



AN EMPIRICAL STUDY OF SHREE CEMENT'S OPERATIONAL PERFORMANCE ANALYSIS

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Abstract: A present study is an empirical approach to understanding the Operational performance of Shree Cement Ltd. That is one of India's key cement companies. The company has manufacturing units in six states of India with an overall capacity of 34.9 million tonnes. Such analysis might be useful for the investors and other stakeholders interested to invest in such a sector. A strong Operational Performance indicates the company's strongest skill to tackle odd situations. This extensive and critical examination of Shree Cement limited will provide a view of future possibilities of the company working style and practices of utilizing the available resources in an effective manner. To understand the trend graphical representations along with percentage change in comparison to the previous financial year were utilized. Simultaneously Single-factor ANOVA and Correlation tools were also implemented to understand the efficiency of available resource utilization by Shree Cement Ltd.

Index Terms - Shree Cement, Operational Performance Analysis, ANOVA, Percentage Change.

I. INTRODUCTION:

The cement industry is one of the fastest-growing industrial sectors around the world. China (2,500 million metric tons), India (330 million metric tons), Vietnam (100 million metric tons), the United States (92 million metric tons), and Turkey (76 million metric tons) are the top five countries in terms of the cement production during the tenure of 2021. In terms of Compound Annual Growth Rate (CAGR), cement production propagated extensively from 272 million tonnes (2006–2013) to 289 million tonnes (2015-16) to finally reached at 550 MT in the financial year 2020. The key factor behind this enamours growth was increasing infrastructure activities and demand from a variety of sectors chiefly from the housing sector (Sasikumar & Pachaialmmal, 2019).

According to O'Brien (2014), Operational Performance is the overall performance of the industry against standardized and prescribed indicators viz., Quality, Effectiveness, Productivity, Waste Reduction, and Environmental Responsibilities. In other words, Operational Performance Analysis provides a holistic idea about the industry Performance in each and all possible parameters. As the performance measures are categorized from an internal or external perspective.

Operational Performance Analysis is one of the evaluating mechanisms that help to determine a company's ability to utilize its resources efficiently. There are several ways to measure it and the most convenient method is to measure it in terms of assets and equity resources. It may also be measured by the conversion of sales into net profits (Singh & Deepak, 2022).

A present study is an empirical approach to understanding the Operational performance of Shree Cement Ltd. That is one of India's key cement companies. The company has manufacturing units in six states of India with an overall capacity of 34.9 million tonnes. Such analysis might be useful for the investors and other stakeholders interested to invest in such a sector. A strong Operational Performance indicates the company's strongest skill to tackle odd situations. This extensive and critical examination of Shree Cement limited will provide a view of future possibilities of the company working style and practices of utilizing the available resources in an effective manner.

II. REVIEW OF LITERATURE:

Venkataramana et al., (2012) utilized the Z Score model in the association with the financial ratio analysis to understand and predict the risk of bankruptcy for selected cement companies. They complied their study for the period of the financial year 2001 to 2010. They identified that liquidity, working capital turnover, efficiency & solvency position of the selected cement companies were not adequate. They also concluded and commented on two companies; first, they identified that the financial performance of K.C.P. Ltd. & Kesoram Industries Ltd. was poor; secondly, the Dalmia Bharat Ltd. was on the verge of bankruptcy their conclusions were properly based on the Z score analysis.

Santosuosso (2014) worked on the 215 non-financial firms listed on the Italian Stock Exchange with the help of efficiency ratios, profitability, stock market value, and operational cash flow. He identified the strong association between various measures of cash flow & efficiency ratios. He also found that efficiency measures did not have a significant association with stock market value.

Devi & Sabarinathan (2015) evaluate the profitability positions of various cement industries. They mainly utilized the production and sales to calculate the monetary feasibility in both long-term as well as short-term implications and concluded that the profitability positions might influence the cement companies and also the trends of the investments in the sector.

Mohamed & Mohamed (2015) worked on the correlation between Liquidity and Profitability among selected cement companies. They finally concluded that the financial and operating efficiency of different cement companies were found to be satisfactory, and nearly all the cement companies were utilizing their resources in an economic and equitable manner efficiently.

Rathna et al., (2017) worked on the Operational Efficiency of the Indian Cement Industry and published an analytical report on it. They found that various financial parameters significantly influenced the Operational Efficiency of the cement industries and small, medium, and large level industries recently improved their efficiency during the recent time. In their final conclusion, they state that the large-sized industries improved performance in a greater and faster manner in comparison to the small and medium industries.

Donovan (2018) worked on various types of organizations and stated that to improve the overall outcomes of the organization, management and policymakers have to deploy effective performance measures in communicating the directions to the workers. He also concluded that sharp and well-focused operational performance plays a critical role in effective resource optimization.

Objectives of the Study:

- To study the Operational Performance of the Shree Cement limited during the last five years (2016-2017 to 2020-2021).
- To understand the pros and cons mainly governing the production rate of Shree Cement Limited.

III. RESEARCH METHODOLOGY

Hypothesis:

There is no significant difference in the various parameters of Operational Performance of Shree Cement during the study tenure (Financial years 2016-2017 to 2020-2021).

$H_0 =$ There is no significant difference in the various parameters of Operational Performance of Shree Cement ($\mu_1 = \mu_2 = \mu_3 \dots \dots = \mu_6$)

$H_1 =$ There is a significant difference in the various parameters of Operational Performance of Shree Cement ($\mu_1 \neq \mu_2 \neq \mu_3 \dots \dots \neq \mu_6$)

Data Sources and Statistical Tools Used for Analysis:

To understand the operational performance of ShreeCement, mainly secondary datasets were utilized for the analysis purpose. The annual report released by the Shree Cement was the key source of data.

Data represented in the tabular format were analyzed and the graphs were prepared for a better understanding of the Operational performance, in addition, percentage changes were also exhibited on the graphs to understand the changes between two consecutive financial years.

In terms of Statistical tools, a single factor ANOVA was implemented on the various parameters of the Operational Performance of Shree Cement to check the significant variations and to test the hypothesis. Simultaneously correlation was also applied to understand the trend of relationships between different Operational Parameters.

IV. RESULTS AND DISCUSSION

Cement Production:

In terms of Operational Performance of Shree Cement in the financial year, 2020-21 the production of cement was the highest (263.61 Lac MT) during the study period it is followed by the financial year 2018-19 (250.63 Lac MT), in contrast during 2016-17 the cement production was observed as lowest (202.87 Lac MT). In terms of comparison with last previous financial year, cement production 2018-19 exhibited the highest growth (12.89%) during the study tenure while during 2019-20 it was observed lowest (-3.78%) (Figure 1).

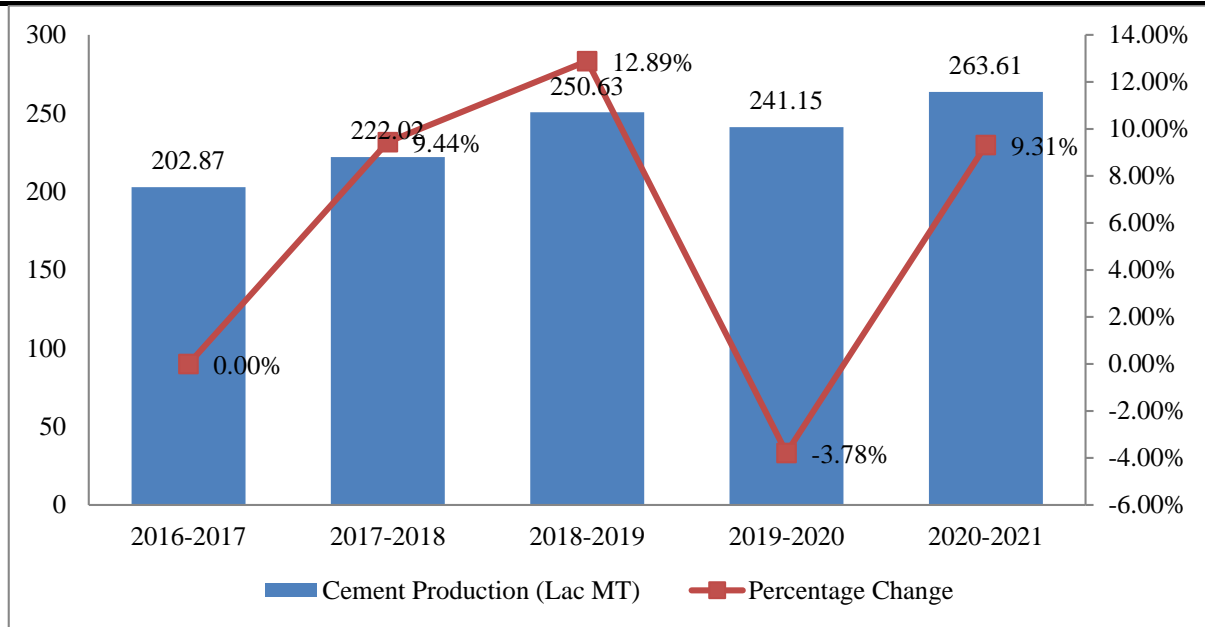


Figure 1: Cement Production (Lac MT) during the study tenure (2016-2021)

Cement and Clinker Sales:

In terms of Operational Performance of Shree Cement in the financial year, 2020-21 the Cement and Clinker Sales were the highest (268.41 Lac MT) during the study period it is followed by the financial year 2018-19 (258.61 Lac MT), in contrast during 2016-17 the Cement and Clinker Sales was observed as lowest (205.86 Lac MT). In terms of comparison with last previous financial year, Cement and Clinker Sales 2018-19 exhibited the highest growth (14.76%) during the study tenure while during 2019-20 it was observed lowest (-3.62%) (Figure 2).

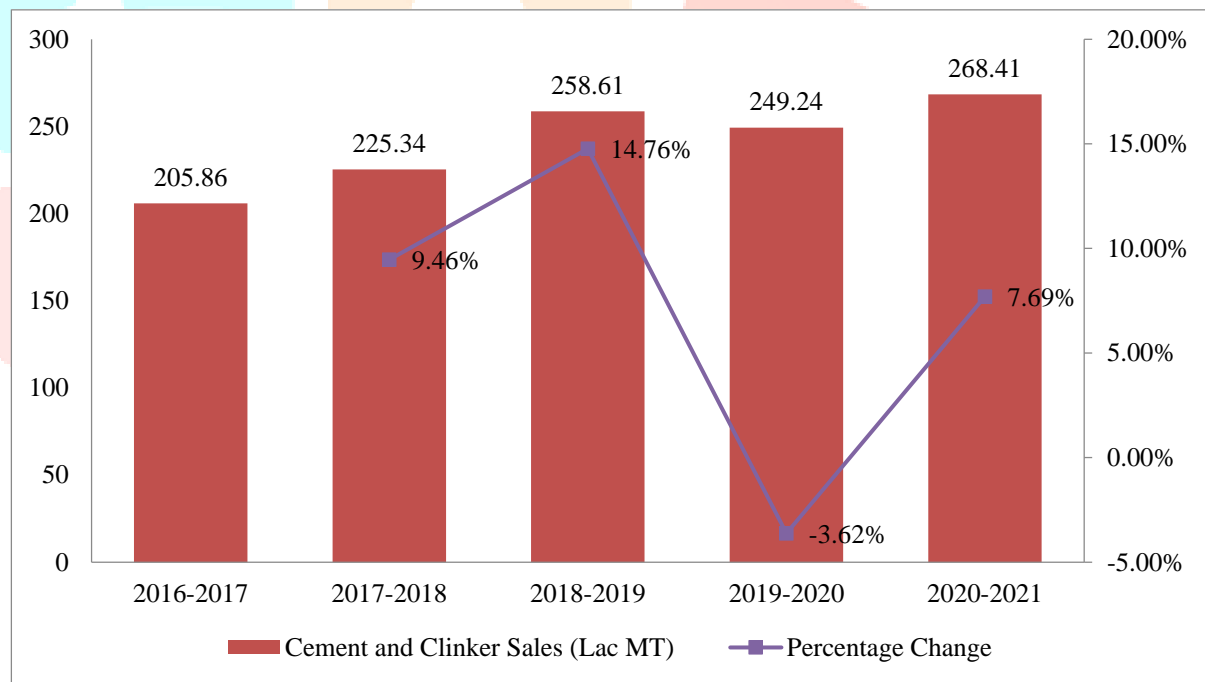


Figure 2: Cement and Clinker Sales (Lac MT) during the study tenure (2016-2021)

Net Power Generation:

In terms of Operational Performance of Shree Cement in the financial year, 2018-19 the Net Power Generation was the highest (32536 Lac kWh) during the study period it is followed by the financial year 2016-17 (28496 Lac kWh), in contrast during 2020-21 the Net Power Generation was observed as lowest (16185 Lac kWh). In terms of comparison with last previous financial year, Net Power Generation 2018-19 exhibited the highest growth (26.98%) during the study tenure while during 2020-21 it was observed lowest (-39.15%) (Figure 3).

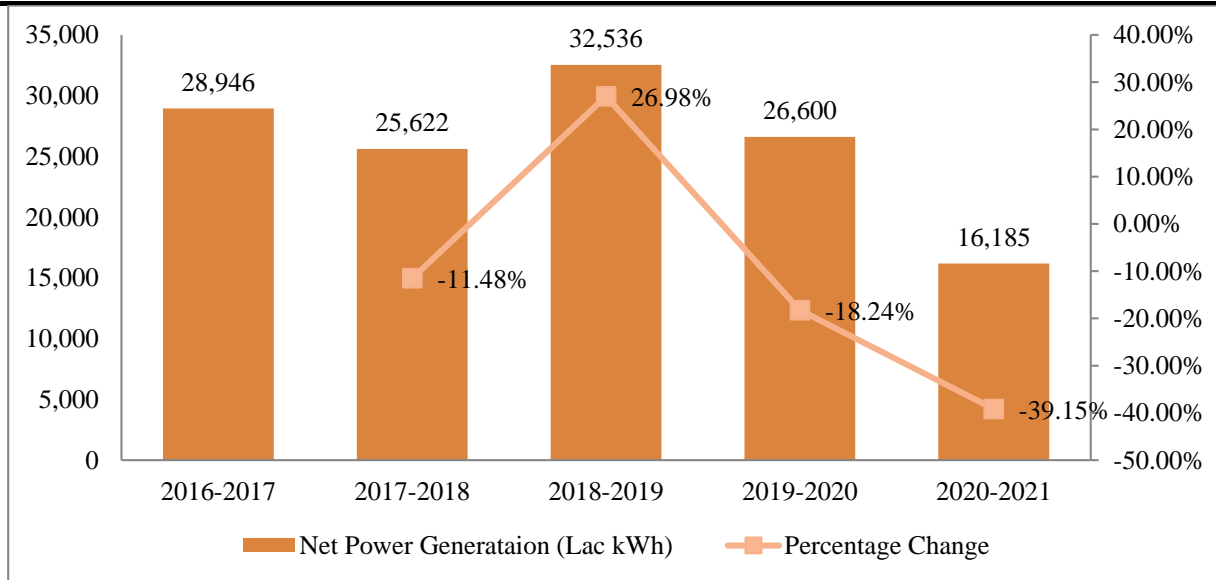


Figure 3: Net Power Generation (Lac kWh) during the study tenure (2016-2021)

Power Consumption:

In terms of Operational Performance of Shree Cement in the financial year, 2019-20 the Power Consumption was the highest (70.54 kWh / Ton of cement) during the study period it is followed by the financial year 2016-17 (69.99 kWh / Ton of Cement), in contrast during 2020-21 the Power Consumption was observed as lowest (68.65 kWh / Ton of cement). In terms of comparison with last previous financial year, Power Consumption 2019-20 exhibited the highest growth (2.16%) during the study tenure while during 2020-21 it was observed lowest (-2.58%) (Figure 4).

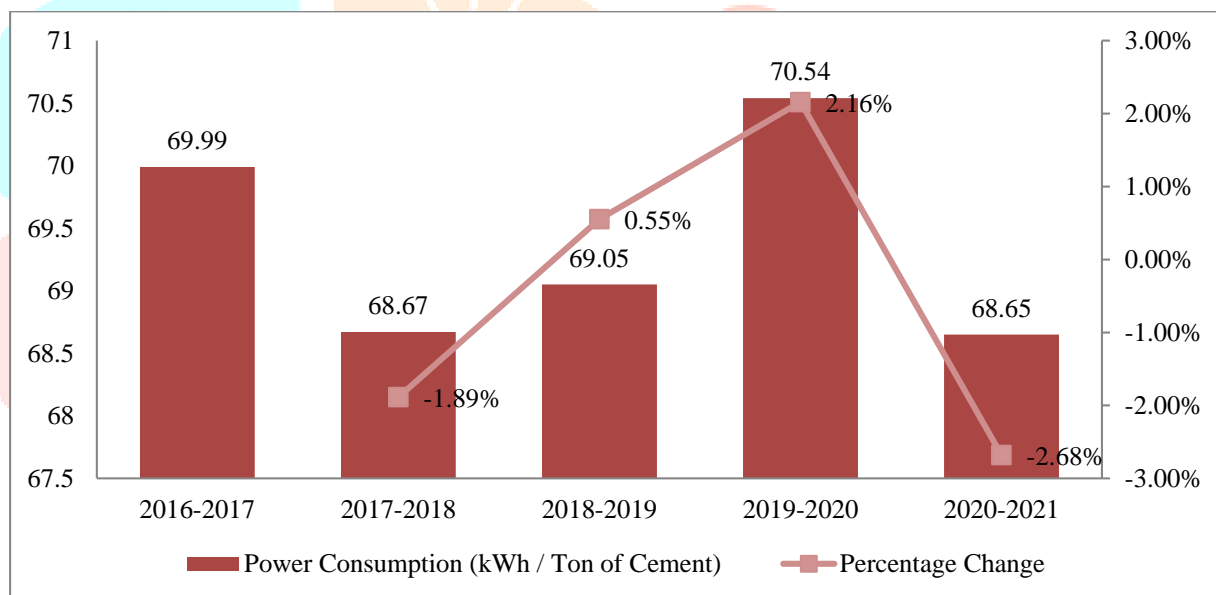


Figure 4: Power Consumption (kWh / Ton of cement) during the study tenure (2016-2021)

Fuel Consumption:

In terms of Operational Performance of Shree Cement in the financial year, 2017-18 the Fuel Consumption was the highest (728 Kcal / Kg of Clinker) during the study period it is followed by the financial year 2020-21 (727Kcal / Kg of Clinker), in contrast during 2016-17 the Fuel Consumption was observed as lowest (718 Kcal / Kg). In terms of comparison with last previous financial year, Fuel Consumption 2017-18 exhibited the highest growth (1.39%) during the study tenure while during 2018-19 it was observed lowest (-1.24%) (Figure 5).

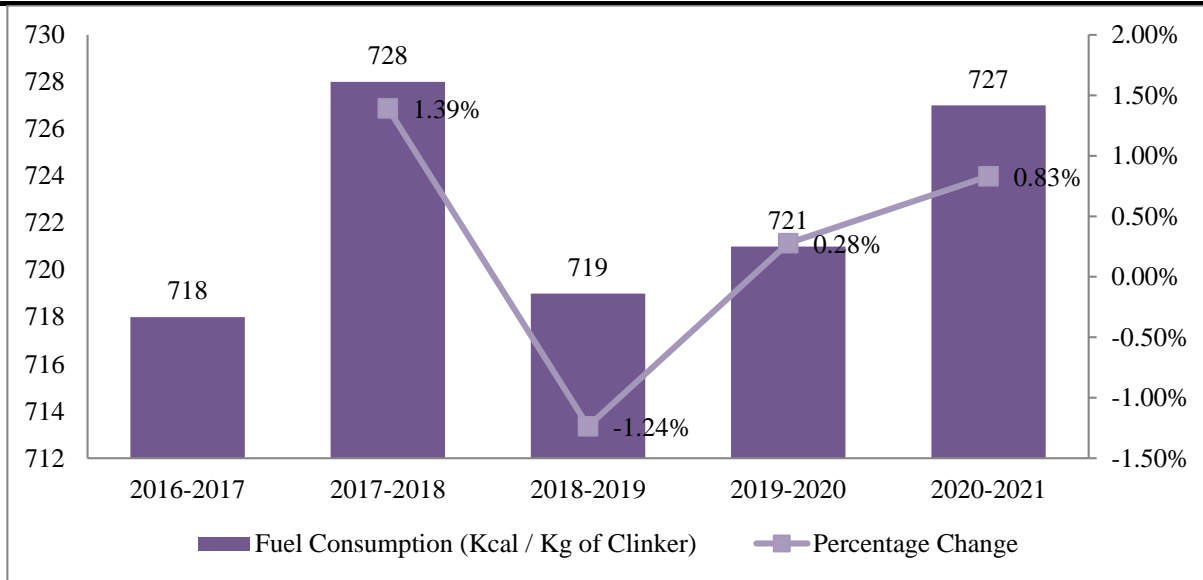


Figure 5: Fuel Consumption (Kcal / Kg of Clinker) during the study tenure (2016-2021)

Clinker Production:

In terms of Operational Performance of Shree Cement in the financial year, 2018-19 the Clinker Production was the highest (176.5 Lac MT) during the study period it is followed by the financial year 2020-21 (171.25 Lac MT), in contrast during 2016-17 the Clinker Production was observed as lowest (136.82 Lac MT). In terms of comparison with last previous financial year, Clinker Production 2018-19 exhibited the highest growth (16.62%) during the study tenure while during 2019-20 it was observed lowest (-6.19%) (Figure 6).

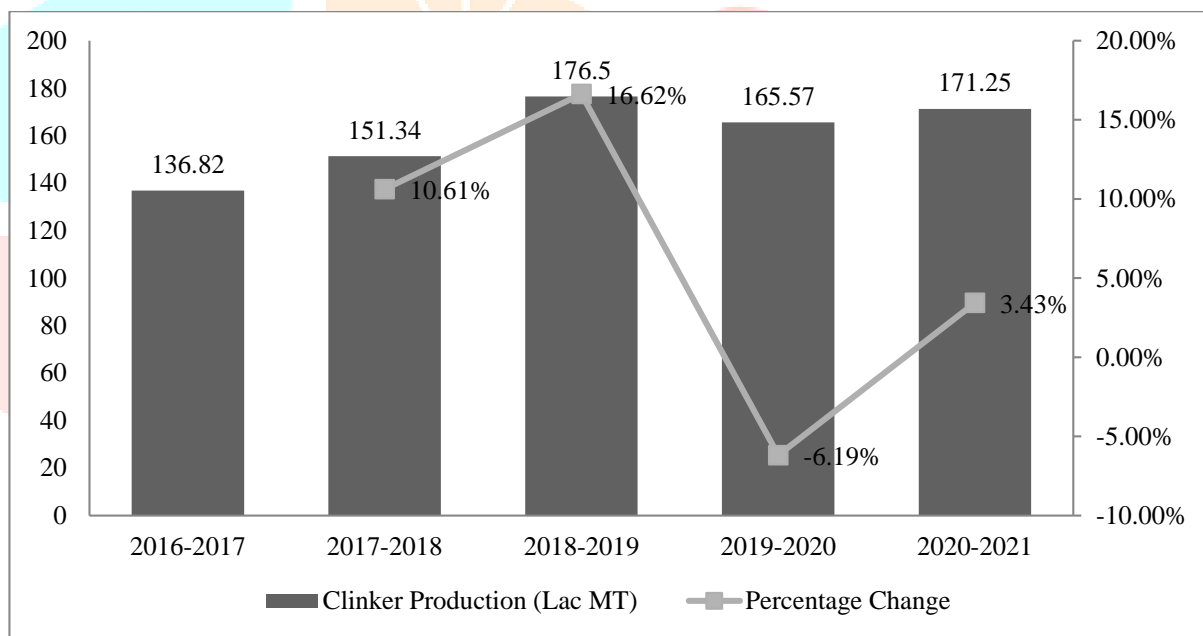


Figure 6: Clinker Production (Lac MT) during the study tenure (2016-2021)

Cement Sales:

In terms of Operational Performance of Shree Cement in the financial year, 2020-21 the Cement Sales were the highest (263.18 Lac MT) during the study period it is followed by the financial year 2018-19 (248.76 Lac MT), in contrast during 2016-17 the Cement Sales was observed as lowest (200.73 Lac MT). In terms of comparison with last previous financial year, Cement Sales 2018-19 exhibited the highest growth (12.98%) during the study tenure while during 2019-20 it was observed lowest (-3.74%) (Figure 7).

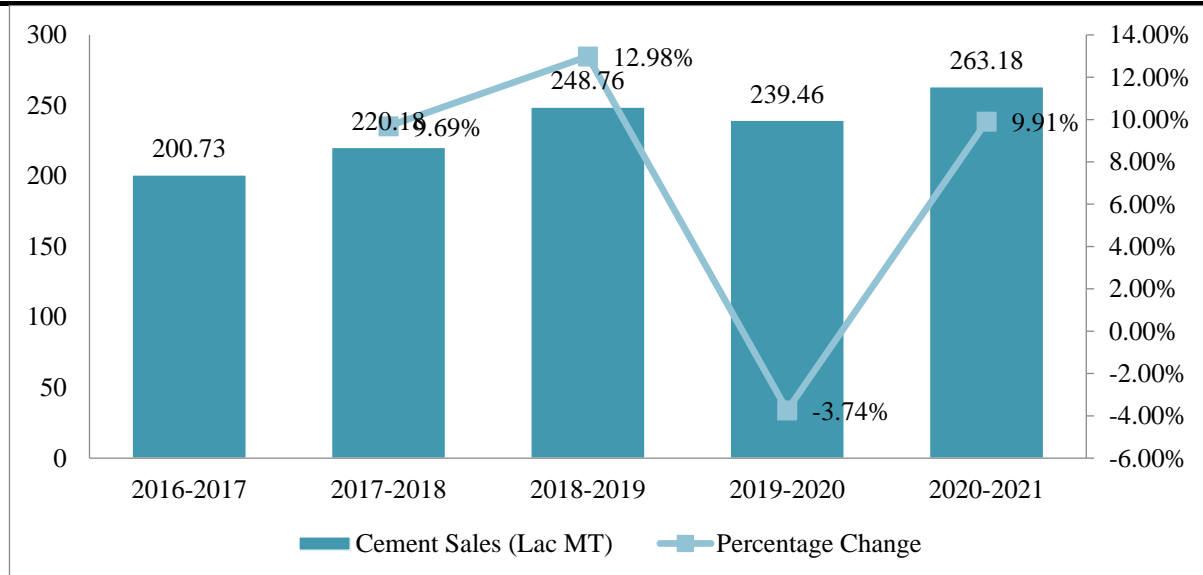


Figure 7: Cement Sales (Lac MT) during the study tenure (2016-2021)

Comparative Analysis:

Table 1: Summary of Single Factor ANOVA for Operational Performance during 2016-2017 to 2020-2021

Groups	Count	Sum	Average	Variance
	5	10095	2019	2.5
Cement Production (Lac MT)	5	1180.28	236.056	573.97328
Cement and Clinker Sales (Lac MT)	5	1207.46	241.492	652.04067
Net Power Generation (Lac kWh)	5	129889	25977.8	37058214.2
Power Consumption (kWh / Ton of Cement)	5	346.9	69.38	0.7159
Fuel Consumption (Kcal / Kg of Clinker)	5	3613	722.6	21.3
Clinker Production (Lac MT)	5	801.48	160.296	260.42683
Cement Sales (Lac MT)	5	1172.31	234.462	598.98992

Table 2: ANOVA: Single Factor for Operational Performance during 2016-2017 to 2020-2021

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	2848358117	7	406908302.4	87.83696566	4.55E-19	2.312741
Within Groups	148241296.6	32	4632540.518			
Total	2996599414	39				

To assess the overall performance during the study period single factor ANOV was employed and the results suggest significant variation in year-wise pattern in all observed Operational Performance Parameters (Table 1 & 2). The highest Variance was observed among the Net Power Generation while the lowest Variance was observed among the Power Consumption.

F value (80.837) > F critical value (2.313) exhibited that there is a significant difference among various operational performance parameters of Shree Cement during the period of study.

Table 3: Correlation between various parameters of Operational Performance during 2016-2017 to 2020-2021

	Cement Production (Lac MT)	Cement and Clinker Sales (Lac MT)	Net Power Generation (Lac kWh)	Power Consumption (kWh / Ton of Cement)	Fuel Consumption (Kcal / Kg of Clinker)	Clinker Production (Lac MT)	Cement Sales (Lac MT)
Cement Production (Lac MT)	1						
Cement and Clinker Sales (Lac MT)	0.997	1					
Net Power Generation (Lac kWh)	-0.454	-0.396	1				
Power Consumption (kWh / Ton of Cement)	-0.361	-0.307	0.377	1			
Fuel Consumption (Kcal / Kg of Clinker)	0.311	0.257	-0.741	-0.673	1		
Clinker Production (Lac MT)	0.950	0.967	-0.163	-0.278	0.138	1	
Cement Sales (Lac MT)	0.999	0.996	-0.469	-0.366	0.321	0.945	1

During the entire period of study (2016-2017 to 2020-2021) the strongest positive correlation was observed between the Cement Production (Lac MT) and Cement Sales (Lac MT) (0.999) followed by the cement Production (Lac MT) and Cement and Clinker Sales (Lac MT) (0.997) & Cement and Clinker Sales (Lac MT) and Cement Sales (Lac MT) (0.996). while the weakest correlation was observed between Fuel Consumption (Kcal / Kg of Clinker) and Clinker Production (Lac MT) (0.138).

V. CONCLUSION:

Shree Cement Ltd. is considered one of India's key cement companies. As the company has manufacturing units in six states with an overall capacity of 34.9 million tonnes. The company exhibited a strong Operational Performance and it was found that the key strangest is to tackle odd situations as during the global pandemic lockdown situations company exhibited significant Operational performance. That indicates the future possibilities of the company working style and practices of utilizing the available resources in an effective manner. Single-factor ANOVA analysis depicted the significant variation among the various Operational Performance Parameters during the study period. Similarly, Correlation analysis indicated the efficiency of available resource utilization by Shree Cement Ltd.

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