

A Critical Review on the Impact of Technology Transfer Performance on Total Quality Management and Quality Performance

Chintan Vasoya¹, Prof. Reshma L. Patel², Dr. Jayeshkumar Pitroda^{3,*}, Prof. C. G. Patel⁴

¹Final year M. Tech. CE&M Student, B. V. M. Engineering College, Vallabh Vidyanagar

²Associate Professor, Civil Engineering Department, B.V.M Engineering College, Vallabh Vidyanagar, Gujarat, India

^{3,*}Associate Professor, Civil Engineering Department, B.V.M Engineering College, Vallabh Vidyanagar, Gujarat, India

⁴Assistant Professor, Civil Engineering Department, SVIT, Vasad, Gujarat, India

Abstract

Quality is one of the various competitive edges, which is desired by any organization. Enhancing the quality in organization is essential for success in business. Managers of various companies are familiar that customer requirements are changing, and customers' expectations must be clearly understood. There are many theories that talk about quality management, but most promising theory is Total Quality Management. Total quality management and technological advancement becomes prime factor for business success. A positive and strong relationship was well founded between TQM and quality performance. The relationship between technology transfer performance and quality performance has become significant with the mediating role of the TQM. This paper shows the critical literature review on the impact of technology transfer performance on TQM and quality performance.

Keywords: Total Quality Management, Quality improvement, Quality Performance, Technology transfer performance

INTRODUCTION

In today's global markets, organizations are in search of decisive competitive edge to curb the rivals. The firms must be able to fulfill their customers' demands and expectations satisfactorily and have a quicker response. To meet these necessities, organizations must reduce price, delivery time while increase the quality of product or service. Therefore, the firms must continuously reduce their lead-time, waiting time in services, and delay in processes. Technology transfer is the process of transmitting technology from one site to another, namely from academics to business world, from one business firm to another, and from one nation to another. If it is economic to transfer technology than to replicate it, technology transfer is ideal. In today's dynamic marketplaces, it is essential for companies to gain understanding of new expertise from extrinsic environment. Thus, the organization can take the advantage of new expertise to generate new products. Technology transfer is recognized as the procedure for the previous and succeeding use of technology, know-how, services, and experience for a specific objective.

LITERATURE REVIEW

The following are the previous research review based on quality performance of the organizations.

Everett E. Adam et al. (1994) conducted a survey work to establish a relationship between quality improvement approaches, operating performance and financial performance. Productivity improvement approaches were also investigated to define better relationship among quality improvement, operating performance and financial performance. The study suggested the profile of quality and productivity improvement approaches should be based on the interest of the firm i.e. quality performance, operating improvement or financial performance. [3]

James W. Dean et al. (1994) proposed theory by comparing total quality and management theory. An analysis was carried which resulted that management research could be improved by integrating some understandings of total quality into management theory and stimulated the development of management theory on total quality. [7]

Everett E. Adam Jr. et al. (1997) collected data from various firms regarding quality improvement approach, organizational performance, financial performance and best improvement approach, which fits in the operating region of the firm. The study quality performance could be mainly influenced by three factors – awareness about quality improvement, focusing on customers and management involvement. [4]

Lawrence M. Corbett et al. (2000) examined the relationship between management culture and quality performance. Different management culture had different co-relation on the quality indicators such as percentage of defects, warranty claims, delivery in time etc. the study concluded that to develop decisive competitive edge management culture and quality relationship should be understood. [8]

Yusof S.M. et al. (2000) characterized the difference between large and small firms with respect to implementation of TQM and proposed a framework for application of TQM in small and medium sized business. The study suggested that instead of full implementation of TQM by small and medium sized business, some gradual progression towards the quality could be favorable. [13]

Raffaella Cagliano et al. (2001) studied reports of 285 small and medium-sized enterprises to get insight in the management practices and operation performance. The study suggested that SME's are required to adopt more formalized practices to better serve and satisfy their customers. Thus to sustain in competitive market it was required for SME's to adopt advance management practices [10]

G.S Dangayachet et al. (2005) assessed the status of advance manufacturing techniques (AMTs) in Indian small and medium undertakings (SMEs). The responses from 122 companies were analyzed, which revealed that Indian SMEs gave more importance to quality and slightest to flexibility. The study highlights about how the Indian SMEs can be fully benefited by the AMTs and achieve more flexibility in their operation along with quality. [5]

Mehmet Demirbag et al. (2006) proposed a model based on theoretical consideration, which linked concepts of market orientation and total quality management to the concepts of organizational performance. The data analysis revealed market orientation had solid and positive influence on degree of TQM implementation. Similarly, it was noted TQM implementation and organizational performance had positive and strong relationship. [9]

Shaukat A. Brah et al. (2006) aimed to get insights organizational variables of logistic firm and their impact on various business performances. The research resulted that TQM and technology played an important role in improving the performance. The study suggested that the use of information technology was crucial in logistic firms to operational, quality and overall business performance. [11]

Ernest Boateng-Okrah et al. (2012) carried out a questionnaire survey in a mining company of Ghana to assess the level at which TQM practices are implemented. The research indicated the stages through which TQM has undergone which are, quality inspection, quality control, quality assurance and finally TQM. [2]

Chiara Verbano et al. (2012) aimed to develop a model of technology transfer path that could be best suited for the space industry. The study also confirmed the factors that result in transfer of space technologies to other industrial sectors. For the study, purpose two case studies were carried out and relevant conclusion were drawn for transfer path and factors that resulted in transfer in space industry. [1]

Gulin Idil Sonmez Turk Bolatan et al. (2016) evaluated 200 firms in Turkey to assess vital factors of technology transfer and measured its impact on quality performance of the firm and TQM. Through the help of a model, connection between technology transfer, quality performance and TQM was established. The results of the study were, there was a strong and positive of technology transfer on TQM and had no significant impact on quality performance of the firm. The study suggested that for having a strong impact of technology transfer on quality performance TQM played a mediating role. [6]

Vasantharayalu et al. (2016) tested the relation of total quality management practices on operational performance in Indian industries. The study revealed that factors that were statistically significant from the viewpoint of operational performance were Leadership, Strategic and Planning, customer focus, human resource management and quality performance. [12]

MAJOR FINDINGS FROM THE LITERATURE REVIEW

1. There was a strong relationship between Quality enhancement approach and performance quality, while there is a weak relationship between quality enhancement and operational or financial performance.
2. There was a strong relationship between quality performance and management culture.
3. Indian Small and Medium Enterprises gave more priority to quality while they gave less priority to flexibility. It was also suggested that Indian SME's are required to give equal priority to flexibility in order to compete at world level.
4. There was a strong and positive relationship between market orientation and implementation in Indian SME's.
5. In order to get successful results of technology transfer in terms of quality performance it is necessary to implement it with help of Total Quality Management.

The following table no 1 represents different factors of management and their relationships.

Table 1: Relationship between different factors of management

Sr. No	Author (Year)	Factor	Relationship
1	Everett E. Adam et al. (1994)	1. Quality enhancement approach and performance quality	Strong
		2. Quality enhancement and operational or financial performance	Weak
2	Lawrence M. Corbett et al. (2000)	Quality performance and management culture	Strong
3	Raffaella Cagliano et al. (2001)	OM Practices within SMEs and level of performance	Strong
4	G.S Dangayachet al. (2005)	Indian SMEs' and Quality	Highest priority
		Indian SMEs' and Flexibility	Lowest priority
5	Mehmet Demirbag et al. (2006)	1. Market orientation and implementation of TQM on SMEs	Strong and positive
		2. Market orientation and organizational performance	No significant impact
6	Shaukat A. Brah et al. (2006)	Quality management practices, technology and performances of the logistics companies	Significant impact
7	Gulin Idil Sonmez Turk Bolatan et al. (2016)	1. TQM and quality performance	Strong and positive
		2. Technology transfer performance and quality performance	No significant impact

Figure 1 shows that Indian SME's priority to quality and flexibility.

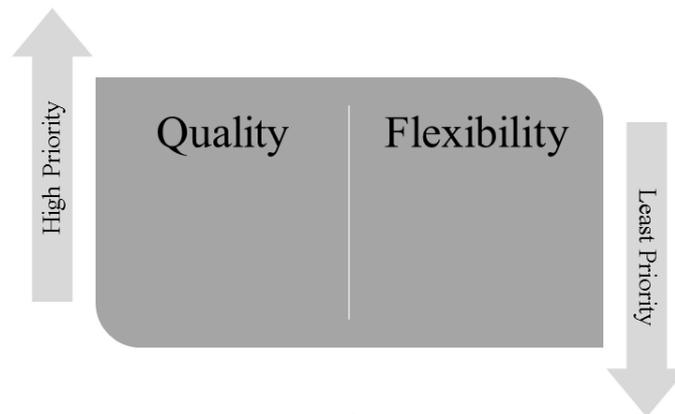


Fig. 1. *Indian SME's*

Figure 2 shows that technology transfer and TQM brings quality performance in organization.

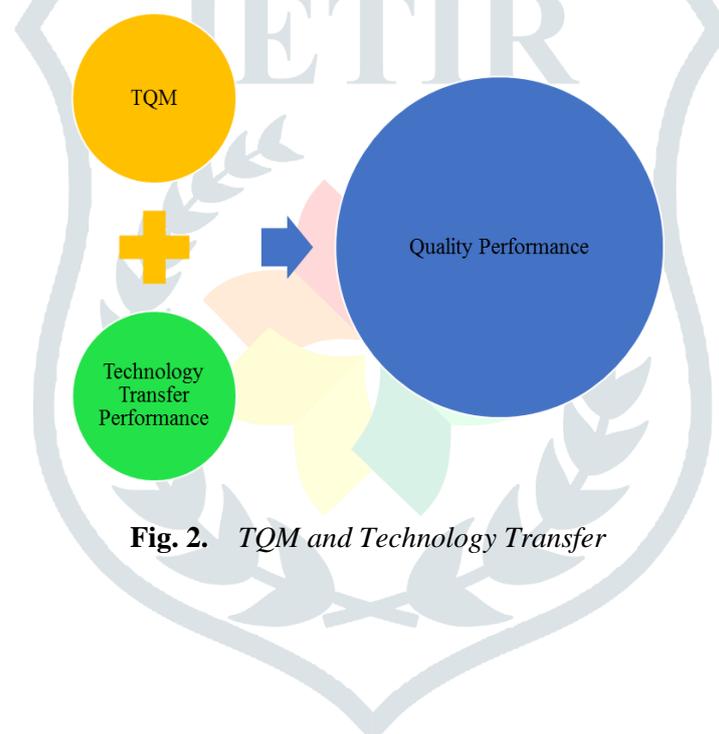


Fig. 2. *TQM and Technology Transfer*

CONCLUSION

From the above literature review, we can conclude the following things:

1. There is lack of knowledge about how to best implement TQM in the organization for its fullest benefits.
2. There are many management problems which needs to be addressed with proper integration method.
3. TQM and quality execution outflanks two-route connection between technology transfer performance and quality performance.
4. Indian SMEs' are giving the most elevated need to quality and minimal need to flexibility; this should be changed to compete at the worldwide level.
5. SME's need to gradually increase the level of quality and there by implementation of TQM is more favorable and beneficial.

REFERENCES

1. Chiara Verbano and Karen Venturini, "Technology transfer in the Italian space industry: organizational issues and determinants", *Management Research Review*, Vol. 35 Iss 3 / 4, PP 272 – 288, 2012
2. Ernest Boateng-Okrah Fred Appiah Fening, "TQM implementation: a case of a mining company in Ghana", *Benchmarking: An International Journal, Emerald Insight*, PP. 743 – 759, 2012
3. Everett E. Adam, "Alternative quality enhancement practices and organization performance", *Journal of Operations Management*, Elsevier Science, PP. 27-44, June 1994
4. Everett E. Adam Jr, Lawrence M. Corbett, Benito E. Flores, Norma J. Harrison, T.S. Lee, Boo-Ho Rho, Jaime Ribera, Danny Samson, Roy Westbrook, "An international study of quality enhancement approach and firm performance", *International Journal of Operations & Production Management*, MCB University Press, PP 842-873, May 1997
5. G.S. Dangayach S.G. Deshmukh, "Advanced manufacturing technology implementation", *Journal of Manufacturing Technology Management*, Emerald Insight, PP. 483 – 496, 2005
6. Gulin Idil Sonmez Turk Bolatan, Sitki Gozlu, Lutfihak Alpkan and Selim Zaim, "The impact of technology transfer performance on total quality management and quality performance", *Social and Behavioral Sciences, Elsevier Science*, PP. 746 – 755, 2016
7. James W. Dean, David E. Bowen "Management theory and total quality: improving research and practice through theory development", *The Academy of Management Review*, Special issue: "Total Quality", *Academy of Management*, PP 392-418, July 1994.
8. Lawrence M. Corbett Kate N. Rastrick, "Quality performance and organizational culture", *International Journal of Quality & Reliability Management*, Emerald Insight, PP. 14 – 26, 2000
9. Mehmet Demirbag, S.C. Lenny Koh, Ekrem Tatoglu, Selim Zaim "TQM and market orientation's impact on SMEs' performance", *Industrial Management & Data Systems*, Emerald Group Publishing Limited, PP 1206-1228, 2006
10. Raffaella Cagliano, Kate Blackmon, Chris Voss, "Small firms under MICROSCOPE: international differences in production/operations management practices and performance", *Integrated Manufacturing Systems*, Emerald Insight, PP. 469-482, 2001
11. Shaukat A. Brah and Hua Ying Lim, "The effect of technology and TQM in the performance of logistics company", *International Journal of Physical Distribution & Logistics Management*, Emerald Group Publishing Limited, PP 192-209, 2006
12. Vasantharayalu and Dr. Surajit Patel, "An empirical study of total quality management (TQM) practices on operational performance of Indian manufacturing and service firms", *International Journal of Management*, IAEME Publication, PP. 192-202, September – October 2016
13. Yusof, S.M. and Aspinwall, E. (2000), "Total quality management implementation frameworks: comparison and review", *Total Quality Management*, Vol. 11 No. 3, pp. 281-94.