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INDUSTRIALPRODUCTIVITY AND QUALITY IMPROVEMENTTECHNIQUES A REVIEW

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ABSTRACT

Productivity and its related terms play important roles in management of an industry. There are various methods to estimate as well as to improve the productivity of an industry albeit these methods are not widely known in Indian small scale industrial environment. Introduction of such simple methods and techniques to industrialists is important for effective management and growth of their industries. This paper shows importance of implementation of such techniques with touch of computer operating systems. From researches, studies and surveys conducted by various learned people it is obvious that for efficient growth of small-scale industries in all over India these techniques along with technical attachment of improved data sciences might bring revolution to these industries. Just like improvement in productivity quality of the final products of these small-scale industries can be improved by implementing various methods and techniques. These methods can help an industry gain maximum efficiency of gained profit against investments.

Keywords: Productivity Improvement, Quality Control, Industrial Management, Small Scale Industries

I. INTRODUCTION

Productivity of an industry is the mark of the growth of that industry. Its high value(greater than 1) shows stable profit while its low value (less than 1) indicates loss. High productivity value also indicates efficient utilization of the inputs. On the other side low productivity value is an indication of inefficient usage and wastage of inputs. For any industry improvement of its productivity is an important objective. There are various ways to increase the productivity and thus gain more profit while using same resources and inputs.

This paper puts forth some methods proposed by many researchers in different articles and papers published in last decade when many small-scale industries emerged. The objective of this paper is to introduce these methods and techniques to new industrialists as well as existing ones so as to increase the efficiency and productivity of their industries. Along with productivity of the industry the quality of the product formed must be improved over time. Constant supply of superior quality product always works in the favour of the industry. For continuous growth of any industry its popularity in the market is necessary which is brought by superior quality of the products that industry sells. This paper also puts forward quality management techniques along with productivity management techniques.

II. PRODUCTIVITY & QUALITY IMPROVEMENT TECHNIQUES

There are various methods and techniques coined by various authors and researchers but implementation of each and every technique in a single industry might not be possible considering the various factors being locality, availability of resources, lack of data collection methods, lack of forecasting methods, etc. Hence it is advised to consider the impact of these factors prior to actions. Improvement in quality might result in improved productivity similarly improving productivity can help improve quality.

Fig. Productivity & Quality Improvement Techniques

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Six Sigma Methodology- Lean Six Sigma (LSS) or simply six sigma rule consists of 5 main phases – Define, Measure,Analyse, Improve, Control altogether known as DMAIC.[1]. Define is the first and most important phase of the DMAIC methodology where identification of customer requirements and needs is done. It is important to determine the requirements and needs of the customer to generate a flow of supply on demand. Measure phase is the phase in which the magnitude of market requirements is identified through study of existing data. Using this data an estimation of production can be made so as to gain maximum efficiency. Analyse phasehelps the industry to evolve by identifying the improvement margins in the industry. After the improvement requirements are met the industry reaches a new height thus it is important to analyze existing data of the industry to determine which aspect should be improved in the order of priority. Improve is the next phase which is based on the previous phase which is analyze. The study conducted in analyze phase provides a guideline for improvement which helps the industry grow. Control is the final phase where the implementation of the improve phase is controlled along with other aspects that needs monitoring and control of the industry. The four sectors where LSS can be practiced are manufacturing, health care, human resource, financial and education [2]. It is also found out that six sigma not only helps in productivity improvement and industrial sustainability but also reduce product variation, defects, cycle time and production costs [3].

Business Process Reengineering- Business Process Re-engineering (BPR) is renovation of the industry by eliminating the issues holding back the growth of the industry. It is not just a structural reconstruction but a thorough reconsideration of the business approach of the industry. For an industry struggling for its survival BPR could be the last ray of hope that might increase its chances to survive the market competition. BPR is a step-by-step process of mapping the current state of the industry and identifying the possibilities of improvement and validating them. By mapping the current state of the industry, it becomes easy to analyze the shortcomings of the industry and come up with multiple options to overcome them. Identifying the possibilities for improvement and implementing various techniques to improve the current methods leads to new ways of operation in the industry. During BPR steps analyzing it is important to consider the future changes in the industrial environment and market of which the industry is part of. It has been found out that the performance of the BPR companies is more than non-BPR companies in aspects such as information computing , usage of technology, etc. [4].BPR also helps in Improvement of the product formed as the complete process of production is re-engineered. Thus, for an industry which has productivity less than 1 for a long time BPR could be an effective technique to regain its quality control.

Inventory Management- An inventory management system is nothing but maintenance and control of all the physical input factors required to produce the product in the industry. Along with the input factors or raw materials, final products storage could also be called a part of inventory management system. For effective supply of raw materials whenever required an industry must have a live inventory system which provides required materials at required timings in required quantities. In paper “An Analytical Study of Inventory Management Influences on the Productivity of Organization” Alka Agnihotri stated that a powerful stock management permits an association to meet or surpass client assumptions by making loads of every item that expand overall gain [5]. This shows that any industry with its inventory stocked up to fulfill upcoming requirements can supply the upcoming demands of the market. For an ideal inventory management system, the storage facilities must be superior enough so as to keep the goods in it usable for as long as possible. It must also have a physical sorting system so as to pick out the required item quickly from multiple batches of many items or raw materials.

Cycle Time Reduction-Cycle time is the total time required for completion of every process from the very first step to the last step. Reduction of cycle time can also mean reduction in consumption of labor hours. Reduced cycle time gives more working hours boosting the production of the industry ultimately boosting its productivity. Reasons for long cycle time may not just be manufacturing related but many different processes can affect cycle time[6]. The various factors affecting cycle time could be delay in collection of materials, handling of various inputs, post production handling, distance of the work floor from inventory, etc. Eliminating these factors could reduce cycle time and thus giving more work hours.

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III. CONCLUSION

This paper puts forth some techniques to manage productivity and its Improvement methods. This paper also puts some insights into how an industry can improve the product quality side by side of its productivity or profit. The various factors that affect the productivity and result in its decreased value should be minimized as much as possible if not eliminated. Embracing the factors that work in favour of the industry is also just as important.

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