A Study in Financial Analysis of Marble Manufacturing Process

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Abstract :- The motive of the work is to analyze a marble industry financially, based on the idea of Life Cycle Cost Analysis (LCCA). LCCA is an important tool to understand the most lucrative option among different competing alternatives to purchase, own, operate, maintain and eventually dispose of an object or process. All the costs are discounted to a present-day value known as Net Present Value (NPV). NPV helps to choose a better investment option or even let us understand that whether the investment is even profitable or not. The crux of the matter is justified by taking multiple aspects under consideration viz., Owning Cost, Operating Cost, Maintenance and repairs. The values were projected for the next 20 years considering it as the life of the industry.

Keywords: - Life Cycle Cost Analysis, Net Present Value, Owning Cost, Operating Cost, Maintenance & Repairs.

I. INTRODUCTION

Financial analysis is wisely known as accounting analysis. Its prime objective has been to assess or to figure out, define and quantify certain financial traits of a business, sub-business or even project. Those financial traits can refer to the business' viability, stability or profitability. This basically imply that by performing financial analysis, one can be able to predict with some degree of certainty if a business will be able to continue on it course the same way as before or if it will be discontinued and, if so, for what reasons. And eventually, the financial analysis allows top management to decide on the best alternative direction in which the company can go.

II. RESEARCH METHODOLOGY

The initial cost, machine cost as well as repair and maintenance cost are evaluated. The data of electricity rates from the year 2002 is taken into consideration and is projected for the next 20 years i.e. till 2036. The data of initial cost of machines and factory were collected from various sites i.e. the marble industries. The cost of electricity as per rates provided by "DNH (Dadra Nagar Haveli) Power Distribution Corporation Limited" is observed. The electricity bills provided by the factory ensures the unit consumed by various equipments. This consumptions as per rates fluctuating in previous years is been projected till the year 2036. The repair and maintenance is collected from the industry and is projected further depending upon the variations in market rates of materials and machines parts. The labor wages are taken as per the District Scheduled Rates (DSR) from the year 2006 and the pattern of fluctuations is been projected till the year 2036. The pricing of the raw materials i.e. Indian marbles, is decided as per the data from 2007 and accordingly been carried till 2036. In the transportation department, fuel cost and transportation taxes are put together to evaluate the total cost under transport.

2.1 Capital Cost

The capital cost includes the establishment cost, equipment cost and the cost of raw materials. These all factors also refers to the initial cost.

2.1.1 Establishment Cost

Table 1

1	Foundation	INR 700 Per Sq. Ft.
2	Machine Foundation	INR 1800000 Per Unit
3	Office Bulding Foundation	INR 1200 Per Sq. Ft.
4	Compound Wall	INR 2500 Per Mt
5	Pavement/ Roads	INR 1250 Per Sq. Mt

6	DRAINS	INR 25 Per Sq. Ft.
7	PLUMBING	INR 5 Per Sq. Ft.
8	ELECTRIC CONNECTION	INR 50 Per Sq. Ft.

2.1.2 Equipments Used
- Crane – INR 3000000
- Block Turner – INR 800000
- Monoblock Dresser – INR 2200000
- Trolley – INR 800000
- Gangsaw – INR 7000000 (Per Unit)
- Resin Line – INR 7000000
- Polishing Line – INR 5500000
- Recycling Tank – INR 1800000

2.1.3 Raw Materials

Raw materials required by the industry per year is 5000 tonnes. The rate per tonne of raw materials in 2016 is INR 6500, this makes the yearly expense on raw material (i.e. for 5000 tonnes) INR 32500000. This data of per tonne of raw materials when projected till 2036 as shown in graph below gives rate per tonne as INR 20995. This data reflects the expense for the year 2036 on raw materails as INR 104975000. This shows a whopping increment of around 223% from 2016 to 2036 per tonne of raw material.
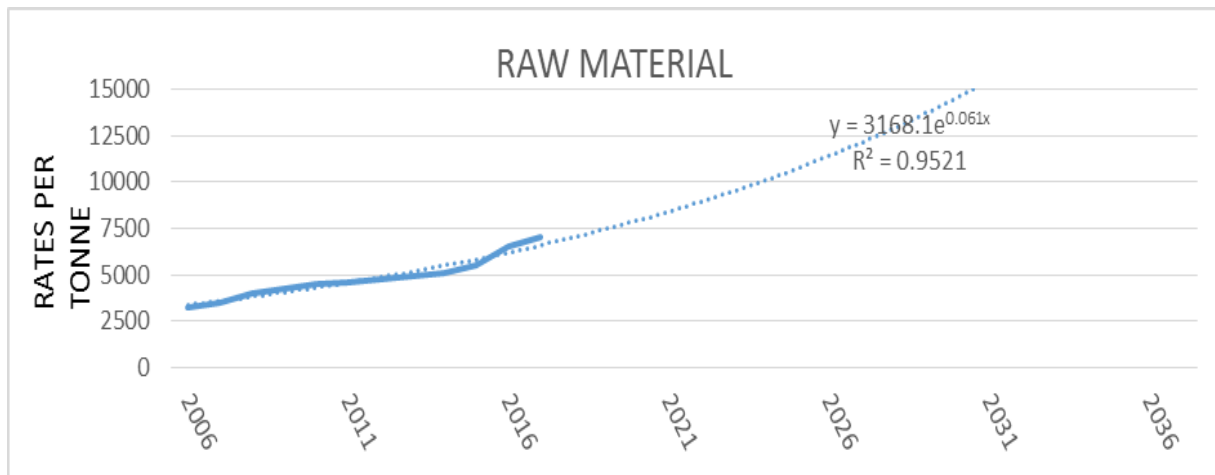

Fig.1 (Rates/tonne of Raw Materials)

2.2 Operating Cost

2.2.1 Electricity

As per the rates provided by DNH Power Distribution Corporation Limited – as of 2002 the rate per unit of electricity was INR 2.45. After the projections till the year 2036, this rate turns out to be INR 8.44 per unit of electricity used. This totally shows a price hike of about 244.48% per unit. The number of units of electricity consumed per month in the industry was 35000 units, as provided by the industry. This makes the yearly consumption of 420000 units of electricity. The following graph shows the variations in the unit rate of electricity. The dotted curve represents the projection till the 2036 and the solid line shows the rates collected from the industry.
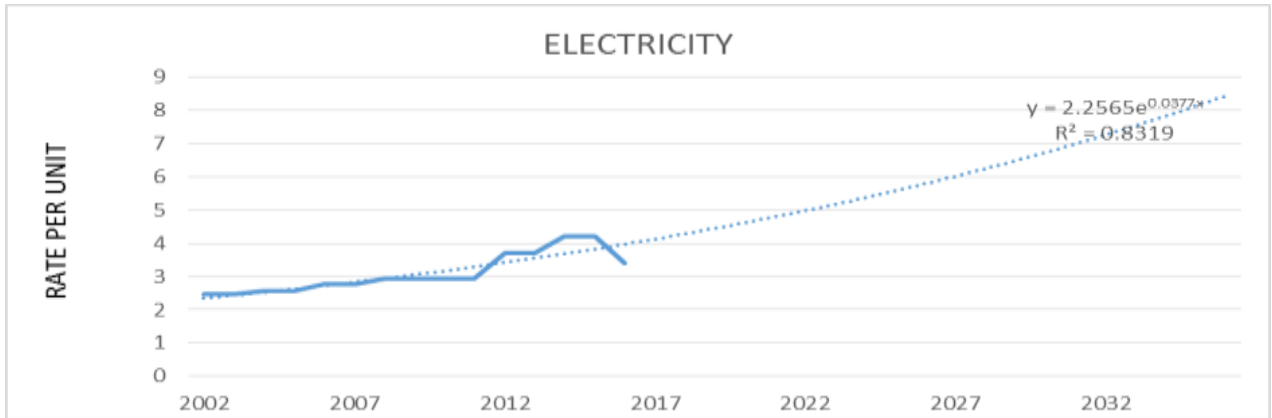
Fig.2 (Rate/unit of electricity)

2.2.2 Transport

In the transportation department multiple factors are taken into consideration viz. truck capacity, fuel cost & road taxes. The truck capacity is 30 tonnes i.e. only 30 tonnes of raw materials can be transported in one trip. Considering the variations in fuel cost which are provided in the graph below, the transportation charges fluctuates. The truck vendor charges per tonne of the material transported. As per the data of 2002 cost/tonne is INR 1110 which makes a trip of carrying 30 tonnes of raw materials of INR 33300. Similarly, in 2016 per trip cost jumps to INR 64350 & finally as projected, in 2036 it reaches INR 100350 per trip i.e. 55.944% increase over the years. Now, if we look at the projections of fuel cost we find that in 2016 average cost per litre of fuel is INR 50.8 and the projection expects it to become INR 93.673 in the year 2036, which witnesses an increment of 84.395%.
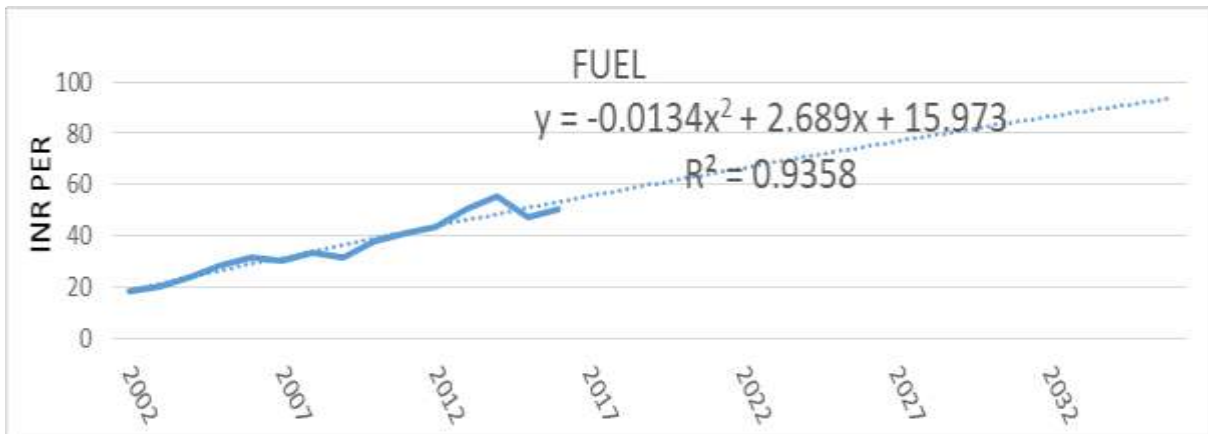

Fig.3 (Cost/litre of fuel)

2.2.3 Labours

There were 15 unskilled and 12 skilled labours required in the industry. The wages of these labours were decided as per the data of District Schedule Rates (DSR). The wages for the year 2016 for unskilled and skilled labours were INR 350 & INR 425 respectively. This value after projections comes out to be INR 525 for unskiled and INR 780 for skilled labours. This totally shows an addition of 50% for unskilled and 83.52% for skilled.
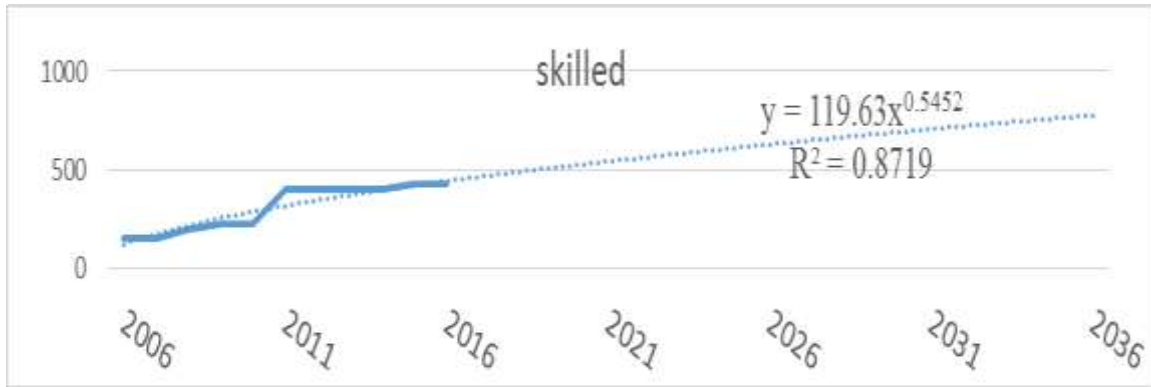
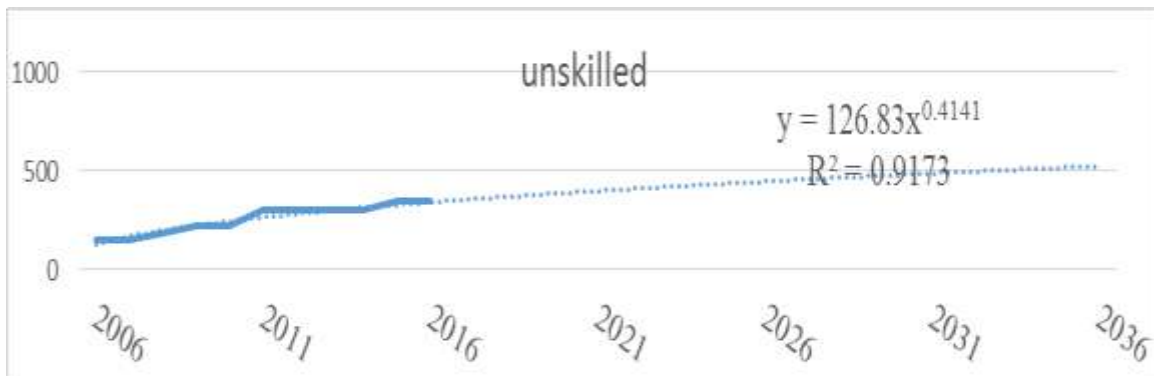**Fig.4** (Y-axis shows the daily wages in INR)

Fig.5 (Y-axis shows the daily wages in INR)

2.3 Maintenance & Repair Cost
2.3.1 CCI (Construction Cost Index)

Construction Cost Index is a factor which evaluates variations in overall cost of construction in various types of projects. It is the monthly measure of Construction Cost movement for the Indian Construction Industry provided by CIDC (Construction Industry Development Council). CIDC decides the base CCI and releases monthly index of following years.

The CCI helps to figure out the repair and maintenance costs. As per the data of CIDC the base CCI in October 2007 is 100. This value turns out to be 143.44 in October 2016. Taking every month data from October 2002 to October 2016 and projecting it to 2036 gives us the CCI of 249.075. This index reflects the maintenance and repair cost as INR 500000 for a CCI of 142.83 in 2016. Similarly, the index value of 2036 i.e. 249.075 projects the repair and maintenance cost as INR 936400.
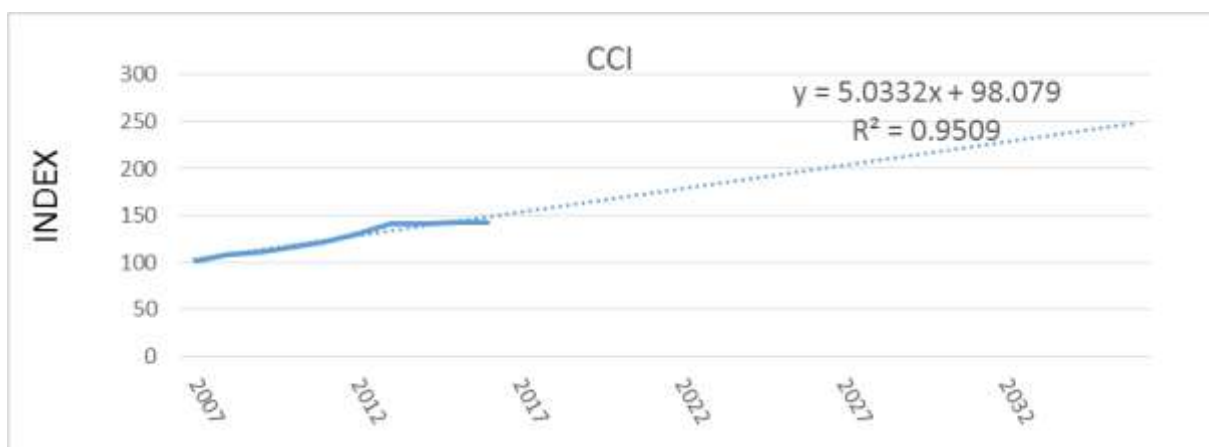

Fig.6 (CCI)

III. CONCLUSION

Finally, the Capital Cost, Operating Cost and & Maintenance & Repair Cost are added for the determination of the NPV. As NPV helps to know the present value of the investment and also determines whether a venture is lucrative or not. NPV at different rate of return is evaluated in the table below.

Table 2 (NPV)

RATE OF RETURN	VALUE (INR)
4%	165649512.54
8%	112687591.49
10%	95041186.89

Another important aspect of the evaluation is the "Payback Period". The payback period is the duration at which the invested amount is recovered, which is simply calculated by observing the difference in the Inflows and the Outflows. The moment at which the investment is recovered is noted as the payback period. Here the payback period is 10 years i.e. 2026 is the recovery year. Which implies that after 2026 every penny flowed in is the profit. The graph below shows the relationship between the Inflow, Outflow and the Net Flow.
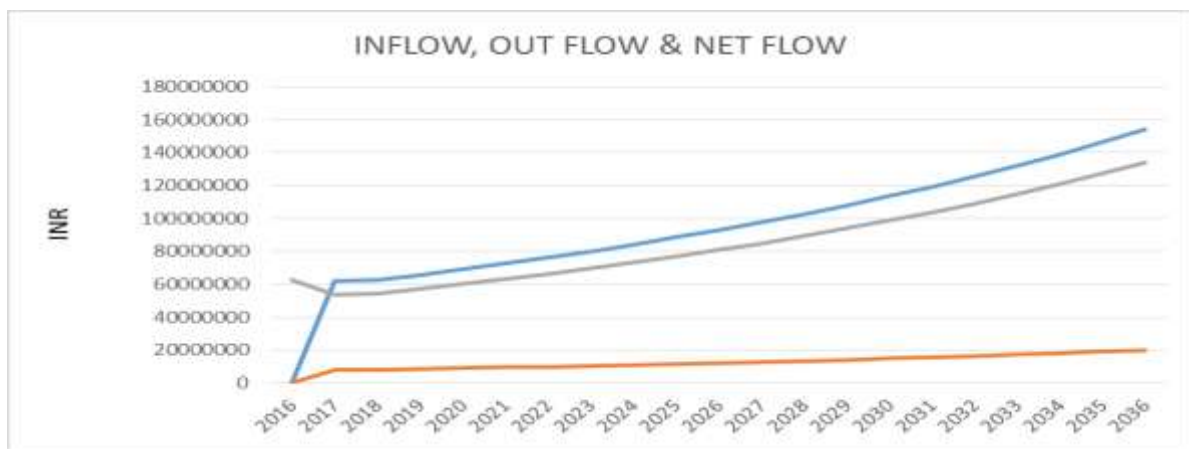

Fig.7

Here the blue line shows inflow, grey line represents outflow & the red line represents net flow.

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