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**Driving Strategy with Quality:
A Useful Insight**

**Sustaining TQM:
A Synthesis of The Literature
and a Proposed Research Framework**

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Abstract

As the new millennium progresses, TQM is expected to mature into a sustainability phase to support a universal business strategy. Its critical success factors will vary, in order to accommodate changes in the environment where the firms operate. Despite the fact that TQM initiatives have been recognised by many organisations as capable of transforming the quality culture and producing competitiveness, new initiatives or their improved versions are being suggested to retain TQM vigour and its sustainability. This has called for a continuous discourse and the development of a framework for sustaining TQM, which is the object of this paper.

The paper first traces the development of the concept of sustainability, leading to the conception of sustainable TQM. A framework of proposed research is presented drawing from literature on quality orientation, performance measurement, change management, and related organisational theories. Strategies for effectively sustaining TQM implementation are highlighted. A set of theoretical enablers and inhibitors for sustaining TQM are discussed, and a research model is proposed. From the model, various scenarios are constructed, and research propositions are deduced. Finally, a methodology for an empirical stage of research is offered.

Key Words: Sustainability, Quality Management, Quality System, TQM Theory, Quality Orientation, Critical Factors, Performance Measurement

Introduction

Every twenty years in four decades, quality management has entered a new era (Feigenbaum, 1956), each of them more advanced and more strategic (Garvin, 1988; Dahlgaard, 1999), thus until this millennium TQM had survived the test of time as a corporate philosophy. However, will it sustain as a dominant logic of business corporate strategy in the future? This question, among the academics and practitioners, remains not fully answered by the past literature. Although there has been anecdotal and empirical evidence that supports TQM as a universal business strategy; the intensity of effective implementation of its success factors brings operational excellence, but the changing business orientation poses a challenge to TQM as a sustainable strategy for competitiveness.

A limited research had assessed at what levels of quality conditions that quality-performance relationship exists (Ismail and Hashmi, 1999). Despite Dale's (1996) positioning approach implied a longitudinal benchmark, but longitudinal research on conditions of TQM sustainability and its impact on long-term performance remain in paucity.

This paper tries to bridge the literature gap in quality orientation, and hence shed some light on the conditions for TQM sustainability in view of the changing critical factors over time as the new global business landscape is being created. The framework here is synthesised from the review of TQM theory, evolutions, and empirical studies in different economies. It then proposes research constructs and hypotheses for an empirical stage of study.

Literature review

Quality management as a managerial discourse (Witcher, 1994) is a moving paradigm (Aune, 1998; Dervitsiosis, 2000). Its evolutionary phases are discussed by many authors (Garvin, 1988; Kanji and Asher, 1993; Dale, 1994; Zairi, 1996; Dahlgaard, 1999) in reflecting continuous change in its philosophical ideas from functional-focus, such as inspection, to external-emphasis, such as market-based orientation (Gale, 1994; Gummesson, 1998; Idris, 2000). Building on these literatures, each era of quality management has its corresponding features reflecting the level of adoption by the industry in different economies. In illustrating the above transformational process, the ISO 9000:1987 for example, has been conceived to be equivalent to the early Japanese total quality control (TQC) (Akao, 1991; Ishikawa, 1985), forming a subset of company-wide quality control (Sullivan, 1986). Under the state of constant change, quality practices emanating from ISO 9000 aptly serve only as guidelines describing a minimal quality system (O'Connor, 1995), although the new ISO 9001:2000 has included customer satisfaction assurance over and above product quality assurance (Conti, 1999). Indeed, when more intense quality programmes are initiated and build-up of total quality approaching a maturity possibility for TQM success increases (Ahire, 1996; Zairi, 1996). This might improve the corresponding operational and corporate performance as a result of greater accumulation of enablers for progress.

According to Sullivan (1986), the build-up of total quality occurs in stages. This is partly because of limited roles played by the gatekeepers, and gradual acceptance by the organisational members (Zbaracki, 1998) after TQM being brought into a company. Therefore in each era, industry, or even within an organisation, the levels of adoption of quality management varies (Hackman and Wagemen, 1995; Haris 1995; Dale, 1996) depending on need and awareness of benefits of TQM. Some are driven by internal and external "push factors" such as competition and legislation.

On deduction, one could separate the emphasis of adoption by; hard and soft elements (Oakland and Porter, 1994), behavioural and technical (Myers and Ashkenas, 1993; Zbaracki, 1998; Baidoun, 2001), philosophical and operational (Deming, 1994, 1982), effectiveness and competitiveness (Zairi and Leonard, 1994; Zairi 1996), normative and rational (Giroux, 1998), operational excellence and strategic positioning (Porter, 1996), inside-out and outside-in views (Day, 1994; Webster, 1994; Gummesson, 1998), and internal-focus and customer-focus (Shiba et al., 1993; Day, 1994). These emphases have their corresponding industry conditions (Ansof, 1979; Webster 1988; Treacy and Wiersema, 1993; Mohr-Jackson, 1998; Idris, 2000), and to excel, firms should steer their emphasis to cope with the environmental forces. The coping process is the effort to reduce uncertainty in the operations and marketing, thus firms need to learn continuously about internal and external variables that have a strategic link to success. For example, Senge (1995) suggested that a TQM firm could be transformed into a learning organisation when all the 'old' and new seven tools of quality are pervasively used to drive change and embed the learning culture.

Some also suggested a higher order approach for TQM theory building (Idris, 2000). His approach, emphasising the learning-control dimension (Sitkin et al., 1994) and a content-process approach (Reed et al., 1996) legitimises the quality orientation as a continuum of adoption of quality principles and practices to create sustainable competitiveness. Each phase of orientation is best characterised by fundamental ideas or principles, core values or intervening principles (Svensson and Klefsjo, 2000), operating principles, and programmes and tools. For simplicity, this continuum

can be reduced to converge into principle-practice categories (Dean and Bowen, 1994; Deming, 1994; Spencer, 1994; Hackman and Wageman, 1995; Hill and Wilkinson, 1995, Boaden, 1997), so as the practices truly reflect the extended principles of quality. When this linkage exists, firms can only gauge to measure real effectiveness, such as by applying scoring by self-assessment models.

Because of the diversity and compelling perspectives of quality management, achieving a consensual definition is difficult (Boaden, 1997), and making principle-practice categories hazy and not fully understood (Dean and Bowen, 1994; Grant et al., 1994; Witcher, 1994). As a consequence, many paradoxes emerge in its implementation (Thompson, 1998), which when solved and matched with the moving industry landscape can create organisational effectiveness (March, 1991; Sitkin et al., 1994; Reed et al., 1996). These underlie the calls for more empirical research to clarify how the TQM evolutionary path is related to critical success conditions (CSC) within an economic sector, industry, and era. In other words, CSC are relevant quality strategies for effectiveness and competitiveness, which are related but have a sequential event and are firm-specific. With more empirical proofs, an approach to sustainable quality strategy could be established. More needed is the longitudinal approach, because a snapshot design alone would fail to capture success conditions holistically.

Quality practices and competitiveness

Research has shown that there is strong positive correlation between quality practices and performance (Oakland et al., 1994; Flynn et al., 1995; Ahire, 1996; Hendricks and Singal, 1997; Idris, 2000) justifying that poor performance might result from practices at the lower orientation continuum (Dale, 1996; Ismail and Hashmi, 1999). It was argued that at a lower level, a company is more susceptible to poor performance and failure than at a much higher level of quality practices (Ismail and Hashmi, 1999). Also, matured TQM companies gain greater benefits from their quality programmes implementation (Ahire, 1996; Agus and Abdullah, 2000). Research has shown that a comprehensive rather than a piece-meal approach brings greater success (Flynn et al., 1995; Ahire 1996), particularly when the major concerns are directed at the contents elements which are tailored for specific sustainable performance factors within a firm (Reed et al., 1996; Idris, 2000).

Researchers have derived CSF (Flynn et al., 1995; Ahire et al., 1996; Black and Porter, 1996; Idris, 2000) spreading from manufacturing (Ahire, 1996, Ahire et al., 1996; Saraph et al., 1989; Agus and Abdullah, 2000), small and medium scale industries (Yusof and Aspinwall, 1999), higher education (Kanji et al., 1999), health care (Kunst and Lemmink, 2000), developing countries (Thiagarajan et al., 2001; Baidoun, 2001), non-Anglo-American (Chan et al., 2000). Collectively, these factors include all practices related to management commitment, education and training, feedback measurement, total employee involvement, empowerment, team-work, technological factors, customer satisfaction measurement, benchmarking, quality information and analysis, strategic quality planning, and supplier management. These main elements which represent the quality management models were further broken-down into their categories of quality initiatives, which can be self-assessed, such as in the MBQNA and European Excellence Models. On this basis, critical factors could be established by reviewing cases of quality award winners (McDonald et al., 2001).

Organisations could be classified according to the level of quality management practices (Dale, 1996). The varied intensity and diversity of practices made phases of

transformational continuum (Bounds et al., 1994; Dale, 1998). It has been suggested that practices at a higher level on the continuum increase chances for greater competitiveness (MacDonald, 1993; Nadkarni, 1995; Ahire, 1996; Miyake et al., 1996), thus ascertaining TQM as an endless destiny to excellence. Agus and Abdullah (2000) confirmed that experienced TQM companies outperformed the short-term adopters. Award-winners in the USA outperform the control sample in operating income-based measures (Hendricks and Singal, 1997). Moreover, MBNQA winners realised performance benefits after only 5-10 years of its implementation (Nadkarni, 1995). High-performing hospitals in the USA exhibited significantly higher quality orientation than did the low-performing ones (Rapert and Babakus, 1996). All these suggest that more advanced quality practices have greater impact on organisational effectiveness, and hence improve managerial commitment to further strive for effective implementation. In other words, success breeds success.

Another stream of research has identified the level of orientation in terms of core quality management practices and supporting practices, and their impact on performance (Flynn et al., 1995; Idris, 2000). These researches were driven by the urge to drive competitive advantage through quality, hence the intensity of implementation of critical elements, and the comprehensiveness of the elements implemented determine failure or success in TQM. The third explanatory variable, the interaction between the critical elements, determines the level of synergy created that reinforced one another to provide support for creating value for the customer. The fourth contributory factor is the alignment of critical factors with the firm's corporate goal, which tend to overlap with each other or be subsumed by the appropriate critical elements, when quality orientation is already embedded as a core philosophy of the business.

Conception of Sustainable Excellence

To agree on success factors for each TQM paradigm, features of that paradigm need to be understood. When companies 'jump the paradigm curve' to higher quality orbit, a different set of characteristics becomes dominant. To generate conditions for sustainability, comprehensive literature review provided success factors, failure factors, change strategies, enablers and inhibitors, and their corresponding sets of organisational culture and climate, which become necessary for transformation to occur and be sustained. Having reviewed relevant literature, conceptual and empirical writings, a model of sustainable TQM-linking proposed constructs is presented. A methodology for the empirical stage is then proposed for advanced research.

For this, and foremost, the quality orientation is operationalised as a firm's quality initiatives at both strategic and operational levels, embraced as a corporate philosophy to affect its long-term performance. Sustainable TQM is therefore synonymous with continuous practices that create internal effectiveness and external competitiveness (Zairi, 1996). After all, good strategy is concerned with the structural evolution of the industry, as well as with the firm's own unique position within that industry (Porter, 1999).

Learning from strategic management literature, sustainable TQM exists for specific environmental conditions, firm-specifics, and will erode if not continuously renewed. From a cultural viewpoint, quality initiatives stay in vigour when they are embedded into the fabric of the day-to-day operations. Literature also suggests that sustainability is the product of efficiency and effectiveness in TQM implementation. This means that implementing the right critical factors efficiently is compulsory. In

other words, sustainability is a cross-product between comprehensiveness of critical factors, because TQM is a systemic methodology, and intensity of implementation of critical elements (Ahire, 1996), because being efficient and effective are conditions for achieving operational excellence or best practice (Porter, 1999). Critical factors fall into a multi-tier model with the highest emphasis on leadership roles (Thiagarajan et al., 2001), consistent with the concept of transformational leadership as stressed by Deming (1993).

The issue of sustainability takes the centre stage of academic discussion at the beginning of the 21st century in disciplines such as sustainable development (Larson et al., 2000; Reinhardt, 2000), and quality orientation (Miles et al., 1995; Mohr-Jackson, 1998; Idris, 2000). Although the concept of sustainability in terms of quality initiatives is relatively of recent interest, its root had been long advocated by writers such as Deming (1982), through his "constancy of purpose" and "stability of society". However, much advanced debate progressed in the sustainable development discipline covering the various frameworks on how human needs could be satisfied without harming nature (Larson et al., 2000). In the context of sustainability, for example, the incorporation of environmentally aware stakeholders into the quality system has extended the ISO 9000 system to ISO9000: 2000 and ISO 14000.

The sustainable development framework, in a way, extends the standard TQM model to include the principles of sustainability (Larson et al., 2000), which brings associated consequences in terms of role of customers, suppliers, regulatory bodies and the publics in the concept of TQM. This captures stakeholders' interest in quality initiatives. Thousands of organisations, which includes Xerox, and AT&T in the USA and Electrolux in Europe have pioneered some of these frameworks. There has been a lack of reported cases in other parts of the world, though the ISO 14000 has been adopted in many countries. For example, in 1998, ISO 14000 was formalised in Malaysia, and EMAS programmes were adopted around the same period.

Conception of TQM sustainability

Within sustainable development, sustainability is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Larson et al., 2000). Within the TQM lexicon, there has been no agreed meaning of sustainable TQM. Conceptually, TQM creates transitional states of excellence that deliver effective performance and, in turn, sustainable competitiveness. This implies that sustainable TQM precedes sustainable competitiveness.

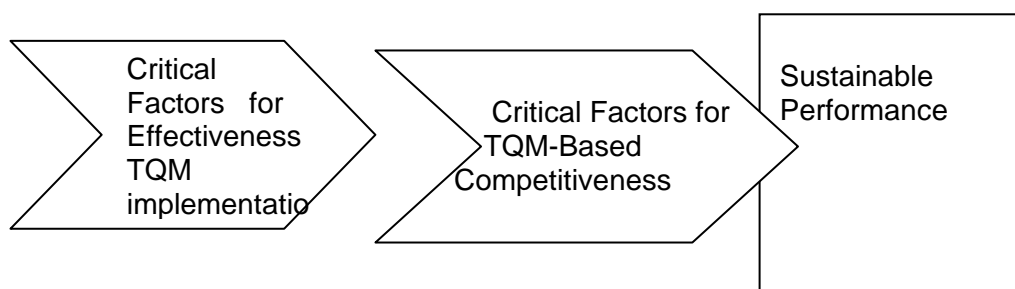
The parallel term, business excellence, emphasises the aspect of competitiveness enhancement (Savolainen, 1997; 2000), although the use of excellence to replace quality in EFQA was heavily criticised by Dale et al. (2001), fearing the shift might affirm TQM as a fad. In terms of matrices, achieving 750 points or higher in EFQM assessment indicates business excellence (Dahlggaard et al., 1998). In a subsequent article, Dahlggaard et al., (1999) proposed a '4P' definition of business excellence related to people, partnership, process and product, which they claim has gained a wider acceptance and to closely consistent with the European model of Excellence.

TQM sustainability could be viewed from effectiveness of TQM implementation that is based on prescriptive critical factors, and effectiveness of critical factors that generate sustainable excellence. In addition to a pioneering work by Idris (2000), the work of Kunst and Lemmink (2000), in comparing between high and low hospital

performance, concluded that there are different explanatory variables for progress in TQM implementation and for business performance.

Sustainable performance is a multi-dimensional concept, incorporating a balanced measurement of items of direct influence on competitive advantage, and thus the concept is contingent on sustainable environmental factors. It is an approach to measuring output performance against employed strategy from a long-term horizon. This two-stage (effectiveness-competitiveness) relationship suggests two types of critical factors exist, but at consecutive levels or perhaps integrative as shown in Figure 1. This two-stage analysis represents a TQM content-process approach to delineating critical factors for sustainable performance (Flynn et al., 1995; Reed et al., 1996; Idris, 2000).

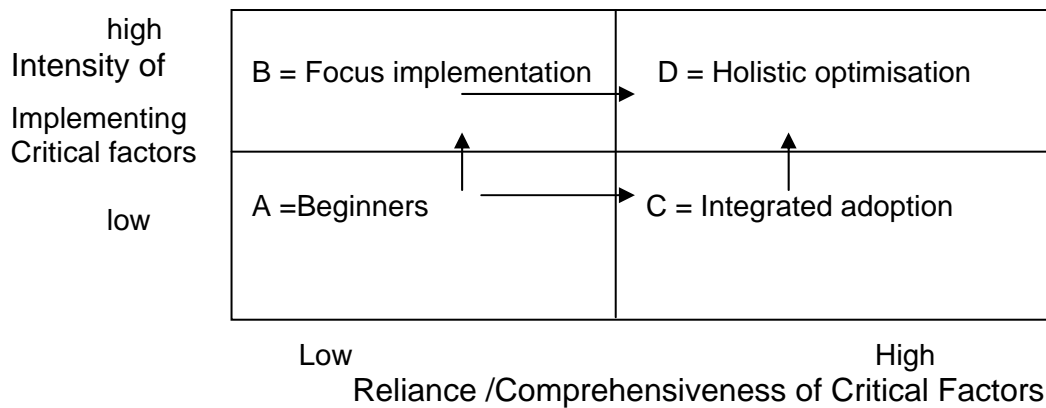
Figure 1: Critical Factors for TQM Implementation and Competitiveness



In this paper, we adopt the concept of TQM life-path (TQMLP) in order to investigate the conditions for TQM sustainability. The evolutionary path of quality management began in the early 1990s (Feigenbaum, 1956), incorporating primarily changes in managerial style (Deming, 1993) which can be symbolised by Introduction, Growth, Maturity, and Sustainability stage (IGMS). Adopting the field-force technique delineates the comprehensive enablers and inhibitors for each stage of TQM life-path.

The introduction stage can be equated to the inspection and quality control phase. The growth begins with adsorption of SPC and employee involvement to transform early stage quality management to TQC. This is later followed by wider applications of the concept of quality in service and thus brings the service quality era into TQM. The maturity stage is characterised by application of three levels of quality tools, including initial benchmarking and reengineering, making the concept of process management a common language in most organisations. This era was rampant in the early 1990s. In late 1990s, TQM began to absorb newer concepts, such as learning organisation and market orientation. As a result, today's TQM or modern quality management is an integrated improvement framework for sustainable performance. The integrated TQM benefits from the synergies of multiple improvement approaches and cost effectiveness in their concurrent implementation. The synergy mapping of TQM implementation is proposed in Figure 2.

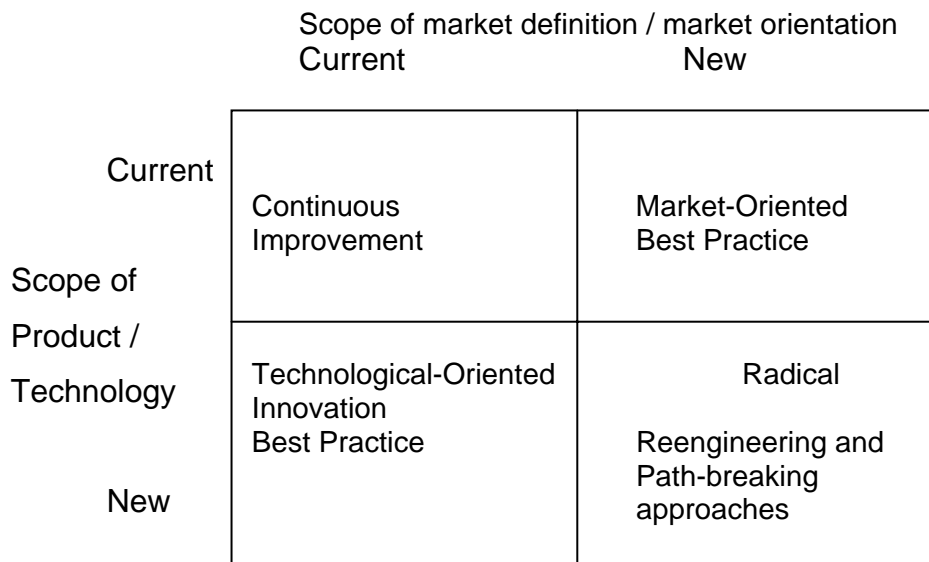
Figure 2: Synergy mapping of TQM strategy



Different strategies are usable to move from one stage to the next. Functional excellence could be achieved when a firm intensively improved any element of its critical success factors, such as design or delivery as appropriate. In order to move into a state of sustainable excellence, a firm might use multiple approaches to quality management, including reengineering and organisational learning. This is possible because history has shown that quality management has accommodated continuously to circumstances, and hence adopted new methods and tools (Dahlgaard, 1999).

The intensity of a TQM success factor should be assessed in terms of its immediate consequences, such as learning rate, innovation of new product or process, best practice goals achieved, and sustained continuous improvement culture in general. On the other hand, the comprehensiveness scale includes nature and degree of synergy achieved, integration of quality principles, and matching of critical factors with the strategic objectives of the firm. Figure 4 illustrates strategic choice of improvement approaches under the TQM umbrella using Ansof's (1979) product market matrix concept.

Figure 3: Strategic implementation of improvement approaches



TQM success and failure

Many authors (e.g. Harari, 1997; Gurnani, 1999) have discussed the success and failure of TQM implementation and proposed what constitute criteria for effective TQM. Critical success factors are those elements based on quality principles that should be present either as a tool, programmes or cultural, and infrastructures that influence the implementation of quality initiatives at the workplace (Zairi and Leonard, 1994). From these ad hoc definitions, organisational effectiveness it is thought, could be achieved by matching process performance with strategic goals - selecting critical processes that add value to business excellence (Dervitsiotis, 1999). Assessment of total performance therefore must rely on critical success factors.

Research has shown that reasons for TQM failure are numerous. Among them are lack of relevant measures for, or understated, cost of quality (Lakshmi and Roa 1996), poor initial planning, higher employee turnover, cultural difference between the management team (Gurnani, 1999), top management personality and preferences, resistance to change, and TQM environment (Krumwiede and Lavelle, 2000). These factors vary from company to company, and there has been no focused study done on the criticality of failure factors. However, generally they could be grouped as poor implementation rather than flaws in TQM contents (Zairi, 1996; Thiagarajan et al., 2001). Based on the 'important factor' lists, as well as relevant literature, a scenario for a quality paradigm could be constructed.

The each era's paradigms comprise factors such as change strategy, evolution of soft and hard elements, and critical success factors, emerging performance improvement strategies that influence adoption of TQM, such as re-engineering, benchmarking, high performance organisation, and trends in measurement.

Strategies for Sustainable TQM

The rise and fall of strategic movements such as strategic planning (Webster, 1988), BCG's experience-curve-effect, incremental improvement, downsizing and restructuring (Merrifield and Mitchell, 2000), and perhaps reengineering and 'Traditional TQM' sum up that those contemporary emphases, once sufficient to yield short-term competitiveness, are now no longer capable to shield that advantage from competitive pressure in the e-knowledge world. Firms need a holistic review and continuous innovation of strategy to match a their resources to the requirements of the future-oriented marketplace (Hamel and Prahalad, 1994), which involves making a tough choice about what you will do and what you will not (Porter, 1999).

In terms of TQM sustainability, making TQM a fabric of how a business is run is paramount to continuous success. Despite research having shown positive linkage between TQM and bottom line (Oakland et al., 1994), each individual organisation must understand how quality processes are linked to performance measures or accountability of their organisation. This includes understanding of financial-based performance and customer-based performance measure.

Holistic TQM implementation means achieving balance between conformance to customer satisfaction and internal process improvement, without losing flexibility and creativity in business improvement. Leverage quality initiatives and knowledge to create organisational agility, could enable firms to customise their mass customising strategies (Zairi, 2001). It is imperative that firms keep close to customers and partners with customers to track customers' value shifts (Woodruff, 1997; Day, 1998).

This customer intimacy allows quick response to customer needs in a differentiated and co-ordinated way - differentiates customers in terms of the product they prefer, and the way they wish to acquire and experience the products.

Organisation at the paradigm edge should create an internal learning web to unite a dispersed workforce, promote unity of mental model by defining quality right, to quickly remove negative quality gaps, and create positive quality to stimulate customers (Zairi and Leonard, 1994; Kondo 2001). In the words of Porter (1999), "Companies must build advantages rather than just eliminate disadvantages."

Firm should optimise knowledge management (see Wayland and Cole, 1997) and capitalise on new research findings (Marrifield and Mitchel, 2000) or linking innovation as an outcome of quality initiatives (Nowak, 1997). For example, IP Malaysia utilises innovation to drive corporate growth, industry growth, and generate percentage of income stream from new products, and plans "phased-innovation". The company also uses global benchmarking study to set up path-breaking innovation (Idris, 2000).

There has been a continuous emphasis placed on creating superior skills and retaining employees (Hall, 1992; Pfeffer, 1994; Lawler, 2000) and optimising employee learning by sharing internal quality information and external customer information. Lawler (2000) suggested firms shifting a managerial culture to managing by incentives, to foster 'excellence employees' by tying incentives to employee contribution towards value creation. Luthans and Sommer (2000) urge that firms utilise high performance work practices (HPWP) to increase competitiveness by reducing employee turnover and increasing organisational effectiveness.

An organisation in search of sustainability should synergise efforts for internal quality initiatives and market-based initiatives (Idris, 2000). Initial research pointed to the emphasis on optimising TQM contents: reliability, processes, design, and market advantage, while simultaneously striving to be overall market-oriented. Over-relying on a specific component of market-oriented strategy, such as customer-oriented or competitor-oriented alone, could prove disastrous (Narver and Slater, 1990; Slater and Narver, 1993), because great strategies are based on lasting value propositions not transient value shifts (Porter, 1999). However, a specific quality-performance link is company-specific, therefore it is imperative that firms align their corporate goals with quality strategies to speeding up business growth. Subsequently, they should converge to synergism the conditions for growth into visible links of strategy-performance routes to sustainability.

Measuring TQM sustainability

One way of measuring performance is by meshing short-term and long-term financial and customer-based measures into an index of sustainable performance (Idris, 2000). The balanced scorecard approach permitted this where indicators could be tailored to match the proceeding strategies adopted by a firm (Kaplan and Norton, 1996). As a generic model, we propose the following measures to gauge sustainability of performance outcomes, which can be linked to individual critical factors of TQM implementation.

Financial measures:

- Relative profitability

- Relative sales growth
- Relative return on assets
- Relative market share
- Customer measures
- Relative customer retention
- Relative corporate image
- Relative new products' success rate

A performance measure measures the effectiveness of a specific quality improvement initiative. Comprehensive indicators should provide holistic assessment of the strength, continuity, and sustainability of the total quality. The “Business Balanced Scorecard Approach” which is an overall method of tracking performance focuses on both the qualitative and quantitative measures which are the main ethos of performance measurement.

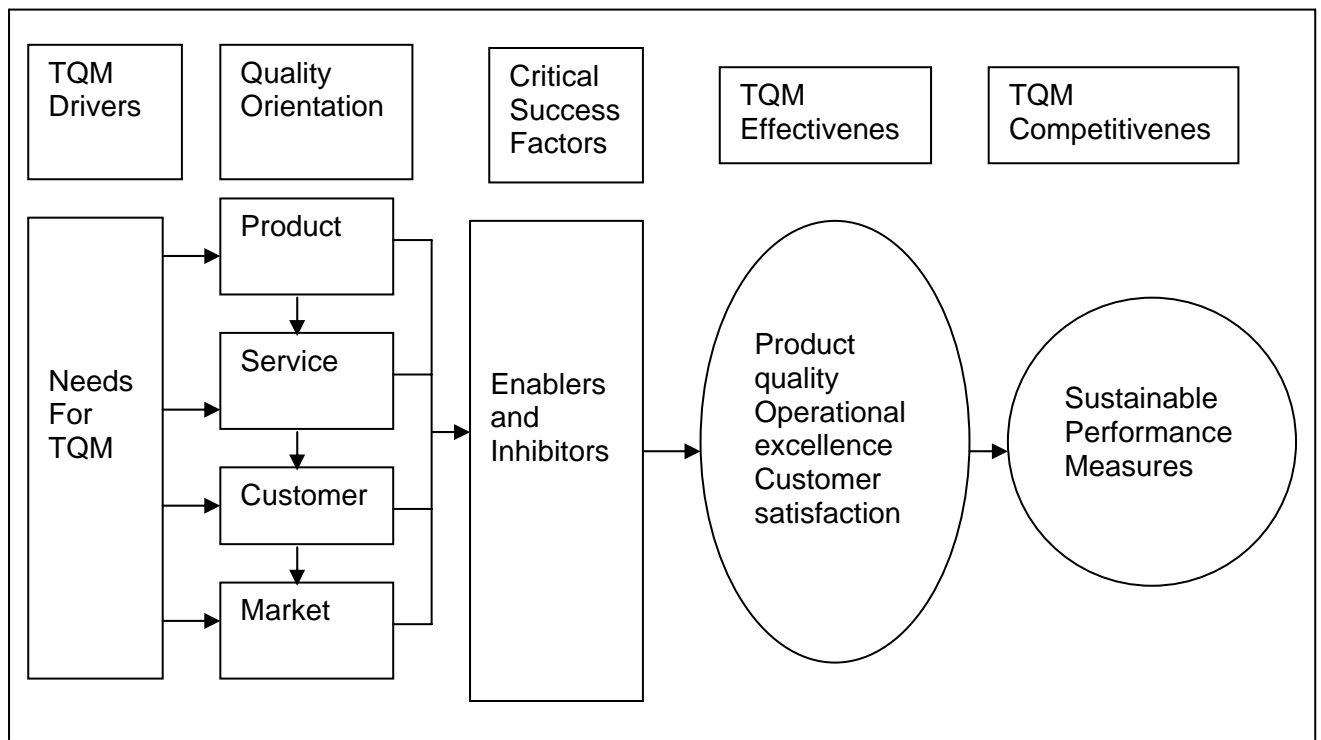
Enabling Conditions and Inhibitors to Sustainability

Enablers and inhibitors influence progress. Enablers are positive forces that impede the speed of positive progress, whereas inhibitors are negative forces that hamper the adoption of the concept, hence causing the delay of positive progress which could also result in diminishing effort on the initiatives. Enablers and inhibitors here refer to organisational antecedents such as climate, management support, and leadership style. Inhibitors are negative forces but not limited to the negatives of enablers, and these include TQM failure factors, as discussed in earlier part of this paper.

Sustainability of TQM is also about getting rid of inhibitors. Many of these inhibitors work the opposite way to the success factors. Inhibitors must be overcome or completely removed in order to facilitate the adoption of the concept, and to ensure quality initiatives can be successfully implemented. The major factors include lack of motivation for knowledge-sharing, lack of management support in quality programmes, under-estimate of the time-frame it requires for TQM to bear fruits, lack of total involvement in quality initiatives, and a host of factors related to structure, and organisational system.

Proposed model of TQM Sustainability

Any organisation could be placed on continuum of sustainability as implied by sustainability model shown in Figure 5, which links the goals, drives, and strategies and performance of TQM initiatives.

Figure 5: Model of Sustainable TQM and Performance

Description of model

The model is based on the following assumptions:

- TQM is an integrative and holistic approach for analysing the current status of continuous improvement within an organisation.
- TQM is not a “quick fix”, and thus has to be approached from a long-term perspective.
- To begin the journey using this quality process to create competitive advantage requires a well-defined strategy to allow the transition as depicted by the model.

Stages of Orientation

In coping with the changing marketplace, a firm implementing TQM develops sustainable conditions to reap the benefits and retain its competitive position. For example, the Japanese have long using a low-cost strategy through utilising the experience-curve effect, hoping the volume of its global business provides sufficient return. This strategy is no longer sufficient in the knowledge-based economy, when speed and being ahead in information is the key to competitiveness (Marrifield and Mitchel, 2000).

The concept of orientation implied in this model therefore reflects the degree and nature of the organization’s adaptation to a specific environmental context in which the firm operates (Miles et al., 1995). As the adaptation is time-dependent, the road to TQM requires gradual paradigm shift or jumping the 'paradigm curve' that takes into account the four significant transitional periods: “Production, Service, Customer and Market Orientations”.

Scenario Development for each era

The objective of constructing a priori scenario of each TQM life-path is to help in clustering organisations into groups with differing emphasis. This construction is anecdotal in nature, and is based on selected reviews of secondary cases of various stages of companies implementing TQM. In this paper, the scenarios are meant to be non-exhaustive as this could vary to a great extent, therefore future research should build further on this approach.

Scenario 1: Blitz factors

Organisations at this stage tend to manifest inward-lookingness, where emphasis is on internal efficiency, product focus, low-cost producer mentality, and using control-oriented TQM goals, thus the ideology of TQM founders centres around traditional continuous improvement. Though companies might claim to have practised TQM, a business as usual attitude prevails and a high chance of TQM failure is expected.

Scenario 2: Certification fever

The organisation at this stage begins to adopt ISO 9000, thus TQM is synonymous with quality assurance. They are inward-looking, and most TQM initiatives are targeted at operational excellence in terms of internal efficiency measures. Documentation begins to take shape, and continuous improvement is nascent. Many of them perhaps have five years or less experience in TQM or ISO 9000. Managers might still think TQM is a fad. They might view customers as current users or suppliers.

Scenario 3: Piece meal drips

Early adopters of TQM tend to practise various initiatives and some might encounter resistance to change. The rise and fall of TQM happens at this stage, the successful implementation of particular initiatives prepares them for the next change. They achieve partial success. Some abandon it all together. During this stage, organisational emphasis might change from technical quality to rhetoric (Zbaracki, 1998).

Scenario 4: Transformed stage

The advanced TQM companies tend to benefit more from TQM implementation. Various initiatives are implemented, but getting more focus, where quality strategies are integrated to business goals and corporate strategy. They achieve success from effective TQM implementation and might look for implementing a self-assessment model to improve performance continuously. Here, firms have a high concern for customer and market knowledge. At this stage, firms display high market orientation and a good history of innovation, success on new products, high reputation, and brand equity. Many of them are exemplars of best practice and market leadership.

Proposed empirical study

An empirical study to verify the model could be done by questionnaire survey of TQM companies within a market economy. A pilot stage research is recommended to obtain the scope of understanding of the concept of sustainability within an industry. Studying secondary cases of quality management implementation over many years could generate the longitudinal data set. This will include the winners of MBNQA, EFQA, and the Deming Prize. If time permitted, primary data collection for targeted companies could be carried out as an exploratory stage. Next, the survey is to confirm the critical success factors for each era. The instrument should be designed to discover the paradigm shifts necessary for each the transformational path.

Research Propositions

Having establish the research model and methodology the following hypotheses are proposed for empirical fieldwork:

1. TQM implementation is an evolutionary rather than a revolutionary process
2. TQM implementation process is constituted of soft and hard elements
3. TQM implementation requires a series of transformational changes
4. TQM process has to be integrated to business management
5. TQM implementation is measured through inside-out and outside-in measures

Conclusion

The paper reviewed TQM critical success factor related to the environmental context of the industrial eras. Having defined TQM sustainability, and traced the quality paradigms along TQM life-path, conditions for sustainability are discussed. The paper also highlights some initial strategies for sustainability, drawing primarily on past empirical and conceptual writing. A proposed sustainable model is presented, linking TQM implementation and competitiveness. Hypotheses and research constructs are generated to help further work in solving the growing concern for TQM sustainability.

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