



# An Instrument for Improved Performances In Manufacturing Industries

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## ABSTRACT

In today's scenario of changing conditions such as global competition, automation, lack of availability of skilled labour, demand for high quality product, availability of different grades of product etc. manufacturing industries have been affected a lot. Every industry is focusing on quality, productivity, safety, return on investment, etc. Now a days various quality management strategies such as Quality circles, production work teams, Total Quality Management, Kaizen, Just-in-time manufacturing, Six sigma, Lean manufacturing & management etc. have been developed. This paper focuses on finding out elements for improved performances of manufacturing industries considering few above mentioned factors. An instrument has been developed to improve financial performance and operating performance for pilot study in the manufacturing industries

**Keywords:** manufacturing industries, Total Quality Management, quality, productivity, safety

**INTRODUCTION:** Large industrial organisations are always global players. Every industry is aimed at quality revolution in the country. To survive in the highly competitive international market, one has to focus simultaneously on different aspects like Quality, Reliability Productivity, Risk, Flexibility and Safety. Hence, it was felt appropriate to investigate a relationship by studying Quality, Productivity and Safety, Risk assessment relationship in a manufacturing setup. Within the last two decades, Total Quality Management (TQM) has evolved as a strategic approach in most of the manufacturing industries to respond to the challenges posed by the competitive business world.. TQM is a process of embedding quality awareness at every step of production or service while targeting the end customer. Other quality management strategies, philosophies and techniques for performance improvement such as: ZD Zero defect, preventive maintenance program, Kaizen, TPM, house keeping, Quality Circles, JIT, Ergonomics, etc. are also employed now a days. This research work was done on manufacturing industries to find the relationship between their performance improvement factors and performance measurement factors.

**Literature Gap:** The primary interest of this study is to find the profit, quality, productivity safety improvement. The extensive literature study suggests that there are linkages between these factors.

**Methodology:** The methodology used for establishing facts was using a questionnaire for the survey, also conducting interviews at personal level. Research instrument developed is a systematic questionnaire. Responses to each statement in the questionnaire are to be taken by ticking on the categories of agreement or disagreement using a 5 points likert scale. The respondents could indicate their degree of agreement by ticking any one of five response categories such as Not Important, Slightly Important, Medium Important, Very Important and Most Important. Likert scale is easy to construct and it is easy for respondent to understand.

**Research Objectives and its Significance** The following research objectives have been sorted out: 1. To identify possible input factors and output measures for improved performances in manufacturing industries. To extract critical success factors (Input factors) and performance measures (Output Factors) from field data. 2. To evaluate the factors which have positive impact on organizational performance indicators.

**Critical Success Factors** : Critical Success Factors are also known as success factors or performance improvement factors. It is essential for every organization to identify CSFs for ensuring overall performance development. Few works are reviewed and summarized as follows: Untawale and Akant (2004), carried out their work on Indian manufacturing industries and have listed seven (7) critical success factors for performance improvement..Shrivastava et al., (2014) carried out their research on Indian cement industries and has identified nine (9) critical success factors consisting of 43 attributes for attaining quality management goals. Lande et al., (2016).carried out their work to lean six sigma in small and medium enterprises and identified 17 critical success factors in the study for Indian industries. Rehman et al., (2015), carried out the studies on Automobile industries. They identified 12 critical success factors with 42 variables for Green Supply Chain Management in automobile industries. Gorantiwar and Shrivastava (2014), carried out their research in sponge iron industries for Quality-Productivity management and identified 50 attributes of prime consideration. Lokhande et al., (2014) carried out their studies on Indian industries with respect to remanufacturing industries. They identified 10 critical success factors including 74 variables for the establishment of remanufacturing industry in India. Ahuja and Khamba (2008) formulated critical success factors to overcome obstacles for implementing TPM to face global challenge. In their proposed model, they stated that organizational, cultural, behavioral, technological, operational, financial, departmental barriers are the main obstacles for implementation. Desai et al. (2012), highlighted critical success factors for six sigma implementation in Indian manufacturing industries. They carried exploratory research work with the help of questionnaire to study the impact of different CSFs of six sigma implementation in different sizes and sectors of Indian manufacturing industries. Khanna et al. (2011), have reviewed critical success factors of Total Quality Management and ranked them for Indian Manufacturing Industries. Hoffman and Mehra (1999) in their empirical study communicated that critical factors responsible for productivity improvement are employees' participative involvement, continuous improvement and customer satisfaction. Kontoghiorghes (2003) carried out his work in a service organisation in the health care insurance industry. He affirmed that there is a positive and strong correlation between the investigated quality & productivity indicators

**List of Attributes for CSF** : 1. top management 2.Knowing the overall mission of organization 3. The structure of organization 4. Better machine protectors 5.Better education & experience 6. Spacious worksites 7.Recognition of technological changes 8.Regular review 9. Better flow of information between production & maintenance workers 10. Planning in advance 11. Effective communication channels 12. Teamwork 13.customer surveys 14. Proper planning 15.Paying fairly for work done 16.Proper worker training 17.Use of statistical process control charts 18.Usage of right tools &equipments 19.feedback from customers 20. Employee satisfaction 21.Proper employee utilization22.Quality assurance 23.safety inspection 24. workers Compensation cost 25. Discipline

**Performance Measures**:Performance measures quantitatively indicate something about the products, services and processes that produce themPerformance measures are always tied to a goal. Ideally, performance measures should be expressed in units of measure that are most meaningful to those who must use or make decisions based on those measures (Shrivastava et al., 2014) .Untawale and Akant (2004) carried out their work on Indian manufacturing industries and have listed three (3) Performance Measures for performance improvement. (Shrivastava et al., 2014), carried out their research on Indian cement industries and have Identified six (6) Performance Measures consisting of 38 attributes for attaining Quality management goals Rehman et al., (2015), carried out their studies on automobile industries. They identified various variables for Green Supply Chain Management in automobile industries in Maharashtra, India. Gorantiwar and Shrivastava (2014) carried out their research in sponge iron industries for Quality-Productivity management and identified 34 attributes of prime consideration. Lokhande et al., (2014) have carried out his studies on Indian industries with respect to remanufacturing industries. He identified 7 performance measure factors including 65 variables for the establishment of Remanufacturing Industry in India. Desai and Shrivastava (2008) conducted their studies on six sigma in context of Indian Industry. They identified 8 performance measures contributing to 54 variables. . Shrivastava et al. (2006) also carried out their work in Indian industries to establish linkages between Total Quality Management and Organizational Performance. They have identified five (5) organizational performance measurements in their study. Lokhande et al., (2014) have carried out his studies on Indian industries with respect to remanufacturing industries. He identified 7 performance measure factors including 65 variables for the establishment of Remanufacturing Industry in India. Shah and Shrivastava (2013) have done their pilot study in small and medium sized enterprises for the identification of lean six sigma. They identified 7 performance measures for the development of an SMEfocused model for its possible use of the implementation of LSS..Nunnally (1978) attempted an empirical study to test the relationship between organizational performance and quality parameters, identified four major indicators for performance measurement.

**List of Attributes for PM** : 1. Less wastage rework 2. More Growth 3. Return on investment 4. Reliability 5.Durability 6. Availability 7.Decreased 8.reputation of organization 9. Timely delivery of materials 10.

Increase in sales 11. Increased Profit 12. Better relations 13.reduced Idle time 14. Increased labour utilization15.Increased labour utilization 16. Cost reduction 18. Reduced Safety violations 19.Decreased injury 20. Increase in production

**Conclusion** :Every manufacturing industry should focus on its own CSFs and PMs. The developed instrument can be used for this purpose.In this work Likert scale is used to obtain the response of the respondents against each of the statements.The instrument developed here can be used for accessing data in different manufacturing industries for overall development of organizations. The study illustrates a method of finding the contribution of CSFs for the performance improvements of manufacturing industries.

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