

TQM: A COMPETITIVE WEAPON FOR THE UK CONSTRUCTION INDUSTRY?

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Although previous research has shown that sustainable competitive advantage can be gained through people with Total Quality Management helping them develop and maintain that advantage, the emphasis has mainly been in manufacturing industries. Furthermore other previous studies by researchers into competitive advantage have evolved around strategic planning; (Betts and Ofori; 1992, 1994); information technology; (Bakos and Tracey 1986) proposed a casual model linking the application of IT and the creation of competitive advantage. (Tan 1996) and Information systems (Johnston & Vitale 1988). Absence of an in-depth study exploring the linkages between competitive advantage and TQM in the UK Construction Industry has been the motivation for this paper. As Powell (1995) opines, TQM's impact on strategic management research remains unclear and under-examined, and that the existing empirical studies of TQM performance - intended to help managers implement TQM more effectively-lack rigour and theoretical support. Other findings employed a small sample size thereby limiting the scope of the research.

Keywords: Competitive advantage, construction industry, construction operational environment, TQM.

INTRODUCTION

A literature review revealed that successful businesses whether in the manufacturing or construction industries are engaged in making and taking opportunities. Hardy (1983.30) states that the development of a competitive advantage automatically creates an opportunity, and so the reasoning may be modified to: 'Successful businesses are engaged in the creation and exploitation of competitive advantages'. TQM is one such management concept that can create a competitive advantage and it has been applied to the manufacturing industry with much success. (Mohrman, *et al.* 1995). It has been hailed as a way of managing to improve the effectiveness, flexibility and competitiveness of a business as a whole. According to Tenner (1992), capturing the competitive advantage offered by Total Quality Management is possible in all types of businesses, from manufacturing through to services. The techniques can be applied to all functions within an organisation, including information systems, marketing, finance, engineering etc. This paper addresses the issue of how organisations in the construction industry can compete based on the implementation of TQM.

The need for TQM is emphasised by the fact that "Companies must institute Total Quality Management (TQM) or become non-competitive in the national and international construction and engineering markets within the next five to ten years" (Burati 1990.126). The importance of TQM is evidenced by the fact that, failures in

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the Construction Industry are due to design (50%), Constructional faults (40%) and product faults (10%), Building Research Establishment (BRE, 1982). Therefore in order to reduce the occurrence of such failures and at the same time remain competitive (in terms of increased profitability), TQM should be pursued actively in the Construction Operational Environment.

Research in the field of construction management, and in particular appertaining to TQM is not utilised to its full potential. This view is supported by Usilaner and Dulworth (1992) who note that while TQM is popular, little research has been undertaken to determine whether organisations that implement TQM have improved their performance and competitive position in the market place. It is not only the construction industry which is reluctant to conduct research, as Wilkinson and Witcher (1991:50) observe, "The academic community is still showing a sceptically-based reluctance to research TQM issues, and until this happens then it seems unlikely that more substantial work into fundamental issues will be undertaken". The Henderson Committee set up by DTI in 1992 to study the feasibility of improving the performance of British industry through TQM recommended that improving management procedures at all levels was vital for an improvement in the construction industry's performance, and needs to be part of a drive towards TQM. The most recent studies show that despite the significance of quality to a firm's competitive position in the marketplace (which has been emphasised for years), the contribution of quality to business performance has been largely unexplored. (Foraker *et al.* 1996).

The first part of the paper describes the application of TQM in the construction industry and the general perception of why the concept is not being implemented. An overall framework for achieving a competitive advantage through a TQM methodology is explored and various definitions of sustainable competitive advantage are presented. The second part focuses on the impact of TQM on the construction industry's operational environment and concludes by establishing the requirements for attaining a competitive advantage.

AIMS AND OBJECTIVES OF THE PAPER

The main aim of the paper is to examine the true relationship/linkages between the attainment of a competitive advantage and the implementation of TQM in the construction industry. The objectives can be summarised as follows:

1. To assess the impact of TQM on the provision of a sustainable competitive advantage for construction companies.
2. To establish the necessary requirements for the attainment of a competitive advantage in a construction operational environment via a TQM methodology.

DEFINITION OF TQM

The literature is abound with definitions of TQM. Tobin (1990) defines TQM as the totally integrated effort for gaining competitive advantage by continuously improving every facet of organisational culture. While Bounds *et al.* (1992) argue that as TQM is an evolving concept that is changing as new concepts and methods are developed, with different organisations being at different stages of transforming to TQM, and requiring different forms of TQM, there can never be a universal definition.

Crosby's (1979) definition of quality is 'conformance to requirements' which he states can only be measured by establishing the cost of non conformance. Crosby succinctly

sums up quality management in one word, prevention, which should replace the conventional view that quality is achieved through inspection, testing and checking. Prevention is the only system that can be utilised according to Crosby, and by this he means 'perfection'

In Construction terms, the digest of data for the construction industry provides the following definition;

TQM is a management philosophy which aims to produce an improved performance from a project team resulting in better quality products & services, delivery & administration, which ultimately satisfy the client's functional and aesthetic requirements to a defined cost and stated completion time. In order to accomplish this, the client has to accept the responsibility associated with being part of the project team.

It is evident from the above definitions that, the common denominator of quality is 'meeting the customer's requirements'.

THE KEY PRINCIPLES OF TQM

The principles of TQM embrace the concept of customer/supplier relationships existing both within companies (between one person or department and another) and between companies. At each of the interfaces there must be a dedication to meeting the stated requirement with perfection being the only accepted objective. Issues to be addressed as principles of TQM are; leadership, commitment, total customer satisfaction, continuous improvement, total involvement, training and education, ownership, reward and recognition, error prevention, co-operation and teamwork (Oakland, 1990)

The key principles of TQM can be applied to the construction industry in order to improve the productivity, employee morale, customer satisfaction as has been the case for the manufacturing environment.

TQM IN THE CONSTRUCTION INDUSTRY

Oakland & Aldridge (1995) established that the construction industry is associated with a patchy reputation, with many projects that are not completed on time. Similarly Chileshe (1996) showed that most organisations in the construction industry are quite happy with accreditation to ISO 9000 series rather than pursuing TQM programmes, among the reasons given for non-implementation of TQM was that ISO 9000 series provided enough of a "culture shock for employees", secondly due to the current industrial climate, particularly in the construction industry, most directors had more 'pressing' matters to consider, such as survival.

The construction industry has been reluctant to embrace the full concept of TQM. Schriener *et al.* (1995) points out that construction, historically is an industry reluctant to change, but is now trying to catch up with the Total Quality Management revolution that has transformed many businesses.

Earlier studies indicate that the nature of the industry in itself creates problems for effective quality management systems. Grover (1987) notes that when the construction industry is stripped to its basic elements, it's one that designs and assembles structures made up of other industries, a task that involves formidable problems of organisation.

His sentiments are shared by Pheng (1994) who opines

“ The nature of the construction industry is however, unique as most building Projects encompass the participation of numerous parties, including design consultants, contractors, building materials, manufacturers and suppliers ”

Here, Pheng is advocating that we need the integration of all parties involved in a building project for quality to be achieved.

However some organisations are beginning to see the positive aspects of TQM. One contracting organisation has equated the cost, inefficiency and waste in the contracting industry as being equal to giving away a house a day.

WHAT IS A SUSTAINABLE COMPETITIVE ADVANTAGE?

The essence of competitive advantage is the conversion of superior skills and/or resources into positional advantages, which in turn create positive outcomes (Day and Wensley 1988). A competitive advantage is sustained only if it continues to exist after efforts to duplicate that advantage have ceased. (Lippman and Rumelt 1982; and Rumelt 1984). Since there is no pre-requisite for TQM registration appertaining to construction firms, it can be said that if a firm has TQM then this in itself is a source of competitive advantage. Achieving sustainable competitive advantage depends on whether TQM is imitable or not.

Hardy defines competitive advantage as:

“A competitive advantage is quite simply an advantage your competitors do not have. once they have access to the special formulation, the new process, the high speed machinery, or whatever your advantage is, then it is no longer a competitive advantage” (Hardy, 1983.29).

THE LINKAGE BETWEEN TQM AND COMPETITIVE ADVANTAGE

From construction firms surveyed in a recent research project, only 4 out of 22 had adopted TQM reflecting 18.8%, with only 1 organisation currently evaluating the implementation process. In response to whether the implementation of TQM had provided a competitive edge, 50% stated that it had. All four of the organisations implementing TQM agreed that it improved their efficiency and effectiveness (Chileshe, 1996). In the words of one contractor, pursuing TQM had resulted in them being on more tender lists. However, there are limitations to the study conducted in that the sample of respondents was small. This paper addresses the majority of issues for an on going research project that involves case studies, in-depth interviews and questionnaires. The findings are yet to be published. However, a literature review has established that there are linkages between TQM and competitive advantage.

During the onset of the recession of 1992 in Australia major problems arose in the building/construction industry. Hoffman (1992) identifies these as, the economy, government reforms, interest rates and the lending market, shortage of labour and lobby group pressures. However, he points out that while some companies had ‘gone to the wall’ others had profited, improved and gained in strength during the same period. His study deals with the positive elements common to those companies that had profited. The common element being TQM. This assists in verifying the hypothesis that TQM improves the efficiency and effectiveness of an organisation.

Oakland (1993), as cited by Ghobadian and Gallear (1996) reported the results of a study that compared the performance of 29 companies practising TQM, along seven keys financial indicators for a 5 year period, with a corresponding industry median. The study showed that the performance of all the companies that had adopted TQM exceeded their respective industry's median performance.

Dean and Evans (1994) provided argument about the relationships between TQM and competitive advantage by linking improved quality with higher prices and improved market share.

THE IMPLEMENTATION IMPACT OF TQM ON CONSTRUCTIONAL RELATED ENTERPRISES

Porter's (1980) framework for the analysis of competition in specific industries shows that an industry has a high level of competitive rivalry when:

1. it is easy to enter
2. Both buyers and suppliers have a bargaining power
3. There is a threat from substitute products/services.

Although Porter's analysis of competitive forces does not specifically address TQM, it can provide a framework for establishing the role that TQM can play in an organisation's competitive strategy.

The structural implications of TQM for the construction industry are addressed by the following questions:

- Can TQM be utilised to build barriers against new entrants to the industry?

The barriers of entry are largely dependent on the size of the organisation. Small and medium sized organisation may gain entry into the construction market, they are however likely to face competition from other smaller firms wishing to become suppliers to large organisations. This is due to the increasing demand for a higher quality of service from large organisations. (Ghobadian and Gallear, 1995). TQM could provide a barrier if clients insisted that it be a pre-requisite for entry onto tender lists.

According to marketing theories, when new companies enter any industry, the market shares of original firms are likely to shrink, and each firm's demand curve becomes more elastic. Sigouras (1994) offers the solution to this problem as that of product differentiation and TQM is one of the best ways to achieve this advantage.

- Can TQM change the basis of competition?

Competition in the construction industry is no longer just between firms from the same sector but from different sectors as well. Hasegawa (1988) noted that with the interface between the construction and non-construction industries growing increasingly wider, it exposes contractors to competition from a greater proliferation of outside companies. Mohrmam *et al.* (1995) established a correlation between various market conditions and the application of TQM practices. The practices included organisational approaches such as quality improvement teams; quality councils, cross-functional planning, self inspection, direct employee exposure to customers, collaboration with suppliers in quality efforts, just-in-time deliveries; and work cells. Various improvement tools such as the use of statistical process control techniques by front-line employees, process simplification, and re-engineering; were

also evidenced. Measurement systems such as customer satisfaction and cost of quality monitoring also played a vital part. Their studies showed that companies experiencing foreign competition and extreme performance pressures were more likely to use most of the TQM practices, tools and systems. This they suggest provides evidence that competitive pressures have led to the adoption of TQM.

Betts and Ofori (1992) also argue that as trade barriers come down, construction enterprises in each country will face real competition from firms from other countries, even for small construction projects. The government has acknowledged the problems of the Construction Industry. In the report (Construction Procurement by Government), which investigated 20 building projects, backs a scathing attack on the building industry by Sir Michael Latham. It accuses the construction industry of lacking customer focus, and being ready to use any excuse to pursue so-called claims against government departments, and of being fragmented, divided by poor communications, and slow to adopt modern technology. (The Guardian, 8/11/95). The report calls for moves away from the usual practice of awarding tenders to the lowest price and instead giving it to the best designers and suppliers who could provide the best service.

- Can TQM change the balance of power in supplier relationships?

Many companies in the manufacturing industry ensure the quality of their component delivery by requiring suppliers to adopt TQM programs. (Powell, 1995). Similarly in construction, some owners & contractors have been requiring their suppliers (vendors) to implement TQM if they wish to be considered for future work (Mathews and Burati 1989)

Ghobadian & Gallear (1996) identified that small and medium sized enterprises (SMEs) were often suppliers of goods and services to larger organisations and in order to remain competitive, they would have to consider the application of TQM due to the increasing demand for higher quality from the larger organisations .

The thoughts of Ghobadian and Gallear are corroborated by Moreno-Luzon (1993) who comments that if a small firm wants to become a supplier to a large company, the increasing demand for quality by the latter creates a strong influence on the former to consider the application of TQM.

Organisations should *create supplier partnerships* by choosing collaborative ventures on the basis of quality, rather than solely on price (Gummer 1996). Companies today are not only placing demands on their own organisation to become world class suppliers they place equally heavy demands on their own suppliers to become world class. (Steingraber 1990).

Moreno-Luzon identifies other factors influencing the spread of TQM between small and medium-sized firms as, the pressure of costs, increasing competition, and more demanding customers requiring small firms to implement TQM. However, aware of the importance of quality in improving the competitiveness of the local economy, some public institutions promote and facilitate the efforts of small firms to take on this innovation.

In conclusion, Grocock (1994) as cited by Larson & Sinha (1995) observed that buyer power over the supplier, and lack of buyer trust in the supplier, could spark quality improvement efforts. He proposes future research into the role of *inter-*

organisational (buyer/supplier) relationships, including co-operation, trust, power, and conflict in quality/productivity improvement.

In order to explore the impact of TQM on sustained competitive advantage, the nature of competition has to be examined under the assumption that organisations have different amounts of physical, human and organisational capital.

THE REQUIREMENTS FOR ATTAINING/MAINTAINING A COMPETITIVE ADVANTAGE

The requirements may be classified by considering the following proposed elements of competitiveness.

- a. Timeliness
 - b. Quality
 - c. Affordability
- (Sheldon *et. al.* 1991)

a) Timeliness :

This has always been an area of concern in the construction industry. Jones and Cockerill (1984) highlight two aspects of performance for which construction has been much criticised as time and cost overruns in contract completion, and the innovative performance of the industry. They argue that cost and time overruns are numerous but are in part concerned with the level of site efficiency in getting men and materials on site on time and completing work on schedule. Another area of concern often cited by researchers is the lack of trained manpower in the construction industry. TQM emphasises the importance of training and could therefore resolve this problematic issue.

Hillebrandt (1984) describes the construction process as often being fraught with disruptions and delays.

- b) **Quality :** Will the product satisfy customer requirements in terms of durability, aesthetics and reliability
- c) **Affordability :** Most construction costs are established before the contract commences however cost overrun's and claims from the contractor could be passed on to the client.

According to Sheldon *et al.* (1991) the above three dimensions largely determine the value of a product to the customer.

Barney (1991) suggested that firms obtain sustained competitive advantages by implementing strategies that exploit their internal strengths, through responding to environmental opportunities, while neutralising external threats and avoiding internal weaknesses.

TQM works by inspiring employees at every level to continuously improve what they do, thus rooting out unnecessary costs. The competitive advantage results from concentrating resources on controlling costs and improving customer service (both internal and external). Dean (1995) states the challenge to obtaining a competitive advantage as being able to holistically define the nature of quality and then rigorously implement a form of integrated product and process development (IPPD) which will attain the defined quality.

CONCLUSIONS

TQM enables a construction company to fully identify the extent of its operational activities and focus them on customer satisfaction. Part of this service is the provision of a significant reduction in costs through the elimination of poor quality in the overall construction process. This paper has examined the structural implications of Total Quality Management for the construction industry and its effect on rivalry within the industry, its impact on the industry's relations with its customers and suppliers, and its implications for prospective entrants and substitute products. It has provided empirical evidence through literature review that TQM can provide a competitive advantage.

In conclusion, it can be stated that although TQM was originally designed for manufacturing industries, it can be applied to construction related organisations, and in so doing empowers the host organisation in the attainment of a competitive advantage. TQM provides an holistic framework for the operational activities of construction enterprises.

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