Innovation, diffusion and adoption of total quality management (TQM)

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Abstract

Purpose – The present paper seeks to establish, through literature reports, if TQM is still a management theory in vogue or now a management fad. To achieve this, the innovative change process of TQM is examined, along the dimension of creativity, invention, innovation, diffusion and adoption.

Design/methodology/approach – The approach for data collection is basically secondary sources. The literature is extensively reviewed to arrive at the position presented in the paper.

Findings – From the reviews made it is argued that, although TQM looks faddish in graphical presentation of articles on TQM, it cannot be concluded that it is now a management fad. Though reports on TQM seem to diminish among popular press but academic scholars are still very much engrossed with empirical studies on TQM. This is based on the fact that many organizations still adopt and implement TQM and its diffusion is on the increase globally.

Research limitations/implications – The main source of literature for the presentation is the ABI-INFORM database. This might have reduced the generalizability of the findings in the present research. It is encouraged for other sources of literature to be explored.

Practical implications – It is implied from the present research that TQM is still a management philosophy in practice. Because it is diffused cross-culturally, it is encouraged for its adopters not to use it as a "canned technique" of management change. Rather the management ideas need to be adapted within specific organizational settings, putting into consideration employees' personality, organizational leadership styles, reward system, and other cultural practices. Implementers of TQM should endeavor to fully understand the antics of the management philosophy and implement accordingly. A clear understanding and training of personnel on TQM philosophy is pertinent for protecting it from becoming a management fad.

Originality/value – What is original about the paper is the conceptualization of TQM along the organizational change process. TQM is presented as an innovation and its diffusion and adoption processes are sequentially analyzed.

Keywords Innovation, Total quality management, Organizational change, Nigeria

Paper type General review

Introduction

In the global marketplace, there is increasing competition among producers and marketers of goods and services, so that the focus for competitive advantage has come to be on quality. Attempts at improving quality in organizations led to the advancement of the management philosophy called total quality management (TQM). It is not clear if TQM is still a desirable management theory or a fad; hence, an analytic review of its innovative change process is presented to judge its status. The present

Management Decision
Vol. 43 No. 6, 2005
pp. 925-940

0025-1747
DOI 10.1108/00251740510603646

paper seeks to establish, through literature reports, whether TQM is still a management theory in vogue or a management fad.

TQM is a management philosophy that seeks to integrate all organizational functions to focus on meeting customer needs and organizational objectives (Hashmi, 2000-2004). It is thus a multi-faceted approach to creating organizational change, with factors including quality, customers, employees, organizational production, and the role of senior management (Hackman and Wageman, 1995). TQM emphasizes the creation of an environment that supports innovation, creativity, and risk taking in meeting customer demands, using participative problem solving that incorporates managers, employees, and customers (Noe *et al.*, 2000). TQM focuses on employee involvement in the control of quality in organizations (Levy, 2003). Rather than concentrating on the volume of production, TQM focuses on quality, customer demands and expectations (Landy and Conte, 2004). Quality has a glut of definitions. Crosby (1980) defines it as conformance to requirements. Quality is that which meets and/or exceeds customers' expectations (Parasuraman *et al.*, 1991).

Origin of the quality movement

There seems to be no consensus on the date and original source for TQM innovation, but most literature reports that the founders include Feigenbaum, Ishikawa, Deming, Juran, and Crosby. Stuelpnagel (1993) traces the origin of TQM to 1926, in Ford and Crowter's book *My Life and Work*. Japan adopted the notion of TQM around 1949, from the consensus of a committee of scholars, engineers, and government officials formed by the Union of Japanese Scientists and Engineers (Martinez-Lorente *et al.*, 1998). The need arose from the desire to improve productivity levels in Japan and to enhance post-war quality of life. Bemowski (1992) argues that the term "total quality management" was formally coined in 1985 by the Naval Air Systems Command to describe its Japanese management approach to quality improvement.

TQM is presumed to have emerged in place of total quality control (TQC), which was originated by Feigenbaum (1951, 1956, 1961). Feigenbaum sees TQC as an effective system for integrating the quality development, quality maintenance, and quality-improvement efforts of the various groups in an organization so as to enable production and service at the most economical levels that allow for full customer satisfaction. It was argued that further control must start with the design of the product and end only when the product has been placed in the hands of a customer, with product satisfaction guaranteed. Feigenbaum believes that all departments in a company have some responsibilities for the achievement of quality, but his conceptualization of TQC did not include other management ideologies like people empowerment, teamwork, and supplier development relationships (Price, 1989). These management ideologies are now incorporated into the new management concept, TQM. Thus, TQM is an alternative to management by control (Price, 1989). Hence, Paton (1994) considered Feigenbaum as the originator of the term "total quality management".

Kaoru Isikawa shaped the Japanese style of TQC and originated an alternative concept – company wide quality control (CWQC). The term "company wide quality control" was introduced in Japan in 1968, some ten years after Feigenbaum introduced the term "total quality control" (Garvin, 1988). Isikawa (1986) opines that quality control consists of developing, designing, producing, marketing, and servicing

products and services with optimum cost-effectiveness and usefulness, which customers will purchase with satisfaction. To achieve these management demands, all the separate parts of a company must work together (Isikawa, 1990). The literature reports that the word "management", is a better substitute for "control", with the idea that quality does not just have to be controlled, but managed (Martinez-Lorente *et al.*, 1998). This idea gave birth to total quality management (TQM), in place of total quality control (TQC) or company wide quality control (CWQC).

Many authors (e.g. Davis and Fisher, 1994; Grandzol and Traaen, 1995; Milakovich, 1991; Muchinsky, 2003; Schay, 1993; Tamimi and Gershon, 1995) report that W. Edwards Deming formulated the TQM concept. Deming, an American, gained much popularity in 1980 after a NBC television documentary about the success of TQM in Japan, where he was a key factor. Deming appeared on CBS in June of 1980 in a documentary entitled *If Japan Can … Why Can't We?* (cited Grant *et al.*, 1994). It is believed that this television program introduced the organizational design that sparked the spread of TQM as a management theory. Deming first implemented his ideas in Japan because the Japanese were interested, and there was lack of interest in the USA. Japan thus established the Deming Prize in 1951 (Watson and Korukonda, 1995). When Deming came to the USA he took the plan of implementation that he used in Japan and put it into the context of American culture (Hackman and Wageman, 1995). The peak of the popularity of TQM was aided by Deming as he made the bestseller list in 1986 with a book called, *Out of the Crisis*, which talked about the implementation of TQM. In the book, Deming (1986) challenged modern organizations to focus on the customer as an indicator of organizational effectiveness, and introduced the concept of TQM to justify that challenge. Deming is notable in the history of TQM for his 14-point plan for TQM (see Wilson, 1995).

Another contributor to the development of the TQM concept is Joseph M. Juran (English, 1996). Juran is considered as the father of quality management and his *Quality Control Handbook*, first published in 1951, became the "bible" for quality management (Whaley, 2003). According to Peter Drucker (1990), "Whatever advances American manufacturing has made in the last 30 to 40 years, we owe to Joe Juran". Although Juran did not directly use the term "total quality management" in some of his books (see Juran and Gryna, 1988; Juran *et al.*, 1974), he briefly mentioned it in his 1995 book *A History of Managing for Quality* (Juran, 1995). To Juran, quality management is not simply the issue of identifying and eliminating variations, it is serving customer needs – focusing the entire company on customers. Juran's approach links quality improvement and control with quality planning and thereby extending quality management from the realm of operations into strategic planning. Juran's 1969 book on *Managerial Breakthrough* is devoted to two modes of management: control and breakthrough (Juran, 1969).

Although Crosby (1980) is also acknowledged as one of the TQM theorists, Drensek and Grubb (1995) report that he did not actually use the term "total quality management" in his book *Quality Is Free* (Crosby, 1980), or in *Quality without Tears* (Crosby, 1987), or in *Completeness: Quality for the 21st Century* (Crosby, 1992).

Evolution of TQM

It is believed that TQM evolved from quality circles (QC), an organizational technique created in the USA by W. Edward Deming in the 1950s. Quality circles have been

defined as work groups ranging from four to 15 members (Robbins, 2003; Sillince *et al.*, 1996) that meet regularly to discuss quality problems, recommend solutions, and in some cases take action to make change (Flores and Utley, 2000; Robbins, 2003; Tang *et al.*, 1996). Most often, quality circles are voluntary groups that employees decide to take part in. Quality circles did not really have any effect on management in the USA until after the design was exported to Japan, and then reintroduced to the USA in the 1980s (Gibson *et al.*, 2003).

The problematic nature of quality circles is that it is a universal idea, having one approach that is designed to fit any organization. Universality does not take cross-cultural differences into consideration. Therefore, by using the same formula as Japan, QCs did not consider the complexities of American organizations, most specifically their definition of quality and the role of teamwork (Daniels, 2000). Researchers agree that about 90 percent of *Fortune* 500 companies began implementing quality circles between 1980 and 1981 (see Abrahamson and Fairchild, 1999; Gibson *et al.*, 2003). However, more than 80 percent of the *Fortune* 500 companies that originally adopted QCs had abandoned them by the late 1980s (e.g. Abrahamson and Fairchild, 1999; Gibson *et al.*, 2003; Ponzi and Koenig, 2002).

The sharp increase and decrease in popularity of QCs is reflected by the change in literature publications over time (see Abrahamson and Fairchild, 1999; Ponzi and Koenig, 2002). The first article was introduced in 1977, the peak of literature was in 1982, and the lowest point was seen in 1995. Due to the fact that in 1995 there were fewer than ten published articles, Abrahamson and Fairchild (1999) concluded that the interest in quality circles had evaporated, making it a management fad.

Hill (1997) monitored the QC experiences of 28 companies (some of the first adopters of QCs in the UK) between 1981 and the early 1990s. By the mid-1980s, 15 of the original 28 programs had terminated (see Hill, 1986, 1989); eight of the survivor companies and five of the terminator companies were reported to have progressed towards TQM. The significance of this finding is that quality circles may have just been the start of an idea that was not carefully worked out. The organizational design of QC programs was unable to actually accentuate quality in organizations. Therefore, it seems that TQM was developed to build up the ideas of quality and employee involvement (Zetie, 2002; Daniels, 2000; Abrahamson and Fairchild, 1999; Sillince *et al.*, 1996). TQM has become an important and well-accepted management concept (Martinez-Lorente *et al.*, 1998).

When TQM is looked at critically, it is noticeable that many of the components have been developed from past organizational techniques or what have been classified in some cases as management fads: this includes quality circles (Gibson *et al.*, 2003). The flaws in the development and implementation of QCs helped to guide TQM in a better direction. Today, many business leaders mistake QCs for TQM. TQM has, however, improved upon the faddish characteristics of QC. It is possible that TQM is more of an evolutionary approach to managing that builds on the ideas of organizational designs that have failed, most notably QCs, but changes them to fit a new approach or philosophy.

The concept of innovation, diffusion and adoption in management

The drives of every company to outlive, surpass, and outsmart all other companies and competitors has driven both employees and organizations to continuously search for

new ideas, new processes of work, products and services, and new strategies in order to adapt, survive and grow in the rapidly changing business environment. The most successful organizations foster innovation, which is the key element of many modern management initiatives and practices (McLoughlin and Harris, 1997). Many researchers have concluded that creativity and innovation are important to the long-term survival of organizations (e.g. Oldham and Cummings 1996; Scott and Bruce, 1994).

Innovation refers to new things and ideas. It is "the act of introducing something new" (*American Heritage Dictionary of the English Language*, 2000). The innovation process involves the generation, adoption and implementation, and incorporation of new ideas and practices (Axtell *et al.* 2000; Van de Ven *et al.*, 1989). Innovation is the application of ideas, concepts and designs to create wealth (Akinboye, 2000). In relation to organizational management, innovation is the process of being creative and implementing new methods to organize or run a company and create improved results (Gates and Cooksey, 1998; Ten Bos, 2000). In the innovation change process, creativity leads to invention, and the first introduction or implementation of an invention is innovation, which could lead to adoption. Adoption results from diffusion process. Rogers (1999) sees the diffusion process as the spread of a new idea from its source of invention or creation to its ultimate users or adopters. The adoption process is thus the mental process through which an individual passes from first hearing about an innovation to final adoption. The innovative change process is incomplete if use is limited only to the innovator and use is not adopted by others and does not result in widespread transformation of the system in question. A model of the innovative change process is shown in Figure 1.

In organizational practice, management theories follow this pattern of innovative change process. The implementation of new ideas in organizations comes from an abundance of literature in the field of management theory (Ponzi and Koenig, 2002). The pattern begins with the introduction of a new organizational design (Miller and Hartwick, 2002), which is referred to as innovation. The innovation is then widely reported throughout all facets of management literature. The popularity or emphasis given to the new organizational technique is exemplified by the large number of articles that can be found relating to it. The process and activities involved in getting the innovation to the end-users, who most of the time are organizational practitioners (Ehigie and Babalola, 1995), is referred to as diffusion. The decision to make regular use of a management theory is referred to as adoption. After the adoption of a management theory, it could remain a theory or become a management fad.

A fad is a "practice or interest followed for a time with exaggerated zeal" (Webster, 1983, p. 444). According to Ponzi and Koenig (2002), a management fad can be considered an innovative concept or technique that is promoted as the forefront of management progress and then diffuses very rapidly among early adopters who are eager to gain a competitive advantage. After organizational leaders come to the realization that the concept has fallen short of its expected benefits, the concept is quickly discontinued or drops back to very modest usage. The short lifecycle of a fad

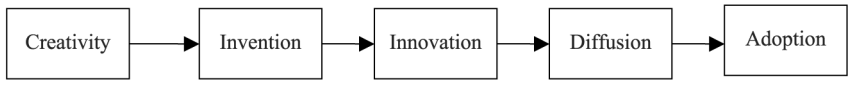


Figure 1.
The innovation change process

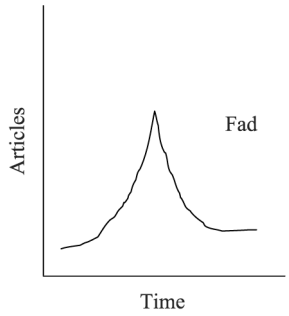
has been argued to go through many quick stages (see Figure 2). In the discovery stages there is a sharp increase of literature and popularity (Gibson *et al.*, 2003). The peak of popularity is evidenced by the number of books purchased and recognition in the bestseller list (Ten Bos, 2000). The sudden increase in information can also be measured by the amount of articles that can be found in academic databases at the time of introduction, throughout the stages of popularity, until the organizational design dies out and becomes unnoticed and named a management fad. The increase and decrease happen within the time span of about five years (Ponzi and Koenig, 2002).

However, when time passes and the introduction phase of the management technique is complete, successes can be compared to failures. Once the abundance of failures is noted and the theory undergoes in-depth questioning, the management literature changes its backing on the innovation. Failures lead the management literature to note the controversial applicability of the theory, which consequently leads management theorists to go from advocating the theory to deeming the theory a management fad (Collins, 2003; Levinson, 1992).

Diffusion and adoption of TQM philosophy

Levy (2003) reports that the idea of TQM was spearheaded by the work of Deming and Juran, who presented their ideas to US companies during the Second World War. But their ideas were better received by the Japanese than by Americans (Cummings and Worley, 2001). Japanese companies consequently became more formidable in their competition with American companies, especially in the automobile industry. American executives realized this, and subsequently in the 1980s Deming's ideas became well received in the USA as well. This was strongly influenced by the penetration into US markets of Japanese products, starting in the 1970s, and the impact of the writings of Crosby, Deming, Feigenbaum and Juran. Companies and academics became interested in the works of these authors and integrated their approaches with quality management.

To encourage the adoption of TQM, The Deming Prize has been awarded annually since 1951 by the Japanese Union of Scientists and Engineers in recognition of outstanding achievement in quality strategy, management and execution (Stark, 1998). Since 1988, a similar award (the Malcolm Baldrige National Quality Award) has been awarded in the USA, and this has become the most prestigious and sought-after distinction (Tata *et al.*, 1999). This was demonstrated by the number of requests for TQM applications, which registered a dramatic increase with 12,000 in 1988, 51,000 in



Source: Adapted from Ponzi and Koenig (2002)

Figure 2.
Common shape of a fad

1989, and 180,000 in 1990 (Gehani, 1993). Early winners of the Baldrige Award include AT&T (1992), IBM (1990), Milliken (1989), Motorola (1988), Texas Instruments (1992) and Xerox (1989) (Malcolm Baldrige National Quality Award Consortium, 1990). *Fortune* 1,000 corporations, for example, had their employees involved directly with customers (Lawler, 1994). Watson and Korukonda (1995) reported a survey that showed that 93 percent of manufacturing companies and 69 percent of service companies implemented some form of quality improvement program. They also reported another survey that reported that 55 percent of American executives and 70 percent of Japanese executives used quality improvement information at least monthly as a part of their assessment of overall business performance.

In the late 1970s to mid-1980s, US companies suffered economic recession, deregulation, trade deficits, low productivity, and downsizing. However, there was an increase in consumer awareness and sophistication with the invasion of Japanese products into the US market. Ford Motor Company had operating losses of $3.3 billion between 1980 and 1982. Xerox, which had pioneered the paper copier, saw its US market share drop from 93 percent in 1971 to 40 percent in 1981. Attention to quality was conceived as a way to combat the competition. As the idea of quality management was integrated into business organizations in the USA, Schlenker (1998) reported that Florida Power & Light (FPL) reduced customer complaints by 60 percent and improved the reliability of electricity services to customers by 40 percent in 1983. In 1987, the firm was rated by 156 utility CEOs as the best managed utility in the nation. Xerox started to regain its market share in copiers from the Japanese. Ford now has one of the most popular cars purchased by Americans, the Taurus.

TQM has therefore become a vast enterprise in the twenty-first century as consulting firms specialize in quality work. Nationwide training programs are organized on the basic principles of TQM and numerous national associations, including the American Society for Quality and the Association for Quality and Participation, are emerging (Levy, 2003). In the spirit of management diffusion, TQM was exported to other countries like the UK. In the UK TQM gained recognition from the activities of the Department of Trade and Industry's National Quality Campaign, which was launched in 1983, with the pioneering work of organizations like IBM (Dale *et al.*, 1994). The global perspective on TQM has helped to create a combination of what works in many different cultures. Although TQM was originally developed for manufacturing organizations, it has also been adapted for service organizations, including educational institutions (Birnbaum, 2001; Muchinsky, 2003).

Easton and Jarrell (1998) conducted empirical research in 108 organizations to determine the impact of TQM, using financial data as parameters for business success. The financial data were based on net income, sales, operational income, and daily return stocks. Two groups were formed from the 108 firms, which were split according to how advanced the TQM process was in the organizations. A total of 44 firms were classified as more advanced, while 64 firms were considered less advanced. The more advanced organizations were reported as more successful; a derivative of effort in implementing TQM into the organization. In another empirical study, 84 percent of *Fortune* 1,000 companies surveyed said that they had great success pursuing both TQM and employee involvement (Watson and Korukonda, 1995). Other researchers like Hackman and Wageman (1995) also found support for TQM, based on empirical data. Lawler *et al.* (1995) found that a very high percentage (83 percent) of companies

that adopted TQM reported their experiences with the program as being positive or very positive.

With these success stories, TQM literature increased, with thousands of scholarly articles, books, workshops, training sessions, and case studies devoted exclusively to TQM. Prior to 1989, the ABI-INFORM database contained fewer than 40 citations on TQM; from 1990 to 1992 that increased to over 300 (Donnelly *et al.*, 1995). Martinez-Lorente *et al.* (1998) tracked papers that made references to TQM in an ABI-INFORM database, starting from 1986 and ending in 1997. The result (see Figure 3) is a sharp increase, but somewhat of a slower decrease, with the highest amount of literature occurring in about 1993. Due to the fact that this research was published in 1998, however, the lifecycle is not fully complete in that the most recent records of published literature through 2003 were not available, and therefore there could be no conclusions on whether or not TQM has fully disappeared from management theory.

After the peak in literature in 1993, further empirical research has supported the implementation of total quality management. A study by Ponzi and Koenig (2002) on TQM adoption illustrates a slightly different lifecycle of TQM, as shown in Figure 4. The increase and decrease in TQM studies seems to be less drastic but still very similar to the lifecycle of a management fad (see Figure 4).

The increase happened over four years. Additionally, when further extending the research to 2002, as shown in Figure 5, the decline took approximately another four to six years and leveled off, still with a large number of published articles. Figure 5 illustrates articles split between peer-reviewed scholarly articles and the popular press. There is a large discrepancy in the shape of literature popularity in scholarly articles versus the popular press. The popular press literature, which includes trade publications, newspapers, and magazines, shows a similarity with Figure 4 in the increase and decrease in the total number of articles, whereas the scholarly articles differ in the rise and fall in literature across the years of report.

However, scholarly articles have much less of a faddish shape: there is a peak in literature in 1995, but the number of articles still ranges between 100 and 200 in the early years of the twenty-first century. Therefore, there seems to be less of a decrease in

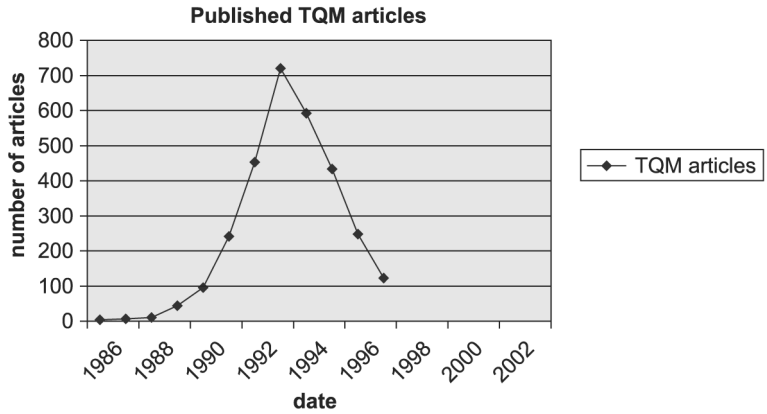
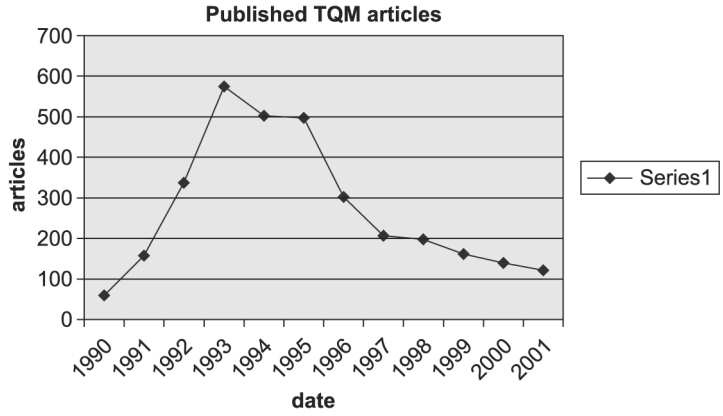


Figure 3.
Published TQM articles (1986-1997)

Source: Adapted from Martinez-Lorente *et al.* (1998)



Source: Ponzi and Koenig (2002)

Figure 4.
Published TQM articles (1990-2001)

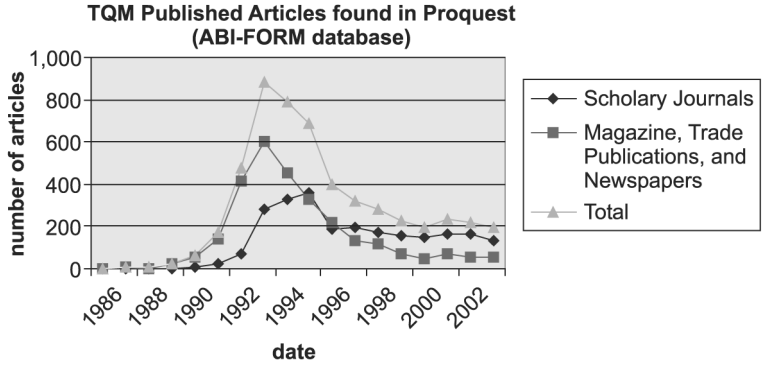


Figure 5.
TQM articles found in the ABI-INFORM database

the literature and the overall existence of literature that is still being published, although slightly fewer than 200 articles are still being published. It should be noted that throughout the introduction and decline of TQM in literature, scholarly research has put forth a large number of articles concerned with testing TQM empirically. Although the popular press may have abandoned TQM, empirical and scholarly research clearly shows some evidence in its being beneficial for companies. Thus, TQM is still being considered by researchers and invariably there is increasing empirical information in the literature. Many organizations implemented TQM after its peak period of 1995, in which 180,000 businesses wanted applications for an award for implementing TQM (Watson and Korukonda, 1995). However, some writers argue that there is a high level of TQM abandonment, although no actual numbers were reported (Paton, 1994; Wang, 2004; Watson and Korukonda, 1995).

Although TQM illustrates the general shape of a management fad, it is not like past fads, such as quality circles, which are not actually in use today (Ponzi and Koenig, 2002). Additionally, journals like *The TQM Magazine* are still being published. Although the popular press may illustrate TQM as having a fad's lifecycle, TQM has

not been abandoned and is still being researched because of its proven results in empirical research (Easton and Jarrell, 1998; Paton, 1994; Wang, 2004). Currently, some Japanese companies are taking TQM techniques to the most problematic commercial areas, like nanotechnology, genomics and proteomics (James, 2002).

The process of innovation and diffusion of TQM is quite different from those of other management techniques like management by objectives, time-based management, and the strategic management of core competences. First, the theoretical basis of TQM is statistics, with the emphasis on statistical process control (SPC) that is based on sampling and variance analysis, whereas other modern management theories and techniques originated in the social sciences. Second, the sources of innovation for other modern management techniques have been the leading business schools and management consulting companies. But the pioneers of TQM, such as Deming, Juran, and Feigenbaum, worked primarily within industries and governments rather than universities. These pioneers were mainly experienced industrial engineers and physicists, with few links with business schools or consulting firms. Third, TQM is credited as being one of the first global management techniques, in that it began in the USA, was developed properly in Japan, and was improved upon as it diffused throughout North America and Europe. TQM thus integrates American technical and analytic skills, Japanese implementation and organization expertise, and European and Asian traditions of craftsmanship and integrity (Grant *et al.*, 1994). Fourth, the dissemination process of TQM is unique. The pioneers of most modern management innovations are leading industrial corporations like General Electric, IBM, and General Motors. In contrast, smaller companies were the first adopters of TQM. Grant *et al.* (1994) report that Nashua Corporation was the first US company to employ Deming as a consultant. Other pioneers were Milliken, Florida Power and Light, Allen-Bradley, First National Bank of Chicago, and Marriott. In addition, with other modern management innovations dissemination was hierarchical, i.e. from chief executive officers to divisional heads and down through the managerial ranks. But with TQM, departmental and divisional managers have often been the initiators, not the CEO. For instance, at Ford it was the general manager of the auto assembly division that brought Deming to the attention of the president of Ford (Walton, 1986).

Implications for TQM adoption in organizations

Defining TQM as a philosophy is key in differentiating TQM from management fads. Paton (1994, p. 3) stated:

> TQM is a philosophy, not a science. Philosophies are seldom suddenly born, and they almost never die; they simply get improved upon.

Therefore, a philosophy can be negotiated and renegotiated, adapted to differences within an organization, and cannot be a simple formula or solution to organizational problems. The structure of TQM in an organization lies in the basic values that a manager has to figure out in order to implement it in the organization. Therefore, TQM as a philosophy acts as a theoretical base for making organizational change. In other words, it is a set of values or a way to reorganize a business, and not a cut-and-paste technique (Miller and Hartwick, 2002; Paton, 1994). For example, one TQM ideology says "[F]ind the problems; constantly improve the system of production and service" (Wilson, 1995). This acknowledges that every organization will have a diversity of

problems, and there is not one solution. Thus, the philosophy of TQM is not using the fad characteristic of saying a certain type of system will improve a certain type of problem. It is therefore in the hands of managers to interpret and implement the tenets of TQM according to how they think the values and philosophies can be accomplished.

To implement a TQM program, Levy (2003) recommends five necessities. First, the support of top management must be sought and senior management must receive training on what TQM is, how it operates, and what their responsibilities are for effective implementation. Second, employees need to be trained on quality methods. Even the lowest level employee is empowered to take steps toward quality improvement, when and where necessary (Jex, 2002). For effective TQM implementation, for instance, all employees should have access to quality control data and be encouraged to act on problems related to product quality. Third, employees are also expected to be trained on the processes and procedures of TQM. Such training should center not only on identification of areas in which department or division excels, but also areas of deviation from quality standards (i.e. errors). The potential causes of these deviations or output variations are examined, corrected, and brought within the range of expected quality. The fourth goal is self-comparison analysis, whereby the organization compares its effectiveness to that of the competitors who were used to set the goals. The fifth necessity is the linking of rewards to the achievement of the TQM intervention's process goals (see Cummings and Worley, 2001; Ehigie and Akpan, 2004).

The degree and type of implementation is invariably important in analyzing TQM's effectiveness. Implementation of TQM failed in Kodak, for instance, due to the way the process was implemented. According to Grant *et al.* (1994, p. 25):

> TQM programs lost momentum because disagreements over goals and implementation procedures surfaced; upper-level managers turned their attention to other priorities and employees became increasingly skeptical about organizational commitment to the programs.

TQM has to be wholly implemented and believed in for successful implementation. However, not all organizations can be improved by total quality management (Easton and Jarrell, 1998).

Throughout the literature, it has been found that employees are at the center of organizational change (e.g. Robertson, 1994; Daniels, 2000; London, 2003). Many organizational techniques fail because they neglect the people aspect of change. Considerations are not made of the role that employees have in making change occur and also how the changes influence them (Szamosi and Duxbury, 2002). Organizational improvement can occur through TQM introduction only when organizational members' behaviors change (Ehigie and Akpan, 2001). According to Robertson (1994), it is the employees that create change, support change, and in the end, affect the longevity and success of the organizational technique. Specifically in the case of TQM, employee behavior is an integral part of changing quality (Flores and Utley, 2000). The role of employees is a very important aspect to the implementation and success of TQM. Daniels (2000) opines that the behaviors of people in business are the center of every business decision and are what underlie every process in organizational change. The behaviors of employees and management could thus determine the success or failure of TQM. Ehigie and Akpan (2004), for instance, reported the roles of leadership

style and reward in employees' practice of TQM. To create total quality management, all aspects of the organization, including the employees, have to be involved (Wang, 2004).

Recommendations/conclusion

Empirical studies (e.g. Easton and Jarrell, 1998; Hackman and Wageman, 1995) illustrate that TQM can be an effective organizational technique to create successful organizational change. Virtually all sectors of the economy, like manufacturing, service, education, health care, and government all over the world are being attracted to the TQM concept (Watson and Korukonda, 1995). Hence, James (2002) describes TQM as the most durable and substantial management theory yet produced. TQM has been reported to take many forms cross-culturally in Japan, the United States, and Europe. Nonetheless, "[M]any organizations are actually implementing a pale or highly distorted version of what Deming, Ishikawa, and Juran laid out" (Martinez-Lorente *et al.*, 1998, p. 385). It is therefore encouraged that implementers of TQM should endeavor to fully understand the management philosophy and implement it accordingly. A mere claim of TQM adoption is not sufficient. Rather, clear understanding and training of personnel in the TQM philosophy is necessary to prevent it becoming a management fad.

TQM has various methods, which highlights the fact that the "canned technique" or "one size fits all" characteristics of management fads should not be used (Miller and Hartwick, 2002). Additionally, the various versions of TQM illustrate the possible consideration of the environment and employee aspects for its adoption. Although TQM is a set of values or a philosophy that may be incorporated for organizational change, it is not an exact formula. As a flexible management technique, TQM can apply to organizations as it fits. The adoption of TQM thus requires systematic changes in management practice. Such changes include work redesign, redefinition of managerial roles, and the reorientation of organizational goals. Companies that have been most successful in achieving long-lasting performance outcomes from TQM, such as Xerox, Hewlett-Packard, Nashua, Banc One and Allen-Bradley, Motorola, Marriot, Harley-Davidson and Ford, accommodated system-wide change in their management practices and philosophies (Grant *et al.*, 1994). When TQM is correctly applied, quality can be improved and costs reduced because expensive monitoring can be eliminated.

The implication of this is that management researchers need to study variables that could enhance or sever the implementation of TQM, taking into consideration organizational type and climate, cultural differences, and the demographic and psychological diversity of personnel.

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