Journal of Business Administration and Management Sciences
Vol. 02 Issue No. 01

DETERMINING THE IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY: AN EMPIRICAL STUDY OF AUTOMOBILE SECTOR IN PAKISTAN

Ishfaque Ahmed* Mubashir Ali Khan**

ABSTRACT

Profitability is main aim of the organizations for both big and small, maximum profitability can be achieved by the proper management especially management of corporate finance. Working capital is vital part of corporate finance and management of working capital is being a fundamental part in managing daily financial needs of the firm hence proper management of working capital not less important than managing fix capital within the organization. The aim of this research is to calculate the existence of relationship between profitability of automobile sector in Pakistan and management of working capital within firms listed in automobile industry listed firms in Pakistan stock exchange. To evaluate this relationship in this study eight years relevant data from 2006 to 2013 of the twelve listed firms in Pakistan stock exchange in Pakistan have been collected. Secondary data was used under analysis and data was retrieved from the Financial Statement Analysis of non-financial firms listed in Karachi Stock Exchange published by State Bank of Pakistan. Secondary data was tested by using SPSS 20 version with the descriptive statistics and Quantitative tools especially regression and Pearson's correlation. The result shows that there is strong significant and positive relation of working capital ratio and net profit margin in automobile sector in Pakistan. Furthermore results also represented significant and positive relation of sales growth and profitability while inventory turnover in days and size of firm have significant and negative relationship with profitability and it also represented that average collection period has weak significant and negative relation with profitability of the listed firms in automobile sector at Pakistan stock exchange. Regression result also show that 40.3% variations in the profitability occur with the variables that are used in current study.

Key words: Working Capital, Profitability, Automobile sector, Pakistan
JEL Classification: G3

1. INTRODUCTION

Corporate finance is a very important aspect for business firm. The decisions made by financial managers considerably impact the complete gain of that firm as well as the benefits of a wide range of stakeholders. In organizations for the liquidity management, financing of working capital plays vital role to fulfil the firm's day-to-day needs smoothly[1], it not only affects the liquidity management but also the profit the firm earns. Basically it is a managerial aspect in which financial manager decide to set amount of current asset present as well as current liabilities[2]. Managers keep in touch with risk minimization strategies and therefore, make different kinds of routine operational softness, which make organizations on safe side as well as keep it in touch with profit maximization. Improper management of working capital being a major reason for the failure of most of small business in developed as well as under developing countries[3]. For every kind of successful organization it is important to have proper understanding about working

* *Corresponding Author, MS, Department of Business Administration, Sindh Madressatul Islam University, Karachi. Email: ishfaqueas@gmail.com*
** *Assistant Professor, MS Department, Bahria University, Karachi Campus.*

[1] Eljelly, Abuzar MA. 2004. "Liquidity-profitability tradeoff: an empirical investigation in an emerging market." *International Journal of Commerce and Management* 48-61.
[2] Raheman, Abdul, and Mohamed Nasr. 2007. "Working capital management and profitability--case of Pakistani firms." *International review of business research papers* 3: 279 - 300
[3] Addae, Albert Amponsah, and Michael Nyarko-Baasi. 2013. "Working Capital Management and Profitability: An empirical Investigation in an Emerging Market." *Research Journal of Finance and Accounting* 4(15): 143-152

capital. As it directly affects the profitability and liquidity of the particular firm so it is considered as not less than management of fixed capital even though it deals with current liabilities and current assets at all the aspects[4].

Working capital management Efficiency actually means management of different kinds of constituents of working capital in a manner that suitable amount firms should keep as a working capital for sophisticated flow of requirements that a company face and to overcome the objectives of both profitability as well as liquidity[5]. Well organized management of working capital includes properly planned and controlled measures of current asset and current liabilities with the manner that minimize the risk of powerlessness of attaining short term obligations and also avoiding unnecessary investing in these assets[6]. For any organization, inefficient management of working capital may result in bankruptcy to that organization; however organization is constantly achieving positive profitability[7]. Within a firm it is important to working capital management should have concentration on profitability and liquidity trade-off otherwise it may lead to the failure of a firm[8]. Efficiency in the management of working capital is basically very essential component in generally corporate strategy for the shareholders' value creation. So optimization of the working capital is being concentrated by the firms for value maximization[9].

Profit is something that a business Firm earns some amount after circulating its efforts as expenses at the time of completion of accounting period. No matter what ever should be the size of firm it can be a small cabin or internationally traded multinational firm the main aim of business is to earning profit[10]. On other hand it is also considered as a sign of level of competence that a business organization has achieved within the market[11]. All kind of the activities, movements and decisions made by any business organization are openly linked with the aim of profit making[12]. So the profit is the main objective for any kind of business organization, hence the existence of business organizations is for the maximization of profit.

Automobile is known as a vehicle with four wheels which uses volatile fuel as an energy source within combustion engine for production of force internally to move vehicle and basically used for transportation of passengers. But now a day's automobile is being modernized by the development and complex addition of system and technology such as specific designed functions, addition of electronic computers, high strength plastics, new alloys of steel, nonferrous metals and so son for the defense against air pollution, safety issues and competition[13]. On other hand, it is being an industry which has direct impact on other sectors such as steel, vending and petrol and also increasing employment. Its sell not only represent human desire but also it is an important economic indicator[14]

Today automobile industry is being profitable internationally with the income of over $2 trillion against more than 66 million automobiles (Vehicle) were produced. And also took part in the employment indirectly near the 50 million individuals while more than 9 million individuals are employed directly with the field on other hand it is economically

[4] Awan, Abdul Ghafoor , Pervaiz Shahid, Jahanzeb Hassan, and Waqas Ahmad. 2014. "IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF." *International Journal of Business and Management Review*, September: 1-20

[5] Harsh, Vineet. 2014. "Efficient Management Of Working Capital: A Study Of Heathcare Sector In India." *Management Strategies Journal* 25(3): 53-65

[6] Iqbal, Nadeem, Naveed Ahmed, and Zeeshan Riaz. 2014. "The Relationship between Working Capital Management and Profitability: Evidence from Pakistan." *International Letters of Social and Humanistic Sciences (ILSHS)* 20: 14-25

[7] Baveld, Mathias Bernard. 2012. "Impact of working capital management on the profitability of public Listed firms in the Netherlands during the financial crisis." University of Twente

[8] Makori, Daniel Mogaka, and Ambrose Jagongo. 2013. "Working capital management and firm profitability: Empirical evidence from manufacturing and construction firms listed on Nairobi securities exchange, Kenya." *International journal of accounting and taxation* 1(1): 1-14

[9] Howorth, Carole, and Paul Westhead. 2003. "The Focus of Working Capital Management in UK." *Management Accounting Research* 14: 94-111

[10] Investopedia. n.d. *Profit.* Accessed January 31, 2016. http://www.investopedia.com/terms/p/profit.asp

[11] Hrastar, John. 2009. "The most important part of profitability is 'ability'." *Washington Business journal.* April 27. http://www.bizjournals.com/washington/stories/2009/04/27/smallb3.html?page=all.

[12] Paramasive, C, and T Subramanian. 2008. *Financial Management.* New dehli, Banglore, Chennai, Cochin, Guwahati, Hyderabad, Jalandhar, Kolkata, Mumbai, Ranchi: New age international (P) limited

[13] Ken, W Purdy. 2016. *Automobile.* Accessed Feb 2, 2016. http://www.britannica.com/technology/automobile

[14] Ravi magazine. 2015. *Analysis of Pakistani Automobile Industry – A Report.* APRIL 16. Accessed FEB 05, 2016. http://www.ravimagazine.com/analysis-of-pakistani-automobile-industry-a-report/

healthy to the countries[15]. Instead of this automobile have not only improved itself with the change in time but also lead to improve roads, gas stations, insurance, regulation as well as beneficial for the business and production. Even though it get started in Europe but production started in other countries as well like US, Japan, Korea and China[16].

1.1. Automobile Sector in Pakistan

Recently in Pakistan after the financial year 2001 forty (40) percent growth per year has been calculated in automobile sector. Even though during the 2008 and 2009 growth rate declined the reason was increase in prices and leasing of the vehicle becomes expensive for peoples which affected negatively in result the demand of the automobiles gone down. Because of this decrease in demand of automobiles not only decreased but also it becomes loss for the Pakistan economy in result value of currency of the state decreased as compare to international currencies and also interest rates in the market were increased. Retailers of the automobile also faced lots of problems during this time as growth first stimulated the market and suddenly fall in demand of automobiles arose[17].

In Pakistan, today automobile industry is engaged in passenger cars, commercial vehicles, trucks, buses, tractors and motorcycles[18]. Currently Pakistan Imports most of the important parts of automobiles such as engines from different countries mostly from japan, while Pakistan's Automobile sector had targeted to produce at the end of June in 2012 total number of units 500,000, while industry could produce 132,661 units below the target during the estimated time[19]. Automobile industry is considered as the mother of all the industries because of its wide links in the development of countries industrialization and ultimately it positively contributes for the betterment of the state economic conditions. Development of the South East Asian countries taken place after the emergence of automobile sector in countries and till now it has links with development of industrial development worldwide. It also accelerates the emergence of industrialization in japan and Korea. In Pakistan this sector provides opportunities for development of other sectors as well as it provides opportunities to investment in automobile and auto parts business which ultimately take part in economic development. Instead of this automobile sector has direct part in development of GDP in Pakistan during 2007 automobile sector contributed 2.8 percent development of state economy and it was expected during next five year that automobile sector will contribute up to 5.6 percent. During 2010 it contributed 20 percent development from manufacturing sector and also expected to increase up to 25 percent development.[20]

It is important to know the impact of working capital management on the profitability of the firm especially in automobile sector. Management of Working capital is important part of the financial management and its optimization has significance with the organization's value. On other hand minimization and maximization of working capital management ultimately brings changes in profitability and sophistication of day to short term expenditure. Different researchers have worked upon this agenda internationally by using different sectors data. While there is lack in the Pakistan under specific field particularly on automobile industry, if any of the study have been done is out to date. So that I want to know "the impact of working capital management on the profitability of the automobile sector in Pakistan."

1.2. Objectives of the Study

- To Measure the association of working capital ratio with profitability of Pakistan automobile sector
- To find out effect of inventory turnover in days on profitability of Pakistan automobile sector
- To calculate the effect of Sales growth on profitability of Pakistan automobile sector
- To find out relation between Average collection period and profitability of Pakistan automobile sector
- To analyse association of size of firm with profitability of automobile sector in Pakistan

The scope of this research would be on the impact of working capital management on profitability of the automobile sector of Pakistan and its listed firms in Pakistan Stock exchange. This study will focus on the profitability hence it

[15] Deidu, 2015. *The Entrant's Guide to the Automobile Industry.* FEB 23. http://www.asymco.com/2015/02/23/the-entrants-guide-to-the-automobile-industry/#footnote_0_6990
[16] Dediu, Horace. 2015. *Is Tesla Disruptive?* MAY 28. http://www.asymco.com/2015/05/28/is-tesla-disruptive
[17] Zubairi, Hamid Jamal . 2010. "IMPACT OF WORKING CAPITAL MANAGEMENT AND CAPITAL STRUCTURE ON PROFITABILITY OF AUTOMOBILE FIRMS IN PAKISTAN." *Finance and Corporate Governance Conference 2011 Paper* (Institute of Business Management (IoBM), Karachi, Pakistan). http://ssrn.com/abstract=1663354
[18] (Ravi magazine 2015)
[19] DAWN NEWS. 2014. "Auto sector's reliance on imports: inability or unwillingness?" Karachi: Dawn News Paper, Dec 28. Accessed FEB 05, 2016. http://www.dawn.com/news/1153540
[20] Atique, Muhammad, and Bilal Jamil. 2010. "Role of Auto Sector in the Growth of Pak GDP." *Scribd.* January 12. Accessed April 21, 2016. https://www.scribd.com/doc/25106629/Role-of-Auto-Sector-in-the-Growth-of-Pak-GDP

will be beneficial to the investors, new entrains and researcher to understand the current situation of the automobile sector. On other hand this study will be beneficial for the current financial management of the automobile sector especially to make optimal decision about working capital of their company.

1.3 Hypotheses of Study

The focus of the current study is on hypothesis are given bellow.

H1. There is significant relationship of managing liquidity with the net profit margin as a proxy of profitability of automobile sector in Pakistan

H2. There is significant relationship of collection time of account receivable with the profitability of the Pakistan automobile sector.

H3. There is significant relationship of time taken by firm for turnover of inventory with profitability of automobile sector in Pakistan.

H4. Size of firm is significantly related with the net profit margin as a measure of profitability of automobile sector in Pakistan

H5. There is significant relation of growth rate of sales with profitability of automobile sector of Pakistan.

2. LITERATURE REVIEW

Different scholars and researchers have studied working capital management in different countries, particular areas for lots of industries and non-financial firms in different scenario. From which they have got like as well as unlike results. Below are the studies which are close to work being done in this research.

In 2007 a study examined the way that management of working capital affecting profitability and liquidity of the firms listed in Karachi Stock exchange[21]. For this they used six-year data of ninety four firms as a sample from 1999 to 2004. They found significant and negative association of net operating profitability with the cash conversation cycle, average collation period, inventory turnover in days and average payment period. On other hand they also found relation of profitability with size of firm positive significant. So, according to them profitability of the firm can be increased with increase in size of firm while profitability will be decreased with the increase in cash conversion cycle, average collocation period, average payment period and inventory turnover in days[22].

Another study in 2014 studied specially cement industry in Pakistan by using dependent variable return on equity and they found that inventory turnover in days, cash conversation cycle and current ratio have negative correlation with return on equity[23].

On other hand size of firm, funds allocated by government in development of public sector, Gross working capital turnover, quick ratio and average payment period have positive correlation with Return on equity. Those results are analyzed by using significant level of 0.01 and 0.05 and data under analysis is sample of ten listed companies of cement sector in Karachi stock exchange. They took data of five years financial reports of selected companies from 2009 to 2013. And they suggested specially to companies of cement sector of Pakistan to efficiently manage their working capital to have more improvement in profitability and also they suggested those companies should be more concerned with accounts receivable, cash and bank balance, inventories and short term investments for the betterment of profitability[24].

Toby in 2014 used likelihood test to find out correlation between Net current asset ratio (measure of working capital), return on asset and Net profit margin (measure of profitability) and he found strong positive correlation between variables, for this he collected numerical data from 107 companies of 23 different sectors quoted in Nigeria. He collected five years data from 2003 to 2007. Beside this he found in Nigerian companies that most of the sectors are following aggressive strategy of working capital management in result, he found in most of those sectors are attaining negative profitability. He recommended following the conservative strategy of working capital management to have profit maximization.

Another study in 2011 analyzed 360 observations of six year data from 2001 to 2006 for 60 textile companies listed in Karachi stock exchange and analyzed relations between working capital and profitability[25]. For this they used three

[21] (Raheman and Nasr 2007)
[22] Ibid
[23] (Awan, et al. 2014)
[24] (Awan, et al. 2014)
[25] Saghir, Ahsen , Faisal Mehmood Hashmi, and Muhammad Nehal Hussain. 2011. "Working Capital Management And Profitability: Evidence From Pakistan Firms." *Interdisciplinary Journal Of Contemporary Research In Business* 3(8): 1092-1105

different type of statistical tools for analysis, first correlation result shows negative relation between return on asset and cash conversion cycle and its components (Number of days Inventory, Number of days accounts receivable and Number of days accounts payables) secondly, Model summary result shoes forty present impact of selected variables of working capital on profitability rest of the impact they found from those variables were not the part of their study third, they used ANOVA which shows a significant relation independent variables and dependent variable. From all of the above result they conclude that if firms keep too high amount of working capital it will result in less the profit while too low working capital will also create problems for the company in the form of unavailability of resources.
Finally they suggested that those firms can create profit by managing optimistically and keeping correctly cash conversion cycle and their components[26].
A study in 2013 worked out to now in what manner working capital management impacts profitability (performance) of those Ghanaian firms which are not listed in Ghana Stock Exchange[27]. They analyzed conceptually as well as empirically from which regression results show that profitability is negatively affected by cash conversion cycle and their component while positively affected by the Size, Firms sales growth and GDP growth. They also concluded that during financial crisis firm's short term investments and liquidity are more important on other hand excessive focus on liquidity can result in lower the profit. So, business managers are in difficult situation to have best trade-off between profitability and liquidity to sophisticated running of firm as well as maximization of profitability. For this all they selected a sample of 125 non-listed firms in selected area and data under analysis for the period of six years from 2004 to 2009. They suggested that value can be enhanced by minimizing time period of cash conversion cycle as for as reasonable[28].
A study 2010 find out the same issue under American context and got too much different findings as compare to others[29]. They collected 88 randomly selected firm's data listed in New York Stock Exchange for three years from 2005 to 2007. They used Gross operating profit as a measure of profitability and analyzed selected data using regression and found negative significant relation between receivable period and profitability which is same result as above studies have shown and they found no significant relation of account payables and number of days inventories with profitability and also they showed positive significant relation of cash conversion cycle and Gross operating profitability and also found between frim size and gross operating profitability no significant relation. Hence result of this study is totally different than others except receivables[30].
A study in 2012 analyzed profitability impacted by working capital management in beer brewery firms for which they collected time series data of top five market leader beer brewery companies in the world and used multiple regression[31]. They used return on asset as a measure of profitability and concluded that profitability can be increased for leading beer brewery companies by decrease in cash conversion cycle and by increasing sales[32].
Another study in 2012 calculated same issue in the context of FMCG (Fast Moving Consumer Goods) in India for which they used ten year numerical data and analyzed by using statistical tools person's correlation analysis and Regression analysis[33]. In this study measure of profitability are used return on total asset and Return on investment result showed like other most of the studies working capital management is negatively associated with profitability[34].
Another study in 2003 tried to measure specially relation between profitability of electrical contractors they used twelve years data from 1985 to 1996 and find out that small, medium and large firms are different in terms of profit making in such a manner that with the increase in size of firm profitability decreases in case of large organization[35].

[26] (Saghir, Hashmi and Hussain 2011)
[27] (Addae and Nyarko-Baasi 2013)
[28] Ibid.
[29] Gill, Amarjit, Nahum Biger, and Neil Mathur. 2010. "The relationship between working capital management and profitability: Evidence from the United States." *Business and Economics Journal* 10(1): 1-9
[30] (Gill, Biger and Mathur 2010)
[31] Uchenna, Wilson, Ifeoma Mary, and David Okelue. 2012. "EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY: EVIDENCE FROM THE TOPFIVE BEER BREWERY FIRMS IN THE WORLD." *Asian Economic and Social Society* (Asian Economic and Social Society) 2: 966-982
[32] Ibid.
[33] Bagchi, Bhaskar, Jayanta Chakrabarti, and Piyal Basu Roy. 2012. "Influence of working capital management on profitability: a study on Indian FMCG companies." *International Journal of Business and Management* 7(22): 1-10
[34] Ibid.
[35] Ammar, Abdurahman, Awad S Hanna, Erik V Nordheim, and Jeffrey S Russell. 2003. "Indicator variables model of firm's size-profitability relationship of electrical contractors using financial and economic data." *Journal of Construction Engineering and Management* 129(2): 192-197

While for the small and medium size organization profitability increases with increase in size hence they concluded that medium size firms are more profitable with the increase in size[36].

3. RESEARCH METHODOLOGY AND DATA DESCRIPTION

The main objective of this research study is to analyze the relationship in between management trends of working capital by the Pakistani automobile firms on the profitability of those firms. To achieve this main objective eight years numerical data of firms which are registered and enlist currently in Pakistan has been used from 2006 to 2013. Population of current study consists on total thirteen listed companies of automobile sector in Pakistan Stock Exchange. Homogenous sampling method has been used for the selection of sample companies. Out of thirteen firms one firm is not fit for current study because of unavailability of required data and those firms are selected whose data is fit for the study total number of selected firms is 12 twelve.

3.1. Data Collection and Analysis

This research consists on data that has been derived from Financial Statement Analysis of non-financial organizations listed in Karachi Stock Exchange published by State Bank of Pakistan where two reports were available from 2006 to 2011 and from 2008 to 2013 by combining both reports total eight years data has been collected from 2006 to 2013. Data has been tested with the techniques of descriptive statistics which shows the overall relevant information such as minimum value, maximum value, mean value, and standard deviation about each variable. Correlation and Regression have been used to measure the association between dependent variable and independent variables. Microsoft Excel has been used for the arrangement of data about each variable and IBM SPSS 20 version has been used for the further analysis.

3.2. Variable definition and specification

There are five independent and one dependent variables in this research work to measure the relationship of profitability with the management of working capital, net profit margin is used as a dependent variable for the measurement of profitability while independent variables are inventory turnover in days, working capital ratio, average collection period, size of firm and sales growth rate. Further specification and the explanations required are given bellow in detail.

3.2.1. Net Profit Margin (NPM)

Net profit margin is used as dependent variable; it represents the profitability of automobile sector in Pakistan. Net profit margin is such kind of measure of the profitability which shows a firm can make profit by the total sales and it is also good measure of profitability for the comparison of same industry[37]. Net Profit Margin as a proxy for Profitability already Toby has used in his study in 2014.

$$NPM = \frac{\text{Net profit before tax}}{Sales} \times 100$$

3.2.2. Working Capital Ratio (WCR)

Working capital ratio is also known as the current ratio. Working capital ratio is the best measure of the liquidity of the firm (Richards and Laughlin 1980) it shows the ability of a firm to pay on the basis of daily financial needs. It is already used in 2007[38].

$$WCR = \frac{Current\ Assets}{Current\ Liabilities}$$

[36] Ibid.
[37] Bragg, Steven. 2011. *What is net profit margin?* Sep 12. Accessed May 18, 2016. http://www.accountingtools.com/questions-and-answers/what-is-net-profit-margin.html
[38] (Raheman and Nasr 2007)

3.2.3. Average Collection Period (ACP)

It shows average of required time for receiving of accounts receivables of the firm against sales and services provided to the customers and clients but still they have not paid back to the firm[39]. To measure the average of coaction period we use:[40]

$$ACP = \frac{Account\ Receivables\ of\ current\ year}{Sales\ of\ current\ year} \times 365$$

3.2.4. Inventory Turnover in Days (ITID)

It shows the average of the time period taken by a firm to sell the finished goods including time taken in process of converting its raw material into useful and complete products[41]. This variable is mostly used to measure the efficiency in managing firm's working capital as it is the important section of working capital[42].

$$ITID = \frac{Current\ year\ Inventories}{Current\ year\ Sales} \times 365$$

3.2.5. Size of firm (Size)

Two studies calculated size of the firm by taking natural logarithm of sales. It shows the volume that is being traded within firm. [43] [44]

$$SIZE = \ln(Annual\ Sales)$$

3.2.6. Sales Growth (SG)

It is the ratio by which sales of the firm has increased year by year. Handsome ratio of sales growth not only represents the organizational effectiveness but also it represents the performance of firm's selling and prising strategies used in their studies. [45,46,47]

$$SG = \frac{sales\ of\ current\ year - sales\ of\ last\ year}{Sales\ of\ last\ year}$$

3.3. Research Model

After studying and reviewing selected literature and studies conducted by different scholars the decision has been taken to work upon following given model to achieve main objective which aims to calculate the relationship between management of working capital in automobile sector of Pakistan with its profitability.

$$NPM_{it} = \beta_0 + (WCR_{it})\beta_1 + (ACP_{it})\beta_2 + (ITID_{it})\beta_3 + (SIZE_{it})\beta_4 + (SG_{it})\beta_5 + \varepsilon_{it}$$

Where,

- **NPM** stands for Net Profit Margin dependent variable used to represent profitability of automobile sector in Pakistan
- **WCR** stands for Working Capital Ratio which is the representative of Liquidity of the automobile sector of Pakistan and used as one of the independent variable

---

[39] Valentina , Lima, Vitorino Martins Francisco , and Brandão Elísio . 2015. "The management of working capital and profitability of SMEs in the euro area." Porto, Portugal: Faculdade de Engenharia da Universidade do Porto, December. http://ssrn.com/abstract=2704622

[40] (Raheman and Nasr 2007)

[41] Raheman, Abdul, Talat Afza, Abdul Qayyum, and Mahmood Ahmed Bodla. 2010. "Working capital management and corporate performance of manufacturing sector in Pakistan." *International Research Journal of Finance and Economics* 47(1): 156-169

[42] Ibid.

[43] (Raheman and Nasr, Working capital management and profitability--case of Pakistani firms 2007)

[44] (Awan, et al. 2014)

[45] ShareInvestor. 2012. *Revenue Growth, Net Earnings Growth And Net Earnings Margin.* March 2. Accessed May 19, 2016. https://blog.shareinvestor.com/revenue-growth-net-earnings-growth-and-net-earnings-margin/

[46] Iqbal, Asif, and Wang Zhuquan. 2014. "Working Capital Management and its Impact on Firm's Performance." *International Journal of Business and Social Science* (Centre for Promoting Ideas, USA) 5(12): 123-130

[47] Zariyawati, MA, MN Annuar, H Taufiq, and AS Abdul Rahim. 2009. "Working capital management and corporate performance: Case of Malaysia." *Journal of Modern Accounting and Auditing* 5(11): 47-54.

- **ACP** stands of the Average Collection Period which shows the time period for the collection of receivable by the firms and used as independent variable
- **ITID** stands for Inventory Turnover in Days which shows time taken by the firm to complete process of inventories turnover and it is used as Independent variable
- **SIZE** stands for Size of the Firm which is representative of natural log of sales and it is used as control variable
- **SG** stands for Sales Growth which shows the Growth rate of sales as compare to previous year sales of the company and it is also used as a control variable
- $\boldsymbol{\beta_0}$ represents the constant of the regression model
- $\boldsymbol{\beta_1}$ **to** $\boldsymbol{\beta_5}$ Stands for the per unit change for every variable in the regression model as a coefficient of Independent variables
- $\boldsymbol{\varepsilon}$ stands for the error term present in the model

4. ANALYSIS OF DATA AND RESULTS

The aim of this chapter is to represent findings in result of analysis of data used under the present study. This chapter consists on descriptive analysis of the dependent and independent variables of the study, regression analysis results by using net profit margin as dependent variable and other independent variables to show the significance of relations and it also contains correlation matrix representing relation between all selected variables.

4.1. Investigation of Descriptive Statistics

Table-1 Descriptive statistics in Appendix-II shows the number of observations, Minimum value, Maximum Value, Mean and Standard deviation of all variables associated in the study. Profitability measured by Net Profit Margin which shows after the calculation over 76 observations mean value 5.24% of the profit as compare to total assets kept by the firm with the 7.53% of standard deviation which can affect the mean value from both sides while maximum percentage is 20.88% of the sales on other hand loss of 23.59% is also associated in the descriptive statistics table. Working capital ratio shows average value 1.69 of the listed firms under automobile sector that means average firms keep 169% of working capital as compare to its liabilities with the standard deviation of 0.9403 in percentage 94.03% it further show 0.6 ratio as a minimum value which shows liabilities exceeded about 40% of working capital kept by firm and maximum value shows too much higher percentage kept by firm as a working capital with score of 5.8 ratio almost 580% of liabilities. Average Collection Period shows the mean value of 14.74 days of the collection period after the product sold out with the standard deviation of 17.74 days, minimum number of days for collection is 0.00 and almost 76 days maximum value of collection time period. Days for the turnover of inventories are shown 72.61 average days for the auto mobile sector in Pakistan keeping 37.19 days in deviation with the minimum and maximum days for inventory turnover among the firms are 20.51 and 187.74 days. Size as a natural logarithm of the sales has mean value of 16.26 while it's higher the size that is 18.16 and smaller size of the firm shows 12.99 with standard deviation of 1.25. Growth in the sales of automobile sector shows mean value of 9.5% annual growth from minimum side it shows decline in sales instead of growth by 51.00% and maximum level of growth is 91.00% while standard deviation in the growth rate of automobile sector shows 33.03% fluctuation can occur in the growth rate.

4.2. Quantitative Statistical Analysis

This section consists on correlation analysis which shows the fashion by which each variable is correlated with other including all independent and dependent variables. While regression analysis shows the relation along with significance level of each variable with net profit margin to find the relationship of profitability of automobile sector in Pakistan with the working capital management of those firms.

4.3. Analysis of Variables Correlated

Table-2 Correlations in Appendix-II shows the matrix of Pearson's correlation. It shows the profitability of the automobile sector is strongly significant and negatively correlated with the inventory turnover period and average collection period of account receivables with the probability value of 0.001 and 0.002 while co-efficient of correlation has values -0.363 and -0.355. Results of correlation shows strong significant positive relationship of net profit margin with the working capital ratio with the zero (p=0.000) probability value and 0.451 co-efficient. Correlation table also shows that sales growth is significant at the 0.05 significance level as probability value is 0.016 and positively correlated with Net Profit Margin along with 0.275 co-efficient. While Size of the firm shows not significant at any level but shows positively correlated with net profit margin.

4.4. Results of Regression Analysis

After the investigation of the main objective of the study to calculate the relationship between working capital management and profitability of the automobile sector in Pakistan. The result shows in Table-3 model summary in Appendix-II there is 40.3% variation is present in this model with selected variables as squired-R shows 0.403. That indicates 59.7% of the variance of the profitability in the context of automobile sector of Pakistan depends upon those variables which are not included in current study. ANOVA result in Table-4 present in Appendix-II shows there is reality in the regression model as significance level is given 0.000 this shows the possibility that falseness of the model does not appear so that the model is not validated by chance. Furthermore regression result of all the variables is shown in Table-5 Coefficients in Appendix-II expresses negative and significant association of profitability with the Inventory turnover in days as probability value (0.019) lies under the significant region with the beta coefficient of (-0.6) that means if a firm will increase the days to convert its inventories it will negatively affect the profit so profit of the firm will be reduced same result was found by various studies[48,49]. Regression result supports hypothesis-3 which states "There is significant relationship of time taken by firm for turnover of inventory with profitability of automobile sector in Pakistan"

Regression result also shows the significant association of the size of firm with the probability value (0.025) that lies under the significant region and the beta coefficient of (-1.776) that shows profitability of the automobile sector of Pakistan is in relation with size of the firm significantly and negatively this negative relation of size with profitability was also found by two other studies,[50] second study further explains that medium firms make more profit as compare to large and small firms hence large firms will decrease the profitability with the increase in size[51]. That means if size of automobile firm will increase profitability as compare to size will decrease instead of increasing this result is totally different from the result from another study.[52] It also shows that small firms gain more profit than large firms within the automobile sector in Pakistan. It also supports the hypothesis-4 because of significance occurs in between profitability and firm size hypothesis states that "Size of firm is significantly related with the net profit margin as a measure of profitability of automobile sector in Pakistan". Growth in sales has also significant and positive association with the net profit margin as proxy taken for the profitability of automobile sector in Pakistan as probability value (0.018) lies under the significance area along with greater beta coefficient (5.397) as compare to other variables. Positive relation of profitability and sales growth was also found by a study[53] that explains if a firm will increase sales the profitability will ultimately be increased and decrease in sales also affect negatively to the profitability hence this result is supporting hypothesis-5 that states "There is significant relation of growth rate of sales with profitability of automobile sector of Pakistan". Working capital ratio represents the liquidity of organizations as it is shown in the regression table. Result shows strong positive association of working capital ratio with the net profit margin as a measure of profitability of automobile sector in Pakistan along with probability value (0.000) that lies in the strong significant region and beta coefficient have positive sign (3.704) this represent if the firms keep more working capital can make more profit and less liquid firms will make less profit. Same result of liquidity and profitability was also found by a study[54]. It is supporting the hypotheses-1 which states that "There is significant relationship of managing liquidity with the net profit margin as a proxy of profitability of automobile sector in Pakistan". It is also shown that Collection period in days also have negative association and weak significant relation with the profitability of the automobile sector of Pakistan with probability value (0.089) that lies into significant area but in the region of less significance. Negative association of average collection period with profitability also was the result of two other studies.[55] [56] Negative relation also represents that if days of collection for account receivable increase it will decrease the profitability of automobile firms listed in Pakistan. If firms want to make profit maximization then they should

[48] (Saghir, Hashmi and Hussain 2011)
[49] (Iqbal, Ahmed and Riaz 2014)
[50] Charitou, Melita Stephanou, Maria Elfani, and Petros Lois. 2010. "The effect of working capital management on firm's profitability: Empirical evidence from an emerging market." *Journal of Business \& Economics Research (JBER)* 8(12): 63-68
[51] (Ammar, et al. 2003)
[52] (Raheman, Afza, et al. 2010)
[53] (Iqbal and Zhuquan, Working Capital Management and Profitability Evidence from Firms Listed on Karachi Stock Exchange 2015)
[54] Muhammad, Sabo, Saminu Jibril Rabi'U, Fatima Bello Ibrahim, and Tjjani Habibu Ahmad. 2015. "The Effect of Working Capital Management on Corporate Profitability: Evidence from Nigerian Food Product Firms." *Applied Finance and Accounting* 1(2): 55-63
[55] (Saghir, Hashmi and Hussain 2011)
[56] (Iqbal and Zhuquan 2015)

collect their receivables within short time. It is also evidence for the acceptance of hypothesis-2 that states "There is significant relationship of collection time of account receivable with the profitability of the Pakistan automobile sector".

5. CONCLUSION AND RECOMMENDATIONS

It is that profitability increases with the increase in working capital ratio as there is strong significant and positive relation between them. It is also concluded from the result of regression that sales growth and profitability are significantly and positively associated so firms should increase sales growth rate for the betterment of firms. From the regression results it is also concluded that days of inventories turnover has significant and negative relation with profitability of the listed firms this shows that decrease in number of days for the turnover of inventories will follow the better profitability. Average collection period shows weak significant and negative relationship with the profitability of automobile firms in Pakistan so in result of the increase in collection days of receivable profitability decreases. But there is problem arose in the result of Size in this study that size has significant and negative relation instead of positive relation with profitability this result is found opposite of the most of the studies conducted by the researchers as (Addae and Nyarko-Baasi 2013; Raheman, Afza, et al. 2010) found positive relation with profitability but (Kouser, et al. 2012; Ammar, et al. 2003) found its negative relation with profitability also which shows that for the large firms size of the firm is in negative association with profitability and profitability will be decreased with the more increase in size. Further regression result in model summary shows that variables of this study are linked with profitability by 40.3% while ANOVA result shows strong significance of the study and significance value represents that this study conducted accurate data and this study is not being significant by chance. On the basis of all statistical results, findings and previous studies it is recommended that for the financial management of firms of Pakistan automobile sector that management should keep in especial eye on the working capital management. It is also recommended that firms should increase working capital ratio till optimal level and active their marketing management regarding the enhancement of sales for betterment of profitability. It is also found that regression results shows significant negative association with Size of firm while correlation matrix shows positive but in significant relations so it shows management problems in the automobile sector of Pakistan. To overcome this problem firms should give more concentration over financial activities.

References

Addae, Albert Amponsah, and Michael Nyarko-Baasi. 2013. "Working Capital Management and Profitability: An empirical Investigation in an Emerging Market." *Research Journal of Finance and Accounting* 4(15): 143-152.

Ammar, Abdurahman, Awad S Hanna, Erik V Nordheim, and Jeffrey S Russell. 2003. "Indicator variables model of firm's size-profitability relationship of electrical contractors using financial and economic data." *Journal of Construction Engineering and Management* 129(2): 192-197.

Atique, Muhammad, and Bilal Jamil. 2010. "Role of Auto Sector in the Growth of Pak GDP." *Scribd.* January 12. Accessed April 21, 2016. https://www.scribd.com/doc/25106629/Role-of-Auto-Sector-in-the-Growth-of-Pak-GDP.

Awan, Abdul Ghafoor , Pervaiz Shahid, Jahanzeb Hassan, and Waqas Ahmad. 2014. "IMPACT OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF." *International Journal of Business and Management Review*, September: 1-20.

Bagchi, Bhaskar, Jayanta Chakrabarti, and Piyal Basu Roy. 2012. "Influence of working capital management on profitability: a study on Indian FMCG companies." *International Journal of Business and Management* 7(22): 1-10.

Baveld, Mathias Bernard. 2012. "Impact of working capital management on the profitability of public Listed firms in the Netherlands during the financial crisis." University of Twente.

Bragg, Steven. 2011. *What is net profit margin?* Sep 12. Accessed May 18, 2016. http://www.accountingtools.com/questions-and-answers/what-is-net-profit-margin.html.

Charitou, Melita Stephanou, Maria Elfani, and Petros Lois. 2010. "The effect of working capital management on firm's profitability: Empirical evidence from an emerging market." *Journal of Business \& Economics Research (JBER)* 8(12): 63-68.

DAWN NEWS. 2014. "Auto sector's reliance on imports: inability or unwillingness?" Karachi: Dawn News Paper, Dec 28. Accessed FEB 05, 2016. http://www.dawn.com/news/1153540.

Dediu, Horace. 2015. *Is Tesla Disruptive?* MAY 28. http://www.asymco.com/2015/05/28/is-tesla-disruptive/.

—. 2015. *The Entrant's Guide to the Automobile Industry.* FEB 23. http://www.asymco.com/2015/02/23/the-entrants-guide-to-the-automobile-industry/#footnote_0_6990.

Deloof, Marc. 2003. "Does working capital management affect profitability of Belgian firms?" *Journal of business finance \& accounting* 30(3-4): 573-588.

Eljelly, Abuzar MA. 2004. "Liquidity-profitability tradeoff: an empirical investigation in an emerging market." *International Journal of Commerce and Management* 48-61.

ENTREPRENEUR STAFF. 2013. *How to Determine Your Working Capital Needs.* Feb 14. http://www.entrepreneur.com/article/225658.

Farrar, Donald E, and Robert R Glauber. 1967. "Multicollinearity in regression analysis: the problem revisited." *The Review of Economic and Statistics* 92-107.

Gill, Amarjit, Nahum Biger, and Neil Mathur. 2010. "The relationship between working capital management and profitability: Evidence from the United States." *Business and Economics Journal* 10(1): 1-9.

Harsh, Vineet. 2014. "Efficient Management Of Working Capital: A Study Of Heathcare Sector In India." *Management Strategies Journal* 25(3): 53-65.

Howorth, Carole, and Paul Westhead. 2003. "The Focus of Working Capital Management in UK." *Management Accounting Research* 14: 94-111.

Hrastar, John. 2009. "The most important part of profitability is 'ability'." *Washington Business journal.* April 27. http://www.bizjournals.com/washington/stories/2009/04/27/smallb3.html?page=all.

Investopedia. n.d. *Profit.* Accessed January 31, 2016. http://www.investopedia.com/terms/p/profit.asp.

Iqbal, Asif, and Wang Zhuquan. 2014. "Working Capital Management and its Impact on Firm's Performance." *International Journal of Business and Social Science* (Centre for Promoting Ideas, USA) 5(12): 123-130.

Iqbal, Asif, and Wang Zhuquan. 2015. "Working Capital Management and Profitability Evidence from Firms Listed on Karachi Stock Exchange." *International Journal of Economics and Finance* (Canadian Center of Science and Education) 7(2): 231-235.

Iqbal, Nadeem, Naveed Ahmed, and Zeeshan Riaz. 2014. "The Relationship between Working Capital Management and Profitability: Evidence from Pakistan." *International Letters of Social and Humanistic Sciences (ILSHS)* 20: 14-25.

Ken, W Purdy. 2016. *Automobile.* Accessed Feb 2, 2016. http://www.britannica.com/technology/automobile.

Kothari, SP, and Ray Ball. 1994. *Financial statement analysis.* Mcgrew-Hill Companies.

Kouser, Rehana, Tahira Bano, Muhammad Azeem, and M Hassan. 2012. "Inter-relationship between profitability, growth and size: A case of non-financial companies from Pakistan." *Pakistan Journal of Commerce & Social Sciences* 6(2): 405-419.

Makori, Daniel Mogaka, and Ambrose Jagongo. 2013. "Working capital management and firm profitability: Empirical evidence from manufacturing and construction firms listed on Nairobi securities exchange, Kenya." *International journal of accounting and taxation* 1(1): 1-14.

Mehmet, D E N, and O U R C Eda. 2009. "RELATIONSHIP BETWEEN EFFICIENCY LEVEL OF WORKING CAPITAL MANAGEMENT AND RETURN ON TOTAL ASSETS IN ISE (ISTANBUL STOCK EXCHANGE)." *International journal of Business and Management* 4(10): 109-114.

Muhammad, Sabo, Saminu Jibril Rabi'U, Fatima Bello Ibrahim, and Tjjani Habibu Ahmad. 2015. "The Effect of Working Capital Management on Corporate Profitability: Evidence from Nigerian Food Product Firms." *Applied Finance and Accounting* 1(2): 55-63.

Nixon, David. 2013. *The 7 Most Profitable Businesses You Could Start.* November 8. http://www.insidermonkey.com/blog/most-profitable-businesses-270123/.

Paramasive, C, and T Subramanian. 2008. *Financial Management.* New dehli, Banglore, Chennai, Cochin, Guwahati, Hyderabad, Jalandhar, Kolkata, Mumbai, Ranchi: New age international (P) limited.

Raheman, Abdul, Abdul Qayyum, and Talat Afza. 2011. "Sector-wise performance of working capital management measures and profitability using ratio analysis." *Interdisciplinary Journal of Contemporary Research in Business* (Institute of Interdisciplinary Business Research) 3(8): 285-310.

Raheman, Abdul, and Mohamed Nasr. 2007. "Working capital management and profitability--case of Pakistani firms." *International review of business research papers* 3: 279 - 300.

Raheman, Abdul, Talat Afza, Abdul Qayyum, and Mahmood Ahmed Bodla. 2010. "Working capital management and corporate performance of manufacturing sector in Pakistan." *International Research Journal of Finance and Economics* 47(1): 156-169.

Ravi magazine. 2015. *Analysis of Pakistani Automobile Industry – A Report.* APRIL 16. Accessed FEB 05, 2016. http://www.ravimagazine.com/analysis-of-pakistani-automobile-industry-a-report/.

Richards, Verlyn D, and Eugene J Laughlin. 1980. "A cash conversion cycle approach to liquidity analysis." *Financial management* 32-38.

Saghir, Ahsen , Faisal Mehmood Hashmi, and Muhammad Nehal Hussain. 2011. "Working Capital Management And Profitability: Evidence From Pakistan Firms." *Interdisciplinary Journal Of Contemporary Research In Business* 3(8): 1092-1105.

ShareInvestor. 2012. *Revenue Growth, Net Earnings Growth And Net Earnings Margin.* March 2. Accessed May 19, 2016. https://blog.shareinvestor.com/revenue-growth-net-earnings-growth-and-net-earnings-margin/.

Sharma, AK, and Satish Kumar. 2011. "Effect of working capital management on firm profitability empirical evidence from India." *Global Business Review* 12(1): 159-173.

Susan, E Wyse. 2011. *What is the Difference between Qualitative Research and Quantitative Research?* September 16. Accessed May 16, 2016. http://www.snapsurveys.com/blog/what-is-the-difference-between-qualitative-research-and-quantitative-research/.

Toby, Adolphus J. 2014. "Working Capital Management Policy And Corporate Profitability Of Nigerian Quoted Companies: A Sectoral Analysis." *International Journal of Financial Mangement* 3 (1): 9-20.

Uchenna, Wilson, Ifeoma Mary, and David Okelue. 2012. "EFFECTS OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY: EVIDENCE FROM THE TOPFIVE BEER BREWERY FIRMS IN THE WORLD." *Asian Economic and Social Society* (Asian Economic and Social Society) 2: 966-982.

Valentina , Lima, Vitorino Martins Francisco , and Brandão Elísio . 2015. "The management of working capital and profitability of SMEs in the euro area." Porto, Portugal: Faculdade de Engenharia da Universidade do Porto, December. http://ssrn.com/abstract=2704622.

Zariyawati, MA, MN Annuar, H Taufiq, and AS Abdul Rahim. 2009. "Working capital management and corporate performance: Case of Malaysia." *Journal of Modern Accounting and Auditing* 5(11): 47-54.

Zubairi, Hamid Jamal . 2010. "IMPACT OF WORKING CAPITAL MANAGEMENT AND CAPITAL STRUCTURE ON PROFITABILITY OF AUTOMOBILE FIRMS IN PAKISTAN." *Finance and Corporate Governance Conference 2011 Paper* (Institute of Business Management (IoBM), Karachi, Pakistan). http://ssrn.com/abstract=1663354.

Appendix-I: *List of Automobile Sector Listed Companies in Pakistan Stock Exchange*

SNo	Name of company	Data availability
1.	AL Ghazi Tractors	Data available and included in study
2.	Atlas Honda Limited	Data available and included in study
3.	Dewan Farooque Motors	Data available and included in study
4.	Ghani Automobile Industries	Data available and included in study
5.	Ghandara Industries	Data available and included in study
6.	Ghandara Nissan	Data available and included in study
7.	Honda Atlas Cars	Data available and included in study
8.	Hinopak Motor	Data available and included in study
9.	Indus Motor Corporation	Data available and included in study
10.	Millat Tractors	Data available and included in study
11.	Pak Suzuki SPOT	Data available and included in study
12.	Sazgar Engineering	Data available and included in study
13.	Ghandara Diesel	Data was not available so not included in study

Appendix-II

Descriptive statistics, Regression and Pearson's Correlation results

Table-1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
NPM	76	-23.59	20.88	5.2361	7.52719
WCR	76	.6	5.8	1.688	.9403
ACP	76	.00	75.90	14.7446	17.74339
ITID	76	20.51	187.74	72.6096	37.11888
Size	76	12.99	18.16	16.2591	1.24833
SG	76	-.51	.91	.0950	.33034
Valid N (list wise)	76				

Table-2 Correlations

		NPM	ITID	ACP	WCR	Size	SG
NPM	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	76					
ITID	Pearson Correlation	-.363**	1				
	Sig. (2-tailed)	.001					
	N	76	76				
ACP	Pearson Correlation	-.355**	.519**	1			
	Sig. (2-tailed)	.002	.000				
	N	76	76	76			
WCR	Pearson Correlation	.451**	-.146	-.285*	1		
	Sig. (2-tailed)	.000	.207	.012			
	N	76	76	76	76		
Size	Pearson Correlation	.175	-.595**	-.580**	.315**	1	
	Sig. (2-tailed)	.131	.000	.000	.006		
	N	76	76	76	76	76	
SG	Pearson Correlation	.275*	-.284*	-.146	-.090	.116	1
	Sig. (2-tailed)	.016	.013	.208	.440	.317	
	N	76	76	76	76	76	76

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

Table- 3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.635[a]	.403	.360	6.02030

a. Predictors: (Constant), ACP, SG, WCR, ITID, Size

Table-4 ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1712.312	5	342.462	9.449	.000[b]
	Residual	2537.080	70	36.244		
	Total	4249.392	75			

a. Dependent Variable: NPM

b. Predictors: (Constant), ACP, SG, WCR, ITID, Size

Table-5 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	32.993	13.535		2.438	.017
	ITID	-.060	.025	-.296	-2.401	.019
	Size	-1.776	.773	-.294	-2.297	.025
	SG	5.397	2.220	.237	2.431	.018
	WCR	3.704	.796	.463	4.652	.000
	ACP	-.087	.051	-.206	-1.727	.089

a. Dependent Variable: NPM