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EFFECT OF ISO 9000 CERTIFICATION ON TQM IMPLEMENTATION

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ABSTRACT

ISO 9000 is a widely used quality management standard in the world. However, the review of literature has shown the contradictory findings about its relationship with the implementation of TQM. The in-depth review of both ISO 9000 and TQM indicates that both systems share many common principles. However, still many believes that ISO 9000 implementation contradict the philosophy of TQM whereas others indicate that implementation of ISO 9000 leads the organisations towards the implementation of higher levels of TQM. Therefore, the relationship of ISO 9000 certification with implementation of TQM needs to be explored in further details. In this study, the data was collected by using self-completion questionnaire from the managers of 306 textile companies located in Pakistan. The findings of this study provides empirical evidence that certification to ISO 9000 facilitates the companies in their journey towards the implementation of TQM. However, duration of ISO 9000 certification does not have the significant effect on the implementation of TQM philosophy.

Keywords: *ISO 9000, Quality Management System, Organisational Performance, TQM, Quality Management.*

1) INTRODUCTION

ISO 9000 is a widely used Quality Management System. Millions of manufacturing and service organisations are certified to this standard. According to the survey conducted by International Organisation for Standardisation (ISO) in December 2011, the number of companies certified to ISO 9000 in the last few years is increasing in all over the world (ISO Survey, 2011).

It is generally believed that implementation of ISO 9000 helps organisations to achieve an improved performance and a higher level of TQM implementation (Gutierrez et al., 2010). However, some studies indicate that certification to ISO 9000 has no effect on the implementation of TQM or even contradicts the teachings of TQM (Martinez-Lorente and Martinez-Costa, 2004; Zhu and Scheuermann, 1999). Martinez-Lorente and Martinez-Costa (2004) state that the underlying concepts of ISO 9000 are contrary to the basic assumptions of TQM, because, for example, ISO 9000 is too bureaucratic this de-motivates employees. Similarly, TQM emphasises the development of long-term relations with suppliers whereas ISO 9000 focuses on the control of products which are being received from the suppliers.

The above studies indicate that the effect of ISO 9000 certification on implementation of TQM needs to be explored in further details. Therefore, in this study it is attempted to provide the empirical evidence to address the above mentioned gaps in the existing literature.

2) THE ISO 9000 QUALITY MANAGEMENT SYSTEM

ISO 9000 is a family of standards which represents an international consensus on good quality management practices. It is developed by the International Organisation for Standardisation (ISO) which is established in 1947. The aim of ISO was to develop international standards in many areas (ISO, 2011). The first set of standards for the promotion of quality in goods and services in UK industries was introduced by the British Standards Institute (BSI) in 1979, whereas ISO released its first ISO 9000 quality standard series in 1987, based on BS 5750 (Sroufe and Curkovic, 2008). The ISO has developed over 18,500 International Standards for various subjects. In the ISO 9000 family of standards, ISO 9001:2008 provides a set of standardised requirements for a quality management system. This standard can be implemented regardless of the user organisation's activities, size or type (e.g. private or public sector). This standard provides a tried and tested framework for the systematic management of organisational processes, in order to produce products which accord to the expectations of customers (ISO, 2011).

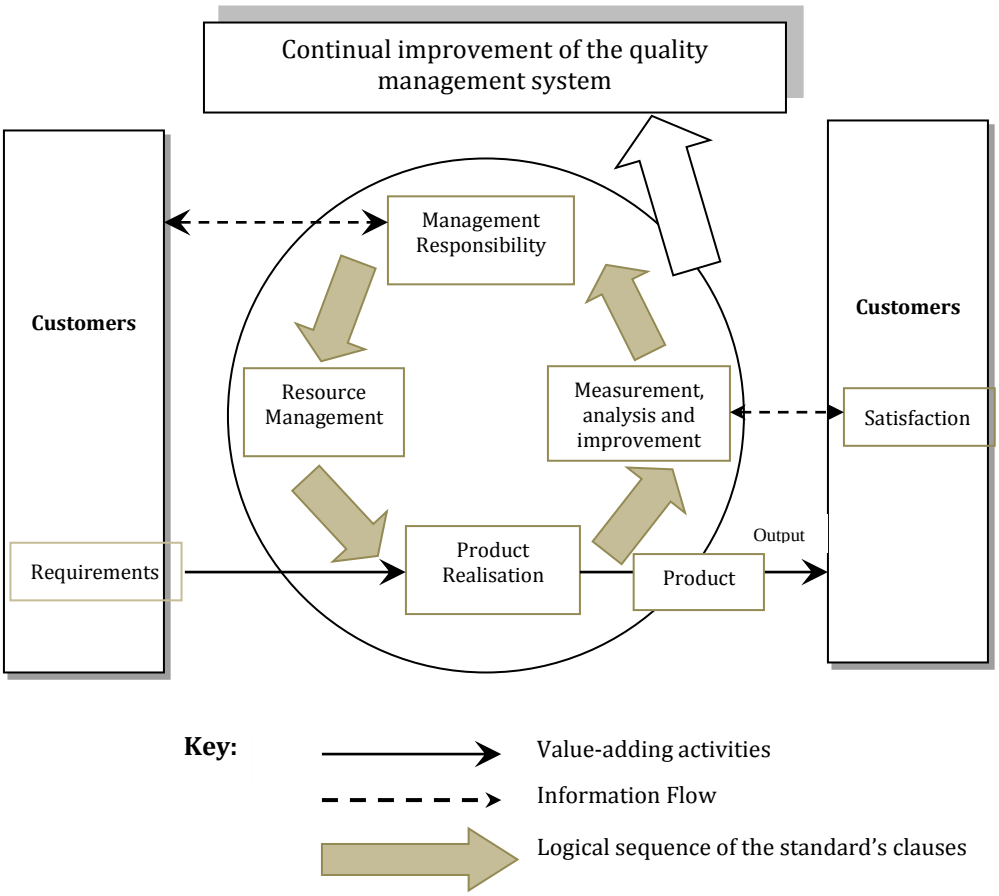
The ISO periodically review their standards, keeping in view the experiences of certified organisations, experts and consultants. The first revision of ISO 9001 was carried out in 1994, then in 2000 and the current

version of this standard was released in 2008. However, no significant changes were carried out in the latest version ISO 9001:2008 compared to ISO 9001:2000 (Martinez-Costa, Choi and Martinez, 2009).

The other standards of the ISO 9000 family provide information about other aspects of quality management system like vocabulary, fundamental concepts and auditing. For example, ISO 9000:2005 provides the fundamentals concepts of quality management systems and defines related terms; whereas ISO 9004:2009 gives guidance to organisations to help support sustained achievements. However, these two standards are not used for certification, contractual or regulatory use (ISO, 2011).

ISO 9001:2008 is based on eight principles of quality management. These principles are leadership, involvement of people, process approach, system approach to management, continual improvement, and factual approach to management, mutual beneficial supplier relationship and customer focus.

The eight principles are integrated in the five clauses of the standard. As ISO 9001:2008 is based on eight clauses. However, the first three clauses just indicate the scope, normative references and terms and definitions. Whereas, the Clause 4 describes the requirements of quality management system. The general and documentation requirements for this standard are also contained in this clause. Clauses Five to Eight present the requirements of the standard related to management responsibility (Clause 5), resource management (Clause 6), product realisation (Clause 7) and measurement, analysis and improvement (Clause 8) (ISO 9001:2008).



(Source: ISO 9001:2008, Quality Management Systems-Requirements, p.vi)

Figure 1: A Model of a Process-based Quality Management System

The process approach is considered to be the corner stone to achieve continual improvement in this standard (ISO, 2011). The "process approach" refers to

> *the application of a system of processes within an organisation, together with the identification and interactions of these processes, and their management to produce the desired outcome.* (ISO 9001:2008, p. v)

This process approach is depicted in Figure 1.

This model indicates the process links between Clause Four to Eight of ISO 9001:2008. From this model it is evident that customer satisfaction is

given great importance in this standard. The customers play a vital role in defining the requirements as inputs. At later stages, organisations have to determine whether they were able to satisfy their customers or not.

2.1) What is Total Quality Management?

Despite thousands of articles in the business and trade press but still total quality remains a "hazy" and "ambiguous" concept. The founders of this philosophy like Deming, Juran and Crosby, have no doubt, contributed to this confusion (Dean and Bowen, 1994). Many authors still consider it to be another management fad (Rich, 2008; David and Strang, 2006; Miller, Hartwick and Breton-Miller 2004; and Boaden, 1996). They argue that the fundamental values of this management philosophy are part of already existing organisational change initiatives (Boaden, 1996). However, many studies indicate that the underlying principles, assumptions, values and theories of TQM are comparatively different from other improvement initiatives (Sousa and Voss, 2002; Hackman and Wageman, 1995; Dean and Bowen, 1994; Grant, Shani and Krishnan, 1994). In order to identify that whether there is anything like TQM exists or not, Hackman and Wageman (1995) conducted the discriminate and convergent validity tests. Discriminate validity refers to the degree to which TQM philosophy and practices can be reliably distinguished from other strategies for organizational improvement such as participative management, management by objectives, and so on. Convergent validity reflects the degree to which the versions of TQM promulgated by its founders and observed in organizational practices share a common set of assumptions and prescriptions. They found that TQM passes the discriminate test because there is sufficient agreement among the movement's founders about the key assumptions and practices of TQM. These assumptions and practices are clearly different, both conceptually and operationally, from the other change management programs.

Several attempts have been made to define TQM but the definitions provided are "vague". There is a little agreement on what total quality management really means. The leading authors and gurus have used different terms while discussing this topic in the existing literature. For an instance total quality control (Feigenbaum, 1956), total quality improvement (Lascelles and Dale, 1991), and strategic quality management (Garvin, 1988). The difference among these terms, if any and other concepts is often unclear and creates confusion. Spencer (1994,

p.448) describes that TQM "is not a cut-and-dried reality but an amorphous philosophy that is continuously enacted by managers, consultants, and researchers who make choices based not only on their understanding of principles of TQM but also on their own conceptual frameworks concerning the nature of organizations". One possible explanation might be that much of the literature is written by consultants and the question of what TQM "really is" has not yet interested the academia to a larger extent (Hellsten and Klefsjo, 2000, p.239).

Some of the authors attempted to define TQM, for example, according to Oakland (1993, p.22), total quality management is an approach to improving the competitiveness, effectiveness, 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. Evans and Lindsay (2008, p.10) extended these definitions and described that people have started to recognize that the "quality of management is as important as "management of quality". The term Big Q is being used to contrast the difference between managing for quality in all organizational processes as opposed to focusing solely on manufacturing quality (Little Q). They have extended this term to the "quality of management" rather than "management of quality". They stated that;

"…..Organizations began to integrate quality principles into their management systems, the notion of Total Quality Management, or TQM, became popular. Rather than a narrow engineering or production-based technical discipline, quality took on a new role that permeated every aspect of running an organization".

Tari (2005) argues that although the practices of TQM vary from author to author, common practices can still be identified. These practices include top management commitment, customer satisfaction, continuous improvement, involvement of employees and partnership with suppliers. Many authors agree that these practices are the core elements of TQM (Martinez-Costa, Choi and Martinez, 2009; Fotopoulos and Psomas, 2009; Lopez-Mielgo, Montes-Peon and Vazquez-Ordas 2009; Bou-Llusar et al., 2009; Zu, 2009; Li et al., 2008; 2006 and Sila and Ebrahimpour, 2003). Furthermore, many studies empirically validate the above-mentioned TQM practices (Saraph, Benson and Schroeder, 1989; Flynn, Schroeder and Sakakibara, 1994; Ahire, Golhar and Waller, 1996; Quazi et al. 1998;

Rao, Raghunathan and Solis, 1999, Kaynak, 2003; Fotopoulos and Psomas, 2009).

Bou-Llusar et al. (2009) explain and categorise TQM practices in more detail; the core practices of TQM can be categorised into two broad dimensions, social or soft, and technical or hard. The social dimension includes teamwork, leadership, training and involvement of employees, whereas the development of standardised and well-defined processes and procedures comes under the technical dimension. However, they emphasise that the social and technical dimensions of TQM are interrelated and mutually support one another.

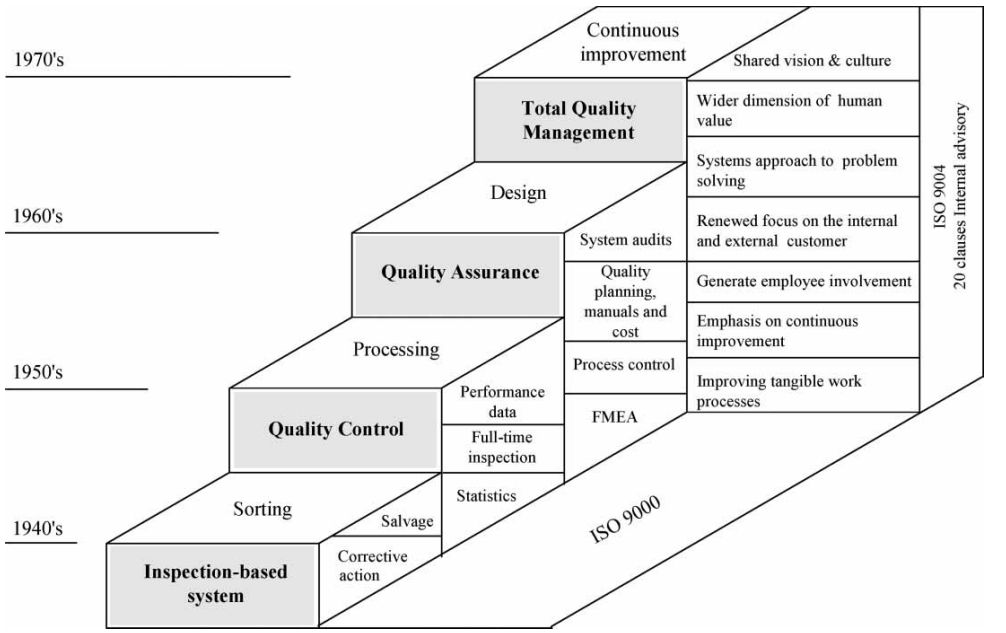
Hafeez et al. (2006) conducted a comparative study of the ten notable authors who have really contributed in extending the discipline of TQM. They have identified 18 elements of TQM which are categorised under well-established dimensions of operations management like technologies (and tools), organisation (and systems) and people. The categorisation of TQM elements in the well-known dimensions of operations management given by Hafeez et al. (2006) are being used as the framework to explain the effect of ISO 9000 certification on TQM implementation.

2.2) Effect of ISO 9000 Certification on Implementation of TQM

The literature seems inconclusive about the association between ISO 9000 certification and the achievement of higher levels of TQM. Many studies indicate that certification to ISO 9000 has no effect on the implementation of TQM or even contradicts the teachings of TQM (Martinez-Lorente and Martinez-Costa, 2004; Zhu and Scheuermann, 1999).

Whereas, Magd and Curry (2003) assert that TQM and certification to ISO 9000 have a propensity to support each other. Companies can streamline their work processes using the implementation of ISO 9000 and then TQM can help to improve the motivation of employees, efficiency of operations, and overall performance of the organisation. Similarly, Rao, Ragu-Nathan and Solis (1997) have revealed that ISO 9000 certification can help organisations to have higher levels of implementation of quality management practices. They provided empirical evidence that the companies which were certified to ISO 9000:1994 had higher levels of quality leadership, human resource development, strategic quality planning, supplier relationship, quality assurance, and customer

orientation. Terziovski and Power (2007) reported that ISO 9000 certification can facilitate the organisations to develop a quality culture. This finding is supported by Srivastav (2010). He provides empirical evidence from the manufacturing companies of India and indicated that ISO 9000 implementation enhances the collaborative culture, reduces the stress level and improves problem solving through team work.



Source: Hafeez et al, 2006, p.1214.

Figure 2: Evolution of Total Quality Management

Similarly, Jang and Lin (2008) provide the empirical evidence that the operational performance of organisations improved after getting the certification of ISO 9000. Sroufe and Curkovic (2008) also show that certification to ISO 9000 improves processes and helps to minimise production losses.

Hafeez et al. (2006) argued that ISO 9000 provide the foundation for effective implementation of TQM philosophy by fulfilling the requirements of quality control and quality assurance. Figure 2 explains in depth how ISO 9000 provide the foundation to implement TQM elements. Gutierrez et al. (2010) support Hafeez et al. (2006). They also argue that the implementation of ISO 9000 could be mapped on to the phases of quality control and quality assurance. They also indicated that

implementation of ISO 9000 could be considered as a mid-way point towards the adoption of advanced TQM models like the EFQM Excellence Model and Six Sigma. They argue that the implementation of EFQM Excellence Model and Six Sigma requires more complexity and development in most of the quality management elements. Thus, implementing ISO 9000 could facilitate the organisations in their journey towards the implementation of these models.

Table 2: Relevance of ISO 9001: 2008 Clauses with TQM Elements

TQM Elements	**Relevant ISO 9001:2008 Clauses**	**Relationship Between TQM Elements and ISO 9001:2008**
Customer Focus	5.2 (Customer Focus), 5.1a 5.6.2b 5.6.3b 7.2 (Customer related processes) 7.2.1 (Determination of requirements related to the product) 7.2.2 (Review of requirements related to the product) 7.2.3 (Customer communication) 7.5.4 (Customer property) 8.2.1(Customer satisfaction),	☻
Continuous Improvement	5.1 Management commitment, 5.3b, 5.6.2g, 5.6.3a &b 8.4 Analysis of data 8.5.1 Continual improvement, 8.1c	●
Benchmarking		◌
Communication	5.5 Responsibility, authority and communication 5.5.3 Internal communication 7.2.3 Customer communication 7.4.2 Purchasing information	●
Process Management	0.2 Process Approach 4.1 General Requirements 5.5.2a 5.6.2c 5.6.3a 6.3b 7.1 Planning of Product Realization 7.2 Customer Related Processes 7.4.1 Purchasing Process 7.5.2 Validation of processes for	☻

TQM Elements	Relevant ISO 9001:2008 Clauses	Relationship Between TQM Elements and ISO 9001:2008
	production and service provision 7.6 Control of Monitoring and Measuring Equipment 8.1 8.2.2 Internal Audit 8.2.3 Monitoring and Measurement of Processes 8.4c	
Partnership and provision of Resources	4.1d 5.1e 6.1 Provision of Resources 7.1b	○
Top management commitment	5.1 Management Commitment	○
Employees Involvement		◌
Employees Training and Development	6.2 Human Resource (6.2.1 , 6.2.2)	○

Legend: ☻ Very Strong, ● Strong, ○ Medium ◌ No/Week

The clauses of auditable standard of ISO 9000 series of quality management system; ISO 9001:2008 are mapped with the elements of TQM in Table 2. The elements of TQM which are referred in five or more than five clauses of ISO 9001:2008 are considered having very strong relevance with ISO 9000, Quality Management System. Similarly, the TQM elements which are referred in three or more but less than five clauses of ISO 9001:2008 directly are considered having strong relevance, the TQM elements which are referred in one or more than one but less than three clauses are considered having medium relevance and elements which are not mentioned anywhere in the standard are considered having week or no relationship with ISO 9000 Quality Management System. It is evident from the table that there is a very clear linkage among the elements of TQM and the clauses of ISO 9001:2000.

Among different elements of TQM, customer focus and process management have a very strong relevance with the ISO 9000 QMS.

Continuous improvement and communication seem to have strong relevance whereas partnership and provision of resources, top management commitment and employees training and development have medium relevance. The Table 1 indicates that employee involvement and benchmarking is not given much importance in ISO 9000 QMS.

Overall, it is evident that ISO 9001:2008 clauses have much relevance with the elements of TQM. Russell (2000) has also done similar mapping of ISO 9001:2000 clauses with the EFQM criteria. He identified that there is a much correspondence between these two models. Leadership is considered as the driving force behind the both frameworks. Customers' satisfaction is given top priority. Continuous improvement and learning, people development and involvement, process approach and partnership development are considered important in both frameworks.

It is the general impression that this standard is bureaucratic in nature and organisations have to put unnecessary emphasis on documentation, which makes the processes less efficient. However, in-depth analysis of the ISO 9001:2008 standard's requirements indicate that this standard only requires six mandatory documented procedures. Apart from these procedures, this standard does not require any other written procedure. However, it is up to the organisation whether it wants some more procedures should be in written form or not. This standard gives much emphasis that the record of the activities performed within an organisation must be maintained. These records are evaluated during the audit of the quality management systems.

Those organisations that have not yet established the fundamental systems and procedures to perform different functions might consider such requirements as burdensome; however, these are the normal documents that every organisation is required to establish for the smooth running of its activities. Therefore, Magd and Curry (2003) assert that early implementation of ISO 9000 can provide stability and consistency in an organisation's work. Subsequently, the implementation of TQM philosophy can enhance an organisation's overall performance.

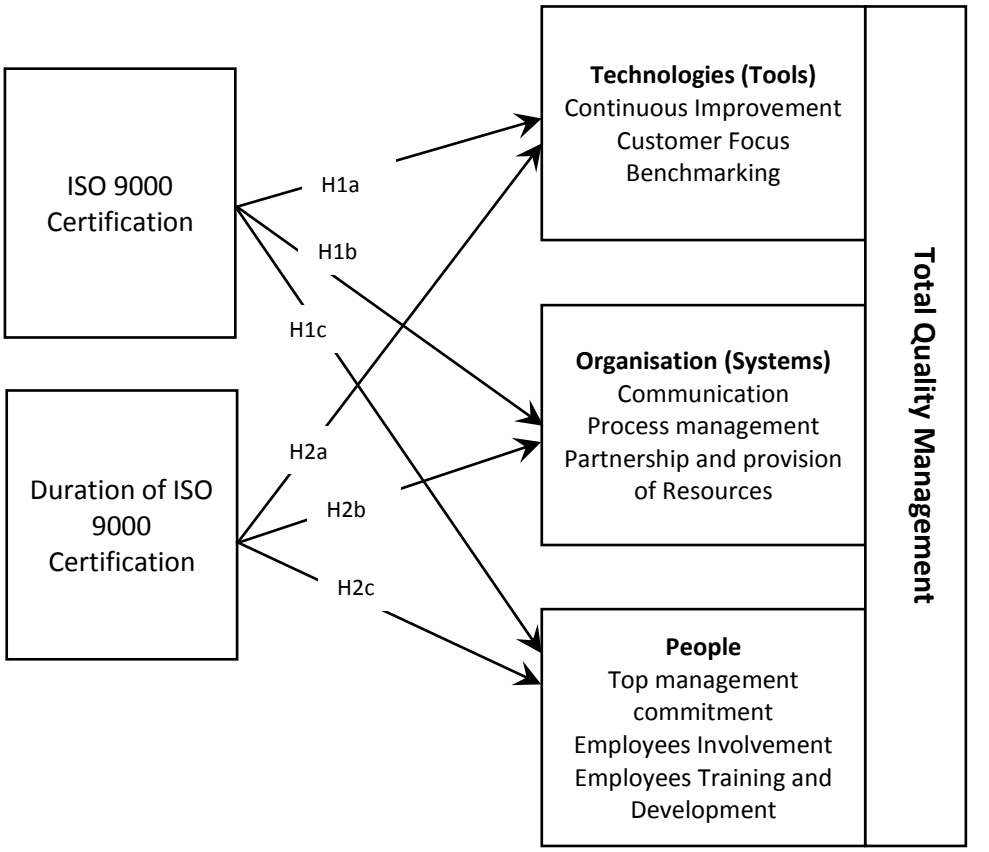


Figure 3: Theoretical Framework of Effect of ISO 9000 Certification on implementation of TQM

Based upon the above discussion, a theoretical framework is developed which is given in Figure 3. The elements of TQM are categorised in three well established dimensions of operations management 'Technologies (and tools)', 'Organisation (and systems)' and 'People' as given in Hafeez et al. (2006). Following hypothesis are developed on the basis of this theoretical framework.

H1: ISO 9000 certification is associated to the implementation of TOP constructs of TQM.

H1a: ISO 9000 certification is associated to the implementation of Technologies construct of TQM.

H1b: ISO 9000 certification is associated to the implementation of Organisation (Systems) construct of TQM.

H1c: ISO 9000 certification is associated to the implementation of People construct of TQM.

H2: Duration of ISO 9000 certification is associated to the implementation of TQM.

H2a: Duration of ISO 9000 certification is associated to the implementation of Technologies construct of TQM.

H2b: Duration of ISO 9000 certification is associated to the implementation of Organisation (Systems) construct of TQM.

H2c: Duration of ISO 9000 certification is associated to the implementation of People construct of TQM.

RESEARCH METHODOLOGY

This study was conducted in the context of textile companies of Pakistan. The member companies of All Pakistan Textile Mills Association (APTMA) were taken as population of this study. There are three hundred and seventy five textile mills are members of this association. The members list of APTMA is taken as the sampling frame for this study. These textile companies are located in different provinces of the country. Among these provinces, Punjab is the largest province. Sixty-five percent of the total population of Pakistan lives in this province and it is the largest producer of cotton. Fifty-six percent of APTMA member textile companies are located in the Punjab. The area and population of the Punjab is three times bigger than that of the UK. Thus, it was decided that all the member organisations of APTMA located in the province of Punjab would be considered as the sample for this study. A total of one thousand and fifty questionnaires were sent to the sample companies.

The selection of respondents is a critical point in a questionnaire survey, which is based on many factors like the nature and level of the information required, and the language and terminologies used in the questionnaire. The majority of information required for this study can only be taken from employees working at the managerial level. Therefore,

it was decided that the managers would be the respondents in this study. It is also assumed that multiple responses from each organisation will minimise the bias in the data. It was therefore decided to collect the responses from the managers of multiple departments of same company. Therefore, senior managers from multi-departments including Quality, Operations, Finance, Sales & Marketing and Human Resources were selected as the respondents for this study. Similar respondents were selected by Feng et al. (2006), Prajogo and Sohal (2003); Ho, Duffy and Shih (2001), Ahire and Dreyfus (2000) and Flynn, Schroeder and Sakakibara (1994). Other research has collected the data from CEOs/ quality directors/quality managers (e.g. Bou-Llusar et al. 2009; Douglas and Judge, 2001; Rao, Raghunathan and Solis 1999).

There are many validated instruments already available in the literature to investigate the extent of TQM implementation (e.g. Saraph, Benson and Schroeder 1989; Ahire, Golhar and Waller 1996). The majority of the instruments were validated in the context of the USA and the UK. It is therefore expected that these instruments may have some validation issues in a developing country like Pakistan. The items for this questionnaire were taken from the literature. For the pilot testing of the instrument, a group of different experts including TQM practitioners, academics and textile managers was selected from Pakistan. The quality and textile academics were selected from the National Textile University, Faisalabad and the Institute of Quality and Technology Management, University of the Punjab and University of Lahore, Pakistan. The textile managers were selected from Nishat Textile Lahore, The Crescent Textile Faisalabad and Style Textile Lahore. The newly developed questionnaire was sent to the focus group members, along with the details of the study and the actions they needed to perform. A comprehensive set of guidelines was sent to facilitate their review of the questionnaire. The details and suitability of this questionnaire in the context of textile companies of Pakistan were also discussed with some of the members of the focus group on the telephone. Feedback was received from fifteen group members. These included academics and practitioners from textile and quality management.

4) ANALYSIS OF THE DATA

4.1) Sample Profile

A total of 1,050 questionnaires were sent to 210 companies, which were members of APTMA and located in the province of Punjab. A total of 75 questionnaires from 15 companies were returned as undelivered and 306 completed questionnaires were returned from 105 companies. Thus, the response rate was 50.5% company wise and 31.8% respondent wise. Five questionnaires were excluded from the final analyses because a major part of the data was missing from these questionnaires.

Table 3, indicates that maximum respondents belong to spinning companies (59%) followed by weaving (20%), finishing (10%), garments (6%) and composite (5%). The responses were according to the textile composition in Pakistan. As the majority of companies in Pakistan are spinning companies; therefore, the majority of responses came from this sector. The majority of responses were received from the companies having employees between 100 to 1000 employees.

Table 3: Profile of the Sample

Type of the sample textile companies n = 299		**Size of company n = 299**		**Manager and employee awareness of TQM n = 298**		**Job designation of the respondents n = 301**	
	%		%		%		%
Spinning	59	Small (100-500)	44	Excellent	5	Production Manager	37
Weaving	20	Medium (500-1000)	42	Very good	31	Quality Assurance Managers	27
Finishing	10	Large (Above 1000)	14	Good	61	Financial Managers	5
Garments	6			Poor	2	Human Resource Managers	8
Composite	5			Know nothing	1	Sales Managers	9
						Any other	13

Only 14% respondents belong to the companies having employees more than 1000. The majority (37%) of respondents were production managers followed by Quality Assurance Manager (27%). The majority (61%) of the

respondents think that employees and managers of the sample companies have good awareness of TQM, 31% think very good, and 5% claim excellent knowledge of TQM. There were only 2% of respondents answering poor and 1% saying that they know nothing about TQM. The overall results show that the respondents perceive that both employees and managers of the companies have awareness of TQM.

The reliability might be referred as the internal consistency of the items, which used to develop a scale. Therefore, to evaluate the internal consistency of the constructs, an item inter-correlation matrix was developed for each construct. All items which had negative correlation with other items of the construct were deleted. Later on, the value of Cronbach's Alpha (CA) was determined for each construct.

Table 4: A Reliability Analysis of the Questionnaire

Constructs	No. of Items[1]	Cronbach's Alpha	Mean	Standard Deviation
Continuous Improvement	3 (V27, V28, V29)	0.70	3.9347	.67644
Benchmarking	3 (V9, V10, V12)	0.70	4.0177	.64611
Top management commitment	3 (V2, V5, V6)	0.76	4.0044	.69066
Employees Involvement	3 (V16, V18, V17)	0.71	3.9457	.72903
Communication	3 (V30, V22, V11)	0.61	3.9280	.65404
Customer Focus	2 (V7, V10)	0.63	3.9668	.74312
Partnership and Provision of Resources	3 (V19, V21, V23)	0.61	3.7973	.69061
Process management	3 (V24, V25, V26)	0.73	4.0421	.64956
Employees Training and Development	2 (V15, V14)	0.78	3.8505	.83221
Organisation (Systems)		0.83	3.9225	.57440
Technologies (Tools)		0.85	3.9731	.60111
People		0.80	3.9336	.62337

Generally, 0.7 is considered as the acceptable CA value for any construct however, Nunnally (1978) indicated that CA value of 0.6 is also acceptable if the scales are new. Table 4 indicates the values of CA for the individual

[1] The items in Section II of the questionnaire are represented by "V1, V2 and so on. These items could be traced from the questionnaire, attached as Appendix A. The notation of "Vr" is used when the rating for that item is reversed.

constructs. It is evident from Table 6.1 that all the values of CA are more than 0.6. Therefore, all the constructs with CA value equivalent or more than 0.6 are accepted. The CA value of Technologies (Tools)', 'Organisation (Systems)', 'and 'People' (TOP) varies from .80 to 0.85.

Figure 4 indicates comparative mean score of the TQM constructs for ISO 9000 certified and non-certified organisations. It is evident from the mean values that the construct have higher mean values for ISO 9000 certified companies.

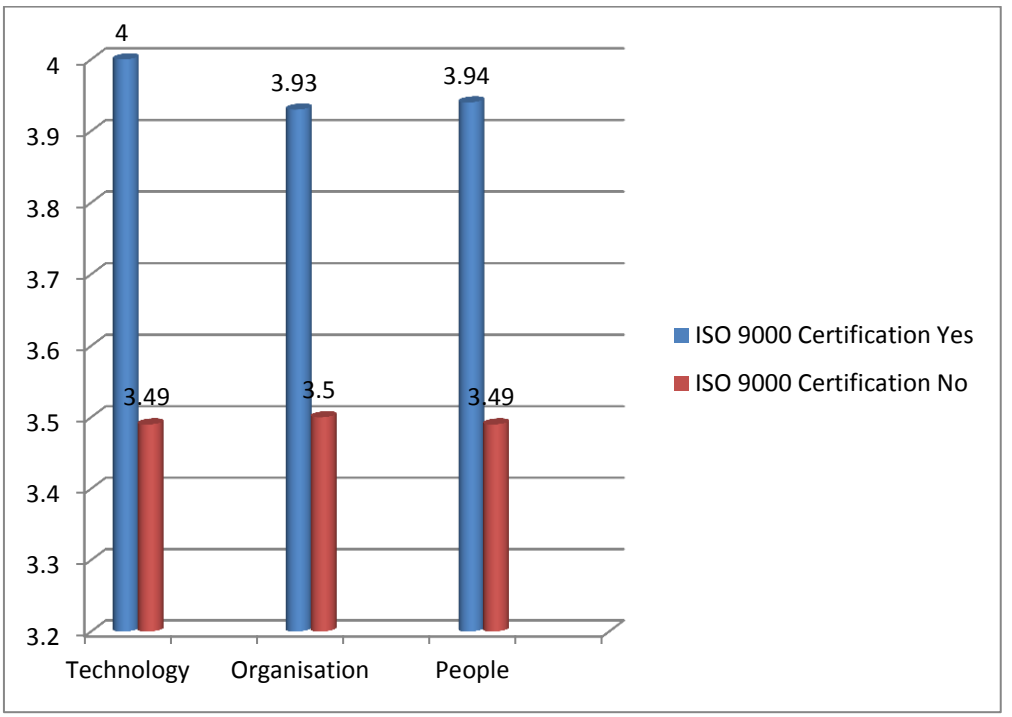


Figure 4: Comparative Mean Score of TQM Constructs for ISO 9000 Certified and Non-Certified Companies.

However, Figure 5 indicates that the mean score for TOP constructs for different durations of ISO 9000 certifications do not have much difference.

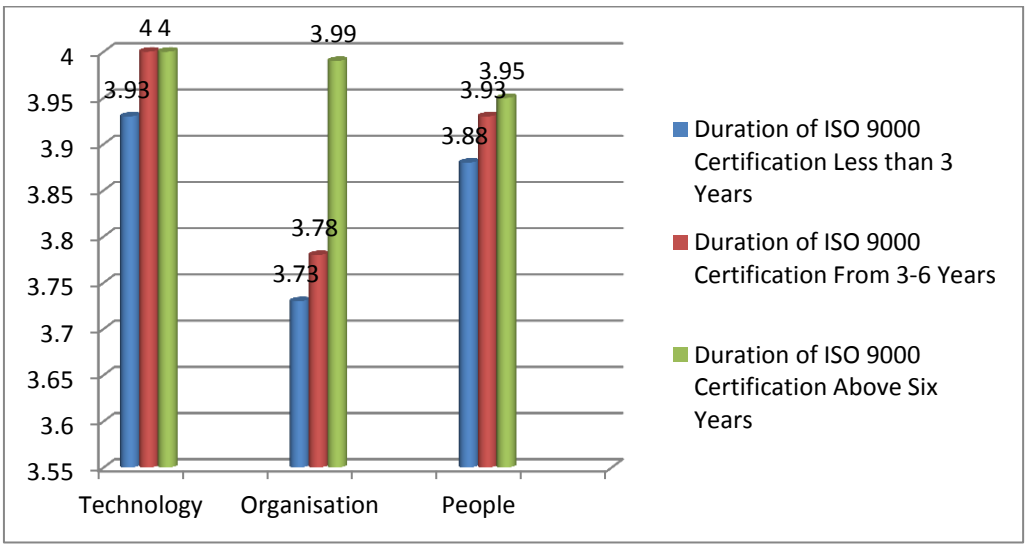


Figure 5: Comparative Mean Score of TQM Constructs for different durations of ISO 9000 Certified Companies.

Table 5 indicates the relationship between ISO 9000 certification and implementation of TOP constructs of TQM. Chi-Square was used to investigate this association. The results indicate that the difference in the implementation of TOP constructs across the ISO 9000 certified and non-certified textile companies is statistically significant (for Technologies $x^2 = 8.925$, $p=0.012$, $df =2$, *for Organisation* $x^2 = 13.473$, $p = 0.001$, $df =2$, *for People* $x^2 = 12.488$, $p=0.002$, $df =2$), thus according to the perception of respondents there is a relationship between the implementation of TOP constructs of TQM with the certification of ISO 9000, Quality Management System. Therefore, hypothesis *H1a, H1b and H1c are accepted*.

Table 5: Relationship of ISO 9000 Certification to TOP Constructs

	Pearson Chi-Square	**df**	**Asymp. Sig. (2-Sided)**
Technologies	8.925	2	0.012
Organization	13.473	2	0.001
People	12.488	2	0.002

Table 6 indicates the relationship between duration of ISO 9000 certification and implementation of TOP constructs of TQM. Chi-Square was used to investigate this association. The results indicate that the

difference in the implementation of TOP constructs across the different durations of ISO 9000 certification is not statistically significant (for Technologies $x^2 = 8.814$, $p = 0.066$, $df = 4$, *for Organisation* $x^2 = 8.160$, $p = 0.086$, $df = 4$) *for People* $x^2 = 12.488$, $p = 0.002$, $df = 2$), however, this relationship is significant for people construct ($x^2 = 11.564$, $p = 0.021$, $df = 4$).

Table 6: Relationship of ISO 9000 Certification Duration to TOP Constructs

	Pearson Chi-Square	**df**	**Asymp. Sig. (2-Sided)**
Tech	8.814	4	0.066
Organisation	8.160	4	0.086
People	11.564	4	0.021

These results indicate that according to the perception of respondents there is no relationship between the implementation of Technologies and Organisation constructs of TOP with the duration of certification of ISO 9000, Quality Management System. However, the construct of 'People' is associated with the duration of certification of ISO 9000. Therefore, hypothesis *H2a and H2b are not accepted whereas H2c is accepted*.

5) DISCUSSION ON RESULTS

From Figure 4 and Table 5 it is evident that all the constructs of the TOP are related with certification of ISO 9000, Quality Management System. Table 5 indicates that the ISO 9000 certified companies have higher levels of TQM implementation. Many studies support these findings. For example, The findings of Terziovski and Power (2007) confirm the findings of the current study by providing empirical evidence that certification to ISO 9001:2000 facilitates the organisations in the development of a quality culture. Rao, Ragu-Nathan and Solis (1997) also confirm the findings of the current study.

Some research does not support the findings of the current study. For example, Sila (2007) states that there was no difference in the performance and systems of the ISO 9000 certified and non-certified companies. A detailed investigation of Sila's sample shows that the non-certified companies which were included were already involved in the implementation of a range of quality improvement initiatives like Kaizen,

5S, lean manufacturing, constraint management, Juran training, as well as other quality improvement initiatives, without formal names. All of the above mentioned initiatives are based on some of the principles of TQM. On the other hand, in the case of the present study, the majority of sampled textile companies were not using any other quality improvement initiatives except ISO 9000. Therefore, in the two studies, the non-ISO 9000 certified companies had a different level of introduction to the TQM principles.

The finding of Martinez-Lorente and Martinez-Costa (2004) seem contrary to the findings of the current study. They put forward evidence that ISO 9001 certification contradicts the implementation of the TQM philosophy when these two approaches are implemented together. In the current study this aspect was not studied explicitly. Thus, the research is unable to make a real comparison of the two studies.

Another aspect of Martinez-Lorente and Martinez-Costa (2004) is not comparable with the current study; the majority of companies in their sample were certified to ISO 9000:1994 whereas the companies in the current sample are certified to ISO 9001:2008. As ISO 9001:2008 is the latest version of the ISO 9000 series and has better compatibility with the TQM philosophy (ISO, 2011), therefore, it was expected that this version would be more helpful in the implementation of TQM practices. Furthermore, these two studies were conducted in two different countries and company sectors. Martinez-Lorente and Martinez-Costa (2004) conducted their study in the manufacturing and service organisations of Spain while the current study was conducted using only Pakistani textile companies. Feng, Terziovski and Samson (2008) indicate that for a successful implementation of ISO 9000 organisations require higher levels of employee training, planning and commitment at all levels.

The other findings indicate that duration of ISO 9000 certification do not have significant effect on the implementation of TOP constructs except 'people'. According to these findings the companies having certification for less than three years and more than six years do not have significant difference especially for Organisation and Technologies construct of TOP. This aspect could be explained in the context of the explanation given by Baxter and Hirschhauser (2004, p.208). They consider that the implementation of the majority of performance improvement initiatives are intended to highlight the company's competence to the outside world,

and the company may never really intend to revolutionize the workplace. The 'pink factories' which adopt this approach in their implementation of TQM can never get success by using this philosophy.

Soltani, Meer and Williams (2005, p. 226) seem agree with this explanation they assert that, "registration with either the EFQM or one of its partners, such as the British Quality Foundation (BQF) and Quality Scotland Foundation (QSF) or MBNQA, does not necessarily make an organisation a quality-driven one". In addition, Magd and Curry (2003) indicate that the majority of companies get ISO 9000 certification because of customers' pressure. They want to show their competence to their customers and are not really concerned about improving the system by using the principles of ISO 9000. This could be the reason that in spite of having ISO 9000 certifications, the majority of companies are unable to improve continuously.

6) CONCLUSION

This study provides empirical evidence that certification to ISO 9000 is associated with the perceived implementation of TQM philosophy. The companies having ISO 9000 certification can perform better in comparison to non-certified companies. Therefore, ISO 9000 implementation facilitates the companies in their journey towards the implementation of TQM (Srivastav, 2010; Jang and Lin, 2008; Sroufe and Curkovic; 2008; Gotzamani et al. 2007; Terziovski and Power, 2007; Gotzamani et al. 2007; and Magd and Curry, 2003). The companies having certification to ISO 9000 can perform in the areas of customer focus and process management and continuous improvement however; they might not perform well in involvement of people and benchmarking activities. Furthermore, the documentation for ISO 9000 facilitates employees having better work instructions and procedures which consequently improve the organisational processes (Chow-Chua, Goh and Wan, 2003). However, the duration of certification to ISO 9000 does has much effect on the implementation of TQM philosophy. It seems that sample companies have not well understood the concept of continuous improvement which is the main component of process approach model of ISO 9000. This also indicate that companies do not give much emphasis on the implementation of spirit of ISO 9000 quality management system after having the certification of this standard.

BIBLIOGRAPHY

Ahire, S.L. and Dreyfus, P. (2000). The impact of design management and process management on quality: an empirical investigation. Journal of Operations Management, 18, 549-575.

Ahire, S.L., Golhar, D.Y. and Waller, M.A. (1996). Development and validation of TQM implementation constructs. Decision Science. 27(1), 23-31.

Baxter, L.F. and Hirschhauser, C. (2004). Reification and representation in the implementation of quality improvement programmes. International Journal of Operations & Production Management, 24(2), 207-224.

Boaden, R.J. (1996). Is Total Quality Management really unique? Total Quality Management, 7(5), 553-570.

Bou-Llusar, J.C., Ana B, E.T., Vicete, R.P. and Beltrain-Martin, I. (2009). An empirical assessment of the EFQM excellence model: Evaluation as a TQM framework relative to the MBNQA Model. Journal of Operations Management, 27, 1-22.

Choi, T.Y. and Eboch, K. (1998). The TQM paradox: Relations among TQM practices, plant performance, and customer satisfaction. Journal of Operations Management, 17, 59-75.

Chow-Chua, C., Goh, M. and Wan, T.B. (2003). Does ISO 9000 certification improve business performance? International Journal of Quality & Reliability Management, 20(6), 936-953.

Curkovic, S. and Pagell, M. (1999). A Critical Examination of the Ability of ISO 9000 Certification to Lead to a Competitive Advantage." Journal of Quality Management, 4(1), 51-67.

David, R.J. and Strang, D. (2006). When fashion is fleeting: Transitory collective beliefs and the dynamics of TQM consulting. Academy of Management Journal, 49(2), 215-233.

Dean, J.W. and Bowen, D.E. (1994). Management theory and Total Quality: Improving research and practice through theory development. Academy of Management Review, 19(3), 392-418.

Evans, J.R. and Lindsay, W.M. (2008). Managing for quality and performance excellence. Seventh Edition. Mason: Thomson Corporation.

Feigenbaum, A.V. (1956). Total quality control. Third Edition. New York: McGraw-Hill, Inc.

Feng, J., Prajogo, D.I., Tan, K.C. and Sohal, A.S. (2006). The impact of TQM practices on performance: A comparative study between Australian and Singaporean Organisations. European Journal of Innovation Management, 9(3), 269-278.

Flynn, B.B., Schroeder, R.G. and Sakakibara, S. (1994). A framework for quality management research and an associated measurement instrument. Journal of Operations Management, 11, 339-366.

Fotopoulos, C.B. and Psomas, E.L. (2009). The impact of "soft" and "hard" TQM elements on quality management results. International Journal of Quality & Reliability Management, 26(2), 150-163.

GARVIN D. A., (1988), MANAGING QUALITY: THE STRATEGIC AND COMPETITIVE EDGE. FREE PRESS; 1ST EDITION

Gotzamani, K. D., Tsiotras, G. D., Nicolaou, M., Nicolaides, A. & Hadjiadamou, V. (2007). The contribution to excellence of ISO 9001: the case of certified organisations in Cyprus. The TQM Magazine, 19, 388-402.

Grant, R.M., Shani, R. and Krishnan, R. (1994). TQM's challenge to management theory and practice. Sloan Management Review, 35(2). P.25-35.

Gutierrez, L.J.G., Torres, I.T. and Molina, V.B. (2010). Quality management initiatives in Europe: An empirical analysis according to their structural elements. Total Quality Management, 21(6), 577-601.

Hackman, J.R. and Wageman, R. (1995). Total quality management: empirical, conceptual, and practical issues. Administrative Science Quarterly, 40, 309-342.

Hafeez, K., Malik, N. and Abdel Meguid, H. (2006). A framework for TQM to achieve business excellence. Total Quality Management, 17(9), 1213-1229.

Han, S.B., Chen, S.K. and Ebrahimpour, M. (2007). The impact of ISO 9000 on TQM and business performance. Journal of Business and Economic Studies, 13(2), 1-23.

Hellsten, U. and Klefsjo, B. (2000). TQM as a management system consisting of values, techniques and tools. The TQM Magazine, 12(4), 238-244.

Ho, C.C.K., Duffy, V.G. and Shih, H.M. (2001). Total quality management: an empirical test for mediation effect. International Journal of Production Research, 39(3), 529-548.

International Organisation for Standardisation. The ISO survey of certification, 2009. Geneva, Switzerland. 2011. Available at http://www.iso.org/iso/pressrelease.htm?refid=Ref1363 [Accessed 15 January 2011].

ISO (2000). ISO 9001:2000, Quality management systems: Requirements. Geneva, Switzerland.

ISO (2000).ISO 9001:2000, vocabulary. Geneva, Switzerland.

ISO (2008). ISO 9001:2008, Quality management systems: Requirements. Geneva, Switzerland.

Jang, W.-Y. and Lin, C.-I. (2008). An integrated framework for ISO 9000 motivation, depth of ISO implementation and firm performance. Journal of Manufacturing Technology Management, 19(2), 194-216.

Karapetrovic, S., Fa, M.C. and Saizarbitoria, I.H. (2010). What happened to the ISO 9000 lustre? An eight-year study. Total quality management 21(3), 245-267.

Kaynak. (2003). The relationship between total quality management practices and their effects on firm performance. Journal of Operations Management, 21(4), 405-435.

Lascelles, D., Dale, B., 1986. How change agents can effect quality improvement. In: Proceedings of the Second National Conference on Production Research, UK, pp. 132–145.

Li, L., Markowski, C., Xu, L. and Markowski, E. (2008). TQM: A predecessor of ERP implementation. Int. J. Production Economics, 115, 569-580

Lin, C.-I. & Jang, W.-Y. (2008). Successful ISO 9000 implementation in Taiwan: How can we achieve it, and what does it mean? International Journal of Productivity and Performance Management, 57, 600-622.

Lopez-Mielgo, N., Montes-Peon, J.M. and Vazquez-Ordas, C.J. (2009). Are quality and innovation management conflicting activities? Technovation, 29, 537-545.

Magd, H. and Curry, A. (2003). ISO 9000 and TQM: are they complementary or contradictory to each other? The TQM Magazine, 15(4), 244-256.

Martinez-Costa, M., Choi, T.Y. and Martinez, J.A. (2009). ISO 9000/1994, ISO 9001/2000 and TQM: The performance debate revisited. Journal of Operations Management, 27, 495-511.

Martinez-Lorente, A.R. and Martinez-Costa, M. (2004). ISO 9000 and TQM: substitutes or complementaries? An empirical study in industrial companies.International Journal of Quality and Reliability Management, 21(3), 260-276.

Masakure, O., Henson, S. and Cranfield, J. (2009). Standards and export performance in developing countries: Evidence from Pakistan. The Journal of International Trade & Economic Development, 18(3), 395-419.

Miller, D., Hartwick, J. and Breton-Miller, I.L. (2004). How to detect a management fad and distinguish it from a classic.Business Horizons, 47(4), 7-16.

Oakland, J.S. (1993). Total Quality Management: The route to improving performance. 2nd ed. Edition. Oxford Butterworth-Heinemann

Prajogo, D.I. and Sohal, A.S. (2003). The relationship between TQM practices, quality performance, and innovation performance: An empirical examination. International Journal of Quality and Reliability Management, 20(8), 901-918

Quazi, H.A., Jemangin, J., Kit, L.W. and Klan, C.L. (1998). Critical factors in quality management and guidelines for self-assessment: The case of Singapore. Total Quality Management, 9(1), 35-55.

Rao, S.S., Raghunathan, T.S. and Solis, L.E. (1999). The best commonly followed practices in the human resource dimension of quality management in new industrializing countries: The case of China, India and Mexico. International Journal of Quality & Reliability Management, 16(3), 215-226.

Rao, S.S., Ragu-Nathan, T.S. and Solis, L.E. (1997). Does ISO 9000 have an effect on quality management practices? An international empirical study. Total Quality Management, 8(6), 335-346.

Reeves, C.A. and Bednar, D.A. (1994). Defining quality: Alternatives and implications. The Academy of Management Review, 19(3), 19-445.

Rich, E. (2008). Management fads and information delays: An exploratory simulation study. Journal of Business Research, 61, 1143-1151.

Russell, S. (2000). ISO 9000:2000 and the EFQM excellence model: competition or co-operation? Total Quality Management & Business Excellence, 11(4), 657-665.

Samson, D. and Terziovski, M. (1999). The relationship between total quality management practices and operational performance. Journal of Operations Management, 17(4), 393-409.

Saraph, J.V., Benson, G.P. and Schroeder, R.G. (1989). An instrument for measuring the critical factors of Quality Management. Decision Sciences, 20, 810-829.

Sila, I. (2007). Examining the effects of contextual factors on TQM and performance through the lens of organisational theories: An empirical study. Journal of Operations Management, 25, 83-109.

Sila, I. and Ebrahimpour, M. (2003). Examination and comparison of the critical factors of Total Quality Management (TQM) across countries. International Journal of Production Research, 41(2), 235-268.

Soltani, E., Meer, R.V.D. and Williams, T.M. (2005). A contrast of HRM and TQM approaches to performance management: Some evidence. British Journal of Management, 16, 211-230.

Sousa, R. and Voss, C.A. (2002). Quality management re-visited: a reflective review and agenda for future research. Journal of Operations Management, 20, 91-109.

Spencer, B.A. (1994). Models of organisation and Total Quality Management: A comparison and critical evaluation. The Academy of Management Review, 19(3), 446-471.

Srivastav, A.K. (2010). Impact of ISO 9000 implementation on the organisation. International Journal of Quality & Reliability Management, 27(4), 438-450.

Sroufe, R. & Curkovic, S. (2008). An examination of ISO 9000:2000 and supply chain quality assurance. Journal of Operations Management, 26, 503-520.

Tari, J.J. (2005). Components of successful total quality management. The TQM Magazine, 17(2), 182-194.

Terziovski, M. and Power, D. (2007). Increasing ISO 9000 certification benefits: a continuous improvement approach. International Journal of Quality & Reliability Management, 24(2), 141-163.

Terziovski, M. and Samson, D. (2000). The effect of company size on the relationship between TQM strategy and organisational performance. The TQM Magazine, 12(2), 144-148

Zhu, Z. and Scheuermann, L. (1999). A comparison of quality programmes: Total Quality Management and ISO 9000. Total Quality Manage

Zu, X. (2009). Infrastructure and core quality management practices: how do they affect quality? International Journal of Quality & Reliability Management, 26(2), 129-149.