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## **A Review of Current Issues and Challenges for TQM Implementations in the Jordanian Information and Communications Technology Sector**

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### **Abstract**

*This paper discusses the application of Total Quality Management (TQM) in Jordanian Information and Communications Technology (ICT) sector. Utilising a methodology based upon questionnaires and semi-structure interviews, investigation of Jordanian ICT organisations and their significant stakeholders has revealed that although they have endeavoured to put into practice the strategies, tools and techniques of TQM, there are barriers to achieving successful implementation. The most significant relate to government influences and internal cultural characteristics. This research has further identified that effective information systems play a successful role in TQM implementations, an issue that is not well demonstrated in the literature.*

**Keywords:** *TQM Implementation, TQM barriers to success, ICT, Jordan*

### **Introduction**

To survive and compete in the rapidly changing business environment many organisations around the world have been forced to create new philosophies to improve the organisational performance. Many of these philosophies have Total Quality Management (TQM) at their core. TQM emerged in 1980 in U.S.A, providing a structure for competitive response to the growing dominance of Japanese manufacturers. Although there is much evidence in the literature of research being carried out in established economies, it is evident that there is a limited amount of

research being undertaken concerning TQM in developing countries. Gosen et al. (2005, p.452) stated that:

*“A number of gaps are identified in the literature on quality management in developing countries along with significant challenges including differing perceptions of quality”*

Moreover, Sila and Ebrahimpour (2002) added that many analytical studies conducted in different countries show that there is a scarcity of information about the nature and stage of TQM implementation in other regions of the world including South America, Africa and Middle East. Therefore, the study described in this work adds to the knowledge of the field in that it demonstrates a new perspective related to the previously un-researched environment of the Jordanian ICT sector also making a contribution to the wider TQM literature.

Reviewing the literature published in Europe it could be seen that there were many companies operating on the Internet, a main part of the ICT sector, which were suffering from financial loss and failure. For instance, ISBN 978-9948-03-638-8

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the Wall Street Journal Europe (2001) has reported that a total of 555 Internet companies have shut down since January 2000 (Kemmler et al., 2001). Many attempts have been made by authors to illustrate the weakness and the strengths within such organisations. The focus of the work is to understand why Companies fail? Then, to demonstrate the potential benefits of applying the concept of TQM to virtual operating environments (Alomaim et al., 2003). Aboelmaged and Tunca (2000) point out that the Internet companies, as with many other virtual organisations, suffer from not only financial problems, but are also challenged by many inner and external threats. These threats are potential crises that may be responsible for final closure.

Alomaim et al., 2003 explained the reasons behind this failure when he said:

*“It is significant for the Internet companies to focus on unconditional customer satisfaction. Many Internet companies have yet to practice TQM principles”*

Building on this discussion, there are significant questions that must be raised. These pertain to the currently successful ICT companies in Jordan and whether they are facing the same potential state of failure? If not how could these companies maintain their current success long term? Therefore this paper reports research that provides an evaluation of TQM implementations in the Jordanian ICT sector and that has identified the critical impediments to successful TQM implementation there. The value of this study comes from addressing the lack of the research that has been undertaken in TQM in Jordan and more specific in the ICT sector.

### **Jordan Overview**

This study has been applied in Jordan, which is one of the developing countries in the Middle East. Jordan is located in the heart of conflict-ridden and unstable region, a key issue in the business environment. The Arab Bank Review (2004) stated that Jordan suffers from a shortage of financial and natural resources, although trade and service-related industries account for more than two-thirds of its gross domestic product. This lack caused high public debt, scarcity of foreign and local investments, poverty and unemployment. Unemployment is potentially the most socially significant of these problems with unemployment rate currently standing at 16%. (Department of Statistics Yearbook- Jordan, 2003-2004). All these aspects negatively affect the Jordanian business environment.

### **ICT Sector in Jordan**

In spite of previously mentioned challenges, the information and communications technology ICT sector in Jordan, achieves advanced levels of performance and competitiveness not only in the Arab world but also in the Middle East. Jordan is considered as an example of a nation state

trying to develop based on using ICT in an increasingly globalised world (Al-Jaghoub and Westrup, 2003). The industry has the potential to generate a competitive advantage. Also to play an important role in the development of other technological based industries. It is engaged in a number of initiatives in order to pave the way for the country to become a regional IT centre (Nusseir, 2001).

### **TQM Overview**

TQM is a comprehensive approach applied to improve competitiveness, effectiveness and flexibility through planning, organizing and understanding each activity, and involving each individual at each level (Oakland, 2003). It is defined by Slack et al. (2007, p 651) as “TQM a holistic approach to the management of quality that emphasizes that role of all parts of an organisation and all people within an organisation to influence and improve quality; heavily influenced by various quality gurus it reached its peak of popularity in the 1980s and 1990s”.

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There are several non Jordan specific studies such as Al-khalifa and Aspinwall, (2000); Chapman and Al-Khawaldeh, (2002); Alomaim, (2002); Abu-Hamatteh et al, (2002); Baidoun, (2004) and Al-Qudah, (2006), carried out in the Middle East that indicate that there are nine common TQM factors (top management commitment; communications and structure; employee empowerment and training; continuous improvement; customer focus; quality measurement and benchmarking; policy and strategic planning; organisational culture; supplier's relationship) and that these factors have been applied to studies in similar environments of developing countries in general, and in the Arab world in particular. It is worth mentioning that none of these studies investigated the role that quality information system (QIS) plays in successful

TQM implementation. Also, there is no clear evidence that the role of this factor in applying TQM has been studied in the Arab world. Therefore, the researchers in the present study investigated the role of these nine TQM factors plus the role of the quality information system. Generally QIS is considered a significant TQM function that plays a vital role in ICT company businesses and is a critical enabler of TQM. Successful organisations realise that information technology and information systems are core to their quality success (Ross, 1999). It has also been identified as a significant element that influences service quality (Bharati and Berg, 2003). Furthermore, the use of information technology in quality management can improve quality through the following:

- Enhancing quality awareness;
- Reduction of quality costs;
- Speedy processing of quality data; and
- Online information about the quality level.

(Mjema et al, 2005).

Organisations face different challenges in TQM implementations (Rad, 2006). The change of organisation's culture has been identified as the most common barrier to successful TQM implementation (Gotzamani and Tsiotras 2002). Therefore, Organisations need to develop a best practice model for implementation, which is accepted by the culture. So that it is important to develop TQM programmes that are accepted culturally. TQM programmes are more likely to succeed if the prevailing organisational culture is compatible with the values and essential assumptions suggested by the TQM discipline (Kujala and Lillrank, 2004). Moreover, Tsang and Antony (2001) indicate that organisations have to generate a culture where all the organisation members participate in the quality awareness programme and quality improvement projects relevant to their own place of work.

Zack and Mckenney (1995), maintained that

organisational context reflects the socialcultural factors affecting knowledge, such as culture, power relations, norms, reward systems, and leadership style. Much of the empirical research on Arab management indicates that organisations in Arab countries face many organisational and managerial problems, stemming from their bureaucratic design and prevailing power culture (Sabri, 2007). It is observed that managerial style in Jordanian organisations is characterized by high power and role cultures (Ali and Sabri, 2001).

The literature indicates that the government can play a significant role in encouraging or discouraging strategic quality planning (Thanassoulis et al., 1994). Furthermore, government has a positive or negative impact on the functioning of human resource practices and training programmes (Ehrenberg and Stupak, 1994). However, Gosen .,et al (2005) stated that governments in developing countries can more effectively help in enhancing local capability without

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diminishing quality by being more efficient themselves, providing financial and technology support, and making industrial development an important priority. It is worth mentioning that a number of gaps have been identified in the literature concerning the role of government effect on TQM implementation in developing countries. Furthermore, there are a number of other barriers to TQM implementation success, such as lack of continuous improvement (Adebanjo and Kehoe, 1998, Tamimi and Sebastianelli, 1998). The lack of top management commitment is also identified as one of the main obstacles to successful TQM implementations (Macdonald, 1998; Najmi and Kehoe, 2000; Amar and Zain, 2002). Also, the inefficient knowledge and understanding of the concept of TQM is recorded as one of the top difficulties that face TQM (Huang and Lin, 2000). However,

the developing countries suffer from poor quality products. Low product quality is term that has become synonymous with the customer goods manufactured in the developing countries (Lakhe and Mohanty 1994). Sandholm (1999) refers to certain inhibiting factors to TQM in developing countries as low purchasing power, a shortage of goods, foreign exchange constraints, an unfinished infrastructure, insufficient leadership and insufficient knowledge.

### **Research Methods**

The study combines two commonly used research methods; qualitative and quantitative techniques are utilised. Two methods were used to collect the data; namely, a survey questionnaire and semi structured interviews. The questionnaire aimed to investigate the implementation of TQM in the ICT sector, to obtain a general background of the respondents and the companies' characteristics. It also included an investigation of factors for successful TQM implementation by considering ten factors. Barriers to the successful adoption of TQM were also identified. Interviews with managers in the organisations were used to explore themes and issues that had emerged from an analysis of the questionnaires. The two methods are viewed as complementary to each other.

The research population consists of all companies in the Jordanian ICT Sector (thirty) that are licensed to work and registered by the Telecommunications Regulatory Commission (TRC) in 2006. The categorisation of these companies according to TRC is: 17 data communications companies; 1 land telephone company; 3 cellular companies; 4 pre-paid card companies; radio trunking companies; 1 paging companies; 3 satellite companies. Five-point Likert scales (strongly disagree, disagree, not sure, agree, strongly agree) were used in the questionnaire. The reasons behind this choice is to avoid confuse the respondents

with having many choices on its continuum scale. Hussey and Hussey (1997) indicate that it makes the respondents comfortable with a wide range of choices on its continuum scale. They add it is easier for respondents to complete the questionnaire in this form. This section of the questionnaire includes thirty eight statements to identify TQM factors that are critical for effective implementation of TQM.

The questionnaire was initially validated through distribution to and feedback from academics in both the UK and Jordan who are expert and specialise in TQM and management. They gave their comments on the content and structure of the questionnaire; amendments were made and the document revalidated.

The external validity of the questionnaire was ensured through the pilot testing of the survey questionnaire in three companies. The questionnaire was completed by general and TQM managers and TQM employees in both English and Arabic versions. This stage aimed to establish

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whether there were any ambiguous or misunderstood questions or suggestions. Six versions of the questionnaire were completed and collected by the researcher. There were no comments, which meant that the questionnaire was clear and easy to complete. At the end of this stage the researchers were convinced that the questionnaire was appropriate.

The questionnaire was distributed to twentyseven companies. A total of 120 questionnaires were distributed personally by hand and left with the participations for a few days to enable them to fill them out. Total of 88 were returned completed and usable. These questionnaires underwent preliminary analyses by using the SPSS programme version 12.0.

The second stage of the data collection was semi-structured interviews with General and TQM managers. These were used to gain a



clear understudying of the themes that had emerged from the questionnaire and collect more information about the TQM implementation issues. The largest 10 companies according to number of employees were chosen to conduct the interview in. The researcher conducted three informal interviews with three managers in order to pilot the interviews' questions. Based on those pre- interviews the researcher made modification to some questions in accordance to the recommendations by the interviewees. The researchers ended with a list of questions ready to conduct and achieved a total of 16 interviews.

## **Findings and Discussion**

From analysis of the quantitative and qualitative data collected a summary of main findings and discussion are provided.

### ***Success Factors***

The value of each TQM factor has been assessed by a group of questions utilising a five -points Likert scale method. That is participants were asked to answer at which point along the scale they would mark to agree with or disagree with the given statements. Using this scale, the average of the measure is 3  $((1+2+3+4+5)/5)$ , therefore, the means above 3 indicate an agreement with the statements while the means below 3 show overall disagreement. Table 1 below shows the mean of each TQM factor studied within the current investigation. These factors are: top management commitment; quality structure and communications; employee empowerment and training; quality measurement and benchmarking; continuous improvement; customer satisfaction; organisational culture; quality information systems; policy and strategy planning; and Supplier's relationships.

Table 1: TQM factor mean

TQM factors Mean Std. Dev.

Top management commitment 3.86 .50

Quality communications and structure 3.90 .75

Employee empowerment and training 3.80 .62

Quality measurement and benchmarking 3.72 .46

Continuous improvement 3.74 .65

Customer satisfaction 3.81 .48  
Organisational culture 3.73 .49  
Quality information systems 3.88 .62  
Policy and strategy planning 4.00 .65  
Suppliers' relationships 3.96 .61

Of the 10 factors developed from analysis of the questionnaires and shown in table 1 above 7 were identified by managers that were interviewed, as being critical factors within ISBN 978-9948-03-638-8  
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the Jordanian ICT sector. These factors are top management commitment, quality communication and structure, quality measurement and benchmarking; customer satisfaction; policy and strategy planning; suppliers' relationships, quality information systems to be critical TQM factors within the ICT sector in Jordan. This result is supported by interview results. The majority of the interviewees identify the significant role these factors play in achieving successful TQM implementation their companies.

The same result is reached by other studies conducted in the field. Salaheldin (2003) concluded that top management commitment plays a significant role in promoting TQM implementation in Egypt. Sila and Ebrahimpour (2002) point out that there are some studies found that communication plays a significant role in the successful TQM implementation. An organisation must embrace strong acceptance and maintenance of total quality measurement and benchmarking plan (Motwani, 2001). ALQudah, 2006) found that supplier's relationship as a TQM critical factor. Al-Khawaldeh (2002) emphasis that the need of the adoption customer's satisfaction element in the companies that applied TQM philosophy and they considered it as a key element to fix and resolve customer's problems and complaints. Baidoun, (2004) indicates that developing a quality policy must reflect the organisation's mission including corporate values, expectations and focus. In the Jordanian context, policy and

strategic planning are defined as fundamental factors for measuring the companies QM performance. Also that strategic planning is the most important principle of King Abdullah II Award for Excellence (Abu-Hamattah et al, 2003).

### ***Quality Information Systems***

ICT companies in Jordan have demonstrated noticeable interest in adopting quality information systems (QIS), identifying that this leads to the successful implementation of advanced quality management systems. Survey results in respect to QIS record a Mean value of 3.88. Moreover, it can be concluded that using quality information systems increases the quality level of the service and, in its turn, fulfils and satisfies the customer requirements by providing all the information needed about the company products and services.

It has been found from the interviews responses that 68.75% of the interviewees mentioned that an information system must be considered as a critical TQM factor; it plays major roles in applying and adopting successful TQM programmes and philosophy. It leads to an increase in the level of quality services which, in turn, fulfil the customer needs and demands and achieves customer satisfaction. One of TQM manager stated that:

“The Quality information system at our company is considered as the main and supportive factor to the other TQM factors at the company. Therefore, we are very keen to adopt it. ... We totally believe that adopting new technologies is going to assist our missions to continue our company improvement process. We are very keen to update our company’s website regularly because we believe that if our customer could not find what he/she is looking for then he/she will move to another website to shop in”.

Duran-Arenas et al (1998) in their study “The development of a quality information system: a case study of Mexico” found that one of the

primary obstacles in the implementation of continuous quality improvement programmes in developing countries is the lack of timely and appropriate information for decision making. This result is not consistent with the result of the current study which was conducted in Jordan, also a developing country. ISBN 978-9948-03-638-8

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country. This result could be reasonable because all the ICT companies are aware of the importance of supportive information systems. They based on their business on information and communication technology and deal with various information systems. More than half of these companies (17 companies) are data communications companies and the rest are cellular, pre-paid card, radio trucking, paging and satellite companies. The nature of these companies work as service companies requires highly qualified information systems managers.

#### ***Social Responsibility***

Within the current study social responsibility as a TQM factor was not measured in the questionnaire. However, a number of General and TQM managers who participated in the interviews did independently raise the issue of the role social responsibility played in applying a successful TQM programme. Three of the interviewees mentioned that social responsibility is considered as a new phenomenon in Jordanian ICT companies and must be considered as a critical factor to implement a successful TQM philosophy. Solis et al (2000) emphasised the need for social responsibility in developing a quality process and having corporate quality citizenship as an important element of the effective implementation and usage of quality management practice.

#### ***Impediments to TQM***

To identify the most influential impediments to successful TQM implementation the respondents were asked to arrange identified obstacles in a range from the most to the least effective factors according to the degree they

prevent the success of adopting TQM in their companies. The Questionnaire findings revealed that there are three main impediments that hinder successful TQM implementation in the Jordanian ICT companies. They are in order 'Weakness of the attention to total quality culture' this is the major problem and the most effective factor preventing the adoption of TQM. Twenty interviewees identified this as being the leading impediment. This was followed by 'Weakness of the employee empowerment, with a frequency of 13 and lack of continuous improvement with a frequency of 11.

### ***Organisational Culture***

The past adoption of inappropriate organisational culture within the Jordanian ICT companies is revealed by both the questionnaire and interviews findings as a main impediment to successful TQM implementation. Furthermore, the managers interviewed indicated that there were two dimensions to this that were exclusive phenomena in the Arab World, in general, and in the Jordanian context in particular. These two dimensions are "Wasta" and nepotism. "Wasta" is a special type of illegal facility (English: a means, mechanism, medium) and sometimes it is even given the nickname Vitamin Waw (as it gives power and so). "Wasta" is term used in the Jordanian context to reflect the role of the personal and family relationship in developing the business process. (Bayazidi, 2005). Wasta usually holds a negative meaning because the people usually use it to develop illegal processes. Ford and McLaughlin, (1986) mention that nepotism has a negative impact on employee's behaviour, when family relationships get mixed up with business decisions; people can not be sure if they are hired, promoted or given a raise in pay on the basis of their actual performance or their kinship. These special dimensions to culture are considered to have negative impact on the implementation of TQM in the studied

companies. This gives an indication that there are weaknesses of organisational culture in the ICT companies in Jordan.

This finding is supported by Hofstede (1997) when he characterised the Arab business ISBN 978-9948-03-638-8

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culture by the high power distance, and collectivism. Moreover, Sawalha (2002) stressed the role of “Wasta” in the business sector as developing the business process based on personal gains; commonly standing for favouritism, cronyism, and dishonesty in general. Also he stated that the Arab World is based on strong family connections secured in “Wasta” networks.

The results regarding the TQM implementation illustrate that the larger companies recorded a mean value of 3.90 while the small ones recorded 3.81 mean. This result reflected that TQM strategy is applicable in the large ICT companies in Jordan rather than the small ones. Terziovski and Samson (2000) concluded that large companies tend to gain greater benefits from TQM than smaller firms.

#### ***Weakness of Employee Empowerment***

Weakness of the commitment in employee empowerment was ranked as the second impediment which hampered TQM implementation in the Jordanian ICT companies. The reason behind this result is there is misunderstanding of employee empowerment as a TQM significant factor within these companies. This result is consistent with AL\_khalifa and Aspinwall (2000) in their study in Qatar; they concluded that the barriers that face implementing TQM in Qatar is the lack of empowerment the company employ in the training programmes.

#### ***Continuous Improvement***

The weakness of continuous improvement is considered as a significant barrier to applying TQM programme within the Jordanian ICT companies. It recorded the third highest ranking among other impediments within the current investigation. The rapid changes in the

business environment and the fast changes in the technology and the market place make the companies and the employees unable to cope with the new technologies and market place requirements. The same result has been reported by Al- Qudah (2006) in his study in Jordan. The interview findings support the questionnaire findings.

### ***The Government Influence***

The interviews identified three other significant barriers that are related to government policy. These barriers are governmental policy; taxation policy and bureaucracy. The governmental policy which gives companies a licence to run a new business is recognised as a barrier because in the current Jordanian's situation the government gives a licence without investigating the companies' established strategies and business plans. AL\_Zamany et al. (2002), in his study in Yemen, states that many organizations in the Middle East have not successfully acted as commercial organisations because of the volume and variety of government interventions. Taxation is another barrier identified in the interviews. Participants indicated that high company taxation was an impediment to the investment needed for successful TQM implementations. Al-Shaikh (2003) stated that it can be easily observed that Jordanians are always complaining about the different types of tax they have to pay (Al-Shaikh, 2003). Government bureaucracy is the third barrier. The extensive procedures demanded by government departments slow down an organisation's ability to respond to its customers and to competitive pressure.

### **Conclusion**

This paper has presented the results of a study on the implementation of TQM carried out in Jordanian ICT sector. The most important findings from the research are as follows:

- Key success factors are: top management support and commitment to its responsibilities for improvement of

the management system and allocating adequate resource and time for TQM;

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quality communications and structure; quality measurement and benchmarking; quality training; customer satisfaction; policy and strategy planning; suppliers' relationships; and quality information systems are critical TQM factors for success.

- Social responsibility appears as a new phenomenon in the Jordanian context.
- TQM programmes are more likely to be adopted and implemented in the largest companies more than the smallest ones.
- The limited attention to total quality in the organizations' culture, the weakness of the employee's empowerment and adoption of continuous improvement were the main impediments prevent TQM implementation process.
- Government influence, high taxation, the policy of giving license to new companies and the bureaucracy are considered other impediments that hamper TQM implementation in ICT companies in Jordan.

### **Contributions and implications**

This paper provides a number of contributions to the knowledge body. It is considered as the first study aimed to investigate TQM practices in the ICT sector in Jordan. The investigation contributes to the knowledge in that the quality information system is recognised as an important factor in implementing and in managing TQM; however, there is a lack of recognition of this in relation to factor in the TQM literature as well as empirical investigations. The study pays attention to other researchers who are working in the field of TQM in relation to the study of social responsibility as an important



TQM factor. Particularly in exploring the extent to which companies take into account social responsibility internally and externally. It provides empirical evidence of the impediments and challenges that hamper and face TQM implementation in Jordanian ICT companies, such as the weakness of the organisational culture. This study raises the awareness of the significance of the TQM programmes as important, strategically and philosophically, which could help companies to give a better understanding of how TQM could be effectively approached and implemented.

The findings of this research lead to a number of recommendations in order to improve TQM activities in Jordanian ICT companies. These companies could develop a strategy for implementing TQM by paying more attention to the identification; analysis and adoption of an appropriate organisational culture that suits the TQM implementation. Social responsibility needs to be considered seriously in two dimensions: companies' responsibility towards its staff should be improved, as well as companies' ethical and social responsibility towards their customers and the external environment. Employee's empowerment is an important issue in TQM implementation; thus, Jordanian ICT companies should pay more attention to how to satisfy those employees and increase their empowerment. Continuous improvement is a significant factor in TQM. The companies need to give it attention in terms of the awareness and the value of its implementation. Government should review its policy regarding the taxation and the policy of giving new licences in order to encourage the companies to adopt and achieve quality.

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