Total Productivity Measurement Model For Glass Manufacturing Firm

Chaurasiya Rahul Ramdarash[1], Prof. Ashutosh dwivedi[2], Rakesh Bhatt[3]
[1, 2, 3] Dept of Mechanical Engineering
[1, 2, 3] Vindhya Institute of tech.& Sci. Satna M.P.

Abstract- *Productivity performance play a vital role in the field of glass manufacturing firm and it has been important aspect in manufacturing firm for improving the quality of firm and quality of product.productivity play an important role in any glass manufacturing industry for customer satisfaction and improve company's performance.In any firm with labor productivity as a main factor and contributing a more important role. The total productivity of glass firm was determined for a period of Eight years by using Craig and Harris model. After analysis the result carried out showed that years 2011 and 2018 had a lowest and highest total productivity level respectively. Therefore, this research work could serve as guiding information for glass firm for determining productivity level without just focusing on labour cost.*

Keywords- Raw material, Capital input, labour input, total input, partial productivity, total productivity equipments .

I. INTRODUCTION

Now a day's, in any manufacturing organization productivity play a vital role for improving the reputation of the firms. The environment of firms running in globalized competition between the various company and firm. If the reputation of firm increased then productivity of firm should be increased in proper way. Not only firm's productivity increased but also partial productivity of labor, partial productivity of raw material, and partial productivity of capital should be increased. Productivity measure is an important aspect in manufacturing firm. Now a day's manufacturing firm play a vital role in today's globalization environment for improving their reputation regarding firm's productivity. Production and productivity both are important point of view in any manufacturing firm to get the higher productivity of the firm. This is very most important point of view to get other benefits from the glass manufacturing firm. Glass manufacturing firm play a vital role in india to manufacturing the glass in different size and in different shape. Not only firm's productivity increased but also partial productivity of labor, partial productivity of capital,partial productivity of raw material, incomplete profitability of crude material, and fractional efficiency of capital ought to be expanded. Profitability measure is an essential perspective in assembling firm. Now a day's in developing country like India the issue of productivity, partial productivity, complete profitability has turned out to be most essential angle for any assembling firm. In this project work the main focus will be on find out the productivity and partial productivity glass manufacturing firm and compare them year wise for 08 years .

In this project work a case study is done from Saint Gobain Glass India ltd Gujraat

In this project work a Glass manufacturing firm is selected for case study of project

For finding the productivity and total productivity of firm.some input resources is selected for case study such as .
In this project work for calculating the partial productivity and some resources has been selected such as,

- Labor input
- Capital input
- Material input input
- Miscellaneous input etc.

Other inputs also used for production of final products or finished products.

II. LITERATURE REVIEW

Literature review shows the study about productivity of firm and what did previous in the field regarding total productivity and partial Productivity of manufacturing firm. Without literature study we can not do future process in this project work which is very important point of research view. Literature is very important point of view before reaches any calculation. In this regard it is benefit for future process . It show that what did in previous and what we have to do in next regarding projects.

RasakAdedapo [1],Describe the Productivity performance has always been an important aspect in manufacturing. measurement is necessary to target and improve a company's

performance. The total output could be regarded as the measure of performance of manufacturing firm with labour productivity as main contributing factor. This has led to manufacturing firm neglecting other measures of productivity. The total productivity of a steel manufacturing firm was determined for a period of five years using Craig and Harris model.

Krugman [2], Planned to declare that defining or measuring productivity is a exceptional task when he asserted that "productivity isn't everything, but in the long run it is almost everything. Productivity acting a vital role in the field of customer approval, and receiving a superior result for industry.

Tangen [3],Summarized a number of variations in the definition of productivity found in different literatures.

Eatwell and Newman [4], defined productivity as a ratio of some measure of output to some index of input use which means that productivity is nothing more than the mathematics ratio between the amount produced and the amount of any resources used in the path of production.

III. PROBLEM DEFINITION

After study the literature study with proper survey in research paper it is found that, in any manufacturing organization partial productivity and total productivity play an important and ultimate role, for information regarding partial productivity and total productivity, but it is not possible for manipulative correct rate of partial productivity with no exact and proper method to get the advantages for the firm of glass industry. In any manufacturing organization the calculation of partial productivity and total productivity for 08 years have not calculated by correct method.

IV. OBJECTIVE OF PROJECT

The purpose of this project is to find the accurate value of partial productivity for 08 years by using method of Craig and Harris model. And find out the uppermost and lowest worth of partial productivity. Also the purpose of this assignment is to find the value of labor productivity for 08 years, capital productivity for 08 years, material productivity for 08 years and total productivity for 08 years and finally find the maximum and lowly value of partial and total productivity.

V. METHODOLOGY

The intention of this thesis research work, is to discover the uppermost and lowest value of productivity for 08 years with the assistance of Craig and Harris demonstrate. With the assistance of Craig and Harris model partial productivity of individual input is establish and also total productivity will also find. In this proposed research work a count of Craig and Harris show is done well ordered. The data is composed from glass industry for project work. In the methodology the functional inputs are Labour input, Capital input, Raw material input, other miscellaneous input are taken.

CRAIG AND HARRIS MODEL

In this project work a Craig and Harris model is applied for calculation of partial and total productivity for 08 years.The next most impartment study using the index approach at the company level is of Craig and Harris model [5]. Define total productivity measure as

Total productivity =Total output/ (labour input + capital input + Raw material input + Misc. input).

VI. CASE STUDY OF PROPOSED WORK

In this assignment study work the most important focal point is going to analyze Partial productivity and total productivity of input functions for 08 year from 2011-2018. Due this computation of productivity the standing of firm will enlarge and customer would satisfy and receiving a turnover for company. Product and productivity are related to each other. All the data linked to efficient input is taken from saint gobain glass manufacturing . And in this planned research job there is also a judgment between uppermost and lowest of entirety productivity from 2011-2018.

Saint-Gobain Glass India, a auxiliary of Saint-Gobain, manufactures and markets a broad range of flat glass products and solutions. It started operations in the year 2000 with the commissioning of its first float glass plant. Since then it has speedily expanded and deepened its presence in the Indian Flat Glass Market. Today Saint-Gobain is a most significant player in the glass industry with a solid brand, a wide scope of items and arrangements and a container India producing impression. Saint-Gobain pioneered several product, marketing and manufacturing innovations that helped in the emergence of product differentiation and segmentation in what was seen till recently as a Commodity industry.

After selection of functional input, visit to saint gobain industry gujrat for collecting the annual balance sheet of saint gobain as shown in table After meeting to the different employee and different engineers from different department and manager of saint gobain it is decided to ready for giving me a annual balance sheet shown in table for

calculation of partial productivity and total productivity of the firm for 08 years. i.e from 2011 -2018 with help of Craig and Harris model. And finally getting the value of total productivity. And find the highest and lowest value of total productivity .

Table1: Functional data for productivity of saint gobain firm from 2011 -2018 (last 8 years)(in Rs cr.)

Year/functional input	2011	2012	2013	2014	2015	2016	2017	2018
Sales revenue	98.23	733.92	3839.27	4426.56	55403	5799.45	614552	6701.9
Finished goods stock exchange	30.7	32.1	33.2	25	32.8	31.6	30	20.64
Capital input	18.96	209.16	721.2	38.6	76.4	93.9	72.8	78.8
Material input	149	134	1393	1785	3175	3231	3349	3668
Miscellaneous input	29	20	61	896	1257	1391	2115	1382
labor	45	37	144	182	322	358	388	414

VII. RESULT AND DISCUSSION

Table 2: Partial Productivity of raw material last 8 years

S.no.	Years	Productivity of raw material
1	2011	0.87
2	2012	5.72
3	2013	2.8
4	2014	2.5
5	2015	1.8
6	2016	1.8
7	2017	1.9
8	2018	1.9

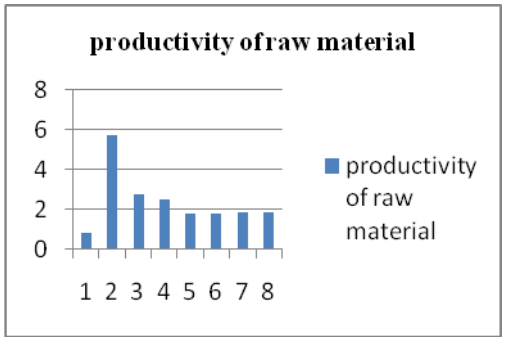

Table 3: Yearly Total productivity of firm

S.No.	Year	Total productivity
1	2011	0.54
2	2012	1.92
3	2013	1.70
4	2014	1.71
5	2015	1.20
6	2016	1.24
7	2017	1.05
8	2018	1.30

VIII. DISCUSSION

The total productivity of the saint gobain glass industry firm investigated was computed for a period of 8 years. The result obtained that the company have its uppermost (Higher) productivity in the year 2012. This was accredited to the decrease capital input and material input. The year with lowest total productivity was 2011. Might be accredited to the low total output in this year i.e.2011. the finding have exposed that total productivity of glass company depend upon five most important factors of productions namely total output, capital input, material input, miscellaneous input , and labor cost.

IX. CONCLUSION

Determining authentic total productivity must not be based on labour issue alone but somewhat on all other factors. To encourage industrial expansion useful inputs types factors attractive productivity**.** It is very important to choose a method that fills the reason of data to be used in manufacturing industry. And finally total productivity still depend upon other factors of construction.

REFERENCES

[1] AdedoyinRasakAdedopo" Total productivity at firm level :A case study of steel manufacturing company in osun state Nigeria " international journal of engg. Innovation and research valume 4 issue 1 ISSN:2277-5668.

[2] Krugman P 1990 the age of diminished expectation mit press combridge mass P9

[3] Tangen S. 2005 Demystifying productivity and performance .Internaltional journal productivity and performance measurement 54(1):34-46

[4] Eastwell JM and Newman P 1991. The new palgrave :A Dictionary of Economics val.3,4 and 12 Macmillan Tokyo.

[5] Craig CE and RC Harris 1973 "total productivity measurement at the firm level. Sloan management Review 14(3) 12-29

[6] Sink D 1983.much do about productivity where do we go industrial engineering 15(10):

[7] Hannula M.2002 total productivity measurement based on partial productivity ratios. International journal of production economics.

[8] Keydos W.1991,Measuring managing and maximizing performance Atlanta GA productivity press .

[9] E R berndt 1990 "energy use technical progress and productivity growth" the journal of productivity analysis p 67-83

[10] S mahapatra UGC minor research project on "Energy consumption pattern in the tea processing unit and scope for energy conservationTezpur University India 2002.