

# TQM IN LARGE NORTHERN IRELAND CONTRACTING ORGANIZATIONS

**J.G. Gunning<sup>1</sup> and E.M. McCallion**

*School of the Built Environment, University of Ulster*

The designated Quality Managers of twenty of the largest contracting organizations in Northern Ireland were interviewed in a semi-structured fashion to investigate their attitudes to and perceptions of Total Quality Management. The survey, reported anonymously, found that there was little progress being made beyond ISO9001 - certificated systems towards full TQM. Indeed, some of the respondents appeared to be unaware of the concept of TQM or the principles of supply chain management. The picture has changed little since previous research by the primary author, published in 1994. Three main obstacles to effective TQM were identified: lack of commitment, poor communication and traditional cultural attitudes. The work of Latham, Egan and the Constructing Excellence movement has gone largely unnoticed by major contractors, and the industry attitude to quality does not embody the continuous improvement principles of ISO9001:2000. Recommendations are made regarding promotion of the concept of post-certification improvement towards TQM, plus much greater publicity for the work of the Constructing Excellence movement.

Keywords: contractors, Northern Ireland, quality, TQM.

## INTRODUCTION

Much has been written in recent times on the concept of total quality management (TQM), and many authors have defined it in different ways. It is the search for, and the ongoing process of, continuous improvement. Indeed, it could be said that the development of quality management itself has been continuous over the past 100 years. This has evolved from quality inspection through to quality control to quality assurance, quality management, and most recently to total quality management.

The development of a quality management system is a gradual process, in finding the correct formula for the specific needs of an organization. The manufacturing and services industries have been able to adopt quality management systems at a rate which has kept them in touch with the latest systems whilst construction has certainly struggled to achieve the same standards. 'Many organizations within construction have questioned whether quality assurance/quality management (QA/QM) is worth the investment, and critics have claimed that QA is little more than a form filling exercise, that it is a fashion that will pass, or is just a marketing badge to attract clients'. (Emmitt and Gorse, 2003) In today's marketplace, no matter what industry one is in, quality is an issue that no one can get away from. One must embrace it; one must adopt the latest quality measures and systems to enable organizations to succeed and survive.

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<sup>1</sup> jg.gunning@ulster.ac.uk

Quality measures now used in the construction industry were initially used in the manufacturing industry; for example lean production which was used by Toyota in Japan, has now been adopted in the construction industry as lean construction. McCabe (1998) has explained how, through functional or generic benchmarking, construction can learn from other industries and use some of their procedures for long-term quality gains.

## **TOTAL QUALITY MANAGEMENT (TQM)**

‘There are many interpretations and definitions of TQM. Put simply, TQM is the mutual co-operation of everyone in an organization and associated business processes to produce value-for-money products and services that meet, and hopefully exceed the needs and expectations of customers’ (Dale, 2003). TQM must include everyone involved with an organization, working towards the same goals for the benefit of customers (both internal and external). TQM is a never-ending process, because, no matter how good processes are, they can always be improved. Commitment from top management is vital to the success of TQM.

Oakland (1993) explained TQM as, ‘an approach to improving the competitiveness, effectiveness, and flexibility of a whole organization. It is essentially a way of planning, organizing, and understanding each activity, and depends on each individual at each level. For an organization to be truly effective, each part of it must work properly together towards the same goals, recognizing that each person and each activity affects, and in turn is affected by others’. Oakland’s point here is that the organization must avoid sub-optimization at all costs in order to succeed. It is important to create a culture in which concern for quality is an integral part of product/service delivery.

‘The globalization currently affecting our societies has resulted in increased economic competition, and a growing awareness of the value of total quality management (TQM) to success. Therefore, business enterprises have strengthened their efforts to achieve a high quality level, which has led to the recognition of quality as a key strategic factor in achieving business success’ (Kruger, 2001). Griffith and Watson (2004) backed this statement up when they commented, “today’s business environment is such that managers must strive for competitive advantage to hold on to their share, let alone increase it”. The construction industry of the British Isles is only recently becoming subject to the threats of globalized competition and the external influences which have faced manufacturing industries (and often practically destroyed them) over the past half-century. TQM is no longer an “optional extra” for successful construction organizations.

Price is no longer the major determining factor in customer choice; price has been replaced by quality. In a highly competitive world, customers are becoming more quality conscious. They know that inferior quality has implications long after the joy of low cost has been forgotten’. This indeed has been the case for a long time within the industry. John Ruskin (1860) commented, ‘if you deal with the lowest bidder it is as well to add something for the risk you run, and if you do that, you have enough to pay for something better... There is hardly anything in the world that someone cannot make a little worse and sell a little cheaper, and the people who consider price alone are that person’s lawful prey’. ([www.victorianweb.org/authors/ruskin](http://www.victorianweb.org/authors/ruskin))

Curry and Kadasah (2002) argued that, from looking at the works of scholars in this field, the most common elements of TQM are, Top Management Commitment,

Customer Focus, Quality Data and Information, Employee Involvement, Training and Continuous Improvement. Leonard and McAdam (2002) interviewed 19 quality managers in their study of TQM and said that the most common terminology used by these managers in referring to TQM were continuous improvement, quality and business excellence. They stated that the difference today is that we are moving more towards 'business excellence', and firms are working to be not only excellent but 'world class'. This may be true in some cases, but a lot of organizations must learn to walk before they can run, and have a process of continuous improvement in place before contemplating the voyage to become 'world class'.

For TQM to succeed there must be a foundation on which it can be built. Establishing a QMS provides this. An organization cannot truthfully state that they are going to pursue TQM without firstly establishing a recognized QMS. When this is in place, the organization must then continuously improve its procedures and processes; it is from here that continuously improving throughout the organization will become a way of life, and will be viewed as normal. When this is achieved, progress will almost certainly be seen and be able to be measured.

## **COMMUNICATION AND SUPPLY CHAIN MANAGEMENT**

For TQM to be successful in the construction industry there must be a vast improvement in the ways we communicate. Oakland and Marosszky (2006) refer to communication as being 'an essential facet of people management'. They go on to explain that two-way communication can establish trust within an organization, and gives people a sense of being valued by the organization and its management.

More recently within construction, we have seen a lot of interest in supply chain management (SCM). For SCM to succeed, communication plays a huge role. Everyone in the supply chain must know their own specific role, as well as the role of everyone else involved. Omachonu and Ross (2004) commented, 'quality-conscious companies are interested in the cost of poor communication, in terms of both employee productivity and customer perception and service quality'. Barriers to effective communication must be broken down if the industry is to improve. SCM may help achieve this, but the fact is that if there is bad communication, then it is impossible to produce a quality product.

## **CONTINUOUS IMPROVEMENT (CI)**

Deming described continuous improvement (CI) as, 'improvement initiatives that increase success and reduce failures', (Jurgensen, 2000). Another definition is that CI is 'a company-wide process of focused and continuous incremental innovation', (Bessant *et al.* 1994) Bhuiyan and Baghel (2005) describe CI in a generic way as, 'a culture of sustained improvement targeting the elimination of waste in all systems and processes of an organization. It involves everyone working together to make improvements without incurring any huge capital investment'.

Continuous Improvement was first started in the manufacturing and operations industry. Japanese manufacturers demonstrated how effective it was in promoting car manufacturers to a highly competitive level in competing with US multi-national organizations. As Schonberger and Knod (1994) explained, 'vigorous international competition has generated a lot of newer concepts and methods. These changes are best captured in the term continuous improvement'. They go on to explain that for it

to be effective strategically, it must encompass the 'requirements of customers, the attributes of competitors, and the organization's internal capacities and capabilities'.

Dale (2003) asked the question, 'When will an organization know when they have achieved TQM?' The answer to this is that they won't know. He explained, 'TQM is based on a continuous process which is both proactive and reactive to the changing needs, the market-place, the environment, the business and its customers and competitors; an organization will never arrive at TQM'. To enable continuous improvement, people and organizations must continuously learn from their experiences. This is best seen in today's construction industry, with the use of key performance indicators, and the use of knowledge management. A database kept by Constructing Excellence keeps records and shares them amongst the industry. This is a means by which others can learn from experience gained by other organizations, whether they are good or bad. 'If the industry is to improve, construction organizations must integrate learning within day to day work processes, in such a way that they not only share knowledge and continuously improve, but also operate efficiently and effectively in response to their changing environment. With this in mind they need to strive to become learning organizations'. (Love et.al., 2000)

## **CONSTRUCTION BEST PRACTICE**

With the lack of available literature in TQM regarding 'Best Practice' in the construction industry, it appears that TQM within the industry is in its infancy. Having said that, multi-national organizations such as Bechtel, have successfully implemented tools such as Six Sigma, based on their development of ISO 9001/14001. Any quality management system (QMS) such as the ISO 9001 standard, can form the basis to pursue TQM, and ultimately to achieve 'Best Practice'.

Since the Egan Report of 1998, construction organizations have become more aware of how to use methods of continuous improvement. Benchmarking has been widely used in the construction industry, with the use of KPI's from successful organizations used as a benchmark. Benchmarking can certainly help an organization to become more effective and efficient, and help them achieve 'best practice'. Johnston and Scholes (2002) commented, 'the shortcomings of industry norm comparisons have encouraged organizations to seek comparisons more widely, through the search for best practice wherever it may be found'. Egan (1998) suggested that benchmarking, in order to learn best practice from elsewhere, is an essential part of improvement. We have seen the Movement for Innovation (M4I), Construction Best Practice Programme (CBPP), Rethinking Construction and now the Constructing Excellence movement. Egan realized that the public sector was the construction industry's largest client; therefore he encouraged them to work 'towards becoming best practice client'. He invited government to develop a Construction Best Practice Programme, and use this 'to create a national knowledge centre for construction'. (Egan, 1998)

It is now recognized in the industry that the lowest price can cost more in the long run. Best practice organizations can only improve the industry. Everyone in the industry, as well as the client, benefits; the ultimate aim is to get it right first time, and deliver a quality product to the client. Organizations that implement TQM will almost certainly be the benchmark for the others. These organizations will operate best practice, and their processes and techniques will teach others how to move forward. To be a best practice organization today means going beyond QMS, such as ISO 9001:2000. It

means taking the organization to the next level, with the goal to be world class as a result of continuous improvement and well-managed change.

## **TQM IN THE CONSTRUCTION INDUSTRY**

Little research has been conducted on the current state or the future of TQM within the Northern Ireland construction industry. In a survey conducted by Gunning and Leonard (1994), they found that 55% of respondents 'claimed that TQM would be introduced to their organizations in the relatively near future, although less than 25% had already started'. They also found that 'over 40% saw no further benefit in TQM, and had no intention of pursuing it'. Since 1994, this has scarcely changed.

With customers now putting pressure on businesses to have ISO 9001 in order to bid for contracts, the advantage of introducing TQM beyond this can be great. Aspects that can benefit from successful implementation of TQM were described by McAdam and McKeown (1999) as, 'employee involvement/empowerment, teamwork, measurement tools, training, quality systems, and top management commitment'. ISO 9001 is only a basis on which TQM can be built. Vickers (1990) commented, 'if successful certification to ISO 9001 is seen as the ultimate goal of the firm, then the TQM process is doomed to fail'.

The ultimate aim of any TQM organization is to become 'World Class'; a level described by Dale (2003) as 'characterized by the total integration of continuous improvement and business strategy to delight the customer'. TQM may feature to some extent in the construction industry, but the industry is by no means embracing TQM in the way Japanese manufacturing industry, or indeed their construction industry, has. Benchmarking against Japanese construction may show UK and Northern Ireland how to approach and implement the TQM philosophy. It can no longer be ignored. Everyone is now competing in a globalized market.

## **RESEARCH PROGRAMME**

The aim of the research was to investigate the current perceptions of, attitudes to, and likely future developments in TQM among medium and top Northern Ireland contracting organizations. The specific objectives of the work were to:

- conduct a rigorous literature review of TQM in the construction industry
- select appropriate methodology to enable the research aim to be achieved
- devise a suitable questionnaire
- make contact with and conduct a survey through questionnaire and interviews with twenty of the largest contracting organizations in Northern Ireland, all of whom were currently certified to BS EN ISO 9001
- visit contractors and carry out semi-formal interviews using questionnaires, to discover if organizations actively pursue TQM after certification to ISO 9001
- analyse results and draw conclusions from the survey
- suggest recommendations for future development to achieve best practice

The hypothesis for the research was "The Northern Ireland construction industry is currently making little progress from ISO 9001 systems towards full TQM systems."

A questionnaire was designed to provide evidence for this hypothesis. To obtain a positive response to the questionnaires, it was decided to carry out a semi-structured interview after the questionnaires had been posted to the respondents.

Interviews were carried out with a sample of twenty of the largest contracting organizations across Northern Ireland, with only one of the 21 firms contacted refusing to participate. This was an onerous process, but the method also enabled the authors to make observations on quality methods and quality managers. This helped to add to the triangulation of the research. The first interview and completed multiple-choice questionnaire with company 'A' was used as a pilot; after this some slight changes were made to the questionnaire and it provided guidance as to how the interviews should be conducted.

## **QUALITY MANAGERS**

Of the sample size of 20, it is clear that most of the companies are now aware of the necessity to have someone directly responsible for quality. Having said that, just because a QM is appointed does not mean that the organization has arrived at a point where they can forget about quality and expect the QM to worry about it. In the research 8 of the companies had a full-time QM (40%), 8 had a part-time QM (40%) and 4 had no QM at all (20%). This is a good percentage rate and shows that the industry in Northern Ireland is making progress towards a better quality industry where everyone will benefit. There is a long way to go. A QM may have the title but must realize exactly what is involved; the job will never be totally finished. When we reach a point where great improvement is evident, the QM should push on to meet the next level in progressing the organization towards 'World Class' status.

Most of the full-time QMs appear to be employed by the larger organizations, with smaller organizations having a part-time QM or no one looking at quality issues at all. In some cases the QM was employed on a part-time basis; it was later discovered that in some cases part-time meant perhaps a couple of hours every week. In these cases it is evident that appointing someone to this position is only a paper exercise; occasionally the company feels it necessary to give someone the title, but it does not actually mean anything significant to them.

On the issue of TQM, each of the persons interviewed was assessed on a scale of having no knowledge to being a leader-someone who is up to date with the issues involved with TQM in the construction industry. It is clear that there is a problem in this area, where 50% of the interviewees had little or no knowledge of TQM. This obviously means that some of the so-called QMs have no idea about TQM, a frightening statistic in an industry where TQM has become crucial to survival and success. On the positive side 10% of people had some knowledge of TQM, with 10% being very knowledgeable about TQM and 30% being classed as a 'leader'- someone who fully understands what is required to implement and make TQM work and is up to date with the latest TQM issues and methods. Successful companies focussed on continuous improvement and on getting things "right first time". They actively sought to change, and were comfortable with Supply Chain Management concepts as a means of enhancing their performance.

It is clear that there is a gap between organizations that are committed to pursuing TQM in some form and organizations who have absolutely no commitment to TQM. In between there are a few companies who could either get better and improve, or they could easily slip the other way to become uncommitted. The majority of improvers in

this research were found to have a full-time QM; this shows the company's commitment to seriously pursue continuous improvement with someone who is aware of what TQM actually is and what is required to implement it, and who is putting it into practice in the organization.

## **QUALITY ACCREDITATION AND CULTURE**

From the research 12 companies were found to be ISO 9001:2000 certified. 5 of these companies have also been accredited by IIP, and a further 2 companies were also IIP accredited. Unfortunately it is again evident that there is a gap in the industry. The larger firms tend to be certified to both ISO 9001:2000 and IIP, while the smaller firms have no quality certification or accreditation whatsoever.

While 12 companies were ISO 9001:2000 - certified, the research revealed that only 7 of these companies are seen to actively practise the standard. This suggests that over 40% of the companies certified to ISO 9001:2000 do not fully apply it, and see the certification as merely a badge. 35% of participating organizations had no quality accreditation and the firms with quality accreditation where it means nothing to them total 25%. Hence 60% of the organizations that took part in this survey are not participating in the pursuit of quality issues at all, never mind pursuing TQM.

From the research it has been found that communication is a problem throughout the industry. 55% of the companies surveyed have problems in communicating the quality message through the organization. Some of the sample did respond to the questionnaire on whether everyone in the organization knew their position with regard to quality in a positive manner by saying 'yes', but from the interviews it was obvious that this was not truly the case.

It was a general view during interviews that top management were not committed to their people, which is a major problem as far as TQM is concerned. The larger organizations did not tend to have a high commitment and participation level from top management, but with smaller contractors, top management were seen as people who do not need to practise the quality messages in the same way as their staff. 40% of contractors had no methods in place to communicate the quality message.

All of the contractors interviewed felt that there are cultural problems in the Northern Ireland construction industry; indeed it was evident that some of the interviewees had cultural problems themselves and were avoiding the issues of change in the construction industry. Nevertheless, 75% of the sample claimed that their organizations have effective procedures in place and staff are doing all in their power to implement a quality culture among their people. A similar 75% of the sample saw TQM as being beneficial to everyone in the organization. It was of concern to find that a quarter of the sample did not recognize that TQM must involve everyone.

The Constructing Excellence movement arose out of the Egan Report (1998), and promotes quality as one of its key principles (McCabe, 2000). It was found that 70% of the contractors surveyed had never heard of the Constructing Excellence movement. Of the other 30%, only half of them were aware of the existence of its regional centre in N Ireland. With regard to literature and updates on quality issues within the industry, only 20% claimed to be receiving updates and relevant literature.

## **OBSTACLES TO TQM AS SEEN BY FIRMS**

The main obstacles seen as obstructing TQM in Northern Ireland are listed below in priority of the main obstacle first:

- 1 Lack of commitment from management
- 2 Lack of communication in organizations
- 3 Cultural attitudes ('this is the way it has always been done')
- 4 Lack of training
- 5 Lack of communication in the supply chain
- 6 Cost being a factor
- 7 Lack of commitment from employees
- 8 Organizational emphasis on short-term gains
- 9 Adversarial relationships within the industry
- 10 Lack of understanding

The main three problem areas here are three of the main constituents of TQM, therefore change is necessary in these areas for the industry to move forward and adopt TQM. There was a general feeling that TQM would undoubtedly make the industry more efficient and help it compete on the global stage. One view on this was that it may never work, and that Northern Ireland is twenty years away from fully implementing TQM – a very pessimistic view, but not shared by everyone. It was felt that education and training must be better to change the cultural attitudes. One contractor put it that, in implementing TQM, 'it will lead to a cultural shift, from a 'cowboy' image to a professional image'. Successful companies, who were classified as "Improvers" (45% of the sample), all displayed interest in changing organizational culture and improving quality practices. By contrast, the 35% classified as "Uncommitted" are persistent in their use of out-dated methods and are apathetic regarding customer satisfaction. The remaining 20%, classified as "Drifters" and "Tool-pushers", are not far along the road to TQM, displaying poor communication systems and lack of clarity in their strategic thinking.

## **CONCLUSIONS**

It was widely acknowledged that people on the ground do not receive the TQM message and, in general, would not know how TQM affects them or the organization. TQM must include these people; they are very much part of the long-term strategy of the organizations. There must be an overall organizational strategy to avoid sub-optimization throughout the organization. Everyone must know what the overall vision, mission, and objectives of the company are and, how they fit into them.

This means that sub-contractors must also be brought on board, in partnerships, or as associates of the main contractor. They must also know what is expected of them with regard to quality. Supply Chain Management (SCM) must be used to spread knowledge to everyone that has an input to a project.

Some organizations had the attitude that, because they have quality certification, this is a notice to everyone that they only produce quality. They believe that when certified, 'they have arrived', and that no one should measure or inspect how quality is achieved. To them quality was about writing a manual, getting certification, putting

the plaque on the wall, and forgetting about it. One quality manager (of a major international contractor in Northern Ireland), even commented, 'we get the certification, then we forget about it; it is only a waste of time and money'. He went on to explain that he could 'bluff' any auditor into giving an organization approval for ISO 9001, no matter how poor the organization was.

This would suggest that auditors and assessors for standards such as ISO 9001 must not be drawn into giving certification to poor quality organizations. Unannounced quality audits (or very short notice ones) should become the norm. More in-depth checks must be carried out to find out if the organization does actually meet the requirements. Otherwise certification to ISO 9001 will become another failure in an industry that needs these types of control measures. These measures help to protect the client, and the perceived integrity of the industry as a whole.

## RECOMMENDATIONS

The construction industry must embrace TQM and forget about the excuses such as, 'the construction industry is different from other industries'. The industry's culture has got to change, and this starts by educating people coming into the industry. Government must take responsibility for ensuring that the industry is changing for the better and improving. It must look at education and training, and go to the grass roots of the construction industry. Government must make everyone aware of what is going on in the industry, and put across the quality message.

Top management must be committed to TQM. It was clear that top management are a separate entity from everyone else in the organization. They must communicate more with people in the organization, and show people that they are part of the quality process. More research should be carried out on TQM in the construction industry. Management of the quality function on site is another area where research would be useful. Effective control of the QMS is crucial to its implementation and success; therefore the right person must be in place as Quality Manager to ensure this.

It is recommended that the industry should take the issue of quality more seriously. The client now demands a quality product and value for money. The industry must take pride in its products and ensure that it must be perceived as being professional in its approach to projects as well as being professional with clients. The image of 'cowboy builders' must become a thing of the past; the TQM road will help achieve this. Government must show the way and insist on organizations gaining quality accreditation such as ISO 9001. The lessons here can be learnt from the Far East, as they lead the way in producing quality products, through the appropriate application of QMS and TQM in their construction industries.

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