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A study on total quality management (TQM) strategy and organizational characteristics

Abdelhamid Naid
Department of Mechanical Engineering, Faculty of Engineering, Al-zzaytuna University, Libya

Abstract
The increasing globalization of companies forces them to create a planned and integrated approach to sustain successful in global markets, by involving employees and implementing improvement programmes that will maximize productivity and company's performance. This paper presents a comparative study on the relationship between implementing total quality management (TQM) and organisational characteristics (size, type of industry, type of ownership, and degree of innovation) in a newly industrialised country in South East Asia. Libya has become the member of the World Trade Organisation (WTO) since January 2007, and this is the first empirical study to examine TQM practices in Libya analysis through structural equation modelling, t-test and MANOVA of survey data from 222 manufacturing and service companies produced three major findings.
First, this study supports previous research findings that TQM can be considered as set of practices. Second, industries in Libya have deployed certain TQM practices (customer focus and top management commitment) at much higher levels than others, namely information and analysis system, education and training, employee empowerment, and process management. Finally, MANOVA shows a clear difference in TQM practices by company size, industry type, and degree of innovation. Large companies had higher implementation levels across almost all practices except for teamwork and open organisation when compared to small- and medium-sized companies.
TQM practices were statistically more significant in manufacturing companies compared to service companies, and firms having a higher degree of innovation also showed higher levels of TQM practice implementation. In particular, the low deployment of TQM practices in service industries, where TQM has been considered as order qualifier, highlights the challenges for Libya service industries that pursue TQM to successfully compete in the global marketplace.

Keywords: total quality management, organizational characteristics, empirical research, structural equation modeling, manufacturing/service company

Introduction
Relying upon the previously mentioned evolution, it might be rational to say that the 21st century will witness the concern in new patterns of quality at the top of which: the quality of knowledge, intangible assets, human capital and perhaps spiritual assets. The past five decades has testified a radical shifting from interest in quality concept. This was plainly appearing especially during the 80's of the last century when the American and the European companies were badly affected by many dramatic developments in the business environment such as: quality based comprehensive competition, the Japanese quality-based competition success [1]. These developments have seriously sidetracked attention toward new quality perspectives, objectives and improvement relying upon a new strategic vision that replacing the old practices of operational plans. This was plainly confirmed by Jouran when he distinguished between two quality perspectives: "big and little quality" [2-4].
The introduction of total quality management (TQM) has played an important role in the development of contemporary management. Quality, considered a key strategic factor in achieving business success, is more than ever required for competing successfully in today's global market place and it has become the key slogan as organisations strive for a competitive advantage in markets characterised by liberalisation, globalisation and knowledgeable customers [5-7]. Following some author prediction that there will be two kinds of company in the future – companies which have implemented total quality and companies which are out of business, companies worldwide, large and small, both in the manufacturing and service sectors, have adopted quality strategies, and made TQM a well accepted part of almost every manager's 'tool kit' [8]. Quality management involves the formulation of strategies, setting goals and objectives, planning and implementing the plans; and using control systems for monitoring feedback and taking corrective actions. An organisation's quality management implementations are of two folds) Satisfying customer's expectation and b) Improvement in the overall business efficiency the basic goal of quality management is the elimination of failure; both in the concept and in the reality of products, services and processes [9]. This does not only mean that product, services and processes will fail in fulfilling their function but that their function was not what the customer desire. Failure must be prevented in quality management and to handle this there should be planning, organizing and controlling. Four stages of quality management was present this include inspection, quality control (QC), quality assurance (QA) and total quality management (TQM) [10].
Despite the great importance of TQM and its major

contribution to the movement of ensuring a continuous enhancement of, process, products, and services quality, the concept is still confronting many obstacles and receiving criticisms related to its high cost caused by the poor relationships between cultural restrictions and company performance standards.

The main objectives of this research are to highlight the benefit of TQM implementation in the service sector and manufacturing industries by examining the basic principles of TQM in the airline. It will thus compare and contrast the performance of TQM in those sector and Non TQM service and manufacturing industries by measuring statistically three major added values namely:-

- Customer satisfaction
- Employee satisfaction
- Operational effectiveness

Research methodology

TQM measures

The extensive literature review presented above provided the basis for operational sing the constructs for measuring TQM implementation (dependent variable). There are many definitions of TQM in the literature, and a variety of approaches have been used by researchers to assess its implementation at the firm level [11]. By keeping all these contributions in mind, this study constructed a TQM model comprising of the following 11 dimensions: leadership and top management commitment, employee involvement, employee empowerment, education and training, teamwork, customer focus, process management, strategic planning, open organisation, information and analysis system, and service culture [12-15]. These dimensions were selected because each of them matched the following criteria:

a. Represent the hard and soft aspects of TQM.
b. Included in the world recognised quality awards and in line with the practices proposed by the majority of TQM scholars and practitioners.
c. Correspond to the Vietnam Quality Award criteria, and therefore suitable for industry analysis in the context of selected country.
d. Considered critically important for implementing TQM in both manufacturing and service organisations

Organisational characteristics

The organisational characteristics (independent variable) adopted in this study were company size, ownership, industry type, and degree of innovation (measured by the number of new products/new services that the firm actually had developed and commercialized over the last three years).

3Data collection

All the companies included in this survey had been ISO 9001 certified for at least 2 years. This condition ensured that managers in the companies sampled for the questionnaire survey had sufficient knowledge and experience with quality management practices. Many Asian firms are reluctant to participate in research surveys without first developing a personal relationship with the researchers [16-18].

Questionnaires were sent to the managers of 500 companies, resulting in a total of 222 questionnaires returned, which is a response rate of 44.4% and one and a half times the average response rate reported by previous research studies. Due to missing data, 18 questionnaires had to be excluded, leaving 204 valid questionnaires for the analysis. In accordance with the classification in the companies in our sample were categorized into three groups: small firms with less than 50 employees, medium-sized firms with 50–200 employees, and large firms with more than 200 employees.

Since the small companies in our sample accounted for such a small share (2.04%), we finally divided the firms into two groups: small or medium-sized firms with less than or equal to 200 employees (32% of the sample), and large companies with more than 200 employees (68%). These finding similar with other used a similar classification in their study in Thailand [19]. About 25% of all firms were either foreign-owned or joint ventures, 56% were state-owned companies and the remaining was privately owned. About half were in manufacturing, 17% were in the service sector and the remaining produced both manufactured products and services. In order to assess a possible respondent bias, 30 non-respondent companies were contacted by phone to collect the following information and compare this with the respondent firms:

- Size (number of employees);
- Type of industry (manufacturing or service);
- Ownership type.

Similar to the respondent sample, the first two above dimensions were categorized into two groups: small or medium-sized firms and large companies; and manufacturing and service companies. Ownership was divided into three categories: 100% foreign owned and joint venture, state-owned and private companies. The results of the comparison between the respondent and non-respondent samples showed a higher share of large companies, state-owned companies, and manufacturing companies in the non-respondent sample with 76.7% of the companies being large compared to 67.9% in the respondent sample; 76.7% being state-owned companies compared with 56.4% in the respondent sample; and 63.3% in manufacturing compared with 47.3% in the respondent sample. However, these differences are not large enough to indicate a substantial difference between respondents and non-respondents. All chi squared values for size, type of industry and ownership were smaller than the chi-square table value for 0.05 significance (3.84 for 1 degree of freedom, and 5.99 for 2 degrees of freedom), and all p-values were greater than 0.05. Thus, the respondents and non-respondents can be considered as similar [20].

Data analysis and discussion

TQM has become a key element for fruitful organizational performance () and a key indicator of the company's ability to compete at the market place. It also be considered as a competitive advantage () or a source of competitive advantage [21]. This is because TQM has a great impact on customer satisfaction, competitive power, and innovation of the company. However, TQM has been in a continuous confrontation with many obstacles and problems, and in many cases these challenges were accompanied by negative assessment of some field studies results which expanded these

challenges [22]. This study has realized that there are three main sources for quality management practices: the ISO 9000-2008 and 2015, the accreditation certificate, and the contributions of researchers to identify and develop TQM elements. This study revealed that the ISO 9000 and accreditation certificate are both representing the standardized systems. These systems greatly rely upon providing the minimum necessary requirements for building a quality management system that characterized by its measurable standardized specifications. In comparison with those two resources researchers' contributions are characterized by its continuous evolution for all concepts and practices of quality system with new additional suggestions and improvements that go beyond the standards and specific requirements of ISO 9000 and accreditation systems. Quality management is the most important development that the industry and services sectors have ever seen. By the 1980s-decade, quality management has urged companies to adopt the strategic vision of quality in which considers quality as a competitive advantage. The findings of this study clearly indicate that five dimensions of TQM (QS, QL, RP, RS, and CI) have a positive impact on hospital innovation and reputation. This result is symmetrical to the results of many previous field studies [24-26].

Results

Table 1: MANOVA tests on TQM constructs

Effect	Model	F	Significance
Innovation	Pillais trace Wilkins model	10.778 10.778	0.000
Ownership	Pillais trace Wilkins model	0.875 0.874	0.000
Company size	Pillais trace Wilkins model	0.456 0.425	0.026
Industry type	Pillais trace Wilkins model	0.467 0.432	0.434

Table 2: Descriptive statistics for implemented TQM constructs.

Team Constructs	Mean (Ranked)	S.D
Customer focus	4.06	0.59
Top management commitment	4.01	0.59
Service culture	3.77	0.56
Strategic planning	3,67	0.76
Open Organization	3.63	0.78
Team work	3.56	0.45
Employment involvement	3.47	0.67
Process management	3.23	0.67
Educational training	3.59	0.87
Information analysis	3.67	0.67

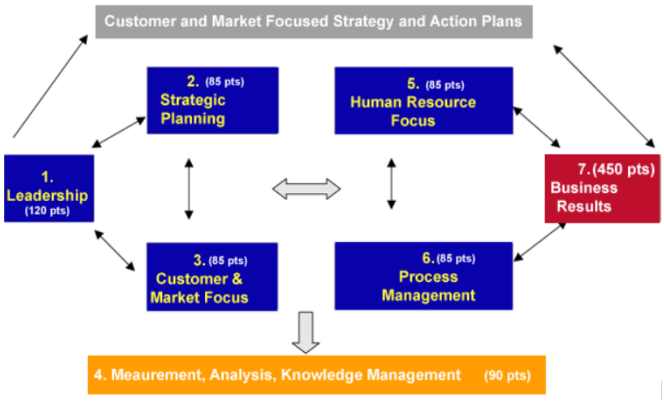

Fig 1

Conclusions

This study investigated whether there is a difference in the TQM constructs implemented by Libyan manufacturing and service companies of different ownership, size, industry type, and innovation performance. While MANOVA was the main technique applied, the measurement model for TQM constructs was examined with the help of structural equation modeling. Several conclusions can be drawn from the above results. Fist, in manufacturing and service companies, customer focus and top management commitment have been implemented at a quite high rate while information and analysis system, education and training, employee empowerment, and process management were found to be just average. This result suggests that Middle East companies still have a lot room for improving their TQM strategy. Second, TQM principles that have been generally considered as a set of practices, in previous studies, could be confirmed as valid for the industries in Libya for both manufacturing and service sectors. Third, the MANOVA results indicate that company size, industry type, and degree of innovation influenced the degree of TQM implementation.

Large companies showed a higher implementation rate in almost all quality management practices except for teamwork and open organisation when compared to small- and medium-sized companies. Particularly, for service culture and strategic planning, large companies were statistically significantly stronger than small- and medium-sized companies. Highly innovative companies showed a higher rate of implementation for all TQM constructs compared to companies with a low innovation performance, which suggests that TQM supports conditions for innovation. This finding contributes to the literature pondering the question whether TQM support the firm's innovation. The small sample size of service companies is the major limitation of the study. In addition, further research should focus on more innovative industries, such as electronics, automotive and food industries and should also explore the relationship between TQM being a competitive manufacturing/operational strategy and other business strategies such as differentiation and cost leadership. Finally, an industry specific, cross-country analysis in Southeast Asia could help policy makers in these newly industrializing countries to understand how to maintain their industries' competitiveness while facing increasing global competitions.

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