

Practices of Total Quality Management in the Manufacturing Industries

Mangesh Prakash Wachasundar^{1*}, Dr. Surendra Kumar Bhogal², Prof. Vibhuti Save³

¹ Research Scholar, Venkateshwara open University, Lekhi Village, Naharlagun, Distt. Papum Pare, Arunachal Pradesh, Pin Code: 791110 India.

² Professor & Dean, Venkateshwara open University, Lekhi Village, Naharlagun, Distt. Papum Pare, Arunachal Pradesh, Pin Code: 791110 India.

³ Assistant Professor, Dr. V. N. Bedekar Institute of Management Studies, Building No. 4, Jnanadweep, Chendani Bunder Road, Thane West, Thane, Maharashtra 400610

Abstract - Total quality management (TQM) techniques are the best alternatives for businesses and their workers to conduct all major corporation procedures. In the industrial and service industries, these procedures improve company outcomes. Service organizations have used total quality management (TQM) as an efficient management strategy to raise the caliber of their services during the past 20 years. As they concentrate on quality and associated issues, they have started to demonstrate a strong interest in TQM. TQM has drawn a lot of interest from scholars, managers, and practitioners because of its significant effects on profitability, customer happiness, and business success. In light of this, an effort has been made to research and comprehend TQM theory and idea, as well as its advantages and varied service component characteristics and categorization. The literature on TQM adoption in certain service industries is also examined in this study. The current study focuses on the core concepts of total quality management, including its history, structure, economic importance, goals, relationships with other areas like quality and performance, manufacturing, the pharmaceutical sector, etc., as well as its shortcomings.

Keywords - Total Quality Management, Service, Management, Manufacturing

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INTRODUCTION

Total quality management (TQM) is considered as a tactic to meet or surpass customers' assumptions and conditions in the current competitive enterprise climate brought on by a rise in global rivalry and increased by deregulation. TQM pursues excellence in all facets of business via continual organisational improvement, shared commitment, and client focus. By recognising the common TQM methods and ideas that apply equally to both the industrial and service sectors, one may benefit from TQM. If these sets of TQM practises were used properly, TQM would be implemented successfully [1]. TQM is linked to other crucial elements in an organization's growth, such as quality assurance and quality control. The majority of businesses that have quality control over their products have consistently reported strong sales, which is consistent with high levels of organisational development. Most studies show that various manufacturing organisations frequently employ TQM

as a strategy to raise the overall quality of the goods and services they create [2].

Although the bulk of these publications endorsed the advantages of implementing this management philosophy in different types of businesses, some of them asserted that TQM's opponents had targeted the improvement in company performance and the lengthy time it takes for it to take effect. TQM appears to have survived these competing viewpoints, though, since many businesses continue to use it and a variety of articles are still being written about it [3].

As a matter of fact, the first goal of this study is to identify the organisational culture traits that support TQM. Specifically, it looks at the relationship between the six cultural dimensions in O'Reilly et al Organizational 's Culture Profile (1991) (outcome orientation, attention to detail, teamwork/respect for people, innovation, stability, and aggressiveness) and the degree of TQM adoption in Australian

manufacturing and service organisations [4]. By emphasising the following effects of the application of TQM procedures on operational performance, the study's secondary purpose is to emphasize the significance of organizational culture (inventory management performance and quality performance). The study specifically looks at the relationships between operational performance in Australian manufacturing and service organizations and Kaynak's (2003) four core total quality management practices (quality data and reporting, supplier quality management, product/service design, and process management)[5].

It is thought that an organization's capacity to translate, integrate, and eventually institutionalise TQM behaviours into everyday work practise on the job is the single most crucial factor in determining the success of its TQM implementation. TQM is a style of thinking about objectives, groups, procedures, and individuals to guarantee that the appropriate things are carried out accurately the first time [6].

After reviewing the literature, the TQM factors—leadership, training, employee management, information and analysis, supplier management, process management, customer focus, and continuous improvement—were developed in the questionnaire. The performance measures—employee performance, innovation performance, and firm performance—were then developed.

Although not all-inclusive, these key categories are frequently regarded as the TQM's important elements [7].

The links between the constructs are examined, and three hypotheses about certain underlying structures that promote complete quality service are developed:

H1: A pervasively quality-focused corporate culture will be favourably connected with the successful deployment and maintenance of TQS.

H2: An effective leadership team or individual will be favourably connected with effective TQS.

H3: Complete commitment from all company personnel will be strongly connected with successful TQS deployment and maintenance.

In light of the aforementioned explained theories, TQS will be critically examined in this essay, and findings that help to better understand the underlying mechanisms of TQS will be reached[8].

BENEFITS OF TQM

Numerous benefits will be realised in an organisation as long as TQM is completely accepted and successfully used. The organization's business performance and competitive edge will be strengthened. Benefits from the effective use of TQM,

both measurable and intangible, are widely recognised. The following are some potential advantages of TQM [9]:

- Lower operating costs;
- Increased staff engagement;
- Improved communication;
- Enhanced productivity
- Higher standards and less rework
- Enhanced client satisfaction
- Enhanced long-term competitive advantage
- Increased client loyalty and service
- Better organisational leadership
- Better financial results

ELEMENTS OF TQM

TQM must be broken down in some way to make analysis easier, even though there will always be disagreements over how to classify the many components of a holistic process and framework like TQM. We have decided to adhere to this framework because rewards criteria like the MBNQA have shown to be the most widespread and common approach. The primary criteria of various quality award systems, notably the most well-known of them, the MBNQA, serve as the foundation for our empirical models. In this part, we provide a description of the seven standards that we have included in the TQM model. The purpose of our empirical study is to evaluate the theoretical coherence of these seven pieces and to establish the relationships between the six practice components and the seventh, or performance results [10].

Leadership: The said element, which is recognised as the "driver" or primary element of TQM, scrutinises senior executives' leadership and personal involvement in implementing strategic guidance as well as in creating and sustaining a leadership system that will endorse high organisational performance, personal development, and organisational learning. TQM proponents emphasise senior leadership's activities, similar to the transformational leadership philosophy [11].

People Management: How well human resource practises relate to and are in line with the organisational strategic directions is the major problem addressed in this area. The voice of the

people serves as a straightforward litmus test for excellence in this field. The survey's questions centred on employee responsibility, training and evolution, conversation, security, multiple abilities, adaptability, and discussion [12].

Customer Focus: This component discusses how and how successfully the company assesses the needs and expectations of present and potential customers, implements efficient measuring consumer satisfaction and customer relationship management [13].

Strategic Thinking: This component focuses on the organization's attention to the demands of the customers and operational performance standards, as well as strategy and business planning and plan implementation [14].

Information and Analysis: The "scope, management, and use of data and information to retain a customer focus, to promote quality excellence, and to enhance performance" is the focus of this component [15].

Process Management: The creation and introduction of new goods and services, the integration of production and delivery needs, and the management of supplier performance are all aspects of this TQM component. The foundational concept of this TQM principle is that organisations are collections of interrelated processes, and that process improvement is the key to enhancing performance [16].

Performance: The performance metrics for operations, businesses, and quality are the main topics of the TQM's performance component. This construct has been given a unique status in the study as the "dependent" variable to which it suited the other categories as independent variables. Customer happiness, staff morale, productivity, output quality, and delivery performance were the variables we looked at [17].

TQM PRACTICES IN MANUFACTURING INDUSTRIES

Manufacturing is often connected with businesses that have little to no client touch, that is those in the concrete industry, heavy manufacturing, mining, and power stations. A change in form, a physical transformation, and the utilisation of resources are all necessary for manufacturing. Researchers have found four traits that set the industrial and service businesses apart. These include heterogeneity, intangibility, inseparability, and perishability. On the other hand, numerous academics have investigated the effects of TQM, namely the TQM procedures, on the industrial industry. The literature research indicated that a variety of TQM techniques may be recognised as being essential to the adoption of TQM in manufacturing companies [18]. Ahire et al. (1996) carried out one of the earliest empirical studies in the field of quality management looked at TQM constructions in the industrial sector. The authors of this study had

carefully examined recent QM literature and had found 12 constructs of used a study of 371 manufacturing companies to develop integrated QM strategies. The constructs have been empirically examined and verified. They are: employee participation (EI), benchmarking, usage of internal quality information, top-management commitment (TMC), training, empowerment, utilisation of statistical process controls, supplier quality management, design quality management, customer focus, supplier performance, and product quality [19].

TQM PRACTICES IN SERVICE SECTORS

In recent years, TQM has been increasingly used in the service sectors. TQM ideas are frequently applied in the healthcare, banking, higher education, real estate, hotel, and tourist industries. The strategy for implementing TQM in various industries include defining fundamental practises that are crucial for the concept's effective implementation. Customer focus, process focus, and personnel management are the three TQM approaches that are mentioned in a research by Gustafsson et al. (2003) on the utilizing data from 281 organisations, describe the role of quality practises in the service organisation that utilise QM. The outcome validated the link between good business practises and performance [20].

Four unique categories can be used to categorise services [21]:

1. **Service-based businesses and industries:** These include those that provide accommodation, transportation, banking, education, and lodging as their primary products.
2. **Services as products:** A variety of intangible product offerings valued and paid for by consumers in the market, such as information technology (IT) consulting services provided by Accenture and IBM, communications services provided by MTNL and BSNL, training services, shipping services, etc.
3. **Customer service:** Support services offered for a business's main product, such as equipment maintenance, machine or electronic gadget installation, on-site and off-site services, customer care centres, etc.
4. **Derived service:** A derived service is one that derives value from tangible objects, such as the barbering services provided by a razor, the information and data processing services provided by a computer, the medical services provided by pharmaceuticals and medicines, etc.

CHARACTERISTICS OF SERVICE INDUSTRIES

The majority of modern items now combine physical and intangible activities as services. Take hair styling at a barbershop as an example. The client will probably also profit from a variety of hair care products and may even buy some for home usage. The consumer also obtains services like installation, upkeep, and repair when they buy an air conditioner. The many elements of services must be understood in order to comprehend their nature and significance. The four different qualities that some scholars refer to as the "4Is of services," namely [22]:

- 1) **Irreducibility:** It is among the most significant qualities that set a service apart. As a result, it is difficult for a buyer to taste, feel, hear, or smell service before purchasing it. Customers frequently must utilise the reputation of a service organisation and its personnel to estimate excellence since they cannot evaluate the intangible component of service before the occurrence.
- 2) **Incoherence:** Variability or heterogeneity are other terms used to describe consistency in the majority of service literature. Services become heterogeneous as a result of explicit and implicit service components that depend on client choices and perception.
- 3) **Indissolubility:** An attribute of a service is inseparability, which denotes that it cannot be removed from the person who created and sold the product and, as a result, has the feature of simultaneity. Since the consumer must be present before any services can be provided, simultaneity results.
- 4) **Inventory:** The simultaneous production and consumption of services, which eliminates inventory, is another defining feature of them. Perishability is another name for this quality. Service cannot be archived, kept, sold again, or exchanged.

IMPACT OF TQM IMPLEMENTATION IN SERVICE INDUSTRIES

- I. **TQM in the Healthcare Sector:** The research conducted by Khorramshahgol et al. (1995) looks into the significant roles that hospital information systems (HIS) and TQM may both have in this effort. Additionally, it identifies and solves a number of significant obstacles to delivering high-quality care in hospitals. For this reason, in-person interviews with a few hospital staff members in charge of TQM and ISs were conducted in order to determine the factors impacting TQM's performance and the role of HIS in this area. In his poll, Grayson (1992) noted that about 60% of healthcare organisations are reacting and putting a TQM programme into place as part of a study on the effects of total quality management in service

sectors [23].

- II. **TQM in Food Supply and Distribution:** Two significant enterprises in the UK food supply and distribution industry publish their findings in a completely different research by Beardsell and Dale (1999), which evaluates the applicability of TQM in this area. Two case studies of significant organisations that are thought to be indicative of the sector were the main focus of the research. The study supports the validity of TQM's application to the food supply and distribution sector. More than half of respondents to a survey-based research on continuous improvement initiatives in the Canadian food industry conducted by Scott et al. (2009) said that the approach was employed. The study included corporate, manufacturers, and quality experts [24].
- III. **TQM in Education Sector:** The TQM philosophy may be applied to academics as well. TQM, according to many educators, offers guiding principles for much-needed educational improvements. The concepts of Smarter Education, e-Learning, JIT Teaching, self-improvement and training, general quality curriculum, and transformational plan are what drive the need for an effective TQM implementation in this service sector [25].
- IV. **TQM in Banking Industry:** The greatest industry that serves the requirements of different demographic segments and reflects the variety of society is probably the banking services sector. In a recent study, Al-Marri et al. (2007) discovered and looked at the CSFs of TQM adoption in the UAE banking industry. 250 banks in the United Arab Emirates that have effectively implemented TQM provided empirical case studies for collection. The success of TQM deployment was shown to depend on sixteen different variables: Top management support, strategy, ongoing quality improvement, benchmarking, customer focus, quality department, quality system, human resource management, rewards and recognition, problem analysis, quality service technologies, service design, personnel, service capes, service culture, and social responsibility were the contributing factors [26].
- V. **TQM in IS/IT:** Application of TQM concepts to IS has the potential to significantly improve the quality of goods and services for consumers since it slows down the use of technology just for its own sake (Ayers, 1993). Letting go of the preconceived notion that an IT/IS system is only a tool for

completing a number of tasks more quickly and cheaply. By lowering costs, removing bottlenecks, and quickly addressing customer demands, top management efforts may simplify processes to make information more accessible (Reese, 1995). IS specialists can utilise ISs to quantify, identify, track, and create these beneficial customer-focused characteristics for products and services [27].

TQM AND ITS RELATIONSHIPS WITH DIFFERENT ASPECTS

A. TQM & INNOVATION: It has two perspectives associated with itself: Positive and Negative. The idea that TQM practises, in both its human and technological dimensions, contribute to build an environment and culture that encourage innovation is shown in a positive light. Customer satisfaction is one of TQM's key tenets. Businesses that use TQM must investigate and discover strategies to better meet consumer wants and expectations. In order to meet the demands of their customers, businesses are encouraged by this to be creative in the development and introduction of new goods and services. Innovation is the outcome of the fusion of various activities, including R&D, process development, design, marketing, organisational restructuring, resource management, and employee development; as a result, it is likely supported by TQM practises that facilitate the fusion of multifunctional activities. In addition to the arguments presented above that suggest a positive relationship between TQM and innovation, there is an opposing school of thought that is represented by Wind and Mahajan (1997), Tidd et al. (1997), Slater and Narver (1998), Kim and Marbougne (1999), and others that claim TQM can impede innovation. Customer attention, according to Atuahene-Gima (1996), is more concerned with product quality than it is with newness (product innovation). The negative school of thinking, however, acknowledges that TQM may aid creativity, albeit under extremely restricted circumstances, and does not fully deny claims that it may encourage innovation [28].

B. TQM & MANUFACTURING: Given how significant the entire quality management system is in the setting of the manufacturing business, there is a strong link between the ideas of total quality management and manufacturing. It has been noted that using statistical methods to offer quality assurance is crucial in the case of a large portion of the manufacturing services sector. When applied to the industrial sector, the notion of overall quality management works in a specific way. An unplanned sampling of a manufacturer's products is typically used to start the process.

Making sure that the production process works smoothly is the primary focus of the implementation of overall quality management in the context of the manufacturing services industry. Additionally, reducing the number of low-quality items is a top priority. One may argue that the industrial sector needs a whole quality management system more than any other [29].

C. TQM & COMPANY'S PERFORMANCE IN INDIAN PHARMACEUTICAL INDUSTRIES:

The majority of the Indian pharmaceutical industry is made up of Indian subsidiaries of multinational corporations (such as Glaxo Smithkline, Merck, and Pfizer), Indian-owned firms (such as Ranbaxy, Dr. Reddy's, Cipla, Glenmark, and Cadila), and a large number of small-scale businesses dispersed throughout the country. These businesses can also be categorised based on their yearly revenue, number of patents, staff, and formulas. Attempts have been made in this study to examine and survey quality management practises, including ISO implementation, and to further assess the key variables influencing the adoption of TQM in the Indian pharmaceutical sector. Top management commitment, leadership, quality management, people management and training, customer focus, and supplier quality are the primary variables influencing the adoption of TQM [30].

LIMITATIONS OF TOTAL QUALITY MANAGEMENT

A company implements the Total Quality Management system in an effort to raise the standard of performance across all levels of employment. The theory's main goals are to boost productivity, cut down on waste, and boost general competence. The following restrictions must be recognised and removed for the system to function, just like with any other system [31]:

1. Removing Manpower
2. Time and financial cost
3. People Fear Change
4. Innovation Decline

CONCLUSION

It is established that this study intends to take a gander into the sets of TQM practises in two main sectors and identifies a set of common TQM practises applicable to both sectors by reviewing the literature on TQM practises adopted by the manufacturing and service industries. The studies evaluated for this objective emphasized on how they

applied TQM principles and techniques. TQM's implementation in the service sector has been examined in terms of a range of consequences in addition to exploring how its various constituents interplay.

REFERENCES

- Ahire, S.L., Golhar, D.Y. and Waller, M.A. (1996) 'Development and validation of TQM implementation constructs', *Decision Sciences*, Vol. 27, No. 1, pp.23–56.
- Ahire, S.L., Landeros, R. and Golhar, D.Y. (1995) 'Total quality management: a literature review and an agenda for future research', *Production and Operations Management*, Vol. 4, No. 3, pp.277–306.
- Al-Marri, K., Ahmed, A.M.M.B. and Zairi, M. (2007) 'Excellence in service: an empirical study of the UAE banking sector', *International Journal of Quality and Reliability Management*, Vol. 24, No. 2, pp.164–176.
- Antony, J., Leung, K., Knowles, G. and Gosh, S. (2002) 'Critical success factors of TQM implementation in Hong Kong industries', *International Journal of Quality and Reliability Management*, Vol. 19, No. 5, pp.551–566.
- Arumugam, V., Ooi, K-B. and Fong, T-C. (2008) 'TQM practices and quality management performance – an investigation of their relationship using data from ISO 9001:2000 firms in Malaysia', *The TQM Magazine*, Vol. 20, No. 6, pp.636–650.
- Bayazit, O. and Karpak, B. (2007) 'An analytical network process-based framework for successful total quality management (TQM): an assessment of Turkish manufacturing industry readiness', *International Journal of Production Economics*, Vol. 105, pp.79–96.
- Beaumont, N.B., Sohal, A.S. and Terziovski, M. (1997) 'Comparing quality management practices in the Australian service and manufacturing industries', *International Journal of Quality and Reliability Management*, Vol. 14, No. 8, pp.814–833.
- Behara, R.S. and Gundersen, D.E. (2001) 'Analysis of quality management practices in services', *International Journal of Quality and Reliability Management*, Vol. 18, No. 6, pp.584–603.
- Black, S.A. and Porter, L.J. (1996), 'Identification of the critical factors of TQM', *Decision Sciences*, Vol. 27, pp.1–22.
- Boynton, A. and Zmud, R. (1984) 'An assessment of critical success factors', *Sloan Management Review*, Vol. 25, No. 4, pp.17–27.
- Brah, S.A., Serene, T.S.L. and Rao, B.M. (2002) 'Relationship between TQM and performance of Singapore companies', *International Journal of Quality and Reliability Management*, Vol. 19, No. 4, pp.356–379.
- Brah, S.A., Wong, J.L. and Rao, B.M. (2000) 'TQM and business performance in the service sector: a Singapore study', *International Journal of Operations and Production Management*, Vol. 20, No. 11, pp.1293–1312.
- Chase, R.B. and Bowen, D.E. (1991) 'Service quality and the service delivery system – a diagnostic framework', in Brwon, S.W., Gummesson, E., Edvartsson, B. and Gustavsson, B. (Eds.): *Service Quality-Multidisciplinary and Multinational Perspectives*, Lexington Books, New York, NY.
- Chowdhury, M., Paul, H. and Das, A. (2007) 'The impact of top management commitment on total quality management practice: an exploratory study in the Thai garment industry', *Global Journal of Flexible Systems Management*, Vol. 8, Nos. 1 and 2, pp.17–29.
- Curkovic, S., Melnyck, S., Calantone, R.J. and Handfield, R.B. (2000) 'Validating the Malcolm Baldrige national quality award framework through structural equation modelling', *International Journal of Production Research*, Vol. 38, No. 4, pp.765–791.
- Dahlgaard, J.J., Kristensen, K., Kanji, G.K. and Juhl, H.J. (1998) 'Quality management practices: a comparative study between east and west', *International Journal of Quality and Reliability Management*, Vol. 15, Nos. 8/9, pp.812–826.
- De Jong, J.P.J. and den Hartog, D.N. (2007) 'How leaders influence employees' innovative behavior', *European Journal of Innovation Management*, Vol. 10, No. 1, pp.41–64.
- Dean, J. and Evans, J. (1994) *Total Quality: Management, Organization and Strategy*, West Publishing, St. Paul, MN.
- Dean, J.W., Jr. and Bowen, D.E. (1994) 'Management theory and total quality: improving research and practice through theory development', *Academy of Management Review*, Vol. 19, No. 3, pp.392–418.
- Demirbag, M., Tatoglu, E., Tekinkus, M. and Zaim, S. (2006) 'An analysis of the relationship between TQM implementation and organizational performance: evidence from Turkish SMEs', *Journal of Manufacturing Technology Management*, Vol. 17, No. 6, pp.829–847.
- Deros, B.M., Yusof, S.M., and Salleh, A.M. (2006) 'A benchmarking implementation framework for automotive manufacturing SMEs', *Benchmarking: An International Journal*, Vol. 13, pp.396–430.

Dow, D., Samson, D. and Ford, S. (1999) 'Exploding the myth: do all quality management practices contribute to superior quality performance?', *Production and Operations Management*, Vol. 8, No. 1, pp.1–27.

Flynn, B.B., Schroeder, R.G. and Sakakibara, S. (1994) 'A framework for quality management research and an associated measurement instrument', *Journal of Operations Management*, Vol. 11, pp.339–366.

Fotopoulos, C.B. and Psomas, E.L. (2009) 'The impact of 'soft' and 'hard' TQM elements on quality management results', *International Journal of Quality and Reliability Management*, Vol. 26, No. 2, pp.150–163.

Fryer, K.J., Antony, J. and Douglas, A. (2007) 'Critical success factors of continuous improvement in the public sector: a literature review and some key findings', *The TQM Magazine*, Vol. 19, No. 5, pp.497–517.

Gummesson, E. (1994) 'Service management: an evaluation and the future', *International Journal of Service Industry Management*, Vol. 5, No. 1, pp.77–96

Corresponding Author

Mangesh Prakash Wachasundar*

Research Scholar, Venkateshwara open University,
Lekhi Village, Naharlagun, Distt. Papum Pare,
Arunachal Pradesh, Pin Code: 791110 India