variable and to know the extent of influence independent variables exert on the dependent variable. Auto correlation amongst independent variables was checked using Durbin Watson statistics. Multi co linearity amongst independent variables was checked using matrix of co-efficients of correlations along with VIF statistics. These tests were carried out to provide better reliability to the results.

RESULTS AND DISCUSSIONS:

The data pertaining to DR, IR, CBMSR, CRV, CR and PATSR has been analysed using various statistical techniques including multiple regression. Auto correlation test and multi co linearity test have also been conducted. SPSS software has been used. The results of analysis are presented in Table 1 to Table 4. The item wise analysis is described below:

(1) The standardized β of the independent variables viz. DR, IR, CBMSR, CRV and CR with their individual direction, values,significance level and VIF statistics are given in the Table- 1. As mentioned in the said table, standardized β of DR is -0.33 which indicates that DR has negative association with PATSR. Further the significance level of 0.472 points out that the said β (DR) is statistically not relevant. Thus the statistical evidences suggest that null hypothesis H0 (DR) be accepted and the alternate hypothesis Ha (DR) be rejected. This means DR does not have influence over PATSR.

(2) The standardized β (IR), as shown in Table-1, stands at + 0.049 which shows that IR has positive relationship with PATSR. It's significance level 0.371 renders it statistically insignificant. The statistical evidences point out that null hypothesis H0 (IR) be accepted and the alternate hypothesis Ha (IR) be rejected which IR does not have any influence over PATSR.

(3) Table - 1 further shows that the standardized β of CBMSR stands at + 0.007.This points out existence of positive relationship between CBMSR and PATSR. However it's significance level 0.842 renders the low value β (CBMSR) even statistically insignificant. The statistical evidences, therefore, clearly suggest that null hypothesis H0 (CBMSR) be accepted and the alternate hypothesis Ha (CBMSR) be rejected. This means CBMSR does not have significant influence over PATSR.

(4) The standardized β(CRV) as stated in Table - 1 stands at – 0.972 which affirms the existence of negative relationship between CRV and PATSR. It's significance level of 0.000 clearly points out that the β (CRV) is statistically very significant. The statistical evidences suggest that null hypothesis H0 (CRV) be rejected and the alternate hypothesis Ha (CRV) be accepted. This evidently means CRV exerts significant influence over PATSR. An increase in CRV will bring about a decline in the profitability by number of times the value of the standardized β of (CRV). Thus CRV appears to be a very important variable influencing PATSR.

(5) The standardized β(CR) as mentioned in Table - 1 is – 0.39 indicating negative relationship between CR and PATSR. It's significance level of 0.365 suggests that the β (CR) is statistically not significant. The statistical evidences suggest that null hypothesis H0 (CR) be accepted and the alternate hypothesis Ha (CRV) be rejected. This evidently means CR does not exert any influence over PATSR.

(6) The results of F test placed in Table – 2, clearly shows F = 211.212 at a significance level of 0.000 with df (5, 84). This suggests that all standardized regression co-efficients will be non zero.

(7) The Durbin Watson test was carried out to check possibilities of Auto correlation amongst the independent variables. Table – 2 shows D = 2.494 For N=90, dL = 1.50 and dU = 1.54 . As a result, D > dU and 4 – D > dL This means that there is no cause of concern from view point of either positive or negative auto correlation amongst the independent variables.

(8) The multi co linearity amongst the independent variables has been examined through Matrix of Co-efficients of Correlations placed in Table - 3 and VIF (Variance Inflation Factor) statistics stated in Table – 1. The said matrix of co- efficients of correlations reveals that none of the five independent variables has the co-efficient larger than + 0.7 except IR and DR which themselves are statistically insignificant. Hence there is no cause of concern from viewpoint of multi co linearity amongst the independent variables influencing the results. This is further confirmed by the VIF statistics placed at Table-1. The VIF statistics are far away from 10 and each of them centered on the mean (VIF).

(9) The test outputs discussed at points (6), (7), and (8) above lend considerable reliability to the results and the emerging Multiple Regression Equation is as under:
PATSR = + 47.529 – 0.33 (DR) + 0.049 (IR) + 0.007 (CBMSR)- 0.972 (CRV) – 0.39 (CR)
The R² i.e. the co-efficient of determination, as mentioned in Table-1, stands at 0.922 suggesting that the said equation can explain 92.2% variations in PATSR. For the remaining variations i.e. unexplained variations, some other variables are responsible.

(10) The descriptive statistics pertinent to the analysis are depicted in Table -4. The predictive value of analysis will be better if the data set of the enterprises closely resemble the pattern of descriptive statistics given in the said table.

FINDINGS AND RECOMMENDATIONS:

Debtors:
The Debtors Turnover Ratio bears a negative association with the profitability of the enterprise. However, the unacceptable significance level does not permit it to be important. This points out that the corporate do not view DR as an important determinant of the profitability. The corporate do not assign much value to the credit being offered to customers from view point of its impact on profitability.

Inventory:
The Inventory Turnover Ratio has a positive relationship with the profitability of the enterprise. At the same time the unacceptable significance level makes it to be irrelevant. This leads us believe that the corporate do not view inventory turnover as a significant variable influencing the profitability.

Cash Bank and Marketable Securities:
The Cash Bank and Marketable Securities to Turnover Ratio though has a positive association with the profitability of the enterprise, it's unacceptable significance level renders it irrelevant. The corporate do not assign much weight to Cash Bank and Marketable securities when it comes to profitability.

Creditors:
The Creditors Velocity bears negative association with profitability and also has relatively high value regression coefficient with a significance level of 0.000. The Creditors Velocity is certainly a very important variable influencing the profitability. The higher the creditors' velocity less will be the profit. This may be due to hidden cost built into the credit extended by suppliers as there is no free lunch in finance.

Current Ratio:
The Current Ratio bears negative association with the profitability of the enterprise. At the same time the unacceptable significance level makes it irrelevant. This means the corporate do not consider as a significant variable influencing the profitability.

CONCLUSION:

This research work has very significant implications both for passenger car industry managers and academicians. Creditors' Velocity has emerged as single most important factor influencing the profitability. They have to adopt more holistic approach to working capital management. They need to pay more attention to the sources of working capital. The focus appears to have been shifted to sources of working capital from current assets. In this sector inventory and debtors have little role to play as far as profitability is concerned. The academicians need to develop more effective models for managing sources of working capital finance.

Table 1: Regression Co-efficients – Direction, Value and Significance Level

	Regression Co-efficients		t	Significance Level	VIF
	Direction	**Value**			
Constant		47.529			
DR	-	0.33	-0.723	0.472	2.381
IR	+	0.049	+0.899	0.371	3.327
CBMSR	+	0.007	+0.201	0.842	1.293
CRV	-	0.972	-30.5	0.000	1.161
CR	-	0.39	-0.910	0.365	2.058

Dependent Variable : PATSR R^2= 0.922
Independent Variables: DR, IR, CBMSR, CRV, CR   N = 90

Table 2: Variance Analysis

	Sum of Squares	df	Mean Square	F	Significance Level	Durbin Watson
Regression	16135849.54	5	3227169.908	211.212	0.000	2.494
Residual	1283462.80	84	15279.319			
Total	**17419312.34**	**89**				

Table 3: Matrix of Co-efficients of Correlations

	DR	**IR**	**CBMSR**	**CRV**	**CR**
DR	1.000	0.717	0.100	-0.211	0.259
IR	0.717	1.000	0.309	-0.150	0.587
CBMSR	0.100	0.309	1.000	-0.011	0.455
CRV	-0.211	-0.150	-0.011	1.000	-0.276
CR	0.259	0.587	0.455	-0.276	1.000

Table 4: Descriptive Statistics

Variables→	PATSR	DR	IR	CBMSR	CRV	CR
Mean	-76.42	34.07	19.92	0.076	302.74	0.97
Std. Deviation	442.41	26.34	23.30	0.076	1446.30	0.46

REFERENCES:

Ahmad Ahmadpour, M. J. (2012, August). An Empirical Study of Association between Working Capital Management and Performance: Evidence from Tehran Stock Exchange. *Journal of Social and Development Sciences,* 3(8), 79-285.

AloyNiresh, J. (2012). Working Capital Management & Financial Performance Of Manufacturing Sector in Sri Lanka. *European Journal of Business and Managem*, 4(15), 23-31.

G.V.Chalam, N. a. (2014, October). Study on the Working Capital Management Efficiency in Indian Leather Industry- An Empirical Analysis. *IRACST- International Journal of Research in Management & Technology (IJRMT),* 4(5), 196-201.

Kaveri, V. S. (1985, August 31). Financing Qf Working Capital in Indian Industry. *Economic and Political Weekly*, 20(35), 123-128.

Nasr, A. R. (2007, March). Working capital management and profitability-case of Pakistani Firms. *International Review of Business Research Papers*, 3(1), 279-300.

Padachi*, K., Howorth1, C., & Durbarry3, M. S. (2010, June 28-29). Working Capital Structure and Financing Pattern of Mauritian SMEs. *Oxford Business & Economics Conference Program*, 1-9.

Padachi, K. (2006, October). Trends in Working Capital Management and its Impact on Firms'. *International Review of Business Research Papers*, 02(02), 45-58.

Petersen, S. M. (1993). Working Capital and Fixed Investment: New Evidence on Financing Constraints. *The RAND Journal of Economics*, 24(3), 328   342.

Richard Kofi Akoto, D.-V. a. (2013, December). Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms. *Journal of Economics and International Finance*, 5(9), 373-379.

Samuel Mongrut, D. F. (2014). Determinants of Working Capital Management in Latin American Companies. *Innovar: Revista de ciencias administrativas sociales*, 24(51), 5-17.

Tom Jose V, A. S. (2013, March). Analysis of Inventory Control Techniques; A Comparative Study. *International Journal of Scientific and Research Publications*, 3(3), 1-6.