THE RELATIONSHIP BETWEEN ORGANISATIONAL PERFORMANCE AND TOTAL QUALITY MANAGEMENT WITHIN CONSTRUCTION SME’S

P. WATSON AND N. CHILESHE

School of Environment and Development, Sheffield Hallam University, City Campus, Howard Street, Sheffield S1 1WB, UK

ABSTRACT

The importance of Total Quality Management (TQM) for Small and Medium-sized Enterprises (SME’s) is widely acknowledged by various authors (Quiz and Padibjo 1998; Barrier 1992; and Ghobadian and Gallear, 1996) who state that SME’s are often suppliers of goods and services to larger organizations, and therefore a lack of product quality from SME’s would adversely affect the competitive performance of larger organisations. This study seeks to understand whether organisational performance is directly linked to the adoption of TQM. Empirically identified sources of competitive advantage are presented along with the necessary conditions for attainment. The literature review draws extensively from the Journals of Operations Management, International Journal of Quality and Reliability Management as survey-based studies in POM have paid more attention to organisational performance. TQM is an emerging field in POM studies. This paper’s contribution will be the testing of the Construction Industry Board’s Working Group 11’s proposition that the implementation of TQM by construction organisations provides a means for achieving the 30% increase in productivity required by the end of this year.

Although Quality Management has been advocated, there is no research to date to underpin the pursuit of this strategy. If such a strategy did not lead to the attainment of the set objectives, then construction related enterprises would be wasting valuable organisational energy. This would in fact detract from obtaining an increase in productivity. The results of this research project will therefore be of interest to practitioners, as the positive outcome of the verification of the strategy would vindicate Working Group 11 and add impetus to the implementation of TQM in particular to construction related SME’s. This study adopts the European Union classification of SME as organisations having up to 250 employees.

KEYWORDS

Total Quality Management; Construction Industry; SME’s; Operations Management; Organisation Performance.

INTRODUCTION

The focal point of the research project is on the opportunities and benefits associated with Total Quality Management (TQM), and in particular, its effectiveness for Small and Medium-sized Enterprises (SME’s) in enabling the attainment of a sustainable competitive advantage. The rationale for investigating SME’s is based on the fact that over 95% of construction companies employ fewer than 10 people, and over 50% of the labour force is self-employed. Whereas previous research has concentrated on large organisations, it is evident that excluding such a group from any research would be folly, as they perform an important role in the UK economy. Though the above figures cited relate only to the construction industry, on a national scale, SME’s account for approximately 99.8% of total UK business (DTI, 1997) and support approximately 67.2% of total UK employment (DoE 1997). A relatively high level of quality is a key factor in the attainment of a superior sustainable competitive position. Hardy advocated 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 advantage.”
Research in the field of construction management, and in particular relating to TQM, is not utilised to its full potential. This view is supported by Usilaner and Dulworth (1992) who noted that while TQM was popular, little research had been undertaken to determine whether organisations that implemented TQM had 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) observed, “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 come about.” 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 needed 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 contribution to business performance it has been largely unexplored. (Forker et al 1996).

The first part of this paper describes TQM in the construction industry and the general perception of why the concept is not being implemented. Also, an overall framework for competitive advantage being achieved through a TQM methodology is explored. The second part of the paper concentrates on the key implementational issues of accomplishing TQM and hence obtaining its advantages.

Definitions of TQM
The literature is rife with definitions of TQM. Tobin (1990) defined TQM as the totally integrated effort for gaining competitive advantage by continuously improving every facet of organisational culture, while Bounds et al (1992) argued that as TQM was an evolving concept which was changing as new concepts and methods were developed, with different organisations being at different stages of transforming to TQM, and requiring different forms of TQM, there could never be a universal definition.

Crosby’s (1979) definition of quality is ‘conformance to requirements’ which he stated could only be measured by cost of non-conformance. Crosby summed up quality management in one word, “prevention”, which should replace the conventional view that quality was achieved through inspection, testing and checking. Prevention was the only system that could be used according to Crosby and by this he meant ‘perfection’.

In construction terms, the digest of data for the construction industry defined TQM as follows: “TQM is a management philosophy which aims to produce a better performance from a whole project team and to result in better quality products and services, delivery and administration, which ultimately satisfy the client’s functional and aesthetic requirements to a defined cost and completion time.” It is evident from the above definitions that the common denominator of quality is ‘meeting the customer’s requirements’.

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, 1993).

TQM and Competitive Advantage
Competitive advantage has been defined as:

“an advantage your competitors do not have ... once they have access to the special formulation, the new process, high speed machinery, or whatever the advantage is, then it is no longer competitive” (Hardy, 1983; page 29)
Powell (1996) showed that under the resources model, success derives from utilising economically valuable resources that other firms cannot imitate, and for which no equivalent substitute exists. Quality management can improve a small firm’s competitiveness through co-operation. (Cherkasky (1992) opined that when quality concepts were applied to every decision, transaction and business process, quality became a competitive weapon. However, processes which have the greatest impact on customer satisfaction would have to be targeted for improvement and only market research would identify the “key customer drivers” or those products and service attributes of greatest concern to customers.

Chapman et al (1997) argued that although there was a perception that a quality driven strategic advantage had a direct link with increased business performance, the latter had been difficult to achieve without the development and implementation of a TQM philosophy. Chien et al (1999) highlighted the factors related to competitive advantage under the four sub-headings of Manufacturing, Marketing, R&D and Engineering and Management. This research draws heavily upon this model and applies the factors adopted under management as follows:

- management competence;
- planning and control systems;
- nature of organisational culture and values;
- quality of corporate staff;
- capability for negotiation and maintaining legitimacy with the operational environment and financial strength.

**Conditions necessary for Competitive Advantage**

Fahy (1996) contended that competitive advantage for service firms lay in the unique resources and capabilities possessed by the firm. Not all resources or capabilities are a source of competitive advantage. Only those that meet the stringent conditions of value, rareness, immobility and barriers to imitation are true sources. The actual sources of competitive advantage are likely to vary depending on the nature of the service, the particular traits of the firm, the nature of the industry and the country of origin.

![Fig 1: Sources of Competitive Advantage](image-url)

Source: George S Day (1990)

Fahy (1996) concluded that service firms must seek to identify the skills and resources they possess and they must satisfy the above criteria in order to realise a sustainable, competitive advantage.

Similarly, studies conducted by Piercy and Morgan (1996) showed that the linkage between a quality strategy and competitive advantage, though pursued, were never understood within the organisations involved. Improving competitiveness is one of the primary goals of quality management (Rao et al, 1997). Therefore small and medium sized construction firms need to identify their sources of competitive advantage in order to fully satisfy their clientele.
The Linkage between TQM and Competitive Advantage
From recent research conducted on construction firms it has been established that all of the organisations implementing TQM had improved their efficiency and effectiveness (Chileshe 1996). In the words of one contractor, pursuing TQM had resulted in them being on more tender lists.

During the onset of the recession of 1992 in Australia major problems arose in the building/construction industry. Hoffman (1992) identified these as the economy, government reforms, interest rates and the lending market, shortage of labour and lobby group pressures. However, he pointed out that while some companies had ‘gone to the wall’ others had profitied, improved and gained in strength during the same period. His study dealt with the positive elements common to those companies that had profited. The common element was TQM. This verified the hypothesis that TQM improved 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 practicing TQM, along seven key 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.

The Implementational Impact of TQM in Construction
Porter’s (1980) framework for the analysis of competition in specific industries showed that an industry had a high level of competitive rivalry when:
1. it was easy to enter;
2. both buyers and suppliers had a bargaining power;
3. there was a threat of substitute products/services.

Although Porter’s analysis of competitive forces did not specifically address TQM, it provided a framework for establishing the role that TQM could play in a company’s competitive strategy.

The structural implications of TQM for the construction industry are addressed by asking the following key 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 larger organisations. This is due to the increasing demand for a higher quality of service from large organisations. (Ghobadian and Gallear, 1996). TQM could provide a barrier if clients insisted that it be a pre-requisite for entry onto tender lists.

• 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. 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. Mohrman 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 suggested provided evidence that competitive pressures had led to the adoption of TQM.
Betts and Ofori (1992) argued that as trade barriers came down, construction enterprises in each country would face real competition from firms from other countries, even for small construction projects.

- 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 and contractors have been requiring their suppliers (vendors) to implement TQM if they wish to be considered for future work (Mathews and Burati 1989).

Ghobadian and 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.

Moreno-Luzon (1993) identified 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. 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) stated 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 would attain the defined quality.

TQM enables a construction company to fully identify the extent of its operational activities and focus them on customer satisfaction. Part of this service focus is the provision of a significant reduction in costs through the elimination of poor quality in the overall construction process.

Having established the advantages of implementation, empirical research has been conducted to test some of the key elements of the implementational process. The first issue to be tested via the sampled companies questionnaire related to an organisation’s ability to respond to change. This encompasses criteria such as:
- empowerment;
- innovation;
- flexibility;
- cultural dynamics.

<table>
<thead>
<tr>
<th>Size of Firms</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td>50</td>
</tr>
<tr>
<td>Medium</td>
<td>25</td>
</tr>
<tr>
<td>Large</td>
<td>25</td>
</tr>
<tr>
<td>Total Sampled</td>
<td>100</td>
</tr>
</tbody>
</table>
Since the previous studies on this topic (Watson [1996]) there has been a great improvement for all firms in their ability to respond to changing environments. This has positive correlation with the number of firms now operating a post-modern philosophy.

Table 2: Analysis of Morphostatic and Morphogenic Processes

<table>
<thead>
<tr>
<th>Organisations as a % age having morphostatic process</th>
<th>Senior Management</th>
<th>Middle Management</th>
<th>Operational level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small 33%</td>
<td>60</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>Medium 56%</td>
<td>50</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>Large 11%</td>
<td>50</td>
<td>42</td>
<td>8</td>
</tr>
</tbody>
</table>

The above analysis in Table 2 indicates that morphostatic processes are common and the amount of proactive participation has not filtered down through the sampled firms. The true TQM philosophy requires a morphogenic culture. Therefore there are still changes required in the cultural dynamics of SME’s in order to fully obtain a sustainable competitive advantage.
Figure 3: The extent to which organisations have obtained the advantages associated with the implementation process of TQM
Table 3: Horizontal Bar Chart of Noted Problematic issues associated with Implementing TQM as identified by the sample of Construction Organisations
(Analysis of Questionnaires)

| Problematic Issues identified by the Twenty Three Construction Organisations | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 100% R
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Insufficient commitment by Senior Management</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>14</td>
</tr>
<tr>
<td>• Incorrect Corporate Culture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>• No formal Implementational Strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>• Narrowly based training</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>• Lack of effective communication systems</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>• Not Concentrating on Organisational Strengths</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9</td>
</tr>
</tbody>
</table>

**Key**  R = Response Rate
CONCLUSIONS

The application of a TQM approach to managing construction firms provides the following advantages:

- organisations are more flexible and therefore better able to cope with the demands of a changing environment;
- the attainment of team working and participation at all levels of the company;
- organisational culture becomes one of being highly motivated, flexible and proactive;
- enhanced innovation at all levels;
- improved product/service quality and thus enhanced customer satisfaction;
- increased market awareness.

Having established the various advantages of operating a TQM model, this study has endeavoured to identify the extent to which the UK construction industry has embraced the new approach. The results indicate that some progress has been made but there is still some way to go before the construction industry is on a par with that of manufacturing. Part of the problem lies in educating senior managers as to the advantages of TQM implementation.

The identified characteristics for a TQM company are essential for it to be able to operate both efficiently and effectively in a dynamic and turbulent environment. Firms require variety in their approach and hierarchical authoritarian organisations are poorly equipped to provide such variety. Only business organisations based on the TQM model with vastly reduced bureaucratic control, a rich array of horizontal communication channels, and in which personnel are given a substantial share of authority to make choices and to develop new ideas, can survive under new global market conditions.

Adopting a TQM culture takes a substantial amount of time and effort to achieve but it will allow the issues reported by Latham (1994) to be addressed.

Problematic Issues of Implementation Explained

Problematic issues:

- **Insufficient commitment by senior management.** Senior management must instill in all employees of the host organisation a desire to improve the competitiveness of the company. TQM’s three vital elements are systems, people, and resources. Successful implementation is dependent upon senior management developing and organising these key elements. Oakland (1993, page 25) advocated that “TQM requires total commitment, which must be extended to all employees at all levels and in all departments”. Therefore senior management must be fully committed to the implementational processes. This can be evidenced by senior management providing all resources required for the TQM initiative.

- **Incorrect corporate culture.** TQM requires a corporate culture based on trust and a desire to identify problems in order to eliminate them thus improving production processes. The concept of ‘empowerment’ is a vital part of the TQM philosophy. However, if a climate of distrust exists between senior management and the rest of the organisation the implementational process is doomed to fail. Organisations must understand that a truly ‘morphogenic’ change is necessary and that a cosmetic ‘morphostatic’ change will not sustain TQM. Organisational culture dictates the way a business operates, and how employees respond and are treated. Corporate culture contains such elements as a guiding philosophy, core values, purpose, and operational beliefs. These elements have to be integrated within a mission statement which interprets the cultural theory into tangible targets bounded by closed objectives.

- **No formal implementational strategy.** The implementational process should be planned, TQM is a project and therefore requires planning as a project, to treat it as an organisational bolt-on activity will lead to failure. TQM is a means of improving the competitiveness, effectiveness and flexibility of an entire company. Achieving these noted advantages requires
them to plan and organise every operational activity at all levels. This process must be part of
the strategic implementational development and not be treated in isolation. Senior management
must also understand that the benefits of implementation are not instantaneous, TQM is a long
term corporate investment.

- **Narrowly based training.** The key to a successful TQM implementation is having staff that
  are competent to execute their allocated tasks. If employees are empowered to plan and perform
  work activities it is vital they possess all the necessary skills and competencies. A primary
  function for a construction related enterprise seeking to gain a competitive advantage is to
  implement “training and education in teamwork” (Hellard 1993. page 154). As an example, if
  staff are to participate in group discussions training in group dynamics and public speaking
  would be advantageous.

- **Lack of effective communication System.** The life blood of any organisation is
  communication and the importance of this activity cannot be over emphasised. Within a TQM
  framework all employees of the company should be able to communicate as necessary, do not
  forget the concept of ‘internal’ and ‘external’ customers with its requirement for effective
  communication mechanisms. If employees are to become part of the organisational decision
  making process they need a means of expressing their views to senior management. Control
  within any organisation is dependent upon the communication systems function.

- **Not concentrating on organisational strengths.** TQM is designed to provide a competitive
  advantage based upon the host firms strengths. Senior management should not lose sight of the
  fact that sustained competitive advantages are obtained by implementing strategies that exploit
  their strengths through responding to environmental opportunities, while neutralising external
  threats and avoiding internal weaknesses. (Barney 1991). The following two standard
  corporate planning techniques can be utilised: first a Strengths, Weakness, Opportunities, and
  Threats analysis (SWOT), and, secondly, a Political Legal, Economic, Social Cultural and
  Technological analysis (PEST).

The following are offered as issues that must be addressed in order to achieve a successful
implementation process.

**Key elements for consideration that lead to a successful implementation of TQM:**
- senior management must attain a full understanding of the philosophy and requirements of
  TQM. They are responsible for establishing a quality focused organisation;
- a common vision is required by all employees of the organisation. This may be accomplished
  by adopting awareness sessions, customer surveys, benchmarking and common vision
  workshops;
- provision of the necessary resources, which include humanistic as well as financial
  requirements, education and training for quality improvements;
- the development of an implementational strategy which may be based on an incremental
  process. Senior management must review the quality management systems in order to maintain
  progress;
- designing procedural systems relating to work practices. Concentration of organisational effort
  should be placed on prevention rather than corrective actions.

**Benefits of TQM in Practice**
The advantages of applying TQM to construction projects are:
- the production of a higher quality product through the systematic consideration of clients’
  requirements;
- a reduction in the overall construction time and costs via the minimisation of potential causes of
  errors and corrective actions;
- increased efficiency and effectiveness of all personnel with activities focused on customer
  satisfaction;
• improvement in information flow between all participants through team building and pro-active management strategies.

TQM will assist in making effective use of all organisational resources, by developing a culture of continuous improvement. This empowers senior management to maximise their value-added activities and minimise efforts/organizational energy expended on non value-adding activities.

As trade barriers are eliminated, UK construction enterprises will face increased competition from overseas firms even for small projects. (Betts and Ofori 1992). The UK Government has acknowledged the problems of the Construction Industry by accusing the industry of lacking customer focus and being ready to use any excuse to pursue so-called claims against government. (The Guardian, 8/11/95). TQM enables construction companies to fully identify the extent of its operational activities and focus them on customer satisfaction. Part of this service focus is the provision of a significant reduction in costs through the elimination of poor quality in the overall construction process. This empowers the host organisation to attain a truly sustainable competitive advantage. TQM provides a holistic framework for the operational activities of construction enterprises. If a construction firm can overcome the implementational problematic issues then a sustained competitive advantage is the prize to be gained.

REFERENCES


Chileshe N. 1996. An Investigation into the problematic issues associated with the implementation of Total Quality Management (TQM) within a constructional operational environment and the advocacy of their solutions. Unpublished MSc dissertation, Sheffield Hallam University.


Hoffman K 1992. Improving business performance in the building industry through total quality management, Conference proceedings for ABIC ‘92 on efficient and effective construction in the 90’s, Australia, Gold Coast.


