



Impact of TQM Practices on Innovation: A Conceptual Framework

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ABSTRACT

TQM has essentially been broadly acknowledged as a management approach that, when successfully implemented, offers a competitive advantage. The topic offers a reevaluation of the necessity of TQM implementation in businesses from a TQM perspective. However, it is anticipated that when market conditions change, the basis of competition will also shift, with quality emerging as a "qualifying criterion" and flexibility, responsiveness, and especially innovation emerging as "winning order criteria. The important component of both TQM and innovation, as well as the component of open culture, is constant improvement. The TQM and innovation's relationship is examined in this study. This suggests that a company that uses TQM techniques can be more innovative than a company that does not. TQM is a tool for organizations to become innovative in this area. Theoretical arguments on the presence of a connection between TQM and innovation are still under dispute, despite the fact that the use of TQM procedures is a significant component of gains in organizational performance. TQM, in essence, promotes innovation.

Keywords: Innovation, TQM, Competitive advantage.

INTRODUCTION:

The adoption and application of Total Quality Management (TQM), which emphasizes continuous improvement and customer focus, has come to be widely accepted as improving the competitive advantage of corporate organizations (Baldwin & Johnson, 1996; Flynn, Schroeder, 1994; Martínez-Costa & Martínez-Lorente, 2008). An integrated managerial concept known as TQM seeks to continually raise product and process quality in order to increase customer satisfaction and boost organizational performance (Anil & Satish, 2016). Management has emphasized quality as the most competitive priority and a necessity for a firm's growth in the current cutthroat competitive industry. According to ISO 8402 (1994), total quality management includes all actions taken by the overall management function to establish the quality policy, objectives, and responsibilities and to put those policies and objectives into practice using quality assurance, planning, control, and improvement processes. According to the RBV theory, an organization can maintain its successful performance by utilizing its unique and intangible resources, which are difficult to reproduce, replicate, or replace (Homaid et al., 2015). As they could revitalize an organization's procedures, practices, and standards, TQM methods create a remarkable competitive advantage by preventing possible imitators from amassing the necessary resources to successfully employ comparable tactics. This remarkable combination of organizational resources, people, and culture provides ongoing performance improvement and a persistent competitive edge (Eniola et al., 2019).

Total quality management seeks to improve quality. Eight principles govern this system: The third principle—employee contributions to the organization, innovation, and invention—is observed to confirm the objectives of the business. (ISO 2008 Technical Committee 176). The most widely used definition of innovation is "innovation is an internally developed or purchased tool, system, policy program, product, method, or service that is unique to the business." The idea of applying or adapting a novel behavior or idea in an organization is at the heart of the majority of innovation definitions (Daft & Becker, 1978; Damanpour, 1988; Hage, 1999; Oerlemans, Meeus, & Boekema, 1998; Zaltman, Duncan, & Holbek, 1973). TQM has made a substantial impact on global economic activity. Both domestic and international economies place equal value on innovation. TQM and innovation both aim to include organization objectives and activities to deliver services that please customers. They incorporate everyone working for the company into the management and operational processes. Additionally, both offer continuous development that is sustained (Oke, 2007;

Talib, Rahman, & Qureshi, 2012). The same statement is backed up by (Abrunhosa & Moura E Sá, 2008; Kaynak, 2003; Kim, Kumar, & Kumar, 2012; Moura E Sá & Abrunhosa, 2007; Pekovic & Galia, 2009; D. Prajogo & Sohal, 2004; D. Prajogo & A. S. Sohal, 2001). While establishing customer satisfaction and open culture are key components of both TQM and innovation, (Prajogo & A. S. Sohal, 2001; Singh & Smith, 2004) emphasized that continual improvement is also a key component of TQM.

The interplay between TQM and innovation can thereby influence the performance and innovation of an organization. This paper's goal is to review the most recent and significant research on the relationship between TQM and innovation.

AN OVERVIEW OF TQM:

Due to the innovative contributions provided by Juran, Crosby, Feigenbaum, etc., the evolutionary philosophy of TQM that stands as a testament today is possible. The most crucial components of the TQM framework advocated by quality experts are Planning, Control, and Improvement: The Quality Trilogy of Juran (1991), Crosby's Absolutes of Quality Management (1991) (conformance to requirements, prevention, zero defects and cost of quality), Feigenbaum's (1990) three steps to quality (quality leadership, contemporary quality technology, and organizational commitment) and Deming's (1986) 14 points and cycle (plan, do check, and act, also known as the PDCA cycle). The implementation of TQM methods enables firms to restructure their current rules and regulations to improve employees' performance in terms of proficiency, effectiveness, and organizational productivity (Iqbal & Asrar-ul-Haq, 2018). Many different sectors have incorporated TQM frameworks into their operations and have reaped rewards (Rahman and Sohal, 2002). For instance, many businesses have used the Malcolm Baldrige National Quality Award framework as a foundation for TQM to enhance quality and financial performance within the organization (Jung and Wang, 2006; Lee et al., 2010; Prajogo and Hong, 2008; Teh et al., 2009), and they have seen positive and notable results. TQM has a part to play in this since there is a tendency towards a larger need for enhanced measures of the performance of the industries (Williams et al., 2004).

LITERATURE REVIEW:

QUALITY:

Over the past 20 years, several study findings about quality have emerged, yet there are still numerous distinct conceptualizations of quality. In marketing, the level of a product's or service's qualities is frequently considered a determinant of quality. Quality is characterized in operations management as having two key dimensions: fitness of use, or if the product or service has features that fulfill consumers' expectations and perform what they are supposed to do, and reliability, or to what extent the product or service is free of flaws. Parasuraman et al., (1988) stated quality as an overall assessment. According to Sureshchander et al., (2002) quality improvement directs a firm to sustainable competitive advantages and quality management leads to enhanced business performance.

Garvin (1987) has highlighted eight attributes of quality where performance refers to the product's primary characteristic features and represents the added features or the "bells and whistles" of the product, conformance represents the extent to which a product's operating characteristics and design meet the recognized standards, reliability signifies the probability that a product will perform properly over a specified period of time under the stated environment of use, durability expresses the amount of use the user gets from a product before it physically deteriorates, serviceability refers to the competence, speed, and courtesy of repair, aesthetics refers to how a product appeals to five senses of consumer and customer perceived quality specifies the customer's perception of a product's quality based on the status of the firm. Juran (1986) stated that quality must be planned and planning should be part of the quality trilogy which consists of planning, control, and improvement. Crosby (1979) identified a number of important principles and practices for a successful quality improvement program which includes management participation, management responsibility for quality programs, employee recognition, training and education, and reduction of the cost of quality which includes prevention costs, appraisal costs, and failure costs. He emphasized prevention rather than after-the-event inspection, doing things right the first time and having zero defects.

TOTAL QUALITY MANAGEMENT:

"Total Quality Management (TQM) has gained a lot of importance by businessmen, managers, practitioners, and research scholars over the last 20 years" stated Bajaj Shweta (2018). "Further, it has been argued by Lenka, Suar & Mohapatra, (2010) that for an institution to realize the value of a TQM adoption, it must have an internal conceptual understanding of TQM in order to be capable of fully supporting TQM implementation". Numerous analysts, for example, Gronholdt, Martensen, and Kristensen, (2000), talk about TQM as a discourse and distinguish its "numerous concepts", including TQM human asset the executives, advertising, business process the management and another management worldview. It has likewise been said by Douglas and Judge, (2001) that TQM incorporates basic management methods, existing improvement endeavors, and specialized devices in a disciplined methodology. The two specialists proceeded and referenced that TQM is an assembly of standards, systems, procedures, and best practices that after some time have turned out to be powerful. This assorted variety of perspectives may fortify the branch of knowledge; however it has clearly not been talked about broadly. Most world-class establishments show most of the practices that are commonly related to TQM. Agus and Abdullah, (2000) stated that TQM unites the group of stars of efficiency, moral authority, and performance into an exceptional relationship. Further, Dayton, (2001) contends that TQM isn't a method that can be connected exaggeratedly to improve the productivity of an establishment, however, (1) it is a lifestyle, an enthusiasm, something that everyone ought to do, (2) it is a culture, which ought to be lived by everyone in a foundation, and (3) it ought to be displayed by those in places of management, yet ought to, in the end, involve individual leadership, which is followed by all individuals from organizations. "Barata and Sinha (2017) have checked on synergies between information systems (IS) and quality management systems (QMS) and propose roads to propel them further, prompting an entire that is more noteworthy than the total of the two sections, moving far from current practice, where the life cycles of IS and QMS are taken care of autonomously, by various groups, furnished with disengaged apparatuses and techniques". As indicated by Scharitzer, and Korunka, (2000), TQM shadows the limits between the organization and nature. Elements recently viewed as outsiders (for example providers, and clients) are presently viewed as a major aspect of institutional procedures. As indicated by Talib, Rahman, and Qureshi (2010) "total quality management (TQM)" is an integrated management approach that intends to improve the performance of products, procedures constantly, and services to accomplish and outperform customer desires. To achieve this target, some key factors that add to the accomplishment of TQM endeavors are to be distinguished. These key elements are frequently named critical success factors (CSFs).

Leadership	Associated with top management's commitment to management culture by quality
Focus on Customers	Associated with how the organization determines the requirements, needs, expectations, and preferences of customers
Involvement and Development of people	Associated with the way the organization engages employees and encourages their participation in and commitment to organization's activities
Management by processes	Associated with how the organization identifies, manages and develops its processes
Ongoing improvement	Associated with the review of organization's processes, having as objective an ongoing improvement
Relations with suppliers	Associated with how the organization relates to its suppliers
Results measurement	Associated with how the organization selects, collects and analyzes data related to quality management
Product design	Associated with the use of quality tools and techniques in the design and development of product

Source: Fernandes et al., 2014

TQM PRACTICES

TQM is a comprehensive management strategy that enables SMEs to apply quality improvement in their operations to manufacture and deliver goods and services that meet customers' expectations more effectively, more quickly, and safely than their rivals while incurring lower manufacturing costs. TQM practices are a series of actions that all participants in the quality processes must adhere to in order to achieve continuous improvement in production methods and procedures, guarantee zero defects, and maximize customer satisfaction (Kumar et al., 2018). These practices represent an integrated organizational-level mindset designed to raise the caliber of products, provide better services, and streamline business operations. The senior management of the company, which works to ensure quality at all organizational levels, effectively leads this practice (Al-Dhaafri et al., 2016; Rogo et al., 2017). In order to improve employees' performance in terms of proficiency, effectiveness, and organizational productivity, firms can restructure their current rules and regulations by implementing TQM practices (Iqbal & Asrar-ul-Haq, 2018).

Table 1 shows the varied number of studies wherein TQM has been used in different firms.

Table 1 Study on TQM in service sector

Area/issue	References
Barriers to TQM implementation	Soltani et al. (2005), Huq (2005), Mosadegh Rad (2005), Bhat and Rajashekhar (2009), Talib et al. (in press a), Ab-Rahman et al. (2011)
Critical dimensions of TQM	Mahadevappa and Kotreshwar (2004), Saravanan and Rao (2006), Tari (2005), Sureshchandar et al. (2002), Talib and Rahman (2010a), Talib et al. (in press a, 2011b)
Development of TQM framework	Yusof and Aspinwall (2000), Malhotra and Grover (1998), Hafeez et al. (2006), Talib et al. (2011c,d), Azam et al. (in press a)
Development of TQM models	Sureshchandar et al. (2001), Bayraktar et al. (2008), Bou-Llusar et al. (2009), Kakkar and Narag (2007), Talib and Rahman (2010a), Azam et al. (in press b), Ooi et al. (2009)
Financial outcomes of SQ initiatives	Rust and Zahorik (1993), Rust et al. (1994, 1999), Brah et al. (2000)
Identification and implementation of TQM practices	Aghazadeh (2002), Khamalah and Lingaraj (2007), Gustafsson and Johnson (2003), Behara and Gundersen (2001), Sureshchandar et al. (2002), Talib et al. (2011b)
Impact of TQM in service industry	Khan (2003), Kumar et al. (2009), Talib and Rahman (2010b)

Relationship between TQM and customer satisfaction	Mehra and Ranganathan (2008), Gonzalez et al. (2004), Sahney et al. (2004), Yang (2006), Tari (2005), BouLlusar et al. (2005), Sila and Ebrahimpour (2005), Sit et al. (2009), Yoon et al. (2006)
Relationship between TQM and employee satisfaction	Yang (2006), Tari (2005), Bou-Llusar et al. (2005), Sila and Ebrahimpour (2005), Ooi et al. (2007a,b, 2008), Teh et al. (2009)
Relationship between TQM practices and business performance and culture	Prajogo and Mc Dermott (2005), Brah et al. (2002), Hasan and Kerr (2003), Bou and Beltran (2005), Hafeez et al. (2006)
Relationship between TQM practices and quality performance	Flynn et al. (1994, 1995), Arumugam et al. (2008), Brah et al. (2002), Hasan and Kerr (2003), Prajogo (2005), Prajogo and Brown (2004), Prajogo and Sohal (2004), Ahire et al. (1996), Talib et al. (2011d)
TQM and knowledge sharing	Rad (2006), Jacobs and Roodt (2007), Hong et al. (2004), Cheah et al. (2009)
TQM and new product development	Sun et al. (2009), Langerak and Hultink (2008), Dayan and Benedetto (2009), Lukas and Menon (2004)
TQM practices and its impact on role stressors	Teh et al. (2008, 2009), Lu and Lee (2007), Brah and Lim (2006), Phusavat et al. (2007), Gilboa et al. (2008)

Source: Talib, F, et al., 2012

INNOVATION:

According to Szeto (2000) and Mitra (2000), innovation is the product of a variety of activities including research and development, process development, design, marketing, organizational restructuring, resource management, and personnel development. Innovation can appear in a variety of ways, for as through management techniques, production methods, or goods. Product innovation is linked to consumer needs and research and development. Innovation in processes involves adjustments to equipment and other factors that are not directly related to people with the goal of boosting productivity (by improving quality and lowering costs). The purpose of innovation in management systems is to better organize work and manage people while also adjusting to new environmental situations. Changes in the process, such as automation and the use of error-proofing equipment, as often outlined by Shingo, may make this type of innovation imperative (1986).

Organizational innovation performance is frequently linked to several notions that stand for distinct innovative activity expressions. R&D and technological innovation, product innovation, process innovation, organizational innovation, and management innovation were five related ideas that Satish and Srinivasan (2010) examined. In addition to this, this study considers how the introduction of a new marketing technique relates to marketing innovation (OECD, 2005). The table below provides a brief explanation of each of the six ideas.

Concepts associated with innovation

R&D and innovation technological	Associated with the creation and existence of a department of research and technological development (creation of or maintaining a department of Research & Development)
Product innovation	Associated with the introduction of a good, or new or significantly improved service (new or significantly improved products)
Process innovation	Associated with the implementation of a new or significantly improved method of production or delivery of product (new manufacture or production methods significantly improved)
Organizational innovation	Associated with the implementation of a new organizational method (new practices in "leanproduction", quality management, team work, decentralization, integration or disintegration of services, training systems, first use of alliances, partnerships, outsourcing procedures)
Management innovation	Associated with the implementation of a New management method (administrative computerization, motivation and remuneration systems, new departments, implementation of management methodologies of knowledge and information)

Marketing innovation	Associated with the implementation of a new marketing method (significant changes in aspect/aesthetic or products' packaging, new techniques or media for products' marketing, new distribution methods and placement of new products or sales channels)
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Source: Fernandes et al., 2014

TQM & INNOVATION:

A manufacturing program called TQM seeks to run the entire business in a way that excels in all areas of goods and services that matter to customers (Bouranta et al., 2019; Mehta et al., 2019). It is described as a collection of guiding principles and a philosophy that serve as the cornerstone of an organization's ongoing improvement (Krajewski et al., 2013). Additionally, TQM's primary goal is to produce better product quality in order to increase company performance (Modgil & Sharma, 2016). Two perspectives strongly endorse the relationship between TQM and innovation performance, one of which strongly supports the idea that TQM does not provide a fertile environment for innovation to flourish (Zeng et al., 2015), and the other of which strongly supports the idea that the two are compatible and, if implemented concurrently, can aid a firm in achieving excellence. According to Zeng et al. (2015), proponents of the positive perspective contend that structural flexibility, autonomy, teamwork, knowledge transfer, and control—all integral components of any TQM program—enable organizations to cultivate innovation. The opposing school of thought emphasizes that combining two of them can lead to disaster (Ferdows & De Meyer, 1990). The TQM-innovation performance relationship has not been adequately studied, as mentioned above. Additionally, this relationship is now more complicated because of the contradictory results of various research.

TQM is not a barrier to company innovation, according to certain authors. Bessant et al. (1994) believe that TQM supports innovation. Imai (1986) documents a case of the Nissan Motor Corporation using continuous improvement and innovation successfully at the same time. However, Miller (1995) believes that although a process of continuous improvement does not offer the tools for innovation, it is not hampered

by this since progress may be attained by employing the right innovation styles. In their 2010 study, Satish and Srinivasan looked at how TQM procedures impact R&D, product, and process innovations in large and medium-sized Indian businesses. Overall findings showed that the causal effects of various TQM methods, either alone or in combination with various innovative performance indicators, varied.

Summary of most recent studies on TQM-innovation relationship

Study	Data source	Analysis Tool/technique	Findings
Hoang et al. (2006)	204 manufacturing and service firms in Vietnam	Structural equation modeling	Positive relationship between TQM practices and innovation. Not all TQM practices have positive impact on innovation.
Prajogo and Hong(2008)	130 R&D divisions of manufacturing firms in South Korea	Structural equation modeling	Positive relationship between TQM practices and product innovation.
MartinezCosta and MartinezLorente (2008)	451 manufacturing and nonmanufacturing firms in Spain	Structural equation modeling	Positive relationship between TQM practices and product and process innovation as well as between TQM practices and company performance.
Abrunhosa and Moura E Sa (2008)	20 footwear manufacturing firms in Portugal	Multipleregression analysis	Positive relationship between TQM practices and technological innovation.
SantosVijande and AlvarezGonzalez (2007)	93 ISO 9000 certified firms (manufacturing and service) in Spain	Structural equation modeling	- Significant positive relationship between TQM and administrative innovation.- the impact of TQM on technical innovation is subject to the mediating role of the firm's Innovativeness
Sadikoglu and Zehir (2010)	373 firms from different industries in Turkey	Structural equation modeling	TQM practices have a strong positive relationship with firm innovation performance whether directly or through mediating role of employee performance.

Perdomo-2006; 2009	Ortiz et al.	102 machinery and instruments firms in Spain; 106 Spanish industrial firms in Spain	Multipleregression analysis	-Positive and significant relationship between TQM Practices and capability of business innovation. -TQM-based Human Resource Management HRM practices have a positive relationship on both technological and non-technological innovation
Leavengood and Anderson (2011)		215 firms in west coast of USA.	Data envelopment analysis (DEA)	TQM with customer focus approach has negative relationship with innovation in quality oriented firms

Source: Bon, A. T., Mustafa, et al., (2012).

COMPETITIVE ADVANTAGE:

Two complementary theories of competitive advantage that are both based on economic theory are available (see Conner, 1991; Porter, 1980, 1985). The first model, known as the market-based model, focuses on cost and differentiation and claims that inefficient businesses or those that do not provide goods for which customers are willing to pay a premium price are weeded out by the environment. This idea of advantage is primarily influenced by outside forces (opportunities, threats, and industry competition), and as Porter (1985) notes, maintaining an advantage necessitates giving rivals "a shifting target." The second model is driven by elements that are internal to the company and is focused on its resources. The Company can produce greater profits by utilizing eccentric resources that give it an operational edge or support the development of a superior market position. In this idea of resource-based competition, the longevity of advantage depends on opponents' incapacity to imitate resources.

TQM & COMPETITIVE ADVANTAGE:

After analyzing the relationship between TQM and company performance in a sample of American businesses, Powell (1995, p. 31) arrived at a conclusion that "The empirical data suggested that TQM can provide a competitive advantage." According to Deming (1982), the main goal of TQM is to maximize efficiency to create and maintain a competitive edge. This effectiveness shows up as decreased costs and increased customer satisfaction (Deming, 1982). A large portion of what he suggests is in line with the goals of conventional management theory and marketing theory (Lemak et al., 2002; Spencer, 1994). Numerous studies show that TQM creates a competitive advantage as demonstrated by better financial performance (e.g., Lemak et al., 1997), increased customer satisfaction (Mehra and Agrawal, 2003), quicker competitor response (Spitzer, 1993), and improved product quality (Escrig-Tena, 2004). An organization with a competitive advantage has "the edge" over its rivals and can produce more value for both the organization and its shareholders. Numerous studies conducted over the past few decades have shown that TQM has helped organizations and given them an "edge" by enhancing the quality of products and services, assisting in the delivery of superior items to customers, and boosting performance (Hoang et al., 2010).

INNOVATION & COMPETITIVE ADVANTAGE:

There is a general consensus in the literature that all types of innovations can help a firm gain a competitive advantage, and a typology of technical and non-technical innovation has gained wider acceptance in the literature (Damanpour, 1991; Damanpour, Szabat, & Evan, 1989; Han, Kim, & Srivastava, 1998) But the majority of the innovation literature has been on technical improvements, mostly in products. This is especially clear in the literature on marketing, and a growing number of marketing academics argue that it is important to investigate the synergistic effects of both technical and non-technical innovation on firm performance and competitive advantage (Han et al., 1998; Varadarajan & Jayachandran, 1999).

CONCLUSION:

This paper provides a thorough examination of the integration of TQM components into businesses as a whole since it advances our understanding of both competitive advantage and TQM in general. From a theoretical standpoint, this study adds to the body of information that may help us better grasp and know the relationship between quality management, innovation, and competitive advantage. The main obstacles to successfully implementing TQM to produce greater competitive advantage resulted from the lack of systems and structures to support TQM as well as the insufficient resources devoted to innovation.

This finding contributes to the theoretical foundation of TQM. By identifying and empirically evaluating a group of viable elements of successful TQM programs, it contributes to the development of a future course for a universally applicable theory of TQM. Although the relative individual effects of each of these factors are still unknown, taken as a whole, they are linked to competitive advantage.

The study has important practical ramifications. It instructs managers on the best elements to look for in any quality program they aim to implement. The cost of a quality program failing is considerable and difficult to recover from. Any business strategy, including TQM, must be used with the utmost prudence in the current dynamic business environment. Managers can identify a TQM program's successful elements, which should be combined with innovation to create a competitive edge.

LIMITATIONS:

The authors are aware of a number of constraints that ought to be taken into consideration for future studies. First of all, this study was a conceptual framework project in which a number of papers were read but no statistical analysis was done. The authors may have overlooked several papers that would have added significantly to the body of knowledge throughout the review. Researchers may conduct a thorough literature analysis in the future to provide more in-depth insights regarding TQM procedures and innovation. Secondly, while evaluating the research conducted to determine the impact of TQM on innovation in various sectors, the researchers attempted to generalize the study's findings. Thirdly, the relationship between TQM, innovation, and competitive advantage was less understood and greater emphasis was placed on determining how TQM practices impacted innovation.

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