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Optimizing Quality, Productivity and Safety through Quality Improvement Techniques in Indian SME's – A Conceptual Framework

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Abstract: The article likes to emphasis the importance of quality, productivity and safety f or a betterment of SME's in enhancing their performance and positioning themselves towards global market. The fundamental requirements for optimizing these three element are quality planning, quality design, quality implementation, quality gaps identification and quality improvement. Quality improvement techniques are the basic practice to follow in organization for effective performance in order of reducing cost, minimization of scrap and waste, optimum utilization of resources, better customer satisfaction, improved employee morale, better quality consciousness among employees and enhancement in productivity and efficiency. The study wants to describe the different quality improvement techniques which are feasible in SMEs for sustaining their competitiveness and equalizing their intention of producing better quality product, efficient productivity and securing a safe work environment with necessary safety measures. As the literature says, SME's are facing various challenges and obstacles in balancing these three elements for satisfying their internal and external customers. SMEs are the outsourced agencies for many large and multi-national companies in worldwide, so their expectation on quality, quantity and policies framed by SMEs as a considerable factor for business excellence in global scenario. Whether SMEs are ready to adapt this sort of organizational transformation for improving efficiency of material, employee, equipment and methodology based on their economic performance.
Keywords: SME's,Quality Improvement Techniques, Quality, Productivity and Safety.

Introduction

SMEs are considered as the backbone of economic growth in all countries and they contribute in providing job opportunities, act as supplier of goods and services to large organizations. The importance of the small and medium industries will become more significant as the country expands its industrial base in meeting the challenges of the new millennium. Quality is widely recognized as one of the most important disciplines/strategies or competitive priority for an organizational development. Application of quality improvement practices in small and medium enterprises has improved their overall performance by a combination of "hard" Quality practices factors such as benchmarking and quality measurement, continuous improvement, and efficiency improvement; and the "soft" quality practices factors consisting of top management philosophy and supplier support, employee training and increased interaction with employees and customers.

Indian SME's

Small and medium enterprises (SMEs) are important to almost all economies in the world, especially in developing countries. In developing countries SMEs constitute the middle size range, which explains their strategic importance and their output share can be greater or less than its employment share. The size and importance of the SME sector varies from country to country; the last few decades have seen an increasing recognition of the role it plays in industrial countries due to which number of SMEs are increasing and SMEs alone contribute to 7% of India's gross domestic product (GDP). They constitute 90% of the industrial units in the country and also contribute to about 35% of India's exports. The SME sector of India is considered as the backbone of economy contributing to the industrial output (45%), exports (40%), giving employment to about 60 million people, creating 1.3 million jobs every year and producing more than 8,000 products for the Indian and international markets,

Characteristics of Indian SME's

Unlike large enterprises, SMEs are more flexible and able to adapt to changing business environments. This agility is present in almost every facet of their business operations. In general, SMEs are able to avoid the

rigidity and inertia common to established firms in their planning and strategy. They are an important source of innovation, both in products and in processes .If they are not actively innovating, SMEs are more willing to adopt the best practices of others because their own routines are malleable. Their smaller size enables the management of human resources to be more informal than in larger companies. This allows flexibility in matching personnel to the myriad problems that SMEs face. Despite regional and country variations, SMEs have a range of common characteristics (AAMO, 2007; JSBRI, 2011; and Shane, 2008):

(a) ***Born out of individual initiatives, knowledge and skills*** – SME start-ups tend to evolve from a single entrepreneur or a small group of entrepreneurs– in many cases, leveraging a unique skill set;
(b) ***Greater operational flexibility*** – the direct involvement of owner(s), coupled with flat organizational structures, ensure that there is greater operational flexibility. As a result, decision-making is faster;
(c) ***Low cost of production*** – SMEs have lower over heads. This translates into lower production costs;
(d) ***Specialization in niche markets*** – Successful SMEs concentrate on small but profitable markets in order to avoid battles with large enterprises as well as to ensure effective investment and utilization of their resources and expertise;
(e) ***A high propensity to adopt technology*** – SMEs show a propensity for adopting and internalizing new technology when given the proper incentives and learning;
(f) ***A high capacity to innovate*** – SMEs' capacity for innovation, improvisation and reverse engineering is extensive if the initial support is there;
(g) ***High employment orientation*** – SMEs are usually the prime drivers of job creation, in some cases creating up to 80-90 per cent of the total jobs in a country. SMEs tend to be labour-intensive and are able to generate more jobs for every unit of investment, compared with their larger counter parts;
(h) ***Utilization of locally available human and material resources*** – SMEs mostly utilize skills, man power and resources available locally. This brings prosperity to the area where they operate; and
(i) ***Reduction of geographical imbalances*** – Unlike large enterprises, SMEs can grow in developed and underdeveloped areas. This reduces geographical imbalances.

However, these characteristics of SMEs also have a downside. SMEs' small operational size and lack of resources (e.g., capital and human), skill/knowledge and network connections area common feature. SMEs typically suffer from:

- Low bargaining power, both for sales and for procurement (i.e., low prices and high costs, leading to low income and less profit);
- Weak market access;
- Low technology adaptation;
- Lack of brand development;
- High debt structure;
- Weak management with less training;
- Weak human resource base with a low level of compensation; and
- Inadequate institutional support.

Determinants of Quality Improvement techniques

A perfect mapping of quality improvement techniques should be done for sustain and transforming quality, productivity and safety for the betterment of SMEs. To implement and keep quality improvement practices in the SMEs the application field should be understood well. By following an exact and effective practices which can ensure the achievement of quality, productivity and safety for SMEs. The different quality improvement tools that can be applicable in SME's based on their productivity and working environment:

Strategic Quality Planning - It demands the integration of quality and customer satisfaction issues into strategic and operational plans. This integration allows organizations to set clear priorities establish clear target area for improvement activities and allocates resources to the most important things to be done

Process flow Management**:** This factor emphasizes systems and procedures for adding values to processes, increasing quality levels and raising productivity per year (Motwani, 2001). Deming (1986) stated that improving product quality should not depend on mass inspection, which is too late, ineffective and costly but should dependon improvement on production process.

Workplace Organization (5S concept) Sort (Seiri), Set-in-Order (Seiton), Shine (Seisco), Standardise (Shitsuke), Sustain (Seiketsu) – Maintaining a well-disciplined work culture to avoid accident and better productivity. 5S is a system to reduce waste and optimize productivity and quality through maintaining anorderly workplace and using visual cues to achieve more consistent operational results. The practice of 5S

aims to embed the values of organization, neatness, cleaning, standardization and discipline into the workplace basically in its existing configuration, and it is typically the first lean method implemented by firms.

Training- Training the higher management to be skilful to implement quality practices. Training the workers to understand the significance of quality practices and their responsibilities. Training within an organization provides a good education and skills to perform and practice a successful quality culture. It should cover all aspects of quality and productivity by developing the attitude of safe working environment and measuring the productivity in terms of quality.

Benchmarking **-** it is a systematic method by which organizations can measure themselves against the best industry practices. It promotes best superior performance by providing an organized framework through which organizations learn how the best in class do the things, understand how these best practices differ from their own and implement change to close the gap (Bester field et al, 2007).

Ergonomics **-**Ergonomics can be defined simply as the study of work. More specifically, ergonomics is the science of designing the job to fit the worker, rather than physically forcing the worker's body to fit the job. Adapting tasks, work stations, tools, and equipment to fit the worker can help reduce physical stress on a worker's body and eliminate many potentially serious, disabling work-related musculoskeletal disorders (MSDs).Ergonomics draws on a number of scientific disciplines, including physiology, biomechanics, psychology, anthropometry, industrial hygiene.

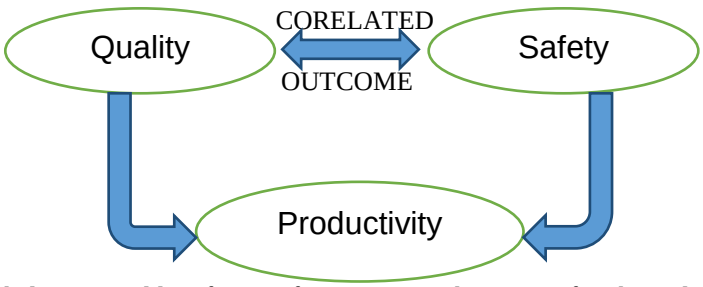
Focused improvement (Kobetsu Kaizen) - Focused improvement includes all activities that maximize the overall effectiveness of equipment, processes and plants through uncompromising limination of losses. Teams were made from every level of organization, mangers, engineers, staff, technicians, line workers. The principal behind is that a large number of small improvements are important than a few improvement of large value".

Team Problem-Solving, (TPS) - This technique, popularized by Juram, uses team actions to benefit from the opportunities occurring during a project. This helps reluctant participants to accept improvements, because it involves them in making and accepting recommendations on problems, they know need resolving**.**

Quality, Productivity and Safety

Productivity contributes to value creation or added value by making continuously better use of resources to contribute to growth, innovation and employment; it is not seen just as a statistical ratio. Productivity is an expression of how efficiently and effectively goods and services (i.e. goods and services which are demanded by users) are being produced. Moreover, productivity is not only measured by quantity and quality, but also measure in the form of working standards and safety environment. The concept of productivity is also increasingly linked with quality (i.e.,) output, input and the process itself. The dimension of productivity depends on quality of workforce, its working conditions and it has been generally recognized that improving quality of working environment and rising productivity should go hand in hand.

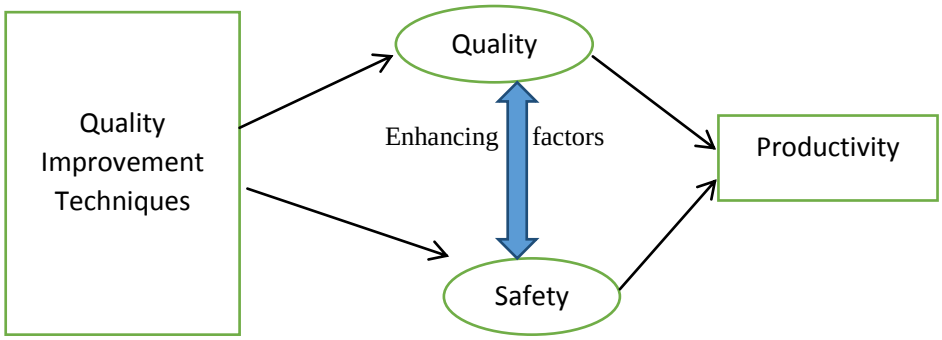
In manufacturing SME's it is commonly stated that "Quality drives productivity." Improved productivity is a source of greater revenues, employment opportunities and technological advances. In business, engineering and manufacturing, quality has a pragmatic interpretation as the non-inferiority or superiority of something; it is also defined as fitness for purpose. Quality is a perceptual, conditional, and somewhat subjective attribute and may be understood differently by different people. Consumers may focus on the specification quality of a product/service, or how it compares to competitors in the marketplace. Producers might measure the conformance quality, or degree to which the product/service was produced correctly.



In this rapidly globalizing world, safety performance is a key issue for the industries to become a world-class competitor. Occupational accidents may lead to permanent disabilities or deaths and/or economic losses or both. Occupational accidents can be reduced through effective preventative measures by hazard assessment, good housekeeping, training, and better personal protective equipment (PPE). In order to develop a good safety culture, the attitude of the workers needs to be reoriented by adopting best practices, good housekeeping, and changes in work culture and work practices. Prediction of various types of safety measures helps managers to formulate organizational policies for improving productivity and quality performance.

In the organizational context, technology innovation may be linked to performance and growth through improvements in efficiency, productivity, better safety through proper human factor design, environmental quality, etc. Technology innovations in SMES are possible in the design of products, processes, supply chains, etc. Unlike the organized sectors, SMEs are not equipped with sophisticated technology, structured environment, or safety and health practices. Often in an SME, workers need to work in adverse working conditions which lead to poor productivity, occupational illness and defective products.

Imparting Quality tools on Outcomes



The following quality improvement methodology can be implemented in respective functional areas like production, material handling, quality control and equipment maintenance could benefits the overall performance of SME's.

- Improve general house-keeping of production area.
- Maintain proper documentation system of standards, drawing and specifications.
- Establish Process Planning section for developing process procedure and train the workers for updated technology.
- Conduct process capability studies of important machines and monitoring of data sheets to visualize the defective areas.
- Prepare a standard institutional process control methods to ensure that products conformance and status of equipment performance.
- Ensure proper maintenance system of plant and machinery through functional training and safety culture.
- Develop an appraisal system and acceptance criteria for evaluating the productivity of each and every outcome of individual activities.
- Arranging proper inspection of incoming material through quality assurance and focus the process through quality can be improved.
- Carryout annual performance evaluation of workers on the basis of their productivity, work procedure and co-ordination of interrelated activities.
- Planning optimum inventory level by shortening the procurement cycle, proper storage and maintenance of procured martial. Ensuring quality of incoming martial, in-process inspection and final inspection and then generating data on trend of rejections for the information of the management.
- Effectiveness of process control can be determined by implementing safety management practices and safety culture.
- Assisting production in analyses of processing defects to find the root causes and taking corrective actions.
- Determining the cost of poor quality in the financial terms and focusing the improvement on particular process for sustaining the process quality and productivity.

Conclusion

To enhance the processes of qualitative growth in SMEs, this interdependency of quality, productivity and safety should be investigated in their respective functional system and to know the feasible quality improvement tools that can be practice by Indian SME's to make transformation in a competitive environment. The quality improvement tools are experiencing to maintain a low level of poor quality and ensure safer environment to yield better productivity by using modern technologies. This could be prevent the major problems faced by SMEs such as knowledge of defectives, economics of scale, workplace accident, product variation and designing difficulty, human resource capability, training infrastructure and performance outcome. There is a growing need for advanced and codified quality improvement practices in Indian SMEs to transcend

from their present state through training and skill development, in order to make a supporting role for to sustain their progress in Indian manufacturing process.

Reference

[1]. Fotopoulos, C. & Psomas, E. 2009, "The use of quality management tools and techniques in ISO 9001:2000 certified companies: the Greek case", International Journal of Productivity and Performance Management, vol. 58, no. 6. Pp. 564-580.

[2]. Okpara J.O. 2009, "Strategic choices, export orientation and export performance of SMEs in Nigeria", Management Decision, vol. 47, no. 8, pp. 1281-1299.

[3]. Ion IONITA, Florin POPESCU, 2009, "Quality - a Factor for Competitiveness Improvement for Small and Medium Enterprises", Economics and Applied Informatics.

[4]. Komson Jirapattarasilp, 2008, "Quality Management in Electrical-Electronics SMEs", Proceedings of the International Multi Conference of Engineers and Computer Scientists, Vol II

[5]. Harjeev Kumar Khannaa, S C Laroiyaa, D. D. Sharmaa, 2010, "Quality Management in Indian Manufacturing Organizations", Brazilian Journal of Operations & Production Management, Volume 7.

[6]. Muhammad Naqib Mat Yunoh, Khairul Anuar Mohd Ali, 2015, "Quality Management Approach for Malaysian SMEs: Conceptual Framework", International Journal of Business and Social Science Vol. 6, No. 1

[7]. Khairul Anuar, M. A, Rushami, Z. Y. & Zakaria, A.,(2010. "The relationship between quality management practices and productivity: A study of Malaysian SME's" Malaysia Management Journal 5 (1&2): 35 46.

[8]. Li, J. H., Andersen, A. R. & Harrison, R. T., 2009. "Quality management principles and practices in China", International Journal of Quality & Reliability Management 20 (9): 1026-1050