AN ANALYSIS OF OPERATING PERFORMANCE OF CEMENT INDUSTRY IN INDIA

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Abstract: The objective of the study is to analyse the impact of operating performance on profitability of the cement industry in India. The data has been collected of five cement Companies from the year 2008-09 to 2017-18. In this study is used various operating ratios have been used as the proxy of the indicators of the operating performance of the companies while a return on assets has been used as the determinant of profitability. In the study quantitative methods has been used. Standard deviation, correlation and regression have been used to analyse of the objective of study. The Study found that correlation shows that there is positive relationship between dependent variable (ROA) and independent variables (OPR, FATR) except the operating cycle. It also found that inverse relationship between ROA and operating cycle. FATR has more impact on the profitability (ROA) of the companies than the OPR and OPC.

Index Terms - **Operating performance, cement industry, Return on assets, profitability.**

I. INTRODUCTION

Performance measurement is the fundamental activity to evaluate the competitiveness of a company. Operating performance measures by operational data and focuses on the day-to-day business activities. Operating performance mainly measures through financial data like as profit and loss statement, balance sheet and cash flow statement. (Hwang, 2014) Operating performance ratios are tools, which measure the function of certain core operations for an organization. Particularly, these ratios reveal information about how efficiently that organization is using resources to generate sales and cash (invetopedia, 2018). A company with strong performance ratios is able to utilize a minimum resource pool to generate high levels of sales, as well as a significant cash inflow (Investopedia, 2018). Operating performance is a measure of how well the company is doing. Many different measures, such as expense ratios, sales performance and policy terminations are taken into consideration when evaluating operating performance (Answer Financial, 2011). Operating performance is measured by various ratios like as operating ratio, operating profit ratio, short-term solvency ratio and profitability ratio etc. Operational performance refers to the degree to which an organization's goals and purposes are achieved effectively and efficiently while financial performance is overall degree of a business's general monetary status in certain period. Operational Performance Measurements are the key metrics, which are used to measure the operational performance of a company (ambaskool, 2019). Operating performance ratios are tools, which measure the function of certain core operations for an organization or business. Particularly, these ratios reveal information about how efficiently that organization is using resources to generate sales and cash (Dotdash, 2018). Operating performance is defined as measuring results relative to the assets used to achieve those results. Efficiently for the purposes of this presentation could be defined as the ratio of output performed by a process or activity relative to the total required energy spent. This category is subjective in nature. Often measurements are viewed not only in relation to factors within a company but without it as well, which is done by making comparisons of company results to industry standards or benchmarks (Accountingplay.com, 2019). Most often, making relative comparisons is the best way to fully understand results in this ratio category. In general, this measurement tool is most often applied in a monetary or financial sense, though it also has applications in other areas such as regulatory compliance, ethics, and managing risk. Understanding operating performance is critical in gauging the condition of a company. Consistently top- performing companies are always efficient operators, while poorly performing companies often have underlying issues, which are creating poor results. Results will vary depending on the selected period, but overtime should provide valuable performance insight (Accountingplay.com, 2019). This is a measure of how well the company is doing. Many different measures, such as expense ratios, sales performance and policy terminations are taken into consideration when evaluating operating performance (2011 answer.com).

The Important Techniques Used in Measurement of Operating Performance

(A)Traditional Techniques:	(B)Modern Techniques
Comparative Financial Statements	Balance score card
Variance analysis	Activity-based costing and management
Ratio analysis	Economic value added (EVA)
Cash flow analysis	
Fund flow statement	
Contribution margin	
Budgetary control	

Budgetary Control and Reporting: -

A budget is generally a list of all planned expenses and revenues. It is a plan for saving and spending for the near future (Reviso, 2019). Preparation of budgets alone will not achieve much unless a comparison is made regularly between the actual performance and the budgeted performance (singh)

Thus, proper reporting is an essential element in budgetary control. The daily/weekly/monthly reports depending on the nature of operations involved in the results of various functions are regularly submitted to the management and follow up action has to be taken immediately (singh).

Budget provides the useful information like as budget cost of actual level activities, actual cost of actual activity and variance between budget figure and actual performance and reasons of variance.

Variance analysis

Variance analysis can be summarized as an analysis of the difference between planned and actual numbers. The sum of all variances gives a picture of the overall over-performance or under-performance for a particular reporting period. For each individual item, companies assess its favourability by comparing actual costs and standard costs in the industry (CFI Education Inc.).

Ratio analysis

Ratio analysis is tool of measuring the operating performance of company, which helps to investors for buy, or sale of their investment. Various ratios are which helps to calculate the performance of company like as short-term solvency ratio, long-term solvency ratio, profitability ratio etc.

Short-term Solvency Ratios attempt to measure the ability of a firm to meet its short-term financial obligations. In other words, these ratios seek to determine the ability of a firm to avoid financial distress in the short-run. The two most important Short-term Solvency Ratios are the Current Ratio and the Quick Ratio (business finance online).

Long-term solvency ratios measure the ability of a company to pay its long-term debt and the interest on that debt. Solvency ratios, as a part of financial ratio analysis, help the business owner determine the chances of the firm's long-term survival. Solvency ratios are sometimes confused with liquidity ratios. Both assess a company's financial health. However, solvency ratios assess the company's long-term health evaluating long-term debt and the interest on that debt; liquidity ratios assess the company's short-term ability to meet current obligations and turn assets into cash quickly.

Non-Financial Quality Performance Measures: -

Profitability alone is inadequate to measure the performance of various centres. There is no denying the fact that financial measures are important measures for evaluating the performance of cost centres, profit centres and investment centres. But these measures are not fully adequate measures for performance evaluation. These are non-financial measure (singh).

Market Share for each major product, Product leadership, Product or service quality, Delivery reliability, Productivity, Personnel turnover popularly known as labour turnover, Personnel development, Personnel satisfaction (singh).

Contribution Margin: -

Contribution margin can define as the difference between the sales and the variable cost of those sales. It contributes towards fixed expenses and profit. A profit centre or investment centre giving more contribution is preferred because it will give higher figure of profit taking fixed expenses as constant. Contribution is different from the profit, which is net gain in activity and remains after deducting fixed expenses from the total contribution (singh).

Contribution margin is a good technique of performance measurement as it helps to find out the profitability of a product, department or division, to have better product mix, for profit planning and to maximise the profit of a firm (singh).

Retune on investment: - Measuring the performance of an investment centre requires a comparison of the profit that has been earned with capital employed in the investment centre. The alternative method of calculating ratio of ROI gives better idea of the operating efficiency of capital employed as compared to the first way of calculating ROI because it throws light on operating profit margin and assets turnover. The ratio of operating profit to sales is the result of firm is pricing policy and its cost control (singh).

Comparative Income Statements:

A comparative income statement shows the absolute figures for two or more periods and the absolute change from one period to another. Since the figures are shown side by side, the user can quickly understand the operational performance of the concern in different periods and draw conclusions (shodhganga).

Cash flow statement: -

The cash flow statement is focused on cash accounting, whereas there are two forms of accounting, accrual and cash. Most public companies use accrual accounting, which means the income statement is not the same as the company's cash position. Cash flow from operating activity. It is the first section of the cash flow statement and includes transactions from all operational business activities. The cash flows from operations section begins with net income and then reconciles all noncash items to cash items involving operational activities (kenton, 2019).

Cement Industry in India

India is the second largest producer of cement in the world. No wonder, India's cement industry is a vital part of its economy, providing employment to more than a million people, directly or indirectly. Ever since it was deregulated in 1982, the Indian cement industry has attracted huge investments, both from Indian as well as foreign investors (India Brand Equity Foundation, 2018).

India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it (India Brand Equity Foundation, 2018). India is second largest producer of cement. In the year 2017, total production of the china was 2320 million tones and India 285.68 MT.

Evolution of The Cement Industry

Firstly, in 1889 a Kolkata based company started manufacturing cement from argillaceous. Later the industry started getting the organized shape in the early 1900's. In India Cement Company Ltd was set up in Porbandar, Gujarat in 1914 with a capacity of 10000 tons and production of 1000 tons installed. Earlier, the government regulated the industry with licensing, price and distribution controls. A gradual removal of these controls resulted in rapid capacity creation. Currently, India is the second-largest producer of cement in the world. However, even before that a small cement factory was established in Madras in 1904 by a company named South India Industrial Ltd (research, 2013).

During the First World War period, cement production in these three important factories was taken under control of the government and later the control of the government and later the control was lifted once the war was over. After the war, 6 more units were launched in India. In 1924, India's cement production was 267000 tons. However, initially this increased production could not reduce the imports and the industry suffered a rate war. This led to closure of many indigenous units. The Indian companies, which were away from ports or commercial centers, faced the locational disadvantage (gktoday, 2011).

Recent Trends of Cement Industry

Increasing presence of cement players

Presence of small & mid-size cement players across regions is increasing, which helps to diminish market concentration of industry leaders.A large number of foreign players have also entered the market owing to the profit margins, constant demand & right valuation (IBEF, 2018).

Tie – up with overseas

India has joined hands with Switzerland to reduce energy consumption & develop newer methods in the country for more efficient cement production, which would help India meet its rising demand for cement in the infrastructure sector (IBEF, 2018).

Housing for All

Under Union Budget 2018-19, allocation for affordable housing has been doubled to US$ 123.57 million. Housing sector accounts for nearly 67 per cent of the total cement consumption in India (IBEF, 2018).

Adoption of cement instead of Bitumen and Ready Mix Concrete (RMC)

The Government of India has decided to adopt cement instead of bitumen for the construction of all new road projects because cement is more durable & cheaper to maintain than bitumen in the long run. Companies are trying to develop a niche market for RMC (Ready Mix Concrete) (IBEF, 2018).

Mergers & Acquisitions

In September 2017, the National Company Law Tribunal (NCLT) approved the amalgamation of Trinetra Cement Ltd. and Trishul Concrete Products Ltd. with The India Cements Ltd (IBEF, 2018). UltraTech Cement acquired Jaypee Group's cement business for US$ 2.38 billion in 2017. As of April 2018, Ultratech Cement has raised its bid for acquisition of Binani Cement to Rs 7,990 crore (US$ 1.24 billion) (IBEF, 2018)
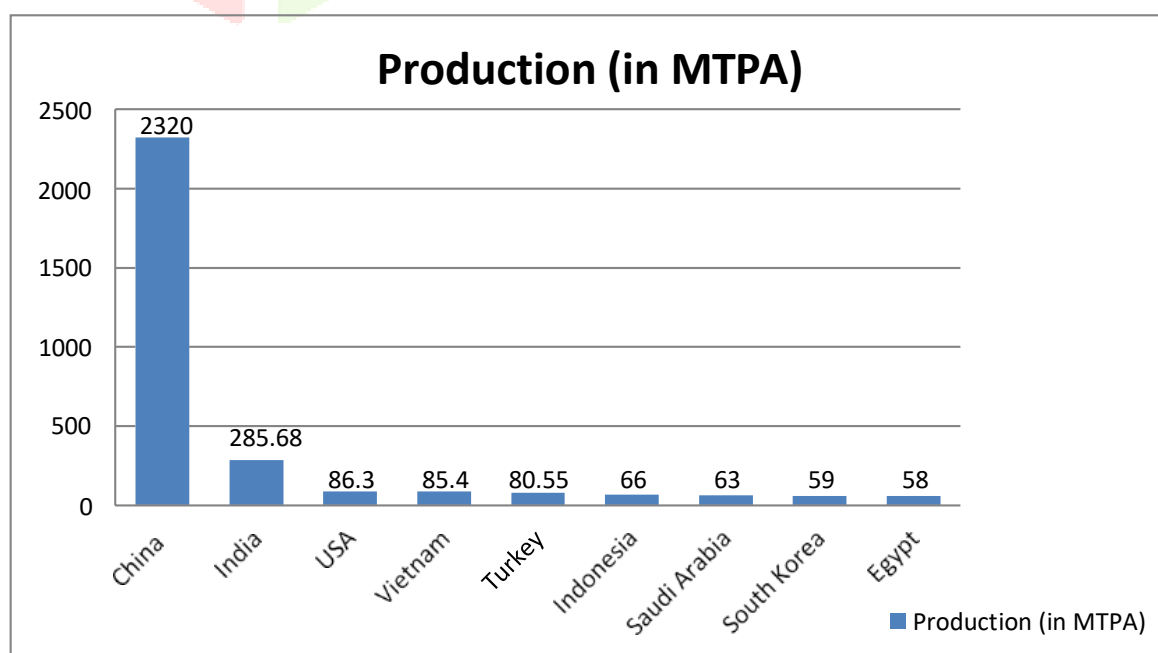
Soures : IBEF cement report may 2018.
Figure 1.1 Top cement producers in 2017 (in MTPA)

Above figure represents total production of cement in all over the word and china is large producer of cement and India is second producer. In the year 2017, total production of the china was 2320 million tones and India 285.68 MT.

Table 1.1 Total production of cement industry in India from the year 2012 to18

Year	Production (Million Tonne)
2012	230.49
2013	248.23
2014	255.83
2015	270.04
2016	283.46
20 17	279.81
2018	297.56

Source: IBFE cement report may 2018 Note: E – Estimate

Production (Million Tonne)

$y = -0.6879x^2 + 15.931x + 216.52$
$R^2 = 0.9681$

Legend: Production (Million Tonne); Poly. (Production (Million Tonne))

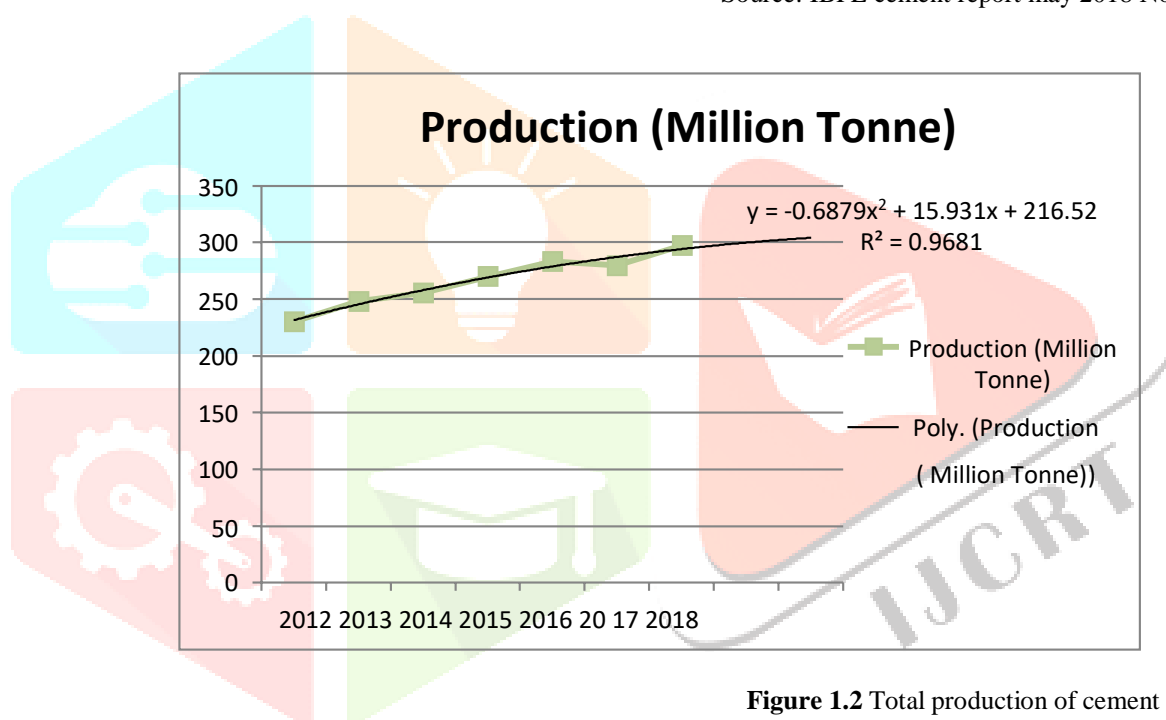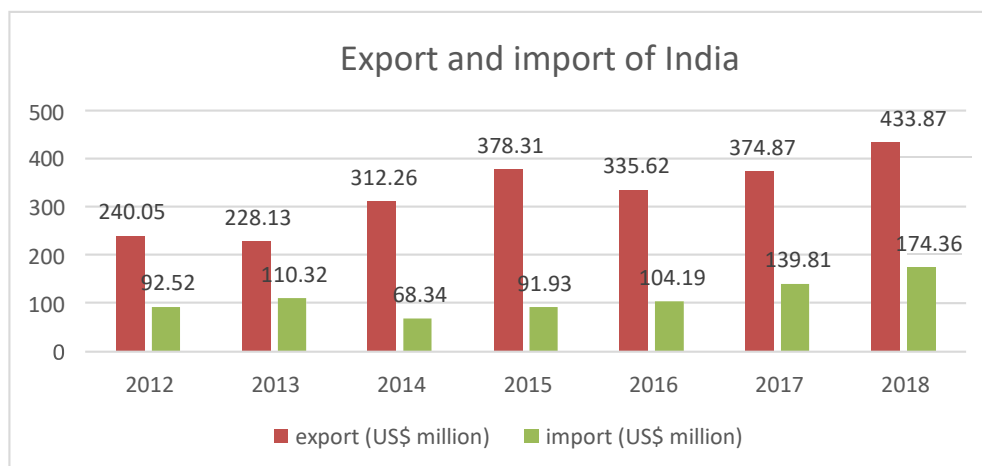X-axis: 2012 2013 2014 2015 2016 20 17 2018

Figure 1.2 Total production of cement industry in India

Above chart shows the total production of cement industry from the year 2012 to 2018 and the chart clearly depicts that there is continuous increase in the production level of cement industry in India and also it has been forecasted that production will continue to grow in the coming years.

Export and import of India

Year	export (US$ million)	import (US$ million)
2012	240.05	92.52
2013	228.13	110.32
2014	312.26	68.34
2015	378.31	91.93
2016	335.62	104.19
2017	374.87	139.81
2018	433.87	174.36

Source: IBFE cement report may 2018

Above chat indicates to total export and import from 2012 to 2018 in India. Lowest value of import was $ 68.34 in year 2014 and highest $ 174.36 in the year 2018. in the year 2018, highest value was 433.87 and lowest $228.13 in the year 2012.

India is second largest manufacturer of cement, so export of cement increases year by year.

Percentage share of cement demand in FY18

The housing and real estate sector is the biggest demand driver of cement, accounting for about 65% of the total consumption in India. The other major consumers of cement include public infrastructure at 20% and industrial development at 15% (Equity master).
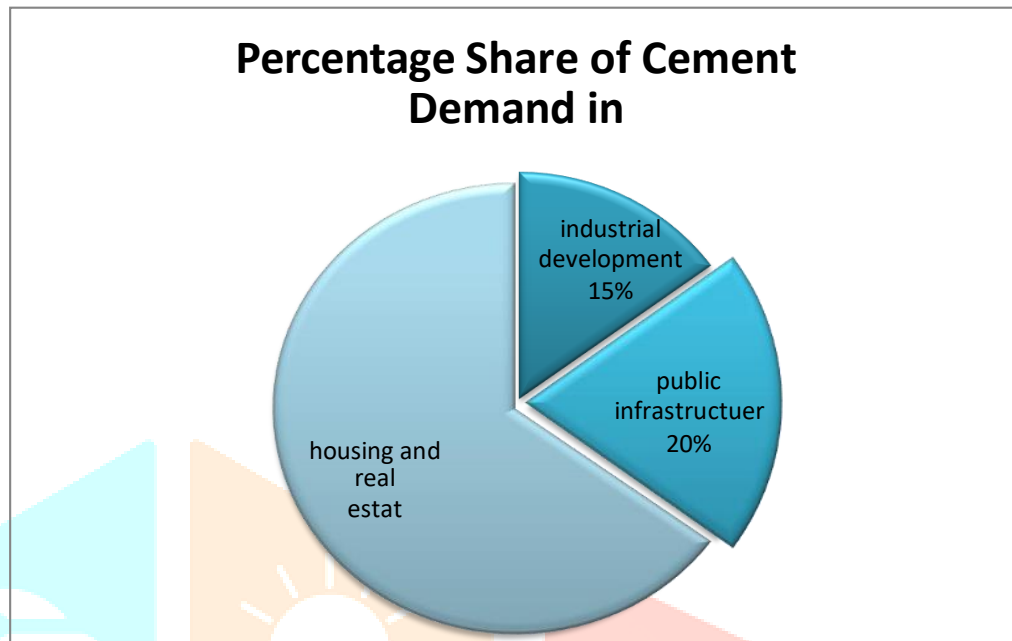

Figure 1.4 Percentage share of cement demand in FY18

Above chart shows the total demand according to sector wise. According to data is 65% cement demand in housing sector and 15% industrial development and 20% in public infrastructure.

Cement is a vital building material which holds a structure intact. It is widely used in the construction of buildings, roads and other infrastructure. India is known to be the second largest producer of cement in the world. The housing sector is the key demand driver for the cement industry and accounts for about 65 per cent of the total demand.

TOP 10 CEMENT COMPANIES OF INDIA

The cement industry is very prominent in India. Basically, the industry comes under the large-scale industry segment. Globally, India is the second largest cement producing country.

The cement industry in our country has a pivotal role in the overall growth of the economy. Apart from contributing GDP, the industry provides employment opportunity for the millions of job seekers (NextWhatBusiness)

Table 1.2 Top 10 cement companies of India

Sr. No.	Companies	Market Capitalization (Rs in Cr.)
1	Ultatech cement	12352.9
2	Shree cement	68742.8
3	Ambuja cement	43326.78
4	ACC cement	30071.31
5	Dalmia Bharat	21231.23
6	Romco cement	17738.93
7	J. k. cement	65556.98
8	Star cement	4525.58
9	Prism Cement	4276.01
10	Birla corporation	4234.91

Sources: capitaline.com

Ultratech Cement

Ultra Tech Cement Limited is the largest manufacturer of cement in India. It was founded in 1983. Ultra Tech's vision is to be 'The Leader' in Building Solutions. The company has a consolidated capacity* of 102.75 million tonnes per annum (MTPA) of grey cement. UltraTech has a strong presence in international markets such as Bangladesh, UAE, Sri Lanka and Bahrain. UltraTech is a founding member of the Global Cement & Concrete Association (Aditya birla group).

It operates 20 integrated units, 26 grinding units, seven bulk terminals and one clinkerisation plant for grey cement, one integrated

white cement unit, two wall care putty plants and over 100 RMC plants. UltraTech has a dealer and retailer network of over 80,000 partners across the country, with a market reach of more than 80% Indian cities and towns (Aditya birla group).

Shree Cement

Shree Cement Ltd is one of India's premier cement makers. Currently its manufacturing operations are spread over North and East India across six states. Its current installed capacity stands at 34.9 million tonnes. The company is an energy conscious & environment friendly business organization (Business- Standard).

Ambuja Cement

The company was incorporated on October 20th in 1981, as Ambuja Cements Pvt. Ltd. it is an India-based holding company, which is engaged in the manufacture of clinkers and cement. The company operates through cement and cement related products segment (IBEF, 2019).The company has a range of products for the business-to-business and retail markets. The company's product, Ambuja Plus Roof Special, is suited for constructing roofs and slabs (IBEF, 2019).

AAC Cement

ACC Limited is India's one of the largest manufacturers of cement and ready- mixed concrete. The company has 17 modern cement factories and more than 50 ready mixed concrete plants (IBEF, 2019). ACC has a unique record of accomplishment of innovative research, product development, and specialized consultancy services. ACC is the first cement company in the country to start Bulk Cement, especially for large consumers. Establishment: 1936 Headquarter Mumbai, Maharashtra (NextWhatBusiness).

Dalmia Bharat Cement

The Dalmia Group refers to a grouping of Indian companies, which trace their origin to the businesses established by Ramkrishna Dalmia and Jaidayal Dalmia. The Dalmia brothers established a business conglomerate in eastern India, in the first half of the 20th century. In the 1930s, the group merged with the businesses of the Sahu Jain Family to form the Dalmia-Jain Group. In 1948, the two families decided to split the businesses; the Dalmia businesses were further divided between Ramkrishna and Jaidayal. Today, a number of companies and conglomerates trace their origin to the original Dalmia businesses; these include Dalmia Bros, which is now managed by Vishnu Hari Dalmia's sons, Sanjay Dalmia and Anurag Dalmia; Dalmia Bharat Group, which is managed by Gautam Dalmia and Puneet Dalmia; Orissa Cement; Renaissance Group; and their subsidiaries.

The romco cement Limited is the flagship company of the Ramco Group, a well- known business group of South India. It is headquartered at Chennai. The main product of the company is Portland cement, manufactured in eight state-of-the art production facilities that include Integrated Cement plants and Grinding units with a current total production capacity of 16.45 MTPA (out of which Satellite Grinding unit's capacity alone is four MTPA. The company is the fifth largest cement producer in the country. it is the most popular cement brand in South India. The company also produces Ready Mix Concrete and Dry Mortar products, and operates one of the largest wind farms in the country.

j. k. cement has over four decades of experience in cement manufacturing. From modest beginning in the year 1974 with a capacity of 0.3 million tonnes at Nimbahera in Rajasthan, today JK Cement has 6 kilns of different capacities with a combined annual capacity of 7.5 million tonnes. The three cement units having aggregate capacity of 4.5 million tonnes are located in Rajasthan at Nimbahera (capacity 3.25 million TPA), Mangrol (capacity 0.75 million TPA) and Gotan (capacity 0.47 million TPA) and one unit in Karnataka at Muddapur with capacity of 3 million TPA. The Company is the second largest manufacturer of White Cement in India, with an annual capacity of 618,000 tonnes and value-added building products such as Wall Putty with an annual capacity of 700,000 tonnes and the plants are fully automated. JK White Cement's plants are accredited with ISO - 9001 and 14001 Certified Company by LRQA. Further, the plant is also OHSAS 18001 (For safety and environmental upkeep) accredited.

Star cement Limited is the largest cement manufacturer in northeast India. There plant is spread across 200 hectares of land in the idyllic town of Lumshnong, a strategic location at Meghalaya that ensures easy availability of high-grade limestone. It brand "Star Cement" has established itself as the most accredited brand of the region on grounds of both quality and fair pricing. Star Cement Limited is listed on National Stock Exchange (NSE) and Bombay Stock Exchange (BSE).

Prism cement Prism Johnson Limited (Formerly Prism Cement Limited) is professionally managed Company promoted by the Rajan Raheja Group. Prism Johnson Limited (Formerly Prism Cement Limited) is India's largest integrated
Building Materials Company with a wide range from cement, ready-mixed concrete, tiles & bath products. The Company has three Divisions, viz. Cement, H & R Johnson (India), and RMC (India).

Birla Corporation Birla Corporation Limited is the flagship Company of the M.P. Birla Group. Incorporated as Birla Jute Manufacturing Company Limited in 1919, Late Mr. Madhav Prasad Birla gave shape to it. As Chairman of the Company, he transformed it from a manufacturer of jute goods to a leading multi- product corporation with widespread activities. Under the Chairmanship of Mrs. Priyamvada Birla, the Company crossed the Rs. 1,300 - crore-turnover mark and the name was changed to Birla Corporation Limited in 1998.

Literature Review

Priya R. (2017) studied that seek to analyse the operating efficiency of the Indian cement industry and objective of this study was to analyse the operational efficiency of Indian cement industry. In this study was used secondary data that mainly available in published annual reports of 23 cement companies. It was found that the perceived low efficiency of small-sized companies appears to result from their implication of generating revenues as well as other outputs and their target segment. Limitation of the study was restricted to Indian cement companies only and the study was conducted with the researches own funding.

Utkarsh et al (2015) empirically investigate the impact of financial leverage on operating liquidity of Indian machinery firms and combined effect of operating liquidity and financial performance of Indian machinery firms. It was used panel data fixed regression model and employed review statistical software the same. It was used 10 years' data 151 Indian machinery firms. Study found that there is significant relationship between operating liquidity and financial leverage of the firms. It reflects that firm with more debt tend to hold more liquidity. Limitation of this study was not considered to risk concept.

R. Priya Rathna , A. Ravi , and P. Vikkraman (2017) conducted the study to examine to operating performance of the Indian cement industry in the past few years and also To study the efficiency of Indian cement companies in the post- reform era to meet the requirements of economy. The study was investigated the operational efficiency of cement companies in India, in terms of operating performance, operational efficiency and efficiency based on firm's size. In this study, secondary data was used. There used data from 2006-07 to 2015-16 for the whole cement industry. Operational efficiency was estimated applying the econometric techniques of Augmented Dickey-Fuller (ADF) unit root test and Co-integration test. The efficiency of Indian cement industry in the post-reform era was tested through Firms Efficiency Analysis.

Amir Hossein Jamali and Asghar Asadi (2012) in their study investigated the relationship between the management efficiency and the firm's profitability for a sample of thirteen auto manufacturing companies listed on the Bombay Stock Exchange. The analysis was carried out using Minitab 14 and conducting Pearson Coefficient correlation test on variables of the study including Gross Profit Ratio and Assets Turnover Ratio. The central conclusion of the study was that profitability and management efficiency were highly correlated to each other and based on the results of the study recommendations for improving the management efficiency and profitability in this industry were suggested.

Burange & et al. (2008) deals with the Cement Industry was experiencing a boom on account of the overall growth of the Indian Economy primarily because of increased industrial activity, and expanding investment in the cement sector. The industry experienced a complete shift in the technology of production. The competitiveness among the firms in Indian Cement Industry has also been 28 evaluated for the year 2006-2007, out of seventeen firms (90.21 per cent of the total market share), about 47 per cent have been recorded, above industry average performance in the overall competitiveness index.

Venkataramana and Ramakrishnan (2012) evaluate the profitability and financial position of selected cement companies in India through various financial ratio and applied correlation, mean, standard deviation and variance. The study uses liquidity and profitability ratios for assessment of impact of liquidity ratios on profitability performance of selected cement companies.

Pritpal Singh Bhullar (2017) This research objective mainly focuses to identify the effect of various variables represent the operating efficiency of firm in terms of financial ratios that were expected to affect the valuation of firm. The study considers 30 Indian firms from the period of 2005 to 2015 and examine the effect, six financial ratios were considered as proxy for operating efficiency and enterprise value (EV) as proxy for firm value. This study was used panel data analysis to explore the relationship of dependent and independent variable. It find that the results report that fixed asset turnover ratio (FATO) and net profit margin indicates negative relation with EV in pharmaceutical sector and EV/Sales and FATO confirms negative relation with EV for FMCG sector. This study was based on historical data, and cannot reliable.

A.Dharmaraj, Dr.N.Kathirvel,(2013). Evaluated study to the financial performance of the Indian automobile industry was analyzed through liquidity, profitability, efficiency and solvency ratios. The main objective of this paper was to compare and analyze the financial performance of the Indian Automobile industry during pre and post Foreign Direct Investment. The financial performance of the Indian automobile industry is analyzed through liquidity, profitability, efficiency and solvency ratios. Study was used secondary data. The period for this study covered fourteen years from 1999 to 2012 and the essential data for this study had been collected from the annual reports of sixteen companies. In addition, use various ratios. Descriptive statistical tools like Mean, Standard Deviation and Student's paired 't' Test were used to test the hypothesis. Limitation that only historical was used for the study.

Dr.P.Raja. (2016) studied to analyse the financial statement of the company The overall financial analysis reflects a superior financial performance with improvement in sales, exports and profit after tax. The company maintains stable earnings without extensive liabilities and pays dividends regularly. India cement Limited continues to play a pivotal role in the growth of India's economy and endeavor's to contribute to the nation's progress. It has one limitation that current items are considered.

Amal C, Umarali K. (2017). The main objective of the study was to identify critical factors of lean success in Indian automobile manufacturing industry and also to determine the influence of these success factors on operational performance. The results of the analysis were showed that lean success factors had positive and significant effect on operational performance. The study was conducted in 10 automobile manufacturing companies in India. Data collection was completed with the help of self-structured questionnaire and factore analysis, reliability analysis and validity analysis tools had been used. The study proved that a positive significant relationship exists between LM and OP.

Shivam Mathur and Krati Agarwal (2016), studied to compare the financial performance of both the companies through inter firm and intra firm analysis.The study was based on secondary data. Data regarding industries is collected from the annual report from 2011-2014 of selected industries with the help of websites, books, journals, magazines. Under this two industries were taken into consideration Tata motors and Maruti Suzuki. Tools which are used were liquidity, debt, profitability, efficiency, value. panies. Found that in short, the net sales of Maruti Suzuki were higher than net sales of Tata motors. It good for Maruti Suzuki. The gross profit of Maruti Suzuki was higher than Tata Motors. Limitation that only sale factor was considered in study.

Mohd. Ajmal (2015), The study was an attempt to evaluate the financial performance of Cement Industry of India with reference to Cement Corporation of India limited (CCI). The financial performance was evaluated through the financial ratios. Liquidity position of the company was checked through short term solvency ratios while earning performance had been evaluated with the help of profitability ratios. Financial and statistical tools and techniques had also been applied in order to check the overall financial position of the company. The data for the study was taken for five years i.e. 2008-09 to 2012-13. It found that the sale has not significant impact on net liquidity position, profitability and solvency position of Cement Corporation of India. The company did not able to pay its obligations within the time during the early period of the study.

Dr. R Venkatacham and V Kasthuri (2016), conducted this study to examine the financial performance cement industry in India and investigate the factors affecting the cement industry based on profitability model. The study is based on secondary data. The data used in this study were from an industry level data base on India's corporate sector, compiled by the Centre for Monitoring the Indian economy (CMIE), a private company in India. The Performance analyses of cement Industry in India were analysed for the period of ten years from 2006-2007 to 2015- 2016 with ANOVA and ratio analysis.

M. Senthil kumar and A. Panneerselvam (2016), conducted the study to analysis financial performance of nine cement companies in India using Altman's Z-score model. The Z-score has a linear combination of five common business ratios, weighted by coefficients. Overall Z-score was calculated as follows, the study found that financial soundness of Ambuja Cements Ltd. was good during the study period. This study was based only one model; others factors were silent.

The study was to identify the performance of Energy Guzzlers and set the Energy Baseline for the facility. For finding out the energy baseline various testing has been performed. As per the current pattern there are numerous measures which will help facility to reduce their energy baseline in future the energy cost plays a major role in production cost of the cement, so thermal energy conservation study is carried out in a cement industry. The conservation is concluded depends on the payback period.

N.M. Leepsa, Dr. Chandra Sekhar Misra(2012), this study mai objective was to find out the long term post acquisition financial performance in manufacturing sector companies in India. The period of study was from 2000-01 to 2009-2010. This period specially chosen to so that the performance of the acquisition deals during 2003-04 to 2006-07 was done for pre-acquisition three years and post-acquisition three years. The present study is an attempt to find out the difference in post-acquisition performance compared with pre-acquisition in terms of profitability, liquidity and solvency. The scope of the study was limited to manufacturing sector companies in

India. The statistical tools used are Paired Sample t-Test and Wilcoxon Signed Ranks Test. Limitation of this study only manufacturing sector companies were considered for the study.

S. Hemalatha & Dr. A. L. Kamalavalli,(2018) studied to assess the profitability position of the selected cement companies in India. This study was used secondary data which were taken from Capitaline Plus database. In this study, 15 cement companies were selected for the 10 years' data from 2005-2015. It found that all the companies were performing satisfactorily, and they can sustain or enhance their profitability by improving their operational performance.

International studies

Willian et al (1994) conducted this study the pre – and post-privatization financial and operating performance of 61 companies from 18 countries and 32 industries that experience full or partial privatization through public share offerings. During the period 1961 to 1990. Found that strong performance improvement achieved surprisingly without sacrificing employment security and after the being privatization, firms increase real sales, become more profitable, increase their capital investment spending, improve their operating efficiency. Limitation of this paper considered only revenue aspect.2 Boubakri N.(1998) analysis conducted in this paper seeks to determine whether the privatization of SOEs in developing countries was truly desirable and lives up to the expectations of governments and development agencies for the performance of newly privatized firms. In this study was used sample of 79 privatized firms, and market-adjusted performance measures for the 39 privatized firms for which market-adjusted ratios could be computed. It was find that adjusted for market effects in addition to unadjusted accounting performance measures. Both unadjusted and market-adjusted results show significant in- creases in profitability, operating efficiency, capital investment spending, output, employment level, and dividends.

Roger M. (1998) examined to study the change in operating performance among real estate investment trusts following an initial public offering. REITs were found to have significant increases in Return on Assets and selected measures of financial performance. Limitation of this analysis is that there were only a few years of data available following the IPO.

Bortolotti & et al. (2002) Studied that the financial and operating performance of 31 national telecommunication companies in 25 countries that were fully or partially privatized through public share offering. Using conventional pre-versus post- privatization comparisons and panel data estimation techniques, they find that the financial and operating performance of telecommunications companies improves significantly after privatization, but that a sizable fraction of the observed improvement results from regulatory changes-alone or in combination with major ownership changes-rather than from privatization alone.

Alovsat Muslumov (2005) this paper examines the post- privatization performance of privatized companies in the Turkish cement industry. The findings indicate that, when performance criteria for both the state and private enterprises were considered, privatization in the cement industry results in significant performance deterioration. Total value added and the return on investment declines significant after privatization. This decrease mainly stems from deterioration in asset productivity. The decline in asset productivity, however, was not caused by an increase in capital investment, since post- privatization capital investment did not change significantly. Significant contraction in total employment and an increase in financial leverage after privatization were among the key research findings. Privatization through public offering, gradual privatization and domestic ownership were found to stimulate the financial and operating performance of firms.

Research gap

From the above literature review, no study had been conducted from the period of 2008 to 2009 to 2017-18. In most of the paper study period less than 10 years, in present study 10-year study period has been taken. Above the literature, review found that, most of papers return on assets ratio taken as a dependent variable. In the present study, ROA has been taken as dependent variable.

Research Methodology

Objectives of the study

To analyse the impact of operating performance on profitability of the cement industry in India

Hypothesis

H_0: There is no significant impact of Operating profit ratio and fixed assets turnover ratio on return on assets of cement industry in India.

H_1: There is significant impact of Operating profit ratio and fixed assets turnover ratio on return on assets of cement industry in India.

Data and Methodology

The data from cement industry in India have been taken to find out the relationship between operating performance and profitability. The cement industry is rapidly growing in India and second largest all over the word. A number of operating ratio have been used as the proxy the indicator of operating performance of the companies while return on assets (ROA) has been used as the determinant of the profitability. Data had been taken from annual report and moneycontrol.com of five companies from the year 2009 to 2018. In this study following companies are taken.

Table 3.1 Names of companies

1. Ultra tech Cement
2. ACC Cement
3. Shree Cement
4. The Romco Cement
5. Jk Cement

In this study, quantitative methods are used to findings of study. Standard deviation, correlation and multi liner regression have been used with the help of predictive analytics software SPSS in order to arrive at the result of the study. Dependent and independent variables have been used which are used following table.

Table 3.2 Depended and in depended variables

Dependent variable	ROA	Return on Assets
Independent variables	OC	Operating cycle
	FATR	Fixed assets turnover ratio
	OPR	Operating profit ratio

Return on assets (ROA) is the indicator of company's profitability. A financial ratio represents the percentage of profit a company earns in relation to its overall resource. It is indicating how profitable a company in relative its total assets.

ROA = net income / total assets

Operating cycle is an indicator of management efficient performance. It means how well company is managing to trade payables, trade receivable and inventory.

OC = DIO + DSP – DPO

OC = operating cycle

DIO = days inventory outstanding = (Avg. inventory / net sale * 360) DSP = days sale outstanding = (Avg. trade receivable / net sale*360) DPO = days payable outstanding = (Avg. trade payable / net sale *360)

Operating profit (OPR): - operating profit is a profit of a business in which excluded interest and taxes income or expenses. Operating profit also known is Earing before interest and taxes (EBIT). Operating profit ratio is calculated by following formula

Operating profit ratio = operating profit / net sale *100

Regression equation model is developed on basis various selected variables as the following manner.

$ROA_{i,t} = \alpha + \beta_0 \, OC_{i,t} + \beta_1 \, FATR_{i,t} + \beta_2 \, OPR_{i,t}$

In the above mode 'ROA' means Return on assets of an individual company in a specific time. $\beta \, OC_{i,t}$, $\beta \, FATR_{i,t}$ and $\beta \, OPR_{i,t}$ represents changing pattern of operating cycle, fixed assets turnover ratio and operating profit ratio respectively. α indicates of constant.

Data analysis and interpretation

Ultratech Cement Ltd Company Analysis

Table 4.1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OPC	10	7.17	45.28	28.0610	12.12759
ROA	10	.56	.86	.7120	.10196
OPR	10	18.29	28.08	21.8410	3.44789
FATR	10	.78	1.38	1.1300	.18655
Valid N (listwise)	10				

Table 4.1 shows descriptive statistics of dependent variable and independent variable. In which operating cycle maximum value is 45.28 and minimum 7.17 with std. deviation is 12.12. Standard Deviation is indicating high variance from mean value. The values of the std. deviation are indicating the consistency of ROA and FATR over the 10-year study period. However, relativity high std. deviation (12.12) indicate inconstant operating cycle exist in the study period.

Table 4.2 Correlations

		ROA	OPC	FATR	OPR
Pearson Correlation	ROA	1.000	-.834	.929	.849
	OPC	-.834	1.000	-.670	-.719
	FATR	.929	-.670	1.000	.690
	OPR	.849	-.719	.690	1.000
Sig. (1-tailed)	ROA	.	.001	.000	.001
	OPC	.001	.	.017	.010
	FATR	.000	.017	.	.014
	OPR	.001	.010	.014	.
N	ROA	10	10	10	10
	OPC	10	10	10	10
	FATR	10	10	10	10
	OPR	10	10	10	10

Table 4.2 shows correlation both between dependent variable and independent variables by using the person's correlation. Correlation between dependent variable (ROA) and independent variable (OPC) is -8.34. It means that there exists a strong negative linear correlation between ROA and OPC and strongly positive linear correlation with other independent variables (FATR, OPR).

Table **4.3 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig.FChange
1	.987(a)	.974	.962	.02000	.974	76.004	3	6	.000

a. Predictors: (Constant), OPR, FATR, OPC

Table 4.3 shows that strength of the relationship between dependent variable and model.

Model summary explain that 97.4% of dependent variable (ROA) is predicated by the independent variables (OPC, OPR, FATR).

Table **4.4ANOVA**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.091	3	.030	76.004	.000(a)
	Residual	.002	6	.000		
	Total	.094	9			

Predictors: (Constant), OPR, FATR, OPC

Dependent Variable: ROA

The model we consider for predication dependent variable is perfectly fit. In this model, p- value is less than 0.05 significant level. It means there have some impact on dependent variable of independent variables.

Table4.5 **Coefficients**

Model		Unstandardized Coefficients		Standardize d Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.247	.088		2.789	.032
	OPC	-.002	.001	-.258	-2.579	.042
	FATR	.312	.053	.571	5.931	.001
	OPR	.008	.003	.269	2.620	.040

a. Dependent Variable: ROA

$ROA_{i,\,t} = \alpha + \beta_0\,OC_{i,\,t} + \beta_1\,FATR_{i,t} + \beta_2\,OPR_{i,t}$

The following regression equation shows that the all the independent variables have significant impact on dependant variable.

$ROA = 0.247 + (.002)\,(OPC) + 0.312(FATR) + 0.08(OPR)$

Table 4.6 shows the regression coefficient of OPC is -0.002, FATR 0.312 and OPR 0.008 while the beta coefficient is -0.258, 0.571 and 0.269 respectively. Among these independent variables, that FATR has more influence on ROA (dependent variable) then OPR and OPC. The level of significant OPC, FATR, and OPR is 0.42, .001, and 0.040 respectively, which is, less than 5 % significant level. **ACC COMPANY LTD.**

Table 4.6 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OPC	10	-34.82	41.37	14.2920	29.25750
ROA	10	.70	.95	.8750	.08250
OPR	10	12.70	31.99	17.1480	5.93027
FATR	10	.92	1.59	1.3140	.22495
Valid N (listwise)	10				

Table shows descriptive statistics of dependent variable and independent variable. In which operating cycle maximum value is 41.37 and minimum -34.82 with std. deviation is 29.26. Standard Deviation is indicating high variance from mean value. Relativity high std. deviation (29.26) indicate inconstant operating cycle exist in the study period. ROA maximum value in study period is 0.95 and minimum value is 0.70.

Table 4.7 Correlations

		ROA	OPC	FATR	OPR
Pearson Correlation	ROA	1.000	.837	.859	-.493
	OPC	.837	1.000	.650	-.768
	FATR	.859	.650	1.000	-.437
	OPR	-.493	-.768	-.437	1.000
Sig. (1-tailed)	ROA	.	.001	.001	.074
	OPC	.001	.	.021	.005
	FATR	.001	.021	.	.103
	OPR	.074	.005	.103	.
N	ROA	10	10	10	10
	OPC	10	10	10	10
	FATR	10	10	10	10
	OPR	10	10	10	10

Table shows correlation both between dependent variable and independent variables by using the person's correlation. Correlation among dependent variable (ROA) and independent variable (OPC and FATR) is respectively 8.37 and 0.859. It means that there exists a strong positive linear correlation among ROA, OPC and FATR. Correlation between ROA and OPR is -0.493. it means that there exists a negative correlation between ROA and OPR.

Table 4.8 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.952(a)	.906	.859	.03096	.906	19.302	3	6	.002

a Predictors: (Constant), OPR, FATR, OPC
Table shows that strength of the relationship between dependent variable and model.
Model summary explain that 90.6% of dependent variable (ROA) predicated by the independent variables (OPC, OPR, FATR).
Table 4.9 ANOVA

Table 4.9 ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.055	3	.018	19.302	.002(a)
	Residual	.006	6	.001		
	Total	.061	9			

Predictors: (Constant), OPR, FATR, OPC
Dependent Variable: ROA
Table shows the p value. The model we consider for predication dependent variable is perfectly fit. In this model, p- value is 0.002, which have less than 0.05 significant level. It means there have some impact on dependent variable of independent variables.

Table 4.10 Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	Constant	.529	.087		6.060	.001			
	OPC	.002	.001	.724	3.104	.021	.837	.785	.388
	FATR	.189	.061	.514	3.099	.021	.859	.785	.388
	OPR	.004	.003	.288	1.461	.194	-.493	.512	.183

a Dependent Variable: ROA

The following equation shows the positively significant impact of independent variables on dependent variable.

ROA= 0.529+.002 (OPC) + 0.312(FATR)

Table 4.11 shows the regression coefficient of OPC is 0.002, FATR 0.189 and OPR 0.004 while the beta coefficient is .724, 0.514 and 0.288 respectively. Among these independent variables, that FATR has more influence on ROA (dependent variable) then OPR and OPC. The level of significant OPC, FATR, and OPR is 0.021, 0.021, and 0.194 respectively, in which all the independent variables are significant except OPR.

SHREE CEMENT LTD.

Table 4.11 Descriptive statistics of Shree Cement

	N	Minimum	Maximum	Mean	Std. Deviation
OPC	10	3.92	64.95	35.5390	20.76057
ROA	10	.82	1.63	1.0630	.23104
OPR	10	20.82	41.45	28.2340	5.99280
FATR	10	1.87	3.73	2.3840	.61368
Valid N (list wise)	10				

Table shows descriptive statistics of dependent variable and independent variable. In which operating cycle maximum value is 64.95 and minimum 3.92 with std. deviation is 20.76. std. Deviation is indicating high variance from mean value. Relativity high std. deviation (20.76) indicate inconstant operating cycle exist in the study period. ROA maximum value in study period is 1.63 and minimum value is 0.82. OPR maximum value is 41.45 and minimum value is 20.82 with standard deviation is 5.99. Deviation is indicating high variance from mean value.

Table 4.12 Correlation analysis of Shree Cement

		ROA	OPC	FATR	OPR
Pearson Correlation	ROA	1.000	-.467	.842	-.036
	OPC	-.467	1.000	-.549	-.736
	FATR	.842	-.549	1.000	.196
	OPR	-.036	-.736	.196	1.000
Sig. (1-tailed)	ROA	.	.087	.001	.460
	OPC	.087	.	.050	.008
	FATR	.001	.050	.	.294
	OPR	.460	.008	.294	.
N	ROA	10	10	10	10
	OPC	10	10	10	10
	FATR	10	10	10	10
	OPR	10	10	10	10

Table shows correlation both between dependent variable and independent variables by using the person's correlation. Correlation between dependent variable (ROA) and independent variable (OPC) is -0.467 and have negative correlation with OPR is -0.036. It means that there exists a negative linear correlation among ROA, OPC and OPR and strongly positive linear correlation with (FATR).

Table 4.13 Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.903[a]	.816	.723	.12149	.816	8.850	3	6	.013

a. Predictors: (Constant), OPR, FATR, OPC

Table shows that strength of the relationship between dependent variable and model.

Model summary explain that 81.6% of dependent variable (ROA) is predicated by the independent variables (OPC, OPR, FATR).

Table 4.14 ANOVA Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.392	3	.131	8.850	.013[a]
	Residual	.089	6	.015		
	Total	.480	9			

Predictors: (Constant), OPR, FATR, OPC
Dependent Variable: ROA

Table shows the p value. The model we consider for predication dependent variable is perfectly fit. In this model, p-value is 0.013, which have less than 0.05 significant level. It means there have some impact on dependent variable of independent variables.

Table 4.15 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	1.202	.536		2.241	.066			
	OPC	-.005	.004	-.474	-1.452	.197	-.467	-.510	-.255
	FATR	.257	.085	.683	3.032	.023	.842	.778	.531
	OPR	-.020	.011	-.519	-1.865	.111	-.036	-.606	-.327

a. Dependent Variable: ROA

The following regression equation shows that the FATR ratio has positive significant impact on ROA ratio.

*ROA= 1.202+ 0.312(FATR).*Table shows the regression coefficient of OPC is -0.05, FATR 0.257 and OPR 0.020 and the beta coefficient is -0.474, 0.683 and -0.519 respectively. Among these independent variables, that FATR has more influence on ROA (dependent variable) then OPR and OPC. The level of significant OPC, FATR, and OPR is 0.197, 0.023, and 0.111 respectively. Only one independent variable is significant which have less than 5% level of significant.

THE ROMCO CEMENT LTD.

Table 4.16 Descriptive statistics of The Romco Cement

	N	Minimum	Maximum	Mean	Std. Deviation
OPC	10	35.82	76.20	61.4520	13.15685
ROA	10	.47	.63	.5510	.04508
OPR	10	15.29	30.89	26.0280	5.22426
FATR	10	.61	.82	.7320	.05903
Valid N (listw ise)	10				

Table shows descriptive statistics of dependent variable and independent variable. In which operating cycle maximum value is 76.20 and minimum 35.82 with std. deviation is 13.15. ROA maximum value in study period is 1.63 and minimum value is 0.82. OPR maximum value is 41.45 and minimum value is 20.82 with standard deviation is 5.99. Deviation is indicating high variance from mean value.

Table 4.17 Correlation analysis

		ROA	OPC	OPR	FATR
Pearson Correlation	ROA	1.000	.186	.057	.930
	OPC	.186	1.000	-.579	.431
	OPR	.057	-.579	1.000	-.091
	FATR	.930	.431	-.091	1.000
Sig. (1-tailed)	ROA	.	.304	.437	.000
	OPC	.304	.	.040	.107
	OPR	.437	.040	.	.401
	FATR	.000	.107	.401	.
N	ROA	10	10	10	10
	OPC	10	10	10	10
	OPR	10	10	10	10
	FATR	10	10	10	10

Table shows correlation both between dependent variable and independent variables by using the person's correlation. Correlation between dependent variable (ROA) and independent variables (OPC, OPR, and FATR) positive correlation but among these variables FATR value is 0.930 which has near to 1. It means there have strongly positive correlation between ROA and FATR.

Table 4.18 Model Summery

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.960[a]	.922	.883	.01539	.922	23.742	3	6	.001

a. Predictors: (Constant), FATR, OPR, OPC

Table shows that strength of the relationship between dependent variable and model.

Model summary explain that 92.2% of dependent variable (ROA) is predicated by the independent variables (OPC, OPR, FATR).

Table 4.19 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.017	3	.006	23.742	.001[a]
	Residual	.001	6	.000		
	Total	.018	9			

Predictors: (Constant), FATR, OPR, OPC
Dependent Variable: ROA

Table shows the p value. The model we consider for predication dependent variable is perfectly fit. In this model, p-value is 0.01, which have less than 0.05 significant level. It means there have some impact on dependent variable of independent variables.

Table 4.20 Coefficients analysis

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
		B	Std. Error	Beta			Zero-order	Partial	Part
1	(Constant)	.023	.074		.315	.764			
	OPC	-.001	.001	-.265	-1.679	.144	.186	-.565	-.191
	OPR	-006	.001	-.001	-.007	.995	.057	-.003	-.001
	FATR	.798	.099	1.044	8.086	.000	.930	.957	.920

a Dependent Variable: ROA

The following regression equation shows the significant impact of independent variable (FATR) on dependent variable (ROA).

ROA= 0.023+ 0.000(FATR)

Table shows the regression coefficient of OPC is -0.01, FATR 0.798 and OPR and the beta coefficient is -0.265, 0.1.044 and -0.001 respectively. Among these independent variables, that FATR has more influence on ROA (dependent variable) then OPR and OPC. The level of significant OPC, FATR, and OPR is 0.144, 0.000 and 0.995 respectively. Only one independent variable is significant which have less than 5% level of significant.

JK CEMENT

Table 4.21 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
OPC	10	13.27	50.67	31.5350	11.80939
ROA	10	.56	.78	.6872	.07333
OPR	10	13.26	21.55	17.0435	3.15028
FATR	10	.84	1.35	1.0540	.16877
Valid N (listwise)	10				

Table shows descriptive statistics of dependent variable and independent variable. In which operating cycle maximum value is 50.67 and minimum 13.27 with std. deviation is 11.80. ROA maximum value in study period is 0.78 and minimum value is 0.56. OPR maximum value is 21.55 and minimum value is 13.26 with standard deviation is .0733. Deviation is indicating high variance from mean value.

Table 4.22 Correlations analysis

		ROA	OPC	OPR	FATR
Pearson Correlation	ROA	1.000	-.776	.693	.904
	OPC	-.776	1.000	-.632	-.669
	OPR	.693	-.632	1.000	.465
	FATR	.904	-.669	.465	1.000
Sig. (1-tailed)	ROA	.	.004	.013	.000
	OPC	.004	.	.025	.017
	OPR	.013	.025	.	.088
	FATR	.000	.017	.088	.
N	ROA	10	10	10	10
	OPC	10	10	10	10
	OPR	10	10	10	10
	FATR	10	10	10	10

Table shows correlation both between dependent variable and independent variables by using the person's correlation. Correlation between dependent variable (ROA) and independent variable (OPC) is -.776 it means that there exists a strong negative linear correlation between ROA and OPC and strongly positive linear correlation with other independent variables (FATR, OPR).

Table 4.23 model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.959a	.920	.880	.02536	.920	23.078	3	6	.001

a. Predictors: (Constant), FATR, OPR, OPC

Table shows that strength of the relationship between dependent variable and model.

Model summary explain that 92.0% of dependent variable (ROA) predicated by the independent variables (OPC, OPR, FATR).

Table 4.24 ANOVA Test

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.045	3	.015	23.078	.001a
Residual	.004	6	.001		
Total	.048	9			

Predictors: (Constant), FATR, OPR, OPC

Dependent Variable: ROA

Table shows the p value. The model we consider for predication dependent variable is perfectly fit. In this model, p-value is 0.01, which have less than 0.05 significant level. It means there have some impact on dependent variable of independent variables.

Table 4.25 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
1 (Constant)	.292	.118		2.475	.048			
OPC	-.001	.001	-.143	-.808	.450	-.776	-.313	-.093
OPR	.007	.003	.289	1.940	.100	.693	.621	.224
FATR	.293	.068	.673	4.330	.005	.904	.870	.499

a. Dependent Variable: ROA

The following regression equation shows the significant impact of independent variable on dependent variable.

ROA= 0.292+ 0.05(FATR)

Table shows the regression coefficient of OPC is -0.01, FATR 0.2.93 and OPR

and the beta coefficient is -0.143, 0.673 and 0.289 respectively. Among these independent variables, that FATR has more influence on ROA (dependent variable) then OPR and OPC. The level of significant OPC, FATR, and OPR is 0.450, 0.005 and 0.100 respectively. In there has only one independent variable is significant which have less than 5% level of significant.

Finding and conclusion

The study conducted to analysis the operating performance of the cement industry, the objective of the study to find out the relationship between operating performance and profitability. In addition, find out the relationship between dependent variable (ROA) and independent variables. In this study is selected five cement companies and 10-year data collected from the year 2009 to 20018 of each company. In this study, quantitative methods are used to findings of study. Standard deviation, correlation and multi liner regression have been used with the help of predictive analytics software SPSS in order to arrive at the result of the study. Dependent and independent variables have been used to analysis the operating performance. ROA used as dependent variable, which has indicators of the profitability, and operating cycle, operating profit and fixed assets turnover ratio are independent variables. In this study concluded that there has some positive relationship between return on assets and operating profit and inverse relationship between ROA and operating cycle. Finding is that there is positive relationship between ROA, OPR and Operating cycle have inverse relationship, and all the selected independent variables (OPC, OPR and FATR) are significant value is 0.042, 0.01 and 0.040 respectively, which less than the 0.05 of significant level. In addition, Model summary explain that 97.4% of dependent variable (ROA) predicated by the independent variables (OPC, OPR, FATR) of the ultra tech cement company. It also found that some companies there is inverse relationship between operating cycle and ROA through it is negative correlation. ACC cement company result found that independent variables OPR and FATR significant value is 0.021 and 0.021 respectively, which is less than 0.05 level of significant. It means there have significant relationship between dependent variables and independent variables. Model summary explain that 90.6% of dependent variable (ROA) predicated by the independent variables (OPC, OPR, FATR). Shree cement company result shows that independent variable FATR have significant relationship with dependent variable (ROA). Model summary explain that 81.6% of dependent variable (ROA) predicated by the independent variables (OPC, OPR, FATR) of the Shree cement in case of The Romco cement results shows the regression coefficient of OPC is - 0.01, FATR 0.798 and OPR -0.006 and the beta coefficient is -0.265, 0.1.044 and -0.001 respectively. Among these independent variables, that FATR has more influence on ROA (dependent variable) then OPR and OPC. The level of significant OPC, FATR, and OPR is 0.144, 0.000 and 0.995 respectively. Only one independent variable is significant which have less than 5% level of significant. J k cement company results shows the MODEL summary explain that 92.0% of dependent variable (ROA) predicated by the independent variables (OPC, OPR, and FATR).

Table 4.25 ANOVA Test and the regression coefficient of OPC is -0.01, FATR 0.2.93 and OPR 0.007 and the beta coefficient is -0.143, 0.673 and 0.289 respectively. Among these independent variables, that FATR has more influence on ROA (dependent variable) then OPR and OPC. The level of significant OPC, FATR, and OPR is 0.450, 0.005 and 0.100 respectively. In there has only one independent variable is significant which have less than 5% level of significant.

Summary of Findings

Correlation shows that there is positive relationship between dependent variable (ROA) and independent variables (OPR, FATR) except the operating cycle. It also found that inverse relationship between ROA and operating cycle FATR has more influence on the profitability (ROA) of the companies than the OPR and OPC. There is highly negative correlation between ROA and operating cycle that is - 0.834 in case of ultra tech cement company. There are all independent variables have statistical significant OPC, FATR, and OPR is 0.42, .001, and 0.040 respectively which is less than 5 % significant level in case of ultra tech.

Limitation of the study

In this study, data has taken from the annual reports and from web site capitaline.com; Means study mostly used secondary data. Therefore, reliability of results is mainly depended on data collected. The study is selected only five private companies of India.

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