The Impact of Working Capital Management on Profitability of Selected Tyre Industry In India: An Empirical Analysis

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ABSTRACT

This paper focuses empirically an insight on the Impact of Working Capital Management (WCM) on Profitability (P) of Tyre Industry in India. The study has considered 6 Tyre Industry for the analysis. The period of the study has been considered from 2003-04 to 2013-14. The study is based on secondary data. The objective of this paper is to find out the impact of working capital management on profitability. Six independent variables (CR, QR, WCTR, DTR, FATR, and ITR) and one dependent variable Return on Investment (ROI) have been tested using regression and correlation analysis. The result of correlation analysis shows that CR and QR (.915) is highly positively significant at 1% level of significance. The degree of relationship between ROI and ITR is .711 (.048) is also significant. The findings of the study show that there a significant effect of WCM in respect of selected predictor variables i.e. (CR, WCTR, DTR, ITR) on profitability (ROI) have significant impact of the WCM on P of tyre industry in the India for the study period.

Key words: *Working Capital management, Profitability, Return on Investment, Tyre Industry Working Capital Turnover Ratio.*

JEL Classification: *G30, G32*

No one can overlook the necessity of funds in a business unit either a retail shop or a large manufacturing concern. Cash is the only common factor in all small and large business units. Thus money management is must that is generally known as financial management. Proper management of invested funds in a business results in effective financial management. Every business unit needs funds for two purposes: for establishment and to run its day to day operations. These funds are known as working capital. In simple words working capital management refers to al aspect of current assets and current liabilities. Usually the working capital is needed to strengthen the solvency, enhance goodwill, obtain loan easily, supply the raw material regularly and face business crises in emergencies such as depression.

REVIEW OF LITERATURE

The following past relevant studies have been taken into consideration:

Padachi (2006) examined the *"Trends in Working Capital Management and its Impact on Firm's performance: an Analysis of Mouritian Small manufacturing firms"* the results proved that a high investment in inventories and receivables is associated with lower profitability. Further, it showed that inventory days and cash conversion cycle had positive relation with profitability. Account receivables days and account payables days correlated negatively with profitability.

Garcia et al. (2007) analyzed the *"Effects of Working Capital Management on SME Profitability"* the effects of WCM on the Profitability of a sample of Small and Medium-Size Spanish firms. They found that managers can Create Value by reducing their inventories and the number of days for which their accounts are outstanding moreover limited the cash conversion cycle also improves the firm's profitability. *Singh (2008)* found that the *"Inventory and Working Capital Management: An Empirical Analysis"* the size of inventory directly affects Working Capital and its management. He suggested that inventory was the major component of Working Capital and needed to be carefully controlled. *Chakraborty (2008)* evaluated the *"Working Capital and Profitability: An Empirical Analysis of their relationship with Reference to Selected companies in the Indian Pharmaceutical Industry"* WC is not a factor of improving profitability and there may be a negative relationship between then, while according to the other school of thought, investment in WC plays a vital role to improve corporate profitability, and unless there is a minimum level of investment of WC, output and sales cannot be maintained in fact the inadequacy of WC would keep fixed asset inoperative.

Ramachandran and Janakiraman (2009) examined the *"The relationship between Working Capital Management Efficiency and EBIT"* to analyzed the relationship between working capital management efficiency and earnings before interest and tax of the paper industry in India. The study revealed that cash conversion cycle and inventory days had negative correlation with earnings before interest and tax. While accounts payable days and accounts receivable days related positively with earnings before interest and tax. *Stephanou (2010)* described "The Effect of Working Capital Management on firms Profitability: Empirical Evidence From An Emerging market" in his study we empirically investigate the effect of Working Capital Management on firms financial presentation in an developing market, for the period 1998-2007.statistical tools is to be used in multiple regression analysis. The results of this study should be of great importance to managers and major investors, such as investors, creditors and financial analysis particularly after the recent global financial crises and the latest downfalls of oversize organizations worldwide. *Palani and Yasodha (2012)* described in his study conducted an important *"study on Working Capital Management in Loyal Textile Mills Limited, Chennai"*. The period of the study was five years from 2006-07 to 2010-11. The objective of the study was to assess the extent to which working capital has been successfully used by Loyal Textile Mills Ltd. The data for the research was collected

from secondary sources i.e. annual reports of the company. The research methodology was mostly created on ratio analysis techniques and statistical tools with Z-Score analysis. The Company maintained good working capital turnover ratio which exposed efficient utilization of working capital in generating sales. It is significant positive relationship between capital employed and current ratio.

Yaghoobnejad (2012) in this study titled *"A study on the effects of WCM on the Profitability of listed companies in Tehran Stock Exchange"* the study is based on secondary data. The period of study is 996-2005 in this study the variable of gross profit to total asset ratio was applied as a measure of corporate profitability and variable of collection period, inventory turnover period. The accounts payable turnover period and cash conversion cycle were used as Working Capital criteria. *Mehrotra (2013)* analyzed the *"Working Capital Trends and Liquidity Analysis of FMCG sector in India"* this industry primarily includes the production, distribution and marketing of consumer packaged goods. The study is based on Secondary data. The period of study is Give years and traditional method of data analysis and ration analysis as tools of financial statement analysis for examine the degree of efficient of WCM has been adopted.

Bhunia and Das (2015) in a study on *"Underlying Relationship between Working Capital Management and Profitability of Pharmaceutical Companies in India"* the study is based on secondary data obtained from centre for monitoring Indian economy data base for the period from 2003-2013. In the course f examination, descriptive statistics, correlation statistics and multiple regression test have been used. The company would anxiety of WCM performance, mainly unexplained variables in justification of making shareholders wealth. *Dash and Hanuman (2015)* analyzed the *"A Goal Programming Model for Working Capital Management"* the WC decision as a balance has to be achieved between the conflicting objectives of liquidity and profitability. The model determines for given Working Capital turnover and fixed assets turnover ratios, how funds should be maintained between WC/CA and FA to achieve targeted levels of liquidity and profitability whilst minimizing the opportunity cost/loss f excess liquidity.

Samiloglu and Akgun (2016) the purpose of the study *"The Relationship between Working Capital Management and Profitability: Evidence from Turkey"* the working capital management and performance such as profitability between accountant receivable period, accountant payable period and cash conversion cycle on Istanbul Stock Exchange (ISE) during the 10 years. The sample of 120 Turkish manufacturing firms listed on ISE for a period 10 years from 2003 to 2012. Multiple linear regression models have been used to find out the relationship between working capital management and firm performance in the context of Turkey. The findings of the study significant and negative relationship between account receivable period and return on asset return on equity, operating profit margin and net profit margin in the manufacturing industry. *Abdolkarim and Rahimi (2016)* in this study explain that *"The Relationship between Working Capital Management and Cash Flow on the Financial Performance of Manufacturing"* the working capitals are seen as important

assets of firms and business units which have a leading role in their financial decisions. The effect of cash flowing manufacturing firms financial performance they are publicly traded on Tehran Stock Exchanges from 2008 to 2014 and the studied samples were selected using systematic elimination of the population. Due to equal circumstance, the number of 155 firms was selected as samples of the research. The results also showed that cash flow conversion cycle has an immediate and delayed relationship with Tobin's Q Index. *Mbawuni et al. (2016)* the study examined the *"The Impact of Working Capital Management on Profitability of Petroleum retail firms: Empirical Evidence from Ghana"* the profitability of petroleum retail firms (PRFs) in Ghana over a six year period (2008-2013). Audited annual reports from a sample of five selected petroleum retail firms in Ghana are employed in the study. Using, descriptive analysis, correlation and regression analysis, the results indicate that, in the PRFs in Ghana, the most important Working Capital Component that drives the firm's profitability, measured in Return on Assets (ROA), is Average Days Payable (ADP). The rest of Working Capital Management components, Cash Conversion Cycle (CCC), Average Days Inventory (ADI) and Average Days Receivable (ADR) are not has significant relationship with profitability. The study found that Working Capital Management practices among the five selected Petroleum Retail Firms support the conservation strategy of Working Capital Management rather than an aggressive Working Capital Management strategy.

Bhatia and Srivastava (2016) investigated of the article titled "Working *Capital Management and Firm Performance in Emerging Economies Evidence from India"*. The analysis is found over a long window spanning across 2000-2014 by using Ordinary Least Square (OLS). The panel data of 179 companies listed on the S&P BSE 500 Index of Bombay Stock Exchange (BSE). The study based on India finds a negative relationship between the working capital management and firm performance, necessitating the need to efficiently manage the working capital for enhanced profitability. *Suganya (2016)* in this study examined the relationship between *"Working Capital Management and Firm's Profitability: The Listed Companies in Sri Lankan Context"*. The empirical relationship of the variables in this study was found with the panel data analysis of 20 listed companies in Sri Lanka: Evidence from standard and poor's index companies for a period from 2011 to 2015. Descriptive Statistics, Pearson's Correlation, Regression analysis were used for analyzing the data. The result of this study reveals that, cash conversion cycle as a component of working capital management has a significant negative effect on profitability of listed companies in Sri Lanka. It concluded the listed companies in Sri Lanka have to decrease period of cash conversion cycle other than considering the current ratio and quick ratio to improve the company's profitability in the form of increasing its profit generation to enhance shareholders wealth. *Pandey and Sabamaithily (2016)* found in the study titled "Working Capital Management on Profitability: Cement Industry in India" that there is a significant effect of WCM in respect of selected predictor variables i.e. (Current Ratio and Quick Ratio) on profitability (ROI) have significant impact on profitability of Cement Industry in India during the period of study from 2003-04 to 2013-14.

OBJECTIVES OF THE STUDY:

- To examine the various factors affecting working capital management on profitability Ratios.
- To find out the impact of working capital management on profitability Ratios.
- To study the relationship between working capital management on profitability Ratios.

HYPOTHESES OF THE STUDY:

H_0^1: There is no significant impact of Current ratio on Return on Investment.

H_0^2: There is no significant impact of Quick ratio on Return on Investment.

H_0^3: There is no significant impact of Working Capital Turnover ratio on Return on Investment.

H_0^4: There is no significant impact of Fixed Assets Turnover ratio on Return on Investment.

H_0^5: There is no significant impact of Debtors Turnover ratio on Return on Investment.

H_0^6: There is no significant impact of Inventory Turnover ratio on Return on Investment.

H_0^7: There is no significant relationship between Inventory Turnover Ratio on Return on Investment.

H_0^{7a}: There is no significant relationship between Current Ratio on Quick Ratio.

H_0^{7b}: There is no significant relationship between Debtors Turnover Ratio on Quick Ratio.

RESEARCH METHODOLOGY:

Types of Data:

The secondary data has been used for this study.

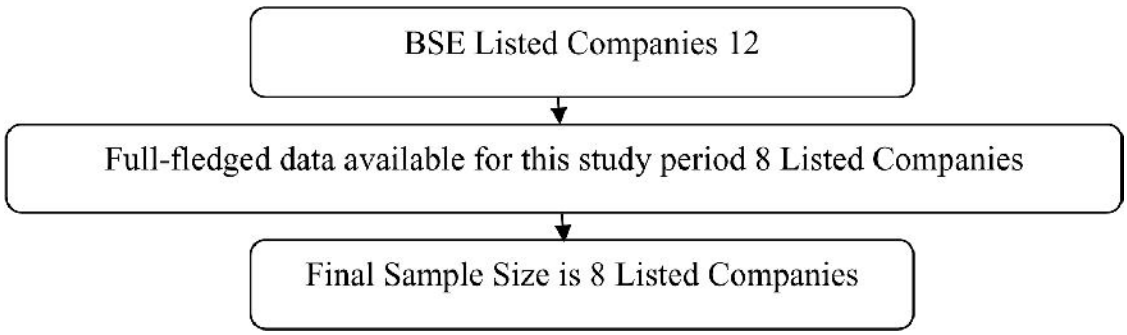
Source of Data and period of the study

The secondary data have been collected from annual reports of the companies listed in Bombay Stock Exchange. The data have been collected from the data base of www.money control.com. The period of the study has been considered from 2003-04 to 2013-14.

Sampling Design:

The tyre industries listed in Bombay Stock Exchange (BSE) has been chosen for this study. In final out of the 12 industries 8 firms are available with full-fledged data. Hence the sample size is 8 tyre industries.

Multistage Sampling Technique



Data Processing and Analyzing Technique:

For the data analysis SPSS 16 version was used. The variables both independent and dependent were analyzed by using the statistical tools as correlation and regression. Here the regression analysis was used to estimate the causes of relationship between the dependent and in dependent variables. Further the study used the correlation model, in particular Pearson correlation to measure the degree of association between working capital management on profitability.

TABLE 1
ANALYSIS AND INTERPRETATION OF TYRE INDUSTRY IN INDIA

COMPANY	Variables	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Mrf Tyre	ROI	36.44	54.92	51.34	88.19	55.30	76.74	3375.81	3264.04	3408.64	2374.14
Appolotyre	CR	1.37	1.49	1.53	1.54	1.50	1.30	1.29	1.48	1.27	1.27
Ceat Tyre	QR	0.87	0.92	0.94	0.89	0.99	0.75	0.78	0.97	0.89	0.91
Balkiri Tyre	WCTR	5.57	1.86	4.04	13.83	9.76	-101.87	-210.96	12.62	-77.53	2.58
Tvs Tyre	DTR	12.56	13.09	13.37	15.60	22.33	20.45	17.11	15.84	46.82	86.73
Good Year Tyre	FATR	10.74	9.27	9.05	8.85	8.65	6.63	8.80	9.57	9.90	11.47
Govind Tyre	ITR	23.33	0.00	104.89	27.18	-64.72	141.43	-234.36	99.23	-471.88	460.54
Ptl Tyre											

Source: *Computed results based on compiled data collected from Money Control.*

Analysis of data for studying working capital management with different sample units of tyre industry was carried out by using variables of Return on Investment (Profitability), Current Ratio (CR), Quick Ratio (QR), Working Capital Turnover Ratio (WCTR), Debtors Turnover Ratio (DTR), Fixed Assets Turnover Ratio (FATR), and Inventory Turnover Ratio (ITR). The result of these analyses is presented in the below table.

TABLE 2
DESCRIPTIVE STATISTICS OF TYRE INDUSTRY IN INDIA

VARIABLES	N	MINIMUM	MAXIMUM	MEAN	SD
ROI	8	.3	1056.6	202.3	362.9
CR	8	.1	1.4	.8	.5
QR	8	.1	2.5	1.3	.7
WCTR	8	-1.2	40.6	12.0	13.5
DTR	8	3.4	24.8	12.6	6.6
FATR	8	5.9	820.2	119.2	283.6
ITR	8	3.5	19.8	10.9	6.3

Source: *Computed results based on compiled data collected from Money Control.*

From the results of descriptive statistics of the table 2 shows that FATR(Fixed Asset Turnover Ratio) has the highest mean value and it is indicated that these industries has highly efficient financial performance and next DTR (Debtors Turnover Ratio) has the highest mean value. Further FATR (Fixed Asset Turnover Ratio) got the higher Standard Deviation value. And it shows that these firms has the efficient WCTR (Working Capital Turnover Ratio) and followed by QR (Quick Ratio). It has also the high Standard Deviation but CR (Current Ratio) has low Standard Deviation.

ANALYSIS OF CORRELATION

The descriptive statistics shows the working capital measures and its variations among the firms in sample industry. The correlation analysis is done to analyze the relationship between the working capital management components and profitability ratios. To examine the relationship among these variables, Pearson correlation coefficients are calculated.

TABLE 3
CORRELATIONS TABLE

	ROI	QR	CR	WCTR	ITR	DTR	FATR
ROI	1						
QR	.382	1					
CR	.102	.915**	1				
WCTR	-.082	-.304	-.221	1			
ITR	.711*	-.153	-.452	-.025	1		
DTR	-.231	-.633	-.740*	-.381	.387	1	
FATR	.351	.090	.079	.039	.111	-.377	1

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed)

Table 3 shows that Pearson's correlation analysis is used for data to find the relationship between working capital management and profitability. Found that the return on investment (ROI) is positively correlated with the Inventory Turnover Ratio (ITR). This relationship between Inventory Turnover Ratio and Return on Investment is contradictory to the conventional belief which shows a positive association between Inventory Turnover Ratio and profitability.

TABLE 4
RESULT OF CORRELATION ANALYSIS

Variables	QR	ROI	CR
CR	.915		
Sig.(2-tailed)	.001		
N	8		
ITR		.711	
Sig.(2-tailed)		.048	
N		8	
DTR			-.740
Sig.(2-tailed)			.036
N			8

Source: *Computed results based on compiled data collected from Money Control.*

The result of correlation analysis in table 4 shows that working capital management on profitability of Tyre industry in India therefore that CR and QR (.915) are highly positively significant at 1% level of significant. The degree of relationship between ROI and ITR is .711 (.048) is significant, However the relationship between ITR and ROI in significant positive at 5% level of significance. The relationship between DTR and CR (-.740) is negatively significant at 5% level.

TABLE 5
REGRESSION RESULT OF TYRE INDUSTRY IN INDIA

Variables	B	't'	Sig
(Constant)	198.402	5.607	.112
CR	-1.305	-6.378	.099***
QR	.277	1.693	.340
WCTR	-.957	-8.513	.074***
FATR	-.334	-4.755	.132
DTR	-1.857	-10.180	.062***
ITR	.895	12.176	.052***
R^2	.999		
Adjusted R^2	.998		
F statistics	91.267		

***Significant at the 0.10 level (2-tailed)

Table 5 shows the following results:

- CR has negative significant co-efficient -1.305 at (0.099) with ROI. There is significant negative relationship between Current Ratio on Profitability (ROI). H_0^1: *"There is no significant impact of Current Ratio on Profitability (ROI)"* hence the null hypothesis is *rejected* at 10% level of significance. Therefore, it is concluded that current ratio has an impact on profitability.
- QR has not significant positive co-efficient .277 at (.340) which means that there is no significant positive relationship between Current Ration on profitability. H_0^2: *"There is no significant impact of Quick Ratio on Profitability (ROI)"*, the hence null hypothesis is *accepted*. Therefore, it is inferred that current ratio has not a significant impact on profitability.
- WCTR has negative significant co-efficient -0.957 at (0.074) 10% level with ROI. Which means that the companies maintain a Higher proportion of net Working Capital when compare to sales. H_0^3: *"There is no significant impact of Working Capital Turnover Ratio on Profitability (ROI)"* hence, null hypothesis is **rejected** at 10% level of significance. Therefore, it is concluded that Working Capita Turnover Ratio has a significant impact on profitability.
- FATR has negative significant co-efficient -0.334 at (0.132) with ROI. This means that there is no significant between FATR on Profitability. H_0^4: *"There is no significant impact of Fixed Assets Turnover Ratio on Profitability (ROI)"* hence, null hypothesis is *accepted*. Therefore, it is concluded that the fixed assets turnover ratio has not a significant impact on profitability.
- DTR has negative significant co-efficient -1.857 at (0.062) 10% level with ROI. This means that the debtor's turnover ratio is significant in profitability. H_0^5: *"There is no significant impact of Debtor's Turnover Ratio on Profitability (ROI)"* hence, the null hypothesis is *rejected* at 10% level of significance. Therefore, it is concluded that Debtors Turnover Ratio has a significant impact on profitability.
- ITR has significant positive co-efficient 0.895 at (0.052)10% level with ROI, which shows that the Inventory Turnover ratio is significantly related to the profitability. H_0^6: *"There is no significant impact of Inventory Turnover Ratio on Profitability (ROI)"* hence, the null hypothesis is *rejected* at 10% level of significance. Therefore, it concluded that inventory turnover ratio has a significant impact on profitability. H_0^7: *"There is no significant relationship between Inventory Turnover Ratio on Profitability (ROI)"* hence, the null hypothesis is *rejected* at 5% level of significance. Therefore, it is concluded that inventory turnover ratio has a significant impact on profitability

  H_0^{7a}: *There is no significant relationship between Current Ratio on Quick Ratio.*

  H_0^{7b}: *There is no significant relationship between Debtors Turnover Ratio on Quick Ratio.*

ANALYSIS AND INTERPRETATION

- **H_0^1:** *"There is no significant impact of Current Ratio on Profitability (ROI)"* hence null hypothesis is *rejected* at 10% level of significant. Therefore, it is concluded that current ration does have an impact on profitability. It is establish that it is better to maintain more than 0.50 CR, which gives better profitability of Tyre Industries. CR has negative significant co-efficient with ROI. MRF Tyre, Appolo Tyre, Ceat Tyre, Balkiri Tyre, TVS Tyre, Good Year Tyre, Govind Tyre, PTL Tyre. The companies like which have CR more than 0.50 are able maintain higher mean profitability position over the study period.
- **H_0^2:** *"There is no significant impact of Current Ratio on Profitability (ROI)"*, hence null hypothesis is *accepted*. Therefore, it is inferred that current ratio has not a significant impact on profitability. QR has not a significant positive co-efficient .277 at (.340) which means that there is no significant positive relationship between Current Ratio on profitability.
- **H_0^3:** *"There is no significant impact of Working Capital Turnover Ratio on Profitability (ROI)"* hence, null hypothesis is **rejected** at 10% level of significance. Therefore, it is concluded that Working Capital Turnover Ratio has a significant impact on profitability. WCTR has negative significant co-efficient -0.957 at (0.074) 10% level with ROI. Which means that the companies maintain a Higher proportion of net Working Capital when compare to sales.
- **H_0^4:** *"There is no significant impact of Fixed Assets Turnover Ratio on Profitability (ROI)"* hence, null hypothesis is **accepted.** Therefore, it is concluded that the fixed assets turnover ratio has not a significant impact on profitability. FATR has negative significant co-efficient -0.334 at (0.132) with ROI. This means that there is no significant impact of FATR on Profitability.
- **H_0^5:** *"There is no significant impact of Debtor's Turnover Ratio on Profitability (ROI)"* hence, null hypothesis is *rejected* at 10% level of significant. Therefore, it is concluded that Debtors Turnover Ratio has significant impact on profitability. DTR has negative significant co-efficient -1.857 at (0.062) 10% level with ROI. This means that the debtor's turnover ratio has significant impact on profitability.
- **H_0^6:** *"There is no significant impact of Inventory Turnover Ratio on Profitability (ROI)"* hence, null hypothesis is *rejected* at 10% level of significant. Therefore, concluded that inventory turnover ratio is significant impact on profitability. ITR has significant positive co-efficient 0.895 at (0.052) 10% level with ROI, which shows that the Inventory Turnover ratio is significantly related to the profitability.
- **H_0^7:** *"There is no significant relationship between Inventory Turnover Ratio on Profitability (ROI)"* hence, null hypothesis is *rejected* at 5% level of significant. Therefore, concluded that inventory turnover ratio is significant impact on profitability

H_0^{7a} : There is no significant relationship between Current Ratio on Quick Ratio.

H_0^{7b} : There is no significant relationship between Debtors Turnover Ratio on Quick Ratio.

Table 6
Statement of Result

S.No	Hypothesis	Statement of Hypothesis	Accepted/ Rejected	Result
1	H_0^1	**"There is no significant impact of Current Ratio on Profitability (ROI)"**	**Rejected**	Significant
2	H_0^2	**"There is no significant impact of Quick Ratio on Profitability (ROI)".**	**Accepted.**	Not Significant
3	H_0^3	**"There is no significant impact of Working Capital Turnover Ratio on Profitability (ROI).**	**Rejected**	significant
4	H_0^4	**"There is no significant impact of Fixed Assets Turnover Ratio on Profitability (ROI)".**	**Accepted**	Not significant
5	H_0^5	**"There is no significant impact of Debtor's Turnover Ratio on Profitability (ROI)".**	**Rejected**	significant
6	H_0^6	**"There is no significant impact of Inventory Turnover Ratio on Profitability (ROI)".**	**Rejected**	significant
7	H_0^7	**"There is no significant relationship between Inventory Turnover Ratio and Profitability (ROI)"** hence, null hypothesis is **rejected.** H_0^{7a}: There is no significant relationship between Current Ratio on Quick Ratio. H_0^{7b}: There is no significant relationship between Debtors Turnover Ratio on Quick Ratio.	**Rejected.**	significant

CONCLUDING REMARKS

The findings of the study show that there a significant effect of *WCM* in respect of selected predictor variables i.e. *(CR, WCTR, DTR, ITR)* on profitability *(ROI)* have significant impact of *the WCM* on *Profitability (P)*. The result of correlation analysis shows that CR and QR (.915) have highly positively significant relationship at 1% level of significance. The degree of relationship between ROI and ITR is .711 (.048) has significant relationship.

The overall regression model is represented by R^2 is above 50 per cent (0.999) 99.9 per cent and Adjusted R^2 which makes clear that the independent variables included to model has powerful impact of ROI. The level of significance shows that the model of this research study is good fit. The ROI was used as the dependent variable in order to test the impact of WCM on firm's profitability. However, the whole WCM across the Tyre Industry is more efficient during the study period.

LIMITATIONS OF THE STUDY:

- The Study is limited to 10 years i.e. from 2004-05 to 2013-14. Therefore, a detailed trend covering a lengthy period is not possible.
- The study is based on Secondary Data collected from www.money control.com. Therefore, the quality of the study depends purely upon the accuracy, reliability and availability of secondary data.
- The Study is limited to the Tyre Industry in India and listed in Bombay Stock Exchange. Therefore, the accuracy of results is purely based on the availability of data.
- Due to time constraints, only tyre industry has been selected for the research .

SCOPE FOR FURTHER STUDIES:

Any advanced researches probably will be accepted on the comparable area with large number of companies and expansion the years of the sample.

- Study may further more be in WCM in different sectors and companies with sizable number of sample.
- Further extensive research may be carried out on working capital components associated to different profitability variables like Return on Assets (ROA), Return on Capital Employed (ROCE), Return on Employed (ROE), and Earning per Share (EPS) etc.
- Study might be undertaken by taking large number of sample covering and more number of years.

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ANNEXURE
Tables and Charts

Table 1

Return on Investment of Tyre Industries over the period Under the study														
S.No	Company Name	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	Mean	Median	SD
1	Mrf Tyre	12.2	13.4	28.1	144.1	98.4	36.9	75.1	62.5	53.7	221.1	74.5	58.1	65.5
2	AppoloTyre	13.6	14.0	14.5	10.6	9.1	13.7	12.4	13.0	5130.2	41.2	527.2	13.6	1617.3
3	Ceat Tyre	44.0	109.8	59.9	42.3	49.0	60.2	254.1	16.8	14.0	8.0	65.8	46.5	72.4
4	Balkiri Tyre	8.4	98.2	89.1	62.9	17.4	37.9	30.0	400.7	125.4	243.3	111.3	76.0	122.8
5	Tvs Tyre	86.1	76.9	72.3	445.4	268.3	464.9	373.6	342.1	234.8	178.0	254.2	251.5	149.9
6	Good Year Tyre	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.9	6.0	0.0	18.9
7	Govind Tyre	127.1	126.8	146.6	0.0	0.0	0.0	26261.0	25277.0	21711.0	18238.0	9188.7	136.8	11964.2
8	PTL Tyre	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.2	3.7	0.6	0.3	1.1
	AVERAGE	36.4	54.9	51.3	88.2	55.3	76.7	3375.8	3264.0	3408.6	2374.1			

Chart 1

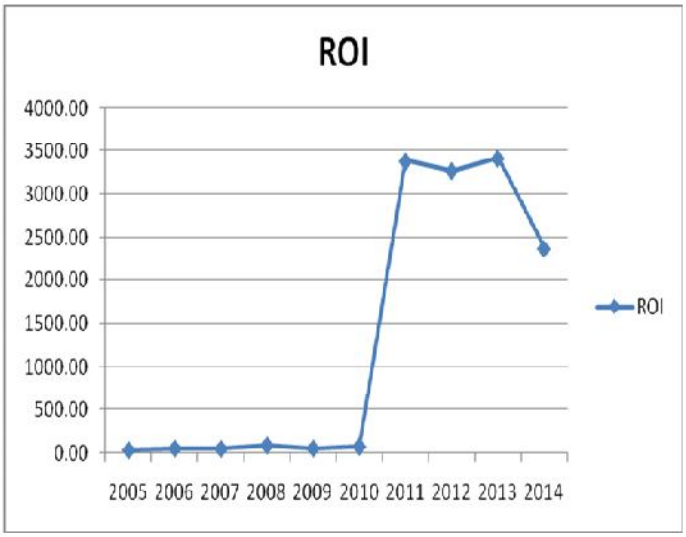


Table 2

Quick Ration of Tyre Industries over the period Under the study

S.No	Company Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Mean	Median	SD
1	Mrf Tyre	1.01	0.92	0.86	0.68	0.66	0.72	0.55	0.61	0.66	0.79	0.75	0.70	0.14
2	AppoloTyre	0.52	0.51	0.49	0.43	0.42	0.37	0.23	0.31	0.30	0.21	0.38	0.39	0.11
3	Ceat Tyre	0.43	0.46	0.47	0.49	0.52	0.41	0.43	0.52	0.50	0.62	0.49	0.48	0.06
4	Balkiri Tyre	0.70	0.88	1.41	1.35	1.65	1.43	1.10	2.37	1.59	1.02	1.35	1.38	0.47
5	Tvs Tyre	0.97	1.52	1.32	1.42	2.05	0.74	0.69	0.64	0.60	0.94	1.09	0.96	0.48
6	Good Year Tyre	1.00	0.91	0.84	0.88	0.76	0.53	1.12	1.14	1.24	1.38	0.98	0.96	0.25
7	Govind Tyre	1.74	1.53	1.62	1.05	1.28	1.48	1.17	1.21	1.24	1.14	1.35	1.26	0.23
8	PTL Tyre	0.57	0.59	0.52	0.84	0.59	0.36	0.95	0.94	1.00	1.21	0.76	0.72	0.27
	AVERAGE	**0.87**	**0.92**	**0.94**	**0.89**	**0.99**	**0.75**	**0.78**	**0.97**	**0.89**	**0.91**			

Chart 2

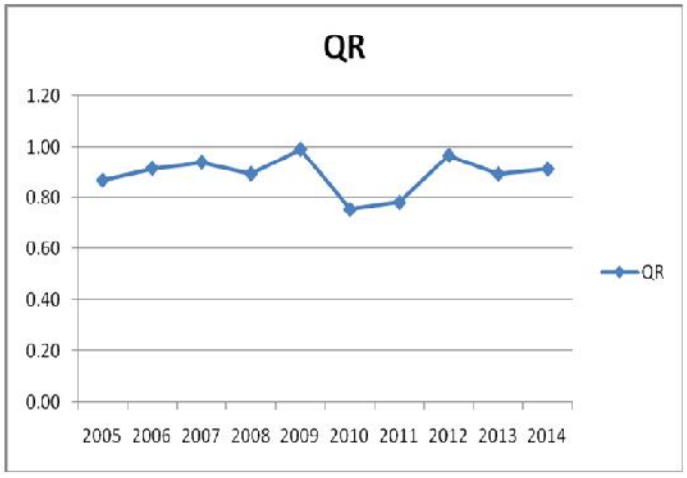


Table 3

Current Ratio of Tyre Industries over the period Under the study

S.No	Company Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Mean	Median	SD
1	Mrf Tyre	2.12	1.79	1.81	1.63	1.33	1.64	1.18	1.27	1.30	1.38	1.54	1.50	0.30
2	AppoloTyre	1.20	1.30	1.15	1.15	1.08	0.98	1.00	1.04	1.08	0.80	1.08	1.08	0.14
3	Ceat Tyre	0.71	0.76	0.81	0.97	0.83	0.81	0.90	0.99	0.87	1.16	0.88	0.85	0.13
4	Balkiri Tyre	1.38	2.03	2.41	2.60	2.54	2.62	2.44	3.73	2.48	1.87	2.41	2.46	0.61
5	Tvs Tyre	1.61	2.41	2.43	2.92	3.17	1.65	1.70	1.62	1.26	1.65	2.04	1.67	0.65
6	Good Year Tyre	1.39	1.23	1.16	1.30	0.99	0.75	1.37	1.44	1.50	1.74	1.29	1.34	0.28
7	Govind Tyre	2.52	2.09	2.34	1.63	1.94	1.88	1.68	1.63	1.58	1.47	1.88	1.78	0.35
8	PTL Tyre	0.07	0.29	0.10	0.09	0.12	0.04	0.08	0.09	0.06	0.06	0.10	0.08	0.07
	AVERAGE	1.37	1.49	1.53	1.54	1.50	1.30	1.29	1.48	1.27	1.27			

Chart 3

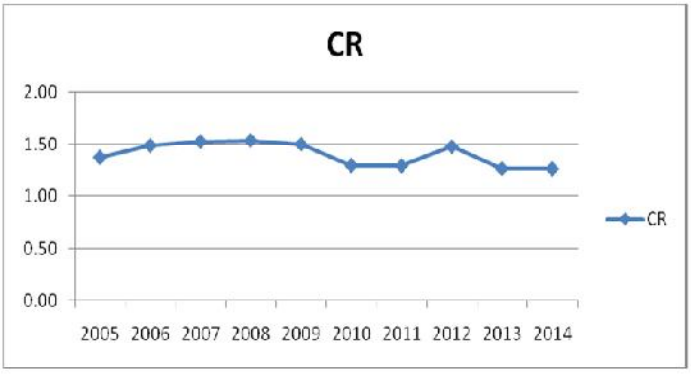


Table 4

Working Capital Turnover Ratio of Tyre Industries over the period Under the study

S.No	Company Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Mean	Median	SD
1	Mrf Tyre	5.01	6.48	7.09	7.19	19.87	10.10	16.71	16.13	14.46	11.10	11.41	10.60	5.11
2	AppoloTyre	9.69	5.64	10.68	11.38	12.44	32.79	18.99	24.21	29.73	-28.49	12.71	11.91	17.08
3	Ceat Tyre	4.34	-20.12	-26.00	53.62	22.60	-888.49	-1749.39	38.82	-688.50	15.96	-323.71	-7.89	603.89
4	Balkiri Tyre	5.58	2.50	3.26	2.75	4.19	3.74	2.90	1.97	2.60	3.59	3.31	3.08	1.03
5	Tvs Tyre	6.46	4.03	3.77	3.01	3.88	4.94	6.30	6.21	9.39	8.37	5.64	5.57	2.10
6	Good Year Tyre	10.62	13.03	30.59	27.95	17.49	17.87	14.14	10.67	8.65	6.58	15.76	13.58	7.98
7	Govind Tyre	2.87	3.33	2.93	3.63	3.25	4.14	4.42	3.64	4.10	4.30	3.66	3.64	0.56
8	PTL Tyre	0.00	0.00	0.00	1.09	-5.64	0.00	-1.73	-0.65	-0.63	-0.79	-0.83	-0.31	1.84
	AVERAGE	5.57	1.86	4.04	13.83	9.76	-101.87	-210.96	12.62	-77.53	2.58			

Chart 4

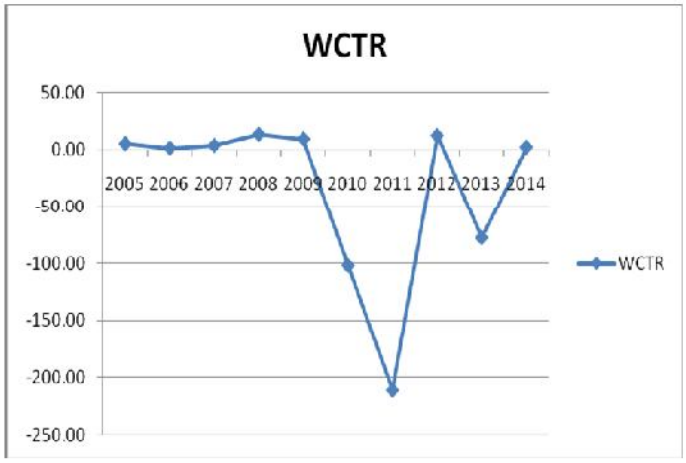


Table 5

Debtors Turnover Ratio of Tyre Industries over the period Under the study

S.No	Company Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Mean	Median	SD
1	Mrf Tyre	12.87	13.89	15.98	16.59	19.58	18.39	14.89	16.33	15.59	15.45	15.96	15.79	1.97
2	AppoloTyre	28.64	29.92	32.41	47.78	93.74	73.37	53.75	44.83	62.29	72.43	53.92	50.77	21.54
3	Ceat Tyre	12.68	13.85	16.26	15.17	15.87	14.97	14.56	14.60	15.36	14.96	14.83	14.96	1.02
4	Balkiri Tyre	15.02	15.59	10.40	10.17	11.43	11.54	11.93	11.76	12.65	11.57	12.21	11.66	1.79
5	Tvs Tyre	10.47	9.50	11.59	10.86	10.83	11.81	12.54	14.81	15.84	12.55	12.08	11.70	1.96
6	Good Year Tyre	14.29	15.60	13.97	18.11	20.63	26.63	23.14	19.19	18.98	28.17	19.87	19.09	4.88
7	Govind Tyre	6.54	6.37	6.31	6.13	6.54	6.88	6.07	5.19	5.32	5.43	6.08	6.22	0.58
8	PIL Tyre	0	0	0	0	0	0	0	0	228.57	533.33	76.19	0.00	175.95
	AVERAGE	12.56	13.09	13.37	15.60	22.33	20.45	17.11	15.84	46.82	86.73			

Chart 5

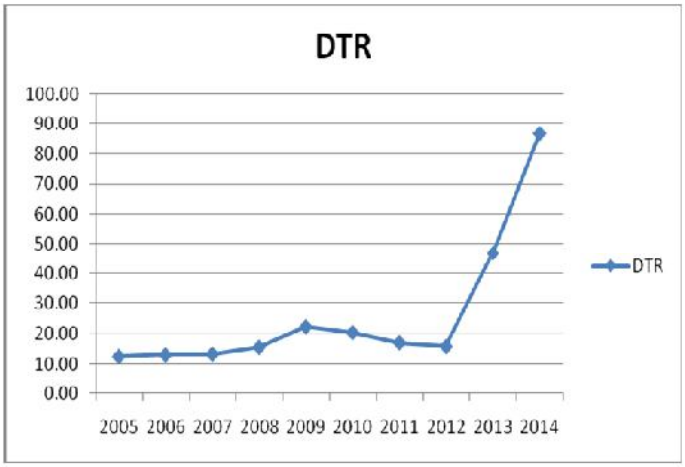


Table 6

Fixed Assets Turnover Ratio of Tyre Industries over the period Under the study

S.No	Company Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Mean	Median	SD
1	Mrf Tyre	8.6	10.5	9.8	7.7	9.3	8.2	6.5	7.1	7.3	6.5	8.2	7.9	1.4
2	AppoloTyre	16.5	18.2	17.8	14.2	10.8	8.2	20.4	33.7	38.7	53.4	23.2	18.0	14.3
3	Ceat Tyre	14.2	4.8	6.0	6.0	6.4	5.6	4.8	5.8	6.5	7.1	6.7	6.0	2.7
4	Balkiri Tyre	4.1	3.8	3.7	3.6	4.1	4.1	5.3	4.4	2.9	2.5	3.9	3.9	0.8
5	Tvs Tyre	1.0	1.1	1.6	1.4	1.5	1.4	1.5	1.5	1.5	1.7	1.4	1.5	0.2
6	Good Year Tyre	37.9	31.8	29.0	28.9	28.2	22.5	18.4	14.9	14.5	12.6	23.9	25.4	8.5
7	Govind Tyre	3.6	4.0	4.5	4.0	3.4	3.1	3.3	3.2	3.4	3.2	3.6	3.4	0.5
8	PTL Tyre	0.0	0.0	0.0	4.9	5.6	0.0	10.4	5.9	4.5	4.7	3.6	4.6	3.5
	AVERAGE	10.7	9.3	9.0	8.8	8.7	6.6	8.8	9.6	9.9	11.5			

Chart 6

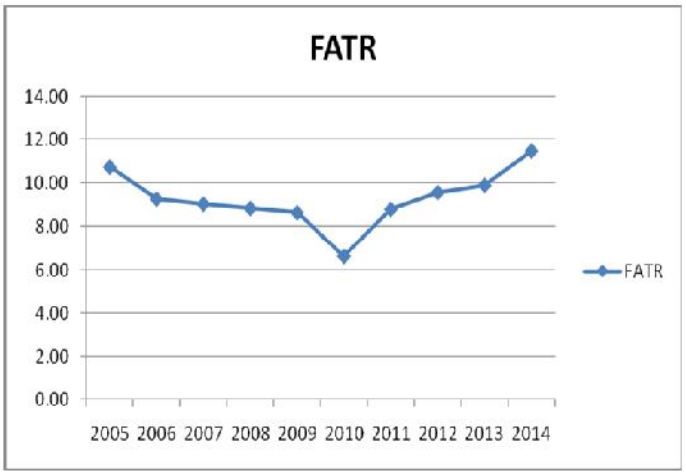
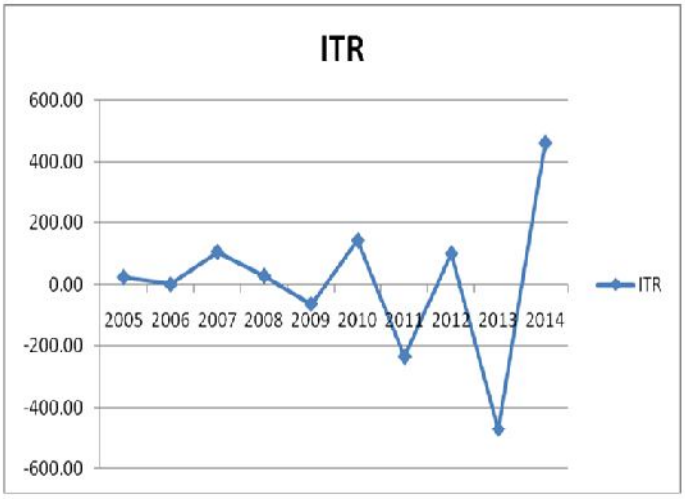


Table 7

Inventory Turnover Ration of Tyre Industries over the period Under the study

S.No	Company Name	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Mean	Median	SD
1	Mrf Tyre	7.03	6.88	5.60	3.94	6.02	3.51	2.52	2.32	2.13	2.10	4.21	3.72	2.00
2	AppoloTyre	11.10	10.29	11.86	11.24	16.31	13.57	7.74	12.40	12.23	10.40	11.71	11.55	2.25
3	Ceat Tyre	15.54	16.19	16.02	10.92	19.70	11.27	10.38	12.95	14.50	11.05	13.85	13.72	3.05
4	Balkiri Tyre	9.88	7.66	9.97	7.14	14.21	8.54	6.92	8.23	9.88	8.04	9.05	8.38	2.13
5	Tvs Tyre	11.76	12.82	11.09	7.84	14.35	6.94	6.51	7.54	9.68	12.96	10.15	10.38	2.83
6	Good Year Tyre	19.70	23.14	23.27	22.67	29.95	34.34	29.29	23.46	25.25	20.62	25.17	23.36	4.61
7	Govind Tyre	10.41	13.43	11.32	8.92	9.59	16.62	11.75	10.97	14.93	14.17	12.21	11.53	2.49
8	PTL Tyre	101.22	-90.44	750.00	144.78	-627.89	1036.67	-1950.00	716.00	-3863.67	3605.00	-17.83	123.00	1952.40
	AVERAGE	23.33	0.00	104.89	27.18	-64.72	141.43	-234.36	99.23	-471.88	460.54			

Chart 7



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