CEM 515: Project Quality Management

Empirical Study: Critical Success Factors (CSFs) of TQM implementation in Saudi Arabian Industries

Abstract

Total quality Management (TQM) is an integrative management philosophy aimed at continuously improving the performance of products, process, and services to achieve and exceed customer expectations. This paper provides an empirical study on the identification of critical success factors (CSFs) of TQM implementation in Saudi Arabian industries. Through a thorough and detailed analysis of literature, 5 success factors with 34 elements were identified to develop a questionnaire. After empirically tested by data collected, these factors are expected to be reliable and valid and offer new insights into the understanding of TQM success factors in Saudi Arabian industries.

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I. INTRODUCTION

Quality has become one of the most important competitive strategic tools and many organizations have realized that it is a key to developing products and services that support continuing success. As competition increases and changes occur in the business world, we need to have a better understanding of quality. Quality concerns affect the entire organization in every competitive environment. Therefore, top managers need to understand and apply quality philosophies to achieve high performance levels in products and processes and to face the challenges of new global competition. There is an increasing focus on quality throughout the world. With increased competition, companies have recognized the importance of quality system[1].

Each part of the organization must work properly together towards the same gaols, recognizing that each person and each activity affects and in turn, is affected by others. As competition increases and changes occur in the business world, the organizations looks for a high level of effectiveness across all functions and process and chooses a total quality management (TQM) as a strategy to stay in the business[2].

In contemporary management, TQM has become the major business strategy in the 1990s[3]. The evolution of TQM into an all pervasive philosophy of management took sharp through the works of Crosby (1979), Deming (1982, 1986), Feigenbaum (1983), Ishikawa (1972), Juran (1988) and Taguchi (1982). The primary focus of TQM philosophy is on the hands and minds that

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[1] Bader Abohimed (2001), "identifying some management approaches to total Quality management (TQM) within industrial organizations", a Research Paper

[2] Samir Baidoun (2003), "An empirical study of critical factors of TQM in Palestinian organizations", Logistics Infromation Management, Vol.16, No.2, pp. 156 - 171

[3] Witcher, B. (1994), " The adoption of total quality management in Scotland", The TQM Magazine, Vol. 6 No.2, pp. 48 - 53

employ the tools and techniques rather than the tools and techniques themselves.[4] Recent research has shown that many TQM-based failed to indicate a significant competitive improvement in business performance (Antony, 2002).

The increasing acceptance of TQM as a management philosophy for improving organizational competitiveness and effectiveness left the development of empirical search behind. This problem is much more apparent in the developing countries where the knowledge of TQM is in the very early stages. Hence, many managers do not fully understand what TQM is all about and the most important factors that drive the successful implantation of TQM in Saudi Arabia industries.

Moreover, an investigation of critical success factors (CSFs) for TQM implementation in Saudi Arabia organizations is worthwhile to carry out. This paper's purpose is primarily identifying the critical quality factors by interpreting the consensus amongst Saudi Arabian ISO certified organizations as to the level of perceived importance of each of five factors (with 38 variables) required for the success of TQM implantation in their organizations and secondly to stratify these factors in a hierarchical structure in a descending order of criticality.

II. POTENTIAL BENEFITS OF TQM

TQM is a managerial system to improve an organization's competitiveness. Kanji & Asher (1993) said that 'TQM is about continuous performance improvement of individuals of groups and of organizations. As long as TQM is adopting fully and practised effectively in an organization, many advantages will be delivered. It will strengthen the organizational business

[4] Jiju Antony (2002), " Critical success factors of TQM implementation in Hong Kong industries", International Journal of Quality & Reliability Management, Vol.19 No.5, pp. 551 - 566

performance and competitive advantage[5]. The successful implementation of TQM will result in:

- Improved employee involvement[6]. TQM ensure everyone within the organization should have a clear understanding of what is required and how their processes relate to the business as a whole. Through the practice of TQM, teamwork is employed and employees are motivated and encouraged to control, manage, and improve the processes, which are within their responsibility.

- Improved communication[7]. A better communication can be accomplished through the effective implementation of TQM principles in any organization. More open and frequent communication among people will be found, and they will view and treat one another as customers and suppliers.

- Increased productivity[8]. Sriparavastu and Gupta (1997) approved that the implementation of both TQM strategy contributes most to increased productivity, employee involvement, management commitment, supplier participation, enhancement in quality and reduction in costs. TQM changes the organizational culture and created a happy working environment. Due to the effective delegation, empowerment and total staff involvement, problems are identified and solved at lower levels. The

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[5] Dinesh Seth and Deepak Tripathi (2006), "A critical study of TQM and TPM approaches on business performance of Indian manufacturing industry", Total Quality Management and Business Excellence, Vol. 17, No. 7, pp. 811 - 824

[6] Chiu R.K (1999), " Employee involvement in a total quality management programme: problems in Chinese firms in Hong Kong", Managerial Auditing Journal, Vo. 14, No. 12, pp. 8-11(4)

[7] Kanji, G., Asher, G. (1993),"Total quality management process: a systematic approach", Journal of Total Quality Management, Vol. 4, pp. 1 - 144

[8] Sriparavastu L. and Gupta T. (1997), " An empirical study of just-in-time and total quality management principles implementation in manufacturing firms in the USA", International Journal of Operations & Production Management, Vo. 17, No. 12, pp. 1215-1232

working process will become more efficient. Consequently, productivity can be increased by reducing the cycle time.

- Improved quality and less rework[9]. Deming has been instrumental in helping the Japanese understand that quality and productivity are compatible. He believes that improving quality leads to decreases in cost because of less rework, fewer mistakes, delays, and better use of machine and materials. In TQM implementation, work processes and improvement are focused. Employees will place more emphasis on the elimination of the root causes rather than correction of problem. Problems will be identified and tackled at lower levels, by the people closet to the work who are empowered to deal with the problems. As a result, the quality of the products and services will be improved and product rework will be reduced.

- Improved customer satisfaction[10]. Through open communication among employees, customers, and suppliers, the true voice of customers can be more readily understood. Since the quality operations also focus more on the work process and improvement, the organizations will provide a better product/service to the market. Therefore enhanced customer satisfaction is achieved.

- Reduced costs of poor quality. Effective implementation of TQM will lead to significant the competitive advantage of an organization to survive in the market. If TQM is successfully implemented, this will result in better customer satisfaction and quality product/services provided with lower prices. This can lead to increased sales to achieve the profit

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[9] YEUNG and LAU(1997), "Making quality profitable", Annual Journal of the Institute of Industrial Engineers (HK), Hong Kong, pp.39-44

[10] Forza and Filippini (1998), "TQM impact on quality conformance and customer satisfaction: A causal model - a holistic construal", International Journal of Production Economics, Vo. 55, No. 1, pp. 1-20

objectives and business growth. Moreover, quality costing is one measurement technique that has often been used to help justify the adoption of quality improvement efforts to senior managers[11].

III. PROBLEM DEFINITION

1. Lack of Empirical Research

The bulk of the total quality management literature is based on personal experiences and anecdotal evidence (Black & Porter, 1996; Rao *et al*., 1999). The lack of empirical research can be attributed to the following reasons: the existing theoretical base of TQM to support research on total quality is not sufficient; TQM is a relatively recent philosophy outside Japan and the origin of TQM lies outside the academic world (Thiagarajan *et al*., 2001).

2. Lack of Empirically Sound TQM Implementation Models

In Japanese survey (Yui, 1995), 57 out of 138 respondents agreed that they do not understand what is required to introduce and implement TQM, even though they understood its concepts. This reflects the total quality paralysis described by Oakland (2000) and Kanji (1990), where organizations attempting to implement TQM are confused where to start.
This is because they are overwhelmed by so many concepts, principles, models and prescriptions (see Juran, 1993; Deming, 1986; Oakland, 2000; Crosby, 1979).

Organizations' top management is questioning the lack of empirically sound models to assist in effective quality management. They recognize that currently available approaches to implementation are organizationally

[11] Sinclair, D. and Zairi, M. (2001), ``An empirical study of key elements of total quality-based performance measurement systems: a case study approach in service industry'', Total Quality Management, Vol. 12 No. 4, pp. 535-50.

and politically nave (Dean & Bowen, 1994). Therefore, a model development to explain effective quality management implementation by organizing, synthesizing, and empirically validating the various key quality factors should serve the needs of practitioners (Thiagarajan, 1996).

3. Lack of Empirical Research in the Developing Economies

The growing interest in quality has reached, due to globalization, several developing countries in the Middle East region (Ali, 1997). It is appropriate, therefore, for studies in TQM implementation to be conducted for the benefit of the managers in these developing countries, where the need is confounded by a dire lack of total quality management information.

IV. CRITICAL SUCCESS FACTORS OF TQM: EMPIRICAL STUDIES' OVERVIEW

The online databases were searched extensively to identity research papers published in referred journals. The scope of the search is for TQM articles published in referred journals because of the thorough professional review of these papers undergo before acceptance and publication. Since, the first research paper in the proposed research review was published by Saraph et al. (1989), the search was limited to the period between 1989 and 2003. The procedure described below was adopted to identify the relevant TQM research articles. A set of keywords was formulated and used for the articles title search:

- quality instrument;
- empirical quality;
- quality performance;
- quality improvement;
- quality critical factors;
- empirical TQM;
- TQM factors;
- TQM construct;
- TQM instrument;
- TQM performance;
- quality index; and
- TQM evaluation.

The five online journal databases: www.Emeraldinsight.com, www.Ebsco.com, www.Infotrac.com, www.ProQuest.com and www.Sciencedirect.com were searched. In addition to articles related to TQM survey by Ahire et al. (1995), Fynes (1999), Sila and Ebrahimpour (2002), Thiagarajan and Zairi (1997a, b, c) and Yong and Wilkinson (1999), articles by Joseph, Rajendran, and Kamalanabhan (1999), Robin Mann, Dennis Kehoe (1995), and Samir Baidoun (2003) were reviewed and identified.

The bibliographies of these articles were screened in addition to online searches to locate articles related to the objectives stated. During this entire process, 37 articles were found. The titles of the journals where these articles were published are listed in Table I[12].

	Journal title	Survey articles
1	*Decision Sciences*	Saraph *et al.* (1989), Anderson *et al.* (1995), Flynn *et al.* (1995) Black and Porter (1996), Ahire *et al.* (1996), Curkovic *et al.* (2000) Wilson and Collier (2000)
2	*Industrial Management & Data Systems*	Forza (1995), Huarng and Chen, 2002
3	*International Journal of Operations & Production Management*	Forker *et al.* (1996), Adam *et al.* (1997)
4	*International Journal of Production Research*	Tamimi (1995), Forker *et al.* (1997), Joseph *et al.* (1999), Ho *et al.* (2001), Merino (2003)
5	*International Journal of Quality & Reliability Management*	Motwani *et al.* (1994), Badri *et al.* (1995), Zhang *et al.* (2000)
6	*International Journal of Quality Science*	Grandzol (1998), Tamimi (1998)
7	*Journal of Operations Management*	Adam (1994), Flynn *et al.* (1994), Choi and Eboch (1998), Samson and Terziovski (1999), Kaynak (2003)
8	*Management Science*	Benson *et al.* (1991)
9	*Production and Operations Management*	Dow *et al.* (1999), Fynes and Voss (2001)
10	*Production Planning & Control*	Mohanty and Lakme (1998), Wali *et al.* (2003)
11	*Strategic Management Journal*	Powell (1995)
12	*The Quality Management*	Roethlein *et al.* (2002)
13	*Total Quality Management*	Quazi *et al.* (1998), Rao *et al.* (1999), Hua *et al.* (2000), Claver *et al.* (2003)

Table I. Title of journals where TQM survey articles published

[12] Karuppusami (2006), "Pareto analysis of critical success factors of total quality management", 18,4The TQM Magazine Vol. 18 No. 4, pp. 372-385

Empirical TQM studies started to increase after 1989 when the critical success factors (CSFs) of TQM were first operationalized by Saraph (1989)[13]. A survey approach to the operationalization of TQM CSFs by this research work set a new direction for TQM researchers interested in the set of CSFs that constitutes TQM. Saraph, Benson and Schroeder (1989) pioneered an empirical approach to examine the critical factors for TQM implementation in the USA. They identified eight critical factors of quality management at the business unit level with 66 elements. Later, some authors have developed a similar approach to identify and investigate the factors of success. Tables II and III[14] review and compare those CSFs developed by researchers such as Saraph (1989), Black and Porter (1996), Tamimi (1998), and Joesph (1999).

Author	Purpose	Source of factors	Results
Saraph *et al.* (1989)	To develop an instrument for studying critical success factors of quality management in Minneapolis, USA	From concepts and prescriptions of quality gurus	Eight factors with 66 elements
Black and Proter (1996)	To identify critical success factors of TQM in the membership organisations of European Foundation for Quality Management (EFQM)	Malcolm Baldrige National Award Quality model (MBNAQ)	Ten factors with 32 elements
Tamimi (1998)	To analyse the critical TQM success factors using second-order factor analysis in Pennsylvania, USA	Deming's 14 points	Eight factors with 32 elements
Joseph *et al.* (1999)	To identify TQM success factors in Indian organisations	Saraph *et al.*'s research	Ten factors with 106 elements

Table II
Comparison of CSFs from literature review

[13] Saraph, J.V., Benson, P.G. and Schroeder, R.G. (1989), "An instrument for measuring the critical factors of quality measurement", Decision Sciences, Vol. 20 No. 4, pp. 810-29

[14] Jiju Antony (2002), "Critical success factors of TQM implementation in Hong Kong industries", International Journal of Quality & Reliability Management, Vol.19 No.5, pp. 551 – 566.

Author	Critical success factors for TQM implementation
Saraph *et al.* (1989)	1. Top management leadership
	2. Role of the quality department
	3. Training
	4. Product design
	5. Supplier quality management
	6. Process management
	7. Quality data reporting
	8. Employee relations
Black and Porter (1996)	1. People and customer management
	2. Supplier partnerships
	3. Communication of improvement information
	4. Customer satisfaction orientation
	5. External interface management
	6. Strategic quality management
	7. Teamwork structures for improvement
	8. Operational quality planning
	9. Quality improvement measurement systems
	10. Corporate quality culture
Tamimi (1998)	1. Top management commitment
	2. Supervisory leadership
	3. Education
	4. Cross functional communications to improve quality
	5. Supplier management
	6. Quality training
	7. Product/service innovation
	8. Providing assurance to employees
Joseph *et al.* (1999)	1. Organisational commitment
	2. Human resources management
	3. Supplier integration
	4. Quality policy
	5. Role of quality department
	6. Quality information systems
	7. Technology utilisation
	8. Operating procedures
	9. Training

Table II. Analysis of common CSFs extracted from researchers

V. RESEARCH METHODOLOGY

Research methodology is very important as it can guide the researcher on what steps need to taken in order to meet the objectives of the research. In this empirical study, the general purpose is to use the perceptions and experiences of TQM-based companies and use this information as the basis of data collection. The analysis will enable the identification of TQM success factors. Therefore, this paper's purpose is primarily identifying the critical quality factors by interpreting the consensus amongst Saudi Arabian ISO certified organizations as to the level of perceived importance of each of five factors (with 38 variables) required for the success of TQM implantation

in their organizations and secondly to stratify these factors in a hierarchical structure in a descending order of criticality.

After a thorough review of the prescriptive, conceptual, practitioner, and empirical literature on quality management, the proposed model used in this empirical study identifies five constructs (with 38 variables) of QM as critical for the institution of a TQM in Saudi Arabian companies. The critical success factors that have been identified are shown in the figure below.

A. Description of Critical Quality Factors

The criticality of each of these dimensions is discussed below.

<u>First Factor: Training and education</u>

Education and training is one of the keys of any meaningful quality improvement. Employees will understand the theory of quality only when they are properly trained in the quality concepts and tools. Training also helps organizations to send powerful messages about an organization's priorities. Most employees possess inclinations toward making larger contributions to the organizational goals and objectives. Training provides them the skills that allow these predispositions to become active, thereby transforming motivation into a competency. Education and training forces employees to not only possess the adequate knowledge and skills to perform their jobs, but also to possess specific values, knowledge, and skills associated with TQM issues and activities. Reasons cited for the failure of TQM initiative include the lack of appropriate training and inadequate knowledge. Thus employees will be motivated to engage in quality-oriented behaviour when their roles and the relevance of their training to overall quality goals are clarified.

Several recent empirical studies revealed that training and education are critical to successful TQM implementation. For Mathews (2001) the training that underpins quality management determines the likely effectiveness of the quality initiatives undertaken[15].

Second Factor: Management Commitment

Top management commitment is prerequisite for effective and successful TQM implementation. Visionary leadership pertains to the formulation of a long-range vision for the development of the organization, propagating the vision throughout the organization, devising and developing a plan of action and finally stimulating the entire organization towards the accomplishment of the vision. Research suggests that most quality tools

[15] Mathews, Ueno, Kekale, Pweiera, and Silva (2001), "Quality training: needs and evaluation-findings from a European survey", Total Quality Management, Vol.12, No.4, pp. 483 – 490.

associated with TQM do not generally produce an advantage, but a certain tacit behavioural feature such as executive commitment can produce an advantage. Many a time TQM initiatives have failed to fulfil their potential due to lack of senior management commitment to the quality process. Thus, for TQM, commitment by the management is essential. Without it; there is no need to proceed further.

Several recent empirical studies revealed that management commitment is critical to successful TQM implementation. Leiter and Maslach (2002) consider commitment of senior executive as a more important factor of successful TQM implementation[16]. Moreover, Mullin (1992) has conducted a study supporting the TQM implementation plans[17]. In his empirical study, the ISO process in the US chemical industry has been a beneficial day-to-day practice and an annual budget item. Not only that, every level of a chemical corporation witnesses concept of quality by implementing ISO 9000. Commitment plays the most variable cost and benefit because to be committed to TQM you need to revolutionize the way the company thinks, defines, and enhances its TQM implementation. Mullin has also reached another conclusion indicating that in any ISO process, staff all over a company must not be restricted in documenting procedures; in fact, they must be able to criticize them, too.

Third Factor: Customer Satisfaction

Customer focus and satisfaction is such an important component of the TQM movement because organizations can outscore their competitors by effectively addressing customers' needs and demands, and anticipate and respond to their evolving interests and wants. In the manufacturing sector,

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[16] Leiter, M. and Maslach, C. (2002), "Beating burn-out", Human Resource Management International Digest, Vol.10, No.1, pp. 6 – 9.

[17] Mullin, Rick (1992), "Commitment and Corporate Culture: Management's New Mechanism", Chemical Week, New York, Vol. 150, Iss. 17, pp. 42 - 45

this can be achieved by the use of technology which will produce products that consist of such attributes of quality as conformance to requirements, conformance to specifications, reliability, durability, absence of variation, fitness for use, etc.

In service organizations, as customer expectations are highly dynamic and complex in nature, service providers need to think differently about their businesses in contrast to their manufacturing counterparts who produce tangible goods. Though the complexity and multi-dimensional nature of quality have been thoroughly grasped by many successful service firms, yet they strive to focus their energies and efforts mainly on customer-defined areas (specific customer needs) so as to satisfy them. In today's world of intense competition, satisfying customers may not be enough. The real gains of a quality revolution come only from customer delight.

Some economists see that customers are an economic asset. They are not on the balance sheet, but they should be. Zairi (2002) wrote that the emphasis on customer satisfaction or customer-driven quality is considered by many gurus and writers as a major success of the quality management effect[18]. For example, construction organization may outperform the competition by being able to anticipate and respond quickly to customers' demands with new ideas and technologies and to produce constructed facilities that satisfy or exceed customers' expectations. Despite the use of the latest process improvement techniques and capable management, a firm's neglect of its customers may lead to disaster. Without customer focus, the TQM programme will lack the foundations on which to build further

Fourth Factor: Communication

[18] Zairi, M. (2002), "Managing Customer Satisfaction: a best practice perspective", The TQM Magazine, Vol.12, No. 6, pp. 389 – 494.

According to Kanji and Asher (1993) effective communication is part of the cement that holds the bricks of the total quality process. Effective communication is important for the success of any quality initiative and critical from the beginning of a change effort. Every element of the change must be talked about, presented and discussed, across levels of the organization[19].

In general, the majority of the respondents to an exploratory case study of quality culture and integrated communication[20] agreed that after the successful implementation of TQM, the hospital's communication had improved, especially in the hospital's communication process and system. Respondents found the communication system and process to be better organized, more formalized and well structured which in turn, allowed them to work more effectively and efficiently. The respondents also found that communication in the form of meetings and group discussions were practiced extensively, especially for the purpose of problem solving. The respondents were asked what TQM principles have you found to be related to effective organizational communication within the hospital? Overall, TQM seemed to positively interact with respondents' communication performance. Responses concerning TQM principles were grouped based on their direct and indirect impact on the hospital and its staff's communication practices.

Fifth Factor: Continuous Improvement

The Japanese were the forerunners of the concept of "kaizen" or "continuous improvement" (CI). Continuous improvement is increasingly

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[19] Tamimi, N. and Sebastianelli, R. (1998), "The barriers to total quality management", Quality Progress, pp. 57-60.

[20] Karinrat Srismith (2005), "Quality Culture and Integrated Communications: An exploratory case study in a Thai health care setting", Annual Meeting of the Australian and New Zealand Communication Association, Christchurch, New Zealand.

becoming the life-blood of any TQM organization. Deming (1986) emphasized the importance of continuous improvement in his philosophy wherein he states: "Improve constantly and forever the system of production and service, to improve quality and productivity; and thus constantly decrease costs"[21].

According to Harrington (1995) all organisations need both continuous and breakthrough improvement. When breakthrough improvement and continuous process improvement are combined, the result is a 60 per cent improvement per year over continuous improvement alone[22]. However, Harrington concludes, based on empirical evidence, that continuous improvement is the major driving force behind any improvement effort. Breakthrough improvement serves to 'jump-start' a few of the critical processes.

B. Hypotheses

H1: "The five-factor model is a reliable and valid instrument for measuring the perceived importance of the quality factors to the success of TQM in the respondent's organization".

H2: "CSFs have positive and significant effects on TQM implementation in Saudi Arabian organizations".

VI. SURVEY QUESTIONNAIRE DESIGN

In order to test the formulated hypotheses, a quantitative data is going to be distributed and targeted those organizations which have already registered to ISO quality management system standards. The questionnaire

[21]Deming, E.W (19866), " Out of the Crisis", MIT Center for Advanced Engineering, Cambridge, MA

[22]Harrington, H.J. (1995), "Continuous Versus Breakthrough Improvement: Finding the Right Answer", Business Process Reengineering & Management Journal, Vol. 1, No. 3, pp.31-49.

shall be directed to the TQM manager, director, quality assurance manager, management representative for quality, etc.

The questionnaire consists of Part I and Part II. Part I consists of five sections, Training & Education, Management Involvement, Customer Satisfaction, Communication, and Continuous Improvement, which are meant to solicit respondents to explicitly identify a quality factor as critical or not which permits objective judgments to be made . Part II looks for the name and designation of the respondents and the demographic data of the organization. Appendix enclosed to this paper includes a copy of questionnaire.

Each respondent is asked to rate each of the quality factors (labelled as quality-related factors in the questionnaire) as to their level of importance to a successful implementation of quality management processes in their organization, using the following criteria:

(1) Critical. Factors that you feel are critical and absolutely essential. The process stands a good chance of ending in failure if these factors are not part of the quality management process.

(2) Important. Factors that you feel are important but not absolutely essential. The process will survive if these are not addressed, but the organization may experience some unnecessary delays to its quality management process until these factors are eventually addressed.

(3) Minor importance. Factors that you feel are of minor importance. These factors will not seriously affect the success or failure of the quality management process.

In addition, the level of measurement used in the survey questionnaire is a three-point ordinal scale with critical, important, and minor importance as

categories. Although the categories are ordered, they are non-numeric, i.e. there is no indication of distance between them. Integer scoring to assign numbers to the critical, important, minor importance categories (1, 2, and 3 respectively) is used. Weisberg (1992) suggests organizing the data into frequency distribution to allow examination and description on the patterns of the responses to be made which can be exhibited effectively in tabular or graphic form[23]. For this level of investigation, frequency distribution is most appropriate for the data organization as it allows the responses distribution for a variable to be summarized.

VII. DATA COLLECTION

Generally, in order to conduct the empirical study, the evidence is mostly likely retrieved from four sources: Documents, archival records, interviews, and observations. The different data sources offered a more comprehensive insight into the subject matter than the use of only a single data source.

The drop-off and pick-up method, commonly employed by several researchers conducting surveys among managers in Saudi Arabia (Yavas and Habib 1987; Ali and Aaali 1991; AL-Meer 1988; AL-Twaijri 1990) is going to be used in gathering the data[24].

VIII. EXPECTATION RESULTS

I believe that my work typified by this proposed empirical study shall support the previous evidence presented in the mostly studied articles, especially the one written by Samir Baidoun (2003).

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[23] Weisberg, H.F. (1992), Central Tendency and Variability, Sage University Paper Series on Quantitative Applications in the Social Series on Quantitative Applications in the Social Sciences, Sage, Newbury Park, CA, pp. 7-83.

[24] AL-Twaijri, M.I. (1990), "Language Effects in Cross-Cultural Management Research: An Empirical Investigation," International Journal of Value-Based Research (No.1), pp.137-146.

Furthermore, in accordance with thorough and detailed analysis of the literature, it might be concluded that

1. The five-factor model is a reliable and valid instrument for measuring the perceived importance of the quality factors to the success of TQM in the respondent's organization.

2. CSFs have positive and significant effects on TQM implementation in Saudi Arabian organizations.

3. Management commitment will be the most important factor for the successful implementation of TQM. Management involvement and their total participation in necessary to lead and facilitate the implementation.

4. Communication will appear as the second most critical success factor, which reflects those organizations have a relatively open culture.

5. Training and Education will be the third most important success factor. Those companies which have spent a huge effort and investment on the development of employees and teamwork. Trained employees would contribute to the success of the business.

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14. Jiju Antony (2002), "Critical success factors of TQM implementation in Hong Kong industries", International Journal of Quality & Reliability Management, Vol.19 No.5, pp. 551 – 566.
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X. APPENDIX

Critical Success Factors (CSFs) of TQM Implementation in Saudi Arabian Industries

Dear respondent

Thank you for participating in this Empirical Study .

Although TQM is a proven approach for success in manufacturing, services and the public sector, several organizations failed in their campaigns because of many reasons like lack of top management commitment, ignoring customers etc.

For that reason, this paper is primarily identifying critical quality factors by interoperating consensus amongst Eastern Providence TQM organizations as to level of perceived importance of each of five quality factors required for success of TQM implementation in their organizations and secondly stratifying factors in hieratical structure in a descending order of criticality.

The success of this survey depends on your participation and frank responses. Hence, I would greatly appreciate your assistance in answering the questionnaire.

Please be assured that your responses will be kept strictly confidential. Individual participants will not be identified in the analysis as only aggregated results will be analyzed and presented.

If you would like to receive a copy of our findings, please fill the following:

Name:
Email:
Mobile:
Mail Address:

If you have any queries, please do not hesitate to contact _____ by email at _____

THANK YOU FOR YOUR PARTICIPATION IN THIS SURVEY

PART I. The following statements pertain to the Training and Education Factor. Please tick (√) the appropriate box.

Training and Education Questions				
#	DESCRIPTION	Critical	Important	Minor importance
1	Specific work-skills training (technical and vocational) given to employees thought the company			
2	Programs to develop team work between employees			
3	Quality-related training given to managers, supervisors, and employees			
4	Training in the total quality concept			
5	Training of employees to implement quality circle type program			
6	Employees are trained in statistical improvement techniques e.g. histograms, control chart etc.			
7	Training in advanced statistical techniques such as design of experiments and regression analysis in the company			
8	Availability of resources for employee training in the company			
9	Training in interactive skills such as communication skills, effective meeting skills, empowerment and leadership skills			
10	Training in problem identification and solving skills, quality improvement skills.			
11	Quality awareness building among employees is ongoing			

PART II. The following statements pertain to the commitment of your management to TQM. Please tick (√) the appropriate box.

Management Commitment Questions				
#	DESCRIPTION	Critical	Important	Minor importance
12.	Top management assumes responsibilities for quality performance			
13.	Acceptance of responsibilities for quality by department heads			
14.	Top management supports long-term quality improvement process			
15.	Degree of participating by major department heads in the quality improvement process			
16.	Importance attached to quality by top management in relation to cost and schedule objectives			
17.	Specificity of quality goals within the company			
18.	Quality goals and policy are understood within the company			
19.	Degree to which the top management considers quality improvement as a way to increase profits			
20.	Degree of comprehensiveness of the quality plan within the company			
21.	Commitment of the top management to employee training			

PART III. The following statements pertain to the customer satisfaction orientation. Please tick (√) the appropriate box.

Customer Satisfaction Questions				
#	DESCRIPTION	Critical	Important	Minor importance
22.	Commitment to customers through strengthening of policies, etc.			
23.	Comparisons of customer satisfaction with competitors and internal indicators			
24.	Benchmarking of direct competitors' products and processes			
25.	Determination of improvements in customer satisfaction			

PART IV. The following statements pertain to communication to improve the quality. Please tick (√) the appropriate box.

Communication To Improve The Quality Questions				
#	DESCRIPTION	Critical	Important	Minor importance
26.	Use of quality techniques and tools to solve problems			
27.	Good communication between different departments.			
28.	Work standards are based on quality and quantity rather than quantity alone			
29.	Effective top-down and bottom-up communication			

PART V. The following statements pertain to the Continuous Improvement Factor. Please tick (√) the appropriate box.

Continuous Improvement Questions				
#	DESCRIPTION	Critical	Important	Minor importance
30.	Review of quality issues in top management meetings			
31.	Feedback provided to employees on their quality performance			
32.	Unit heads and managers assume active roles as facilitators of continuous improvement			
33.	Assessment and improvement of process, practices and products and services			
34.	Extent to which quality data are use to evaluate supervisor and managerial performance			

DEMOGRAPHIC QUESTIONS

In the section below, please tick (√) the appropriate choice about you and your organization.

Your Company's Main Business Activity

( ) Agriculture
( ) Construction
( ) Banking & Finance
( ) Energy & Natural Resources
( ) Government Agencies
( ) Health care/Life sciences
( ) Information Technology
( ) Manufacturing
( ) Retailing/Wholesale
( ) Education

Total Number Of Full-Time Employees In Your Company

( ) Up to 20
( ) 21 – 50
( ) 51 – 100
( ) 101 – 200
( ) 201 – 500
( ) 501 and above

Your organization ISO 9000 certified

( ) No
( )ISO 9001 Certified
( )ISO 9002 Certified
( )ISO 9003 Certified
( )QS 9000 Certified

Your Company's Experience In The Market

( ) Up to 5 years
( ) 6 – 10 years
( ) 11 – 15 years
( ) 16 – 20 years
( ) 21 years and above

Your Company's Profit Objectives

( ) Long term
( ) Medium term
( ) Short term
( ) No objectives

Your Age Group:

( ) < 25
( ) 25-40
( ) 41-55
( ) >55

Level of Your Education:

( ) High school or less
( ) Some college
( ) College graduate
( ) Graduate school

Level of Your Experience

( ) < 5
( ) 5 – 10
( ) 11 – 15
( ) > 15

Your current position in the company is:

_____

THANK YOU FOR YOUR PARTICIPATION IN THIS SURVEY