CHAPTER-X
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SUMMARY AND CONCLUDING REMARKS

10.0 SUMMARY:

Productivity concepts have been basically generic from the Taylorian philosophy with the main objective centered around human activity system. Various techniques and tools have been ample researched on the different aspects of productivity over the last several decades.

The meaning of productivity although has remained the same, its exploration while implementing has been varied. The emphasis in most of the organisations across the globe on measurement and evaluation, as a result of which productivity has been focused within a narrower perspective. Although many authors have studied and expounded the philosophy of total productivity management (TPM) their concerns have only been to measure the ratio between total output to total inputs.

During the last few years the industrial society is facing competition and challenges on such an unforgiving and cut-throat market environment that it has become necessary to relook and review the total productivity management methods. Therefore, in this study we have made an attempt to look productivity management of cement industry in India with a total system perspective. Total system perspective requires the connectivity between and focus on both hard and soft factors. In this thesis such an attempt has been made. The study can be viewed in two
parts. In the first part principal issues of the management of productivity has been considered. Therefore, attempt was made to identify the company's performance. Four partial productivity measurements were carried out namely,

* Manpower Productivity
* Materials Productivity
* Overhead Productivity
* Energy Productivity

and finally the total productivity was measured for both the plants. A study was also carried out to establish and optimise suitable production functions for the cement industries studied. The performance of both the industries were analysed and factors contributing to the low productivity were identified. There was rare attempt on the productivity management study applying an accounting approach to analyse the critical issues of productivity and the factors affecting productivity to a specific production system like cement industry, which are complex in nature. Hence, it was intended to construct some models to deal with the validity of the identified postulation.

This part of the study contains discussions on concerning manufacturing systems with particular reference to the two cement plants. Further, this is more of a systematic exploration to understand the intricacies of organisational issues and identifying the relationship of productivity to growth and the possibilities of their variations. Again, this part is aimed at suggesting of ways for extending operations, revising policies, and organisational arrangements and making them more effective
in promoting productivity based capabilities in manufacturing organisations.

The second part of the study is devoted to postulate that a productivity culture is the key to attain high degree of excellence in the productivity management systems. This culture is to be conceptualised, ingrained and actualised in the operational front. This concept is well emancipated through investigation. Further in this part of the study a survey to understand the factors that affect productivity in cement industries was also carried out. The survey was aimed at depicting the perceptions of the managers and such study was felt necessary to understand whether development of a productivity culture was necessary or not in the organisation. It is felt that the data generated from such survey can at least be employed in four ways i.e. to motivate the manpower, provide strategic directions to management, facilitate in identifying criteria to appraise the functioning of organisations and promote the cultural upsurge towards productivity.

It is specifically derived form this study that productivity management is not merely measuring output/inputs, but management processes requires recognition of strategic directions within a total system perspective and translating these directions through objective modeling into action plans. It was also emphasised in this study that the cultural elements plays a vital role in developing a productivity culture which is essential to foster an environment to derive long term productivity gains.

The following significant conclusions are highlighted based on the present study for a synoptic review.
In Chapter-I, an introduction to the Indian cement industry and their problems have been discussed, and the specific objectives and scope of this research have been drawn.

Some critical comments on Indian cement industry have been made in Chapter-II. The cement industry in India has evolved over three phases; namely (i) The period of conditional free trade (ii) The period of control and (iii) period of decontrol.

In Chapter-III, a brief review of literature on productivity management as applied to an enterprise has been presented. The review of literature reveals that the literature can be classified according to productivity measurement, evaluation, planning and improvement models. There has been a significant amount of research in the areas of productivity measurement and evaluation, but there is some paucity of research in the areas productivity planning and improvement. It has been experienced that these measurement models do not bring about the normative strategies for planning and improvement of productivity in an enterprise. These models often lack a total system intervention and hence are strategy-deficient.

In Chapter-IV, two representative cement plants of India have been taken as the sample for understanding and assessing the different aspects of productivity management. In this chapter, productivity management of Hira Cement and Konark Cement plants has been discussed. A comparison in terms of productivity parameters between the two cement plants has also been presented.

A productive performance evaluation study has been presented in Chapter-V. This performance evaluation study is
concerned with the following aspects: Manpower, Materials, Overhead, Energy and finally the Total productivity. Hypotheses have been tested to understand the trend and to know whether there exists a difference in productivity level between the two plants or not.

Based on the studies made in Chapter-IV and V; an attempt has been made in Chapter-VI to understand the perception of managers about several factors affecting productivity in a cement plant. From the survey results, it is clearly seen that age, education and experience play a vital role in perceptions of the managers towards productivity. In this Chapter, we finally conclude that in an organisation there should exist a mechanism for upgrading productivity culture that place a high concern on people as a creative resource and encourage innovations, risk taking, trust and openness to derive the best results from the productivity improvement programs.

In Chapter-VII, suitable production functions have been formulated for both the cement plants. The production functions with exponential and linear approximations have been attempted for both the cases and finally an appropriate production function for each plant has been recommended.

The production function recommended for each plant in Chapter-VII has been taken as the objective function in Chapter-VIII. Two productivity optimisation strategies have been considered in this chapter, i.e. output maximisation and input minimisation. Two different models have been formulated for these two strategies and the models have been tested for both the cement plants. These optimisation models prescribe the normative guidelines for planning productivity.
Business strategies need to be integrated with the functional strategies to take competitive advantages. Hence in Chapter IX it is highlighted that a company must have mechanisms to integrate its business strategy across both its functional areas and market place. The strategy planning provides a framework for creating and sustaining competitive advantage. Hence in this chapter an attempt has been made to mesh the business requirements with time based productivity management rather than viewing each of them as an isolated function. A new concept has been introduced in this chapter and it has been termed as strategic time based total productivity management initiatives (STTPMI). To introduce STTPMI in an organisation, integrated framework is required. Such a framework has been developed and is applied to a process industry manufacturing cement. It is concluded in this chapter that time based total productivity management strategies synchronised with corporate strategy provides a competitive edge to the company.

Finally in Chapter-X, that is in this chapter we have identified pertinent conclusions, significant contributions and scope for furtherance of research.

On the whole, in this thesis some attempts have been made to review the existing state of art in productivity management. It was intended to carry out some research work in this study in the area of productivity management with a total system intervention approach. The models and exercises developed in this work can merely be considered as an attempt towards learning the complex phenomenon of productivity management better, rather than proposing some paradigm.
10.1. SIGNIFICANT CONTRIBUTIONS:

Though contextually this research is not different from, say normative and descriptive way of productivity management, a more planned and structured aspect of productivity study is attempted. The study makes mainly the following contributions.

(i) Cement industry is a major process industry and constitutes an important segment of India's modern industrial sector. But till today no major work has been done on the productivity management of this industry. Some work has been done on productivity measurement area but generally the research works lack total system approach. So models have been designed and applied in two real life cases and their utility to the decision makers for providing strategic directions for planning and improvement of total productivity in clear terms have been established. These models and frameworks are so designed and oriented towards total system intervention approach that it allows the decision makers to interact with the models and help in creating various action plans to support the decision making process.

(ii) Statistical models and surveying techniques are used to understand the productivity management process and the climate. These models are used to identify the factors affecting productivity and measures the level of productivity culture existing in an organisation.

(iii) An integrated framework has been established to provide strategic support to cement industry which can initiate a major productivity improvement effort over a specified time period and can be applied to the entire organisation.
10.2. LIMITATIONS AND SCOPE FOR FURTHER RESEARCH:

(i) Although comparative study has been carried out between two cement plants bench-marking studies have not been carried out.

(ii) This study lacks in identifying the strategic information requirements for the cement industry.

(iii) The questionnaire developed for assessing the level of productivity culture in an organisation need to be implemented across all cement plants and inferences to be structured.

(iv) Strategic time based total productivity management (STTPMI) model described needs to be validated.

The rational behind keeping these details open is to leave room for further research in the field of productivity management.

Finally, it is submitted here that this thesis only concerns with some aspects of productivity management in Indian cement industry sector. The primary objective has been to make an in-depth understanding of the problems associated with this industry and to formulate some models and methods. Attempts have been made to establish some factual bases from where one can derive some normative guidelines for helping decision makers to plan and improve productivity efforts. We make no claim in terms of finality in refinements in these normative guidelines. It is only to be noted that productivity is the only key to India's competitiveness in the process of globalisation. Cement industry sector, being the crucial sector for infrastructural development of the national economy, this study establishes a mile-stone in our research endeavour.
REFERENCES


75. Madu, C.N. "On the total productivity management of a maintenance float system through AHP applications".


138. Yoshihare, K., Furuyak, J. and Suzuki, J., "The Problem of Accounting for Productivity Change in the Construction
