

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The main purpose of the present research is to analyze the relationship between human factors of quality management and quality improvement practices and organization performance through evaluating both direct and indirect impact of human factors of quality management on quality improvement practices and organization performance.

In doing so, an empirical study on sample of 87 Yemeni industrial companies was carried out. Specifically, the research focused on all industrial companies who had received local and international quality certificates due to their interest on total quality management implementations and implicate local and international criteria in their operations. The sample of the study consists three quality managers each company. The theoretical review and the data analysis of this study led us to several conclusions.

In the following sections, the summary of study, conclusion, implications of study, limitation of study, and suggestions to future research are discussed.

5.1 Summary of the study

The purpose of this study is to determine, describe, and explore the contribution of human side of total quality management to the implementation of total quality management program and organization performance through examine the direct impact of human factors of quality management on quality improvement practices and organization performance, and indirect impact of human factors of quality management on organization performance via their direct impact on quality improvement practices. To investigate the main purpose of this study the researcher posed four objectives; they are (1) To determine the impact of human factors of quality management on organization performance. (2) To identify the impact of human factors of quality management on quality improvement practices. (3) To evaluate the impact of quality improvement practices on organization performance. (4) To examine the role of quality improvement as a mediator factor on the relationship between human factors of quality management and organization performance.

Consequently, in order to achieve the four research objectives, four research questions were proposed they are (1) Is there direct impact for human factors of quality management on organization performance? (2) Is there direct impact for human factors of quality management on quality improvement practices? (3) Is there direct impact for quality improvement practices on organization performance? (4) Is there indirect impact for human factors of quality management on organization performance through their impact on quality improvement practices?

Literature of quality management suggested that there is insufficient interest on the human side of quality either when the companies reengineer their process to implement total quality management program or in the term of research, there are lack of studies interest on the human side of quality management. Moreover, some studies were interested in dividing the critical factors of quality management into two groups; namely hard and soft factors or technical and human factors respectively.

According to Wilkinson (1992), there are two aspects of quality management; one of whom is the hard aspect (or technical factors) that focuses on tools and work process and the other is the soft aspect (or human factors) that interests on the human side of quality management. Moreover, Wilkinson et al. (1994) suggested that the hard aspect is more preoccupation rather than the human aspect when the organizations implement total quality management program.

Literature on quality management also suggested that human factors of quality management such as leadership, teamwork, employee involvement, training and education, customer focus, communication, supplier relations, and rewards and recognition have significant impact on the implementation of total quality management (Saraph et al., 1989; Flynn et al., 1995; Ho et al., 2001; Rahman and Bullock, 2005; Abdullah et al., 2008; Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; and Kumar et al., 2009).

In view of that, even quality improvement practices, the literature of quality management suggested that quality improvement practices include both technical and human factors of quality management; it proposed that when quality improvement practices increase the organization performance also increases as well. Quality management gurus such as Deming, Juran, Crosby and Ishikawa also referred to the important role of quality management in the increment of organization performance. Thus, based on these ideas this study interests on illustrate and demonstrate the relationship of human factors of quality management with quality improvement practices and organization performance.

In Yemen, industrial sector plays a vital role in leading economic changes whereas Yemeni Government makes effort to enhance this sector due to its support to Yemeni Economic. Alongside, Yemeni industrial companies have been taken total quality management program as the effective approach to enhance their competitive advantages in order to encounter the new challenges in business environment, but that won't be succeed without paying a great attention to human factors of quality management due to the importance of

these factors to the implementation of total quality management and organization performance.

This study developed its framework based on the work that had been done by Flynn et al. (1994) and Abdullah et al. (2008). The researcher developed the framework of the current based on six human factors of quality management as an independent variables; they are leadership, customer focus, supplier relations, employee involvement, training and education, and reward and recognition, while quality improvement practice was treated as a mediator variable, and organization performance as a dependent variable (see Figure 5.1).



Figure 5.1 the structural model of study

Based on the theoretical framework and previous studies that investigated the direct relationship between human factors of quality management and quality improvement practices and organization performance in addition to the indirect impact of human factors of quality management on organization performance through their impact on quality improvement practices, the following four hypotheses were generated to answer the selected research questions: (1) Human factors of quality management have direct impact on organization performance. (2) Human factors of quality management have direct impact on quality improvement practices. (3) Quality improvement practices have direct impact on organization performance. (4) Human factors of quality management have indirect impact on organization performance through their impact on quality improvement practices.

In fact, the current study is considered the first attempt in Yemen as well as in the Middle East countries that interests on the human side of total quality management; in point of fact, this is the cause behind the importance of this study. Practically, this study was carried out through 87 of Yemeni industrial companies by sample of three managers each company; one of whom is top managers and two are quality managers). However, they were different size in population from small, medium and large, also they were different terms in local and international certified.

For the accomplishment of the research task toward achieving the desired objectives and examining the generated hypothesis, choice a suitable methodology is a vital issue. In some cases, the required information can only be acquired by a specific methodology. Therefore, in the present study the quantitative method was chosen and the data was collected through a designed questionnaire.

In terms of data analysis, this study used two analysis program; they are (1) SPSS program to statistical analysis which factor analysis, reliability analysis, demographic information, descriptive statistic analysis and correlation analysis between the variables of study were carried out accordingly, (2) Structural equation model (SEM) was used by Amos program to evaluate the

direct and indirect relationship between the variables of this study by establishing four structural models.

The analysis results found a positive relationship between the variables of this study, whereas the results revealed a significant direct impact of human factors of quality management on organization performance; the standardized coefficient was .432 and significant at .001 level ($P < .000$). This result supports hypothesis 1 that claimed a significant direct impact of human factors of quality management on organization performance.

Moreover, the results revealed a significant direct impact of human factors of quality management on quality improvement practices; the standardized coefficient was .795 and significant at .001 level ($P < .000$), this positive result supports hypothesis 2 that mentioned earlier and claimed a direct impact of human factors of quality management on quality improvement practices.

An in-depth analysis, revealed a significant direct impact of quality improvement practices on organization performance; the standardized coefficient was .396 and significant at .001 level ($P < .000$), however, this result supports hypothesis 3 that mentioned earlier and claimed a significant direct impact of quality improvement practices on organization performance.

Furthermore, the mediation role of quality improvement practices was examined, and the results suggested that the human factors of quality management indirectly impact organization performance through their impact on quality improvement practices; the standardized coefficient was .236 and significant more than (.08), this results support hypothesis 4 that claimed earlier a significant mediation role of quality improvement practices for the relationship of human factors of quality management and organization performance.

5.2 Discussion

In view of the findings and discussions that mentioned in chapter four, all four research questions were answered and all four research hypotheses were supported by the study's findings and the researcher extracted the following discussion:

5.3.1 Direct impact of human factors on organization performance

The findings of this study showed a significant relationship between human factors of quality management and organization performance which means that human factors have a direct impact on organization performance. These results make this study harmonizes with previous studies in literature of quality management such as Flynn et al. (1994); Ho et al. (2000); Rahman and Bullock, (2005); and Abdullah et al. (2008).

In fact, human factors of quality management have an important role for the implementations of total quality management and directly impact organization performance. Therefore, due to the importance of these factors, more attention must be obtained when the companies reengineering their process to implement total quality management program especially for the factors of interest in this study and significantly impact organization performance; leadership, customer focus, employee involvement, training and education, and reward and recognition.

In relation to Yemeni industrial companies, the results of this study will stimulate Yemeni companies to enhance the implementation of human factors during their implementation for total quality management program due to their important function since they act to increase the awareness to the culture of total quality management and breaking down department barriers and increasing employees' performance and contribution.

Indeed, the literature of quality management suggested that the commitment of both managers and employees of organization is necessary for the implementation of total quality management. Due to the significant contribution of human factors in change the thinking of both managers and employees and permeate total quality management through the whole organization, we can say that human factors play a central role in organization.

Moreover, in terms of research, there are still insufficient studies interested on the human side of quality management. Furthermore, in Yemen and Middle East countries to date there is no study was carried out interests on human side of quality and its contribution to organization performance; hence, a concentrated dose of attention must be give to human side by researchers all over the world especially in Middle East countries.

An in-depth analysis and explanation for the results of current study showed that five out of six human factors have significant relationship with organization performance they are; leadership, customer focus, employee involvement, training and education, and reward and recognition. In reality, the literature of total quality management considered these factors as the most important factors to achieve the implementation of total quality management.

Actually, the results of study support the previous suggestions in literature. It has been shown that leadership is the key factor in leading the success of total quality management implementation and organization performance through driving the changing in processes and system and place clear standards of acceptable work to employee, in addition to creating an appropriate environment to achieve quality objectives and enhance organization performance.

Besides, the results of this study considered customer focus as a critical factor to the implementation of total quality management program since it has a significant relationship with organization performance. Actually, customer focus must get essential consideration of organizations; and definitely the understanding of the customer requirements are extremely important to ensure

that design quality meet the customer needs which involvement of customer in the product design is necessary to explore and achieve its requirements.

Furthermore, this study confirmed that employee involvement is one of the most critical succeed factors for the implementations of total quality management program and organization performance. These results found that employee involvement significantly impact organization performance. In reality, the message of quality "the quality is every one" confirms that the all employees of organization are responsible to achieve the aims of total quality management program. Therefore, involving the employees in decision making and place the objectives of quality in their hands; without doubt lead to accomplishment total quality management program and increase organization performance.

Indeed, the results also revealed that training and education is an essential factor for total quality management implementation and organization performance. Training and education has a significant direct impact on organization performance. Actually, this important factor makes the employee ready to be constantly updated due to the rapid changing in the organization environment which may face new challenges and achieve the aims of quality continuous improvement.

Moreover, in the results of study, reward and recognition appeared to have a significant relationship with organization performance. Actually, reward and recognition is a critical factor to the success of total quality management implementation since it performs to enhance an effective employee commitment to quality improvement program which in turn increases organizational performance.

On the other hand, the result of the current study found that there is not any positive relationship between supplier relation and organization performance. In point of fact, this result confirms the previous suggestion in the literature of total quality management that obtained by Dow et al. (1999) and Powel (1995), whom claimed that a factor such supplier relation could be context-dependent.

In sum, it is clear to us that the results of this study confirm that human factors of quality management are essential factors. These factors effectively act to enhance the commitment of both managers and employees to the implementation of total quality management, which is seriously efficient to increase organization performance.

5.2.2 Direct impact of human factors on quality improvement practices

Many organizations in business environment believe that effective total quality management implementation is the key to construct and support competitive advantages in the market. This study was conducted to support the effort of Yemeni Government and companies to enhance competitive advantages of the companies through the implementation of total quality management.

As discussed earlier, total quality management philosophy made revolution in business environment, and has changed methods of work. In fact, to effectively manage total quality management implementations, companies need to investigate the combination between quality improvement practices, which include both human and technical factors.

Again, the results of this study revealed that human factors of quality management have a significant relationship with quality improvement practices; human factors of quality management directly impact quality improvement practices. This result makes this research somewhat consistent with previous studies that brought evidence confirmed the significant relationship of human factors of quality management and quality improvement practices such as Flynn et al., 1994; Motwani et al., 1994; Anderson et al., 1994; Dow et al., 1999; and Abdullah et al., 2008.

In fact, there is insufficient research in literature of quality management investigated the contribution of human factors for the success of quality improvement practices. However, it is necessary to evaluate this relationship due to the importance of human factors that act to effectively improve the performance of total quality management program.

In Yemen, there is a great effort has been done by Yemeni Government and industrial companies to improve industrial sector and enhance the competitive advantages of the companies through adopting an efficient implementations of total quality management. Indeed, the results of this study make it clear to both Yemeni Government and Yemeni companies that human factors of quality management are essential factors to enhance and support their efforts and achieve their aims. In fact, literature of total quality management divided quality improvement practices into technical and human factors. Human factors act to create a suitable environment to implement technical factors which in total both human and technical factors play a central role in the success of quality improvement implementation and increase performance and productivity.

Moreover, the results of the current study positively found direct impact of all six human factors of quality management (leadership, customer focus, supplier relation, employee involvement, training and education, and reward and recognition) on quality improvement practices. Actually, this result confirms that technical side of quality improvement practices cannot contribute to the implementation of total quality management without any support and guidance by human side.

5.2.3 Direct impact of quality improvement practices on organization performance

An investigation of quality improvement practices may increase organization performance from one hand and enhance competitive advantage from the other hand. Although a review of the literature suggested that total quality management philosophy is the most important method in leading the companies to make competitive advantages, Middle Eastern countries have been preoccupied with conventional management issues and are not aware of advanced quality system.

Thus, the current study was carried out as one of a few empirical studies to investigate the implementations of quality improvement practices in Yemeni industrial companies, which can support the effort of Yemeni Government and companies to enhance industrial sector and achieve the competitive advantage.

Based on the findings of this study there is a significant relationship between quality improvement practices and organization performance; quality improvement practices directly impact organization performance, this result makes this study in line with previous studies (Flynn et al., 1994; Badri et al., 1995; quazi et al., 1998; Dow et al., 1999, Roa et al., 1999; Abdullah et al., 2008). Also, literature of total quality management suggested that quality improvement practices would lead to higher level of organization performance (Badri et al., 1995; quazi et al., 1998; Dow et al., 1999, Roa et al., 1999; Abdullah et al., 2008).

Total quality management leaders considered quality improvement as an organizational system which acts to enhance the implementations of process management through cooperation and learning, they also suggested that all activities take action to achieve customer satisfaction which in turn ensures that the organization stays in business. Therefore, the findings of study confirm the important role of quality improvement practices either to increase organization performance or to enhance competitive advantages. It is important to note here that Yemeni companies must understand that the success implementation of

quality improvement practices enhance their competitive advantage which can face new challenges in business environment.

5.2.4 Indirect impact of human factors on organization performance

This research is one of a few empirical studies; it was carried out to investigate direct and indirect impact of human factors of quality management on quality improvement practices and organization performance. Moreover, this study is the first, to report in Middle East countries, interests on the human side of quality management and its contribution to quality improvement practices and organization performance. Although the importance of human factors of quality management for the implementation of total quality management and organization performance there is a lack for research investigates the significant role of this side for total quality management implementation and organization performance.

The finding of this study brought evidence that human factors of quality management have a positive relationship with quality improvement practices and organization performance, whereas human factors of quality management have indirect impact on organization performance through their direct impact on quality improvement practices which make the findings of the current study somewhat consistent with Abdullah et al. (2008) study.

Abdullah et al. is the first researcher who started to make highlighting on the mediation role of quality improvement, and to date there is still no more studies have formed any linking mechanism between the human factors of quality management, quality improvement practices, and organization performance.

Literature of total quality management identifies a set of total quality management practices as critical success factors to the implementation of total quality management. Furthermore, literature divided these critical factors into human and technical factors. In fact, quality improvement practices include both of human and technical factors; the integration between these factors can lead the effectiveness of quality improvement practices. Indeed, human factors act to create an appropriate environment to the implementations of quality improvement practices.

Another confirmation resulted from the current study was related to the significant role of human factors of quality management either to the implementations of quality improvement practices or organization performance. Human factors directly contribute to quality improvement practices which in turn contribute to organization performance. In other words, companies must focus seriously on human factors of quality management to create conditions that allow effective diffusion and utilization of quality improvement practices which lead to increase organization performance and enhance the competitive advantage.

In view of the above discussion and based on the results of the current study, it is very obvious the necessity to focus on the effective of human factors of quality management in order to achieve an improvement in overall total quality management practices, in addition to increase and enhance organization performance, which make it clear also to Yemeni Government and companies that the efficiency of human factors implementation can lead to achieve their objectives to improve industrial sector and enhance the competitive advantages of the companies.

5.3 Conclusions

The main purpose of this study is to evaluate both of direct and indirect impact of six human factors of quality management on quality improvement practices and organization performance. Four research questions directed by the research objectives. In order to answer the questions, four research hypotheses were formulated and tested and the main conclusions for this study are:

There is a significant relationship between human factors of quality management and organization performance, in other words, human factors of quality management directly impact organization performance. These results make this study harmonizes with previous studies in literature of quality management such as Flynn et al. (1994); Ho et al. (2000); Rahman and Bullock, (2005); and Abdullah et al. (2008).

There is a significant relationship between human factors of quality management and quality improvement practices, since human factors of quality management directly impact quality improvement practices. This result makes this research somewhat consistent with previous studies that brought evidence confirmed the significant relationship of human factors and quality improvement practices such as Flynn et al., 1994; Motwani et al., 1994; Anderson et al., 1994; Dow et al., 1999; and Abdullah et al., 2008.

There is a significant relationship between quality improvement practices and organization performance whereas quality improvement practices directly impact organization performance. This result makes this study in line with previous studies (Flynn et al., 1994; Badri et al., 1995; quazi et al., 1998; Dow et al., 1999, Roa et al., 1999; Abdullah et al., 2008).

Quality improvement practices play a mediator role for the relationship between human factors of quality management and organization performance, thus, human factors of quality management indirectly impact organization performance through their direct impact on organization performance, which make the findings of the current study somewhat consistent with Abdullah et al. (2008) study.

5.4 Limitations

This research has been done of course with some deficiencies as it is the case for all research studies. Thus, it is necessary to critically evaluate this study in the context of its limitations. In this section, researcher is going to discuss some of the weakness of the study as follows:

Regarding data collection, this study used quantitative approach; the data was collected through questionnaire; thus, the researcher could not use qualitative approach because this approach needs the researcher himself to be in Yemen to collect this kind of data while he stayed in Malaysia.

About the instrument, the employee morale and customer satisfaction were evaluated by the managers perception, which might be relatively weak and pretty unreliable. Due to the secondary nature of the data, it cannot conclude that asking alternative sources is equivalent to ask the individuals directly about their satisfaction. According to Cherrington (1995), the best way to measure employee satisfaction is either to interview employees or ask them to complete a questionnaire.

Furthermore, this study could not get enough information regarding the situation of total quality management in Yemen; that occurred due to the lack of studies that interested on the implementation of total quality management program from one hand, and the weakness of documentary in Yemen regarding industrial sector companies from the other hand which make it somewhat difficult to get enough information regarding the population of study.

5.5 Implications

Based on the findings of this research, in this section the researcher provides several implications. In fact this study provided evidences for the significant positive impact of human factors of quality management on quality improvement practices and organization performance.

Due to the importance of human factors of quality management to the implementations of total quality management and organization performance, the results of this study could be important to the practitioners and researchers; and Yemeni Government can benefit of the results of this study in enhancing its planning and improving industrial sector through the success of total quality management program.

In short, researcher concludes the following implications:

5.5.1 Implication to the methodology

This study provides methodology to evaluate not only the direct impact of human factors of total quality management on both quality improvement practices and organization performance but also the indirect impact of human factors on organization performance through their direct impact on quality improvement practices.

Moreover, this study used two technical programs to analyze the data that was collected from Yemeni industrial companies. It used SPSS statistical program through applying factor analysis, reliability analysis, descriptive analysis, demographic information analysis, and correlation analysis, while Amos statistical program was used by structural equation modeling (SEM) to examine hypotheses of study through examining the direct and indirect impact of human factors of quality management on quality improvement practices and organization performance.

5.5.2 Implication to the theory

This study has added the knowledge to the body of total quality management and organizational performance by evaluating the direct impact of human factors of quality management on quality improvement practices and organization performance, and the direct impact of quality improvement practices on organization performance, in addition to the indirect relationship by examining the indirect impact of human factors of quality management on organization performance through their impact on quality improvement practices. Literature of total quality management suggested that human factors of quality management could cause an improvement in organizational performance (Flynn et al., 1994; Ho et al., 2000; Rahman & Bullock, 2005; and Abdullah et al., 2008).

Furthermore, this study confirmed the importance of human side of total quality management to the implementation of total quality management, where literature of total quality management claimed this importance (Wilkinson, 1992; Louise, 1996; Demirbag et al., 2006; Tari, 2007; Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; Kumar et al., 2009.)

Moreover, this study added the knowledge to the body of total quality management as one of the studies that interested on the human side of total quality management, whereas this study provided evidence that human factors of quality management have an important role to the implementations of total quality management, in addition to the significant direct and indirect role of human factors on organization performance.

This study also provided knowledge to the body of business and total quality management as the first empirical study, which was carried out in Middle East countries, interests on the human side of total quality management and its relationship with quality improvement practices and organization performance.

5.5.3 Implication to the practice

This study added the knowledge in the areas of total quality management and organization performance which provided evidence to the managers about the important role of human factors of quality management and their significant contribution to the implementation of quality improvement practices and organization performance.

Moreover, this study confirmed the importance of human factors of quality management to the success of the implementation of total quality management and to improve the organization performance, which this study warned the companies to be aware for these human factors when they reengineering their process to implement total quality management program and enhance their competitive advantage.

Additionally, the findings of this study shed light upon the importance of human factors of quality management to improve organization performance and enhance the competitive advantages of the companies since this study might provide assistance to Yemeni Government by providing a strong backbone in order to achieve its plans to improve Yemeni industrial sector and advance the competitive advantages of the companies.

5.6 Suggestion for future research

There are several recommendations can be made from this study to future research:

1. This study interests on the implementation of human factors of quality management in Yemeni industrial sectors. In future, this study can be expanded to include other Middle East Countries such as Saudi Arabic, UIA, Qatar, Bahrain, Oman, Kuwait, Jordon, Egypt, Iran, and Turkey.
2. This study interests on the Yemeni industrial companies who have gotten local and international quality certifications. The future studies can include those companies that have not got any quality certifications.
3. This study used six human factors of quality management in relation to quality improvement practices and organization performance they are: leadership, customer focus, supplier relation, employee involvement, training and education, and reward and recognition. The future research can includes other human factors of quality management such as communication, empowerment, teamwork, quality culture, human resource management, and employee satisfaction.
4. The sample size of the current study was 261 respondents while for the purpose of future studies a large sample size can be recommended.
5. This study examines direct and indirect impact of human factors of quality management on quality improvement practices and organization performance, while future studies can evaluate human factors of quality management as a moderator variable for the relationship of quality improvement practices and organization performance.

6. This study examines the relationship between the variables of this study from managers' perception; thus, it would be better for future research to examine some issues such as employee morale and customer satisfaction from both of employee's and customer's perceptions.