Execution of TPM and TQM: An TPQM Alliance Intended for Quality Management

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Abstract:

Total Productive Management (TPM) and Total Quality Management (TQM) both the concepts are judged by quality practitioners for organizational system improvement. The purpose of study is to identify and develop a link between continuous improvement while improvement in the organizational efficiency and productivity of the resources. TPM through productive maintenance and TQM through quality management in total mode are worthwhile to the organization. Productivity is possible only through the resources utilization to get optimum output. TPM and TQM both are quality conscious concepts, and these resembles can create healthy and quality organizational system. In this paper Alliance of TQM and TPM means TPQM is introduced with a view to provide more instrumental and valuable results for business performance. This can create new ideas for quality business performance through regular standard variables.

Key words: TQM, TPM, productivity, TPQM alliance, performance

1. Introduction

Innovation and industrial improvements in the industry influence on both consumer aspirations, needs and also on the approach of executing business operations. Every businessperson wants to grow faster than his competitors which need to maintain competitiveness in the business operations. In current times changed consequences recognition of Globalization- privatization-liberalization system show its influence on the business strategies and socio-financial style of business performance. So, for the accomplishment of business most of the organizations are running according to the thought of TPM and TQM. This context explores a link between organizational accomplishment and applications of higher than mention concepts.

Similarities between TPM and TQM were discovered by Cua (2000) determined that both are executed for the recognition in the areas of inaccuracy reduction and uninterrupted advancements in the system. Both TQM and TPM are belongs to global class i.e. international concepts used in the manufacturing businesses in distinct countries. Both are focusing on the total aspect of the business through output progress instead of than being specific only in one area or selected field. Productivity is the proportion of input resources against the yield given by the system. In number of cases output depends on the environmental conditions like - system of administration, system of operational activity, organizational employment culture, centralization or decentralization of authority, organizational quality policy, business goals, etc. TPM and TQM both are working on certain comparable parameters. This study is an endeavor to check similarities between TQM and TPM to identify success factors for development of business through quality.

2. Literature Review

2.1 Performance of TPM

Ahuja et.al (2008) elaborated TPM as a strategic warhead which was available for progress of manufacturing activities and during study, they determined that TPM provided a required methodologies and practices as a package for better equipment performance. Another study acknowledged that TPM was providing a path for maintenance operators to execute preventive maintenance system which was too beneficial for process improvement through team efforts at workplace (Jostes, M. Helms, 1994). Studies conducted on TPM by them explore link among lean efforts and reduction of wastage including improvement in productivity of organizational equipment and concern area indicate positive results. As the time move ahead it discovered other areas which are linked with TPM as it provides a scope for creation of relationship between employees working in the maintenance department and other departmental employees. It is a need of time and business to improve the
performance of business organisation by executing standard system during the operations (Fatemeh Harsej, Sha’ri M. Yosof, 2011). The study of various factors linked with TPM was studied over the time by many researchers to identify such impact (Agustiady T., Cudney E., 2018).

Studies conducted in other region by Nakajima (1989) revealed that TPM is working as a manufacturing program for improving and expanding organizational equipment’s efficacy. Seiichi Nakajima (1989) defined concept of TPM as productivemaintenancerefiningentireinvolvement. In this study the word total participation includes the terms output, superiority, distribution, environmentalsecurity and employee morale at workplace. In general, TPM aims at improvement in product superiority and productivity as well as to provide added benefits linked with employee morale and job fulfillment (Singh, Shah, 2012).

Most of the organizations believe that major aim of TPM is working specially on preventive maintenance for machinery. But it was fact that TPM was assured about the reliability of equipment used at workplace (Wireman, 1991). TPM application purpose studied by Nakajima (1989), enlighten eight pillars of TPM as; focused improvement, autonomous maintenance, planned maintenance, training and education, quality maintenance, maintenance prevention, administrative TPM safety, and health and environment. The organization may receive the benefits like avoiding failure of equipment or machinery break down, avoiding every time set up procedures and adjustments, eliminating problems related to loss of speed, avoiding loss of product quality or output if they implement TPM. Manufacturing organizations may too enjoy such benefits by implementing TPM system for the business activity.

2.2 Performance of TQM

Globalization is opening number of prospects for business development. But instantaneously create a sturdy challenging competition for existence and sustainability of the organisation. To acquire the competitive advantage, organizationessential work on the precise areas like quality and nonstop improvement in the business structure. With the enhancement view TQM is achieved through interest of all the quality experts around the world (Wireman, 1991; Eklof, A., Westlund, 1998). Quality is not related individually with product and services, but it shows its existence and extension in all organizational measures, systems and policies. Previous literatures explored that TQM is not an independent phenomenon, it is an integrated approach accompanied with other aspects of the business. TQM can be executed as corporate strategy for business processes. Organization’s working on the international level need to be aware about global competitiveness and changes happening in the globalized environment. For this purpose, while trading in international market business organizations need to focus on the philosophies and procedures of TQM and achieve their objective with the help of TQM tool and techniques (Ahmad, Yusof, 2008; Ahmad, N. Zakuan, Jusoh, Takala, 2012.).

Research on the quality practices too executed (Besterfield, Dale, 1998) elaborate TQMas not only as a term but as the art of managing the complete activities for the attainment of excellence in the product or service of the implemented organization. According to another study conducted by Waldman (1994) explain like TQM is working as a systematic organizational strategy which to provide ascope for organizational services, goods and implemented organizational processes towards the attainment of organizational improvement. In the business organization strategies can provide the direction and scope for the creation of policy towards attainment of organizational objectives. Well-designed and well-planned implementation of TQM show results in achievement of the business for the elements like customer satisfaction, satisfactory services, improvement in the quality, controlled prices of the product and delivered services, product delivery time, and besides extended (Bayazit, 2003) their view for improvement towards business profit etc.

Study conducted in the allied areas (Feigenbaum, 1991,) Gharakhani and others, (2013) stresses on all aspects of organizational quality requirement and so Feigenbaum, defined TQM as, ” An effective system for integrating the quality-development, quality-maintenance, and quality-improvement efforts of the various groups in a firm so as to enable marketing, engineering, production, and service at the most economical levels which allow for full customer satisfaction.”
Study through extended management procedures executed (Ljungstrom, Klefsjo, 2012) and observed TQM concept as an organisational management approach through quality practices, each and everyone’s participation to attain continuous success on the basis of customer satisfaction.

Other studies suggested that TQM should cover allied areas linked with the elements just as organizational activity, related process including products to maintain quality and application of the concept (Creech, 1994, Saylor, 1996, Roghanian et al., 2012). Another researcher Pun (2002) explain concept as TQM is working as an integrated management philosophy which focus on elements as continuous improvement, fulfilling customers’ desires, reducing rework during production, long-range thinking while completing the task, increased employee involvement and result oriented teamwork, process redesign, competitive benchmarking, and team resources etc.

Literature explored over the time (Demirbag and others 2006) express concept like TQM is that management philosophy used to achieve satisfaction among customer by providing quality and safe products at economical rates.

3. Objectives of study
This study was conducted on the basis of following objectives
1. To study all previously described elements linked with TQM and TPM.
2. To search for the common parameters in quality and productivity
3. To develop an integrated model of TPQM for manufacturing industry on the basis of resembles.

4. Methodology of the study
This study was based on secondary data and previous literature developed by various researchers. In depth study and identification of required factors is the base of this study. Observation methods are also used to identify application scope of the presented model in practical operational field.

5. Framework of TPQM
This study is conducted to identify the relevant link and associated factors for the study purpose.

5.1. Entrepreneurial importance and alliance of TPM and TQM
Technological advancement requires up-gradation of traditional methods and organizational vision. The relation between TPM and organizational results (Suzuki, 1994) indicate that TPM works for equipment improvement and which can change employee thinking towards the TPM concept through creation of healthy business environment. Suzuki (1994) elaborate TPM as-
1. TPM visibly transforms the workplace.
2. TPM raises the knowledge and skills in the production and maintenance workers.
3. TPM shows and guarantees dramatic results.

Likewise, TQM is an answer to the problems linked with the quality of organizational products and services. TPM is a path for managing all the equipment and maintain them for the improvement in machinery efficiency. Both started with the purpose of quality in the system -means administration system and production system. Such other study (Mathew, James, 2006) stresses on TPM and TQM as management tools which are used to achieve continuous improvement and so business organizations are utilizing these tools for the purpose of corporate transformation. Study later on extended that TQM and TPM both are important for the achievement of operational and financial performance (Mathew, James, 2006) and literature studied by researcher reveals that TPM can be extended up to administrative activities and allied areas.

Researchers through their research work explain the basic objective while implementing TPM as it require involvement of all employees for production and maintenance functions (Lazim, T. Ramayah, Norzieiriani Ahmad, 2008). Another study explored by Narinder Singh and Onkar Singh Bhatiya (2015) stresses on need of zero breakdown in manufacturing industry while working on
TPM. Pillars of TPM were again explored while checking its impact on organizational performance in a manufacturing industry study again to identify link of variables (Adesta, 2018).

5.2 Integration of TPM and TQM

Every entrepreneur desires to calculate the outcome of his business in terms of the level of performance. Business performance level depends on the factors like productivity of man-machine-material and money. This productivity is measured on the basis of the value of resources utilized during production processes which show results in terms of product sales, gained revenue, level of consumer satisfaction. If any single element is missing from the productivity, necessities indicate alarming condition for the entrepreneur. For productivity another view explained by Amabile (2000) reveals that employee skills and level of motivation among employees play an important role for the areas job satisfaction and productivity. Study concluded for Indian industry (Rashmi, M.J, 2018) that success of TPM is linked with vision and plans and too need to consider parameters like morality, reliability in such workplace.

Another comparative study of TQM and TQM (DALE, 1993) emphasize on TPM as complementary to the TQM concept which can work like an additional driver for the business organizations. The central attention of both TQM and TPM is on the reduction of loss and equipment downtime through improving the effectiveness of organizational equipment, and employee involvement working in that area (Jostes, Helms, 1994). Major aim of TQM and TPM is linked with improvement of organizational system through reduction of organizational system gaps and working according to standards in the organization. Both TPM and TQM concepts are originated for different purposes but if they are interlinked as an integrated system then can provide better results. Likewise, TQM moreover observe quality results in the long term planned efforts.

As the study of various literatures and conclusion of previous scholars on the topic of TQM and TPM is observed, concluded that there are some similar factors for the quality management applications and practices which can work for integrated systematic-result oriented system. Parallel consideration of both the concepts are studied in the engineering field to achieve productive business environment (Kamath, Rodrigues, 2016). Study conducted for machine breakdown explore implementation approach of TPM in manufacturing industry (Kumar, Raj, Shubham, 2017). Study on impact of lean manufacturing tools through TPM was concluded that their effects are quite good in Indonesia and provide a scope for more study in the same (Adesta et. al. 2018).

**TQM generic elements are as-** Quality management, Continuous improvement, teamwork, employee involvement, Rework reduction, Process redesign, Improvement in operational and Financial performance, maintain product quality.

**TPM generic elements are as-** Equipment efficiency, continuous improvement, Involvement of functional employee, focused improvement. Training and education, planned maintenance, Improvement in operational and Financial performance, standardize product quality, process improvement, Reduction of wastage.

5.3 Framework of TPQM alliance model

TPQM (Figure 1, Figure 2) is an integrated approach created to achieve excellence in business practices. Resembles can help in systematic application of TPQM concept (Figure 2). Every business always works with common objectives like productivity and profitability. Both the objectives are associated with the effect of business practices in the operational area. Business operations are connected to standard operating systems (SOP) at workplace.

On the base of such kind of scholarly studies TPQM framework is designed. This framework will be beneficial for the organization which needs equipment maintenance while achieving quality management in their organizations. The above framework can give better results for achievement of high productivity for business which yields as growth of market and revenue for entrepreneur. The effect of TPQM on the business and related elements are considered for the further study as mentioned in Table:1.
5.4 Managerial amplification of TPQM model in Indian Scenario

![TPQM Alliance Model](image1)

![Resembles of TPM and TQM](image2)

This TPQM Alliance model Figure-1, is developed on the basis of previous scholarly studies both literature and industrial work and their results concluded by various authors. In every business organization output of the implemented system is considered for results. Such kind of study explained (Konecny, Thun, 2011) significant support between TPM and TQM for the enhancement and improvement of business performance. So, if business need is growth and continuous improvement, then alliance of TQM and TPM will support the managerial system. Parameters of TPM and TQM in relations to productivity (Khokhar et. al., 2014) and their effects are studied by many researchers which showed positive results.

In TPQM Alliance (Figure 1) holds the ability to improve through TPM as business performance improvement in the operation likewise TQM provide the consistency through continuous improvement. So, this alliance will provide the positive results for creation of ZED organization in India as per the view of Confederation of Indian Industry (CII) proposed for industrial and entrepreneurial development within the nation (Quality news, 2014).

6. Conclusion

Integrated practices in a business can give better results by eliminating drawback or limitations of any single practice. In general TQM stands for quality and TPM stands for productivity and preventive in the manufacturing industry. Fusion of best practices can minimize failures and maximizes success. On this base study is developed through the integrated approach. A new vision through a fusion and integration of TQM and TPM is discussed throughout this study. This paper has attempted common parameters for the study and identify link for integrated TPQM approach. Study is completely based on previous scholarly literature but still introduce new path for success of manufacturing organizations equally in Indian Scenario. Elaborated framework of TPQM Alliance defines common background for the concept application and explained a scope for its execution in manufacturing industry to maximize the outcomes of quality practices.

References


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**Table 1: TPQM Critical Success Factors Summary**

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<th>Sr. No.</th>
<th>TPQM Critical Progress Features</th>
<th>TPM</th>
<th>TQM</th>
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Source: Scholarly literature reviews