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Firm Specific Determinants and Performance of Cement Firms in Pakistan

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Abstract: This article investigates the effect of firm specific determinants on performance of cement firms' in Pakistan over the period from 2011-2020 for sixteen sampled cement firms quoted at Karachi stock exchange using the panel least square technique. Return on investment (ROI) as a measure for performance is taken as dependent variable of the regression model while liquidity, leverage, activity, profitability and growth as proxies for firm specific determinants are taken as independent variables. The results of data analysis disclose that the variables of liquidity, activity and profitability were found to have positive impact on cement firms' performance. Besides, the variables of leverage and growth were found to have negative impact on it. In addition, the regression results highlight that all the variables except the growth are significant and have significant influence on performance of cement firms in Pakistan. The analysis results may be very encouraging and useful for management as well as for the investors to plan investment and operational activities to accomplish profitability goals more efficiently and effectively.

Keywords: Liquidity, Leverage, Activity, Profitability, Growth.

1.Introduction

The cement is a key sector of Pakistan's economy and in fact has been playing a crucial role in the country's infrastructure development over the past two decades. Due to the size of the area and the size of the country, the various construction activities carried out by local government, civil society and other organizations including private sector create a huge demand for cement. In addition, the market demand for cement for private use is growing day by day due to improved living standard of inhabitants (Kamal and Moudud-Ul-Huq, 2014). In contrast, the sector helps in creating jobs, generating taxes for the government and creating avenue for the investors to invest. Therefore, it is important to make sure that the cement companies in Pakistan operate effectively and productively.

Every firm in today's highly competitive market is concerned with its performance and good performance does not just build its market value yet helps in the growth of the industry over time, consequently prompting general prosperity of the economy (Ahmed et al., 2011). Mostly, the shareholders who have made an investment into an organization expect a positive return on performance, whether it is a cement company or other types of companies. There are different performance indicators, but the most commonly used seems to be profitability.

At present, there's found a number of articles aimed at discovering firm specific determinants and their influence on performance of cement firms. Researchers in various fields of research and strategic management focused mainly on financial performance (Amal et al., 2012). Due to the effect of financial performance on organizational health and its sustainability, it has become a major concern for business professionals in various organizations. Management productivity and veracity in employing the firm's resources is expressed by high performance and helps contribute to the economy (Naser and Mokhtar, 2004). Since the last two decades in the corporate finance sector, the organization's performance has attracted the attention of researchers but in the case of cement industry, little attention has been given (Ahmed et al., 2011).

Performance is essentially important for firms as it aids their endurance in the cement industry. Over the years the variations in profit gradually increases as reported in financial statements of cement companies in Pakistan. This led to the idea that certain firm specific determinants must have been responsible for affecting the performance of cement firms over time. In Pakistan, to the best of our understanding, very few of the studies have examined the firm specific determinants like liquidity, leverage, firm size, firm age, profitability, activity and cash conversion cycle in relation to cement firms' performance.

Previous studies in Pakistan (Aqeel, Munir and Shahzad, 2016; Muhammad, Ameen and Shahzadi, 2017; and Farah, Ijaz and Naqvi, 2016) examined liquidity, leverage, profitability, activity and cash conversion cycle in relation to financial performance of cement firms in Pakistan. These conclude with mix findings on the link between these firm specific determinants and performance of cement firms in Pakistan. Hence, the paper struggles to empirically examine the impact of firm specific determinants on performance of firms' in cement sector, Pakistan.

The paper introduces growth as a new variable in the examination of determinants of cement firms' performance in Pakistan. Studies conducted outside Pakistan like Batchimeg (2017); Hajihassani (2015); Sumathi and Jothti (2016); Kamran, Ramiyani, Shirkouhi and Badizadeh (2014) used growth in their corresponding studies. The study results conducted outside Pakistan may not be applicable to cement firms' in Pakistan. The reason is that the environments in which the cement firms' operate differ in terms of regulation and operation. Hence, the obligation to analyze the impact of growth in addition to other specific determinants on cements firms' performance in Pakistan.

2.Literature Review

2.1Performance and its Measurement

The term performance originates from French word 'Parfournir' meaning thereby to do, to carry out or to render. Performance is the outcome obtained by an executive or group of executives in an organization relevant to its authority and responsibility to accomplish the purpose lawfully 'not against the law' and in compliance with morals and ethics (Amal et al., 2012). According to Mayowa and Ogieriakhi (2018) the measure used in evaluating firms' performance depends on the type of the organization which is to be analyzed and the purpose of carrying out the evaluation. It serves as an indicator to select the useful measure for evaluating performance. Different scholars offered different models for evaluating firms' performance in the field of strategic management. The multifaceted perspective on

performance implies that the used of multiple models will create distinct relationship between predicted and predictor variables in the projected model (Ostroff and Schmidt, 1993).
According to Ali and Eneizan (2018) the two distinct types of performance are the financial and the non-financial performance. A distinction is often found between these two i.e. between financial and non-financial performance. Financial performance is usually expressed in terms of sales growth and turnover/ stock prices whereas, non-financial performance is outlined in terms of goodwill, expenditures innovative sales ratio (Hagedoorn and Cloodt, 2003). In present paper liquidity, leverage, activity, profitability and growth are chosen as explanatory variables while variable return on investment, ROI is used as performance indicator because most of the empirical studies on performance as it relates to cement firms used return on investment as the measure of performance; Farah et al. (2016); Daryanto (2018); Sahar et al. (2019); Kamran et al.(2014); Preeti and Hosmani (2018); Qasim et al. (2012); Amalendu et al. (2011); Nishanthini & Nimalathasan (2013); Ajmal (2015).

Return on investment (ROI) as measure for performance indicates the overall profit produced by firm on its total wealth (investment) and expressed as percentage of the amount invested. The ratio is thought out as the most appropriate measure of firm's performance and if there's occur some increase in ratio it depicts positive performance of the relative concern (Venkatacham and Kasthuri, 2016).

2.2 Firm Specific Determinants and Performance

2.2.1Liquidity and Performance

An important variable used in determining firms' performance is the liquidity. Liquidity measures company's power and ability to pay as and when some obligations are due. Ali and Eneizan (2018) high liquidity occurs when a company has an enough working capital to meet such obligations. It enables the company to handle with unexpected risk factors and meet the requirements of paying off its obligations when earnings are low. The empirical findings as it relates to liquidity and performance of cement companies have been mixed. Ali and Eneizan (2018); Muthusamy and Karthika (2019); Hajihassani (2015); Aqeel et al. (2016) observed a significant positive correlation between liquidity and cement companies performance. Farah et al. (2016); Mistry (2012) observed a significant negative association between liquidity and performance of firms. Ajmal (2015); Prajapati (2019); Sumathi and Jothi (2016); Batchimeg (2017) found an insignificant association between liquidity and performance.

2.2.2Leverage and Performance

Leverage refers to degree at which the borrowed capital is being utilized by the company. A possibility of bankruptcy occurs when a highly leveraged firm finds it difficult to pay off all of its debts (Mayowa et al., 2018). A high use of leverage in a firm reduces conflict between shareholders and company's management (William, 1987). The empirical results as it relates to leverage and firms' performance have been mixed. Batchimeg (2017); Muthusamy et al. (2019); Farah et al. (2016); Ahsan and Shahzadi (2017); Muhammad et al. (2017); Nawaz et al. (2015) found a significant negative association between leverage and performance. Khurram et al. (2016) found a negative and positive relationship between leverage and performance in both models. Mahboob et al. (2015) found a negative inter-relationship between leverage and profitability of manufacturing sector. In the same vein, no relationship was observed between leverage and profitability in the service sector.

2.2.3 Activity and Performance

Activity, as a tool, compares the two competing businesses with the same industry. It helps the investor to measure different facets of company's fiscal strength. Hajihassani (2015) used the activity to determine the period of service and the composition of business current assets. The empirical results as it relates to activity and firms performance have been mixed. Lina and Al-Omari (2015) observed a significant influence of activity ratios on Jordanian company's performance. Santosuosso (2014) noticed a positive inter-relationship between activity ratios and Italian firms' performance. Satriya and Korsakul (2020) used ratios like inventory turnover ratio and fixed assets turnover ratio as proxies of activity.The findings reveal that activity ratios have a significant influence on mining companies' performance. The highactivity ratio value indicates high efficiency of company and vice versa.

2.2.4Profitability and Performance

Another key factor used in determining companies' performance is the profitability. Profitability refers to capability of a given investment to produce some return from its use (Nimalathasan, 2009). It measures present and past profitability and projecting of future profitability is significant. The empirical findings as it relates to profitability and performance of cement companies have been mixed. Prajapati (2019); Farah et al. (2016); Sumathi (2016) found a good positive association between profitability and firms' performance. Hajihassani (2015) found that profitability has a significant impact on the performance of the companies in the cement industry. Batchimeg (2016) utilized several ratios as proxies of profitability. Among these, the return on costs and earning per share were the most crucial determinants that have a significant positive impact on the performance of Mongolian companies.

2.2.5Growth and Performance

Another key factor used to determine the position of the company in industry is the growth. Generally, higher growth rate does not imply a high rate of future oriented growth, as industrial and economic conditions are continuous evolving and frequently cyclical. Mansoor (2019) defines the growth as rise in the value of the contract overtime. The empirical findings as it relates to growth and performance of cement companies have been mixed. Lazar (2016) found significant positive effect of growth on firms' performance. Batchimeg (2016) used several determinants like growth in sales, growth in profit and growth in assets as proxies of growth. Amongst all these only growth in sales was considered as the most crucial determinant that has a significant positive impact on Mongolian companies' performance. Besides, growth in profit and growth in assets were considered insignificant determinants of performance.

2.3Empirical Review

Previous studies conducted on the relationship between firm specific determinants and performance of cement firms in the extant literatures conclude with mix findings.

Hajihassani (2015) did a valuable work to evaluate the performance of 28 cement companies in Iran for the period 2000-2009 using Copeland method. One predicted variable (performance) and fivepredictor variables (liquidity, profitability, activity, growth and leverage) were chosen for the study. The result indicates that Ardabil and Azar Shahr lime cement firms' got the first rank. More, all the predictor variables are considered significant in effecting performance of cement sector firms. In one more study Nousheen and Hassan (2013) find out the impact of firm specific and macroeconomic factors on profitability of firms in food sector Pakistan using panel data and a sample that consists of total 12 firms from period 2004-2006. The findings indicate that size of firm has a significant negative effect on profitability. The tangibility of assets, growth and food inflation have an insignificant positive effect on

profitability. On the same way, an insignificant and negative effect was also noticed between the debt to equity and the profitability of firms in food sector, Pakistan.

Farah, Ijaz, and Naqvi (2016) in their paper "Financial performance of firms of cement industry in Pakistan" examines the relationship between five ratio parameters like liquidity, profitability, leverage, assets utilization, cash conversion cycle and financial performance of cement firms in Pakistan. The study concluded that liquidity, profitability, assets utilization and cash conversion cycle all had significant relationship with financial performance while leverage had insignificant relationship with performance. Krishna et al. (2013) in their study evaluates the performance efficiency of Indian cement companies for 15 years period from 1992 to 2006. Eight inputs including the debt equity ratio, current ratio, profit before tax, profit after tax, Dividend, return over capital employed, return over net worth, average profit per unit and one output (financial performance) was chosen. The output concludes that all the inputs chosen for study have showed the significant impact on financial performance of companies except the debt equity ratio. More, future outlook of companies is very bright. One more recent study by Banupriya and Thyagarajan (2018) analyzed the financial performance of cement companies in Tamilnadu over a period of five years. The cement industry of India is the 2nd top most industry in India after china that showed the net profit growth rate of 85% and contributed almost 8% to the economic development of India. Performance in the study was chosen as predicted variable and liquidity, leverage, activity and profitability ratios were selected as predictor variables. The results of data analysis disclosed that all the chosen variables are considered significant. Overall, they help in improving performance of companies.

Dhivya et al. (2017) carried out a study on financial performance of ACC Cement Company in Tamilnadu on various fronts of profitability, liquidity, and solvency and concludes that overall liquidity position of ACC Company is good; hence, it can meet its short term obligations. The solvency ratio highlights that company is in a good condition and there is no problem to fulfill its long term debts. However, company's profitability position is not good, hence there is need to improve profitability by cost reduction as well the modernization of companies. Another study by Venkatacham and Kasthuri (2016) assessed the financial performance of Indian cement industry using analysis of variance that consists of 10 years period i.e. from 2007 to 2016. Current ratio, liquidity ratio, net profit ratio, debt equity ratio and interest coverage ratio were chosen as explanatory variables of the study. The results represent that current ratio and liquidity ratio had not any significant association with financial performance. Similarly, the net profit ratio, debt to equity ratio and interest coverage ratio had a significant positive association with financial performance.

Sumathi and Jothi (2016) carried out a study to analyze the financial performance of two cement companies in India using panel data and consist of 10 years period from 2006 to 2015. Liquidity, profitability, leverage and assets utilization were taken as firm specific factors in the study. The analysis reveals that 'chosen companies' profitability ratio is satisfactory while 'chosen companies' liquidity position is not satisfactory because the level of current ratio and quick ratio is too low than one. More, both the companies must maintain their inventory level, investment and debtors. Manjula and Sabarinathan (2015) did a perishable work to analyze the performance of cement companies in India using multiple regression analysis technique with a sample consisting of total 5 cement companies over the period 2005 to 2014. The output reveals that liquidity and long term efficiency ratio both are found statistically significant. However, financial position of Indian cement companies is also found strong.

In one more study Khurram et al. (2016) developed two models to find out the interrelationship between systematic risks and profitability of 16 cement companies in Pakistan from 2009-2015. Using Return on Assets (ROA) and Return on Equity (ROE) as measures for profitability and Degree of Operating Leverages and Degree of Financial Leverage as representatives of systematic risks. The output of model 1 shows that there's found a negative relationship between both the degree of operating leverage, degree of financial leverage and return on assets of companies. Similarly, the result of model 2 indicates that there's existed a positive relationship between the degree of financial

leverage and return on equity while, on the other vein, a negative relationship was noted between the degree of operating leverage and return on equity of companies.

From the previous studies reviewed above across different boundaries, the significance of the relationship between the firm specific determinants and performance become unambiguous for Pakistan's cement industry in present study.

2.4 Research Objectives

The two major objectives of the paper are:

- To identify the factors that affects the performance of cement firms in Pakistan.
- To explore the impact i.e. significant or insignificant of identified factors on the performance of cement firms in Pakistan.

2.5Research Hypotheses

The study five hypotheses formulated in their null form are:

H01: Liquidity has a significant impact on performance of cement firms in Pakistan.
H02: Leverage has a significant impact on performance of cement firms in Pakistan.
H03: Activity has a significant impact on performance of cement firms in Pakistan.
H04: Profitability hasa significant impact on performance of cement firms in Pakistan.
H05: Growth has a significant impact on performance of cement firms in Pakistan.

2.6Conceptual Framework

A conceptual framework used to examine the influence of firm specific determinants on the performance of cement firms' in Pakistan is shown below in figure 1.

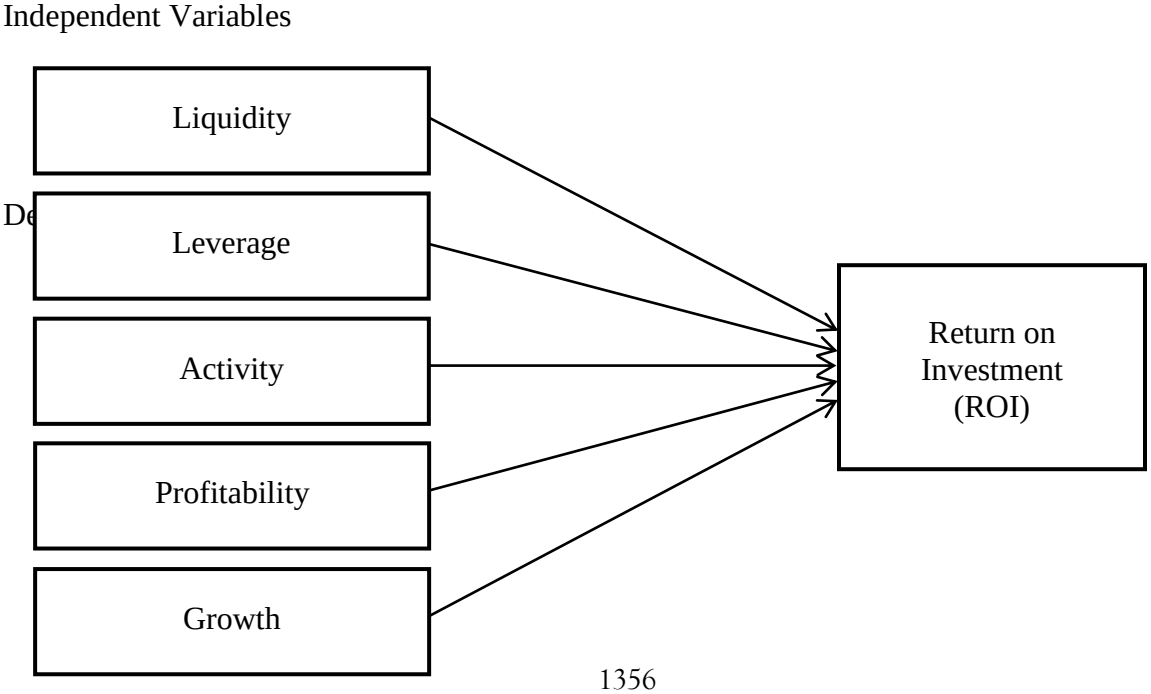

Figure 1: Conceptual Framework

3.Research Methodology

This study adopts descriptive and explanatory research design. The descriptive is used because the paper explains the extent of firms' performance and uses explanatory design to describe the inter-relationship between firm specific determinants and performance of cement firms. The population of the study comprises of total twenty one (21) cement companies recorded on the Karachi stock exchange-KSE as at June 30, 2011.The criteria for selecting the sample size is that the cement firms must have a continuous data from 2011-2020 and might be recorded as on June 30, 2011. Among all these firms, only 16 cement firms met the inclusion criteria for the sample size, thus constituting the study sample size. The study uses secondary data collected from the financial statements and accounts of the sampled cement firms in Pakistan.

3.1Variables and their measurements

The study used two types of variables namely the predicted and the predictor variables. Return on investment (ROI) as a measure for performance is taken as dependent variable of the regression model and liquidity, leverage, activity, profitability and growth as proxies for firm specific determinants are taken as independent variables. Most of the variables selected for the study are organized based on the variables used in previous research as work done by Batchimeg (2016) on the "Financial performance determinants of organizations". The measurement of variables is highlighted in table 1.

Table 1: Predictor Variables

S.No.	***Variables***	***Measurements***
1	Liquidity	Current Assets/ Current Liabilities
2	Leverage	Total Liabilities/ Total Assets
3	Activity	Sales/ Average Total Assets
4	Profitability	Net Profit After Taxes/ Net Sales × 100
5	Growth	(St- St-1/ St-1)

3.2 Variables Description

- Return on Investment: Indicates the overall profit produced by firm on its totalwealth (investment) and expressed as proportion of the amount invested.
- Liquidity: It refers to company's power and ability to pay as and when some obligations are due. A company's liquidity can be measured by calculating current ratio i.e. a proportion of current assets to current liabilities.

- Leverage: It reveals the significant amount of debt a firm uses to finance assets. A ratio applied to measure a company's financial leverage is the debt ratio.
- Activity: Used as a tool to measure the performance of a firm in utilizing and managing its resources to generate highest possible revenue. A firm's activity could be measured by computing the ratio between sales to average total assets.
- Profitability: It is the capability of the company to utilize its resources in a way that it can produce maximum profit from its operations. Ratio that measure company's profitability is generally called as net profit margin ratio.
- Growth: Means increase in the value of the deal overt time. It indicates whether a firms or company position in the industry is good or not. Growth could be measured by enumerating the sales growth ratio.

3.3 Research Model

To explore the impact of firm specific determinants on the performance of sampled cement firms, author considered the following ordinary least square (OLS) regression model.

$$ROI_{i,t} = \beta 0 + \beta 1\ LQ_{i,t} + \beta 2\ LV_{i,t} + \beta 3\ AV_{i,t} + \beta 4\ PR_{i,t} + \beta 5\ GR_{i,t} + \varepsilon i$$

Where;

ROI = Return on Investment
LQ = Liquidity
LV = Leverage
AV = Activity
PR = Profitability
GR = Growth
$\beta 0 - \beta 5$ = Model Coefficients
ε = Error term.
i,t = for firm i in period t

4.Results and Discussion

The section of paper presents and discusses the study results. The first is descriptive statistics, and then the correlation coefficients. The regression analysis results between ROI and liquidity, leverage, activity, profitability and growth have been presented and discussed.

Table 2: Descriptive Statistics

	ROI	*LQ*	*LV*	*AV*	*PR*	*GR*
Mean	8.9532	1.3523	0.5109	0.6153	0.0448	21.7299
Maximum	34.9206	8.0671	1.8199	1.3762	0.3919	798.0103
Minimum	-19.7974	0.1462	-0.4387	0.0147	-3.1915	-87.8967
Std. Dev.	11.5505	1.1599	0.2948	0.2909	0.4248	85.7198
Observations	160	160	160	160	160	160

Source:E-view 10.0 Output, 2020

Table 2 shows the descriptive statistics for all the study variables. The mean of ROI is 8.9532 while the maximum and minimum is 34.9206 and -19.7971 respectively. The standard deviation is 11.5505 representing a considerable dispersion from the mean. The average value of liquidity is 1.3523 with an 8.0671 maximum and 0.1462 minimum values. The standard deviation is 1.1599 represents a considerable clustering around the mean. The leverage has an average of 0.5109 with a maximum of 1.8199 and minimum of -0.4387 values. The standard deviation is 0.2948 representing considerable clustering around the mean. Activity has a central tendency of 0.6153 with a maximum and minimum values range from 1.3762 to 0.0147 respectively. The standard deviation is 0.2909 representing considerable clustering around the mean. The average profitability has 0.0448 with a maximum of 0.3919 and minimum of -3.1915 values. The standard deviation is 0.4248 which represent a considerable clustering around the mean. The average growth of cement firms is 21.7299 with a maximum and minimum of 798.0103 and -87.8967 values respectively. The high standard deviation of 85.7198 indicates a high variation from the mean.

Table 3: Correlation Coefficient

	ROI	*LQ*	*LV*	*AV*	*PR*	*GR*
ROI	1.00000					
LQ	0.51439	1.00000				
LV	-0.67743	-0.55849	1.00000			
AV	0.56336	0.41979	-0.34108	1.00000		
PR	0.57176	0.26380	-0.49618	0.37517	1.00000	
GR	-0.11330	-0.11959	0.18934	-0.09348	0.05194	1.00000

Source:E-view 10.0 Output, 2020

Table 3 discloses that there is a positive correlation between ROI (as a measure of performance) and liquidity, activity and profitability of sampled cement firms in Pakistan at the coefficient of 0.51439, 0.56336 and 0.57176 respectively. This shows that liquidity, activity and profitability have a positive relationship with return on investment-ROI. As firms liquidity increases ROI increases, as activity increases ROI increases, and when profitability of firms increases ROI also increases. Only leverage and growth have a negative relationship with ROI with coefficient of -0.67743 and -0.11330. This highlights that as firms debt increases, ROI decreases and when growth rate of firms increases, ROI also increases respectively.

Table 4: Panel Regression Analysis

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	8.12537	2.26865	3.58159	0.0005
LQ	1.03805	0.62198	1.66895	0.0972
LV	-15.67491	2.64433	-5.92774	0.0000
AV	11.65971	2.26800	5.14097	0.0000
PR	6.42079	1.63093	3.93688	0.0001
GR	-0.00134	0.00688	-0.19405	0.8464
R-squared=0.626167, F-statistic=51.58964 (0.000000) Durbin-Watson stat=0.586739				

Source:E-view 10.0 Output, 2020

Table 4 shows that liquidity, activity and profitability have a positive impact of 1.03805, 11.65971 and 6.42079 respectively on return on investment whereas, leverage and growth have a negative impact on return on investment of - 15.67491 and - 0.00134. Therefore, the research model is represented as:

ROI i,t = 8.12537 + 1.03805 LQ i,t - 15.67491 LV i,t + 11.65971 AV i,t + 6.42079 PR i,t - 0.00134 GR i,t + εi.

Liquidity, leverage, activity, and profitability are all significant at 5% level of significance as described by the P-values of 0.0972, 0.0000, 0.0000, and 0.0001 respectively. The variables have significant impact on performance of cement firms. The findings reveals that as the sampled cement firms improve their liquidity, activity and profitability position will lead to increases in the rate of return on investment.

The study results also shows that 63% of the change in predicted variable-ROI is explained by the predictor variables of the study, while the remaining 37% of the change of the predicted variable could be explained by other variables not included in the present study model. F-statistic 51.58964 and its related sig-value (0.00000) indicate the validity of the model and provide evidence of a significant association between the dependent and independent variables of the study. The Durbin-Watson stat of 0.586739 indicates that autocorrelation is unlikely.

5.Conclusion and Recommendations

This paper makes an attempt to study the effect of firm specific determinants (liquidity, leverage, activity, profitability, and growth) on the performance of cem

ent firms in Pakistan. Using panel least square technique, the regression resultrevealsthat the variables of liquidity, activity and profitability were found to have positive impact on cement firms' performance. Besides, the variables of leverage and growth were found to have negative impact on it. In addition, the regression results highlight that all the variables except the growth are significant and have significant influence on cement firms' performance. The analysis results may be very encouraging and useful for management as well as for the investors to plan investment and operational activities to accomplish profitability goals more efficiently and effectively.

Finally, the study results must be explained based on certain limitations. First, the study is limited to the sampled cement firms in Pakistan, thus it does not provide an overview of other industries in Pakistan. Second, the research is mainly based on secondary data obtained from the financial statements and written documents of the cement firms in Pakistan. Lastly, the research only considered five firm specific determinants, without taking into account factors such as company age, company size, and tangibility, providing a basis for the future research.

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