THE RELATIONSHIP BETWEEN HUMAN FACTORS AND ORGANIZATIONAL PERFORMANCE IN YEMENI INDUSTRIAL COMPANIES

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Abstract

This study conducted an empirical investigation into the extent of total quality management practices in the Yemeni industrial companies. It evaluated the impact of the human factors of quality management on organizational performance. The data employed in this study were questionnaires from 87 industrial companies. The sample consisted of three quality managers for each company and a total of 210 managers responded to the survey in response rate of 80%. A structural equation modelling (SEM) was carried out by Amos program to evaluate the hypothesis of this study. This study is the first to report on the human side of total quality management in Yemen as well in Middle East countries. In this study, the findings revealed a direct relationship among the variables; the human factors directly impacted organizational performance and the standardized coefficient was .432 and significant at .001 level (P = .000).

Keywords: Human factors, total quality management, organizational performance, Yemeni industrial companies

Introduction

The new millennium has been witnessed many changes, these changes have significantly affected the requirements of business environment. The competition in global market makes organizations and researchers emphasis on the need to innovate new methods to face the new challenges. However, total quality management is considered a greater

innovation methods interested in making competitive advantage. It is the only way to face the rapidly changing in the business environment. Actually, total quality management becomes as a famous approach, since it has new methods to assure the successful for organizations in business environment. However, total quality management approach was built by quality leaders such as Deming, Grosby, Juran, Feigenbaum, and Ishikawa, who made the main structure of total quality management (Zairi et al; 1994)

The spotlight on quality management in business environment urged the researchers to focus seriously on the improvement of quality management methods, which enhance the organization activities via the successful of total quality management implementations. Recently, many attempts were made to identify the critical success factors of total quality management from one side, and also to discover the importance of these factors to the implementation of the total quality management from the other side (e.g. Oprime et al., 2012; Guion, 2010; Wahid and Corner, 2009; Fotopoulos et al., 2009; Sharma and Kodali, 2008; Antony et al., 2002; Zhang et al, 2000; Yusof and Aspinwall, 1999; Black and Porter, 1996; Tamimi and Gorshon, 1995; Badri et al., 1995; Flynn et al., 1994; Porter and Parker, 1993).

Alongside, some studies were interested in dividing the quality management practices however, they divide the critical factors of quality management into two groups; either hard and soft factors or technical and human factors respectively (e.g. Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; Kumar et al., 2009; Abdullah et al., 2008; Tari, 2007; Demirbag et al., 2006; Rahman and Bullock, 2005; Louise, 1996; Flynn et al., 1995; Wilkinson, 1992). According to Wilkinson (1992), there are two aspects of quality management; hard aspect, which focuses on tool and work process, and soft aspect, which interests on human side of quality management. Also, he suggested that the hard aspect has more preoccupation rather than the human aspect when the organizations implement total quality management program. Moreover, Edward and Sohal (2003) suggested that the lack of attention to the human side of total quality management may lead to limited success of total quality management implementation.

Scientifically, literature of quality management suggested that human factors of quality management such as leadership, employee involvement, training and education, customer focus, communication, rewards and recognition, supplier relations, and teamwork have a highly significant impact on organization performance (Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; and Kumar et al., 2009; Abdullah et al., 2008; Rahman and Bullock, 2005; Flynn et al., 1995).

Recently, Yemeni economic sectors are affected by the new rapidly changing in the business environment. In the last decade, Yemen

Government made a revolution to face the new challenges through enhances its economic sectors. Actually, the industrial sector received much more emphasis in Yemeni Government effort due to its importance to Yemeni economy (Government report 2007). Consequently, due to the importance of human factors to the implementations of total quality management and organizational performance, this study attempts to examine the impact of human factors on organizational performance, which contributes to a better understanding of human side of total quality management through context of Yemeni industrial companies.

Human factors and organizational performance

A large body of research supports the relationship between total quality management practices and organizational performance (e.g., Fotopoulos and Psomas., 2009; Gadenne and Sharma., 2009; Kumar et al., 2009; Abdullah et al., 2008; Demirbag et al., 2006; Tari., 2007; Rahman & Bullock., 2005; Dow et al., 1999; Ahire et al., 1996; Louise, 1996; Powell., 1995; Flynn et al., 1995).

Flynn et al. (1995) claimed that there is a significant relationship between core quality management practices (technical factors) and quality management infrastructure (human factors); they mentioned that the human factors positively impact the technical factors. Their study, further, showed that the human factors have both direct and indirect impact on performance through their impact on technical factors of quality management.

Indeed, the human factors act to create an appropriate environment to implement the technical aspect; this fact refers to the influence of the human factors on the implementation of technical factors. On the other hand, the human factors also impact organizational performance in the same way that the traditional human resource management impact organization performance (Ahire et al., 1996).Besides, Ahire suggestion was similar to the claim of Flynn et al. (1995); Ahire claimed that the human factors directly and indirectly impact organization performance.

Furthermore, Rahman & Bullock (2005) examined the relationship between the soft factors (human factors) and the hard factors (technical factors) and their impact on organization performance. They found a positive relationship between both soft and hard factors and organization performance, since the soft factors directly impact the hard factors and organization performance. They also found indirect relationship between the soft factors and organization performance; the soft factors indirectly impact organization performance through their direct impact on the hard factors.

As well, Abdullah et al. (2008) suggested that the effective implementation of the soft factors in the organization plays a central role in the quality improvement, which acting to improve performance and

productivity. However, they examined the direct and indirect relationship of the soft factors on organization performance. Their results found direct positive effect of soft factors on organization performance, and they also found indirect effect of soft factors on organization performance through their direct effect on quality improvement that acts as a mediator factor for the relationship between the soft factors and organization performance.

Gadenne & Sharma (2009) suggested that the favourably relationship between the hard and the soft factors of quality management improve organizational performance. They found that organization performance is influenced simultaneously by the hard factors (such as benchmarking and quality measurement, continuous improvement, and efficiency improvement) and the soft factors (such as top management philosophy and supplier support, employee training and increased interaction with employee and customer).

Moreover, Demirbag et al. (2006) measured the effect of total quality management practices on the organization performance in SMEs in Textile Industry of Turkish. They found a strong positive effect of quality management practices on non financial performance, and a weak effect of quality management practices on financial performance. Again, Tari et al. (2007) identified the relationship of total quality management practices and their direct and indirect effect on organization performance. They found a positive effect of total quality management practices on organization performance. And, Kumar et al. (2009) investigated the impact of total quality management implementations on Canadian organization performance. They also found a positive impact of employee relations, operating procedure, customer satisfaction and financial result on organization performance.

Additionally, Samson & Treziovsk (1999) found that total quality management practices such as leadership, management of people and customer focus have a significant relationship with organization performance, and the behavioural factors such as executive commitment, employee empowerment and open culture contribute a competitive advantage more significant than the hard factors such as process improvement, benchmarking, and information and analysis. Besides, in a study conducted by Dow et al. (1999) a positive relationship between the human factors (such as employee commitment, shared vision and customer focus) and organizational performance was found. Not that only, but they also found that the hard factors such as benchmarking, cellular work team, advanced manufacturing technology and close supplier relations do not contribute significantly to superior performance.

Theoretical framework

Due to the production orientation of TQM leaders, there is insufficient attention paid to the human side of quality management such as leadership, communication, training and education, employees' involvement, teamwork, reward and recognition, customer focus and supplier relations, (Louise, 1996; Wilkinson, 1992; Hill, 1991). Recently, there is more interest on the human side, and empirical studies [e.g. Flynn, 1995; Abdullah et al., 2008; Rahman and Bullock, 2005; Flynn et al., 1995; and Ho, 2001) examined the relationship between the human side and organization performance. Indeed, they provided evidences for a significant relationship between the human factors and the organization performance.

From all what have been discussed above and based on the work that has been done by TQM leaders (such as Deming, 1986; Grosby, 1979; Juran,1993; Feigenbaum, 1991; and Ishikawa, 1985) In addition to the previous studies that are interested on identifying the critical factors of TQM implementation (e.g. Wahid and Corner, 2009; Fotopoulos et al., 2009; Sharma and Kodali, 2008; Antony et al., 2002; Zhang et al, 2000; Yusof and Aspinwall, 1999; Black and Porter, 1996; Tamimi and Gorshon, 1995; Badri et al., 1995; Flynn et al., 1994; Porter and Parker, 1993). and the studies that concentrated on the human side of TQM (e.g., Fotopoulos and Psomas., 2009; Gadenne and Sharma., 2009; Kumar et al., 2009; Abdullah et al., 2008; Demirbag et al., 2006; Tari., 2007; Rahman & Bullock., 2005; Dow et al., 1999; Ahire et al., 1996; Louise, 1996; Powell., 1995; Flynn et al., 1995; Wilkinson, 1992). this paper developed the following framework:

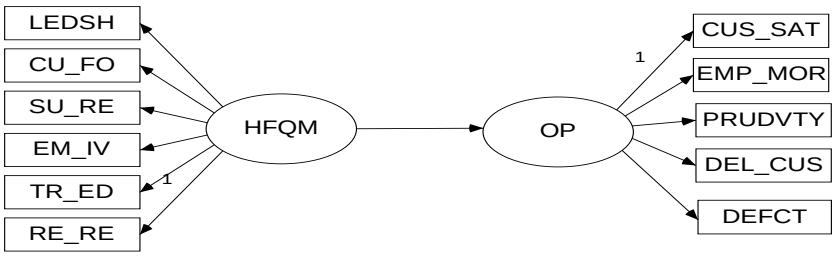

Figure 1: Framework of study

Whereas:

HFQM=human factors of quality management

LEDSH = leadership

CU_FO = customer focus

SU_RE = supplier relations

EM_IN = employee involvement

TR_ED = training and education

RE_RE = reward and recognition

OP = organization performance

CUS_SAT = customer satisfaction

EMP_MOR = employee morale

PRUDVTY = productivity

DLE_CUS = delivery customer in full time

DEFCT = defects

Methodology

Population and sample

The target population of this study was all Yemeni industrial companies who had received local and international quality certificates due to their interest on total quality management implementations and implicate international criteria in their operations. In fact, there are 87 Yemeni Industrial Companies have already taken local and international quality certificates; these companies were divided into five industrial cities: they are Sana'a, Aden, Hadramout, Alhudaidah and Taiz.

The participants of this study were the managers who are familiar with the implementations of total quality management. And at the same time all of them have enough knowledge about the performance. Based on this principle, the respondents of this study were one top management manager and two quality managers, from each company. A total of 210 completed surveys were returned out of 261 surveys questionnaire, for a response rate of 80 %.

Measurement

A questionnaire was designed to collect the data that determine and clarify the relationship between the human factors and organizational performance. To measure the human factors, the researcher developed the instrument that was used by Zhang et al. (2000). This instrument was developed based on an extensive literature of total quality management, which include 40 items dividing into six factors; they are leadership, customer focus, employee involvement, supplier relations, training and education, and reward and recognition. While to measure organization performance, the instrument that was developed by Samson and Terziovski (1999) was used. This instrument includes five dimensions; they are customer satisfaction, employee morale, productivity, delivery in full and defects. Prior to conducting the present study, a pilot study was conducted with 30 quality managers in Yemeni industrial companies in order to test the clarity, comprehensiveness and acceptability of the questionnaire. Each measure was assessed on a five-point Likert's scale continuum. Factor analysis and reliability analysis were carried out and the coefficient alpha shown in Table 1.

Table 1: Reliability analysis

No	Factor	No of items	Alpha
	Leadership	8	.824
	Customer focus	6	.817
	Supplier relations	6	.777
	Employee involvement	8	.727
	Training and education	6	.860
	Reward and recognition	6	.871
	Organizational performance	5	.827

Analytic methods

Pearson correlation coefficient test was used to evaluate the relationships between the variables of this study, and structural equation model by Amos program carried out to examine the hypothesis of this study.

Findings

The correlation between the six human factors (leadership, customer focus, supplier relation, employee involvement, training and education and reward and recognition) and the five dimensions of organizational performance (customer satisfaction, employee morale, productivity, delivery to customer and defect) are shown in Table 2. The correlation results show that five out of the six human factors were significantly related to organization performance (leadership, customer focus, employee involvement, training and education and reward and recognition). While supplier relations has not any relation with any dimension of organizational performance.

An in-depth analysis of the structural model establishes the existence of the causal relationship between the human factors and organizational performance. A significant coefficient would reveal the existed relationship among the variables, and the magnitude of this relationship can be observed from the value of this coefficient.

The estimated model fit shows a good fit, as shown in Figure 2. The results of the goodness of fit test, indicates that the value of chi-square (94.118), degree of freedom d,f (36), CFI (.955), RMSEA (.088) and P-value (,000) are significant.

Table 2: Correlations analysis of human factors and organizational performance

	CUS_SAT	EMP_MOR	PRUDVTY	DEFCT	DLE_CUS
LEDSH	.206**	.303**	.334**	-.013-	.139*
CU_FO	.224**	.249**	.345**	.014	.199**
SU_RE	-.038	-.063	-.027	-.116	-.074
EM_IN	.222**	.415**	.469**	.004	.216**
TR_ED	.236**	.332**	.423**	.000	.198**
RE_RE	.233**	.405**	.473**	.020	.178**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

As shown in Table 3 and Figure 2 below, the results indicate that the human factors have a positive relationship with organizational performance, and directly impact organizational performance (the standardized coefficient = .432, effect size (R2) = .186 and significant at .001 level (P = .000)). These results mean that 19% of organizational performance can be explained by the human factors, which considered as a large effect size.

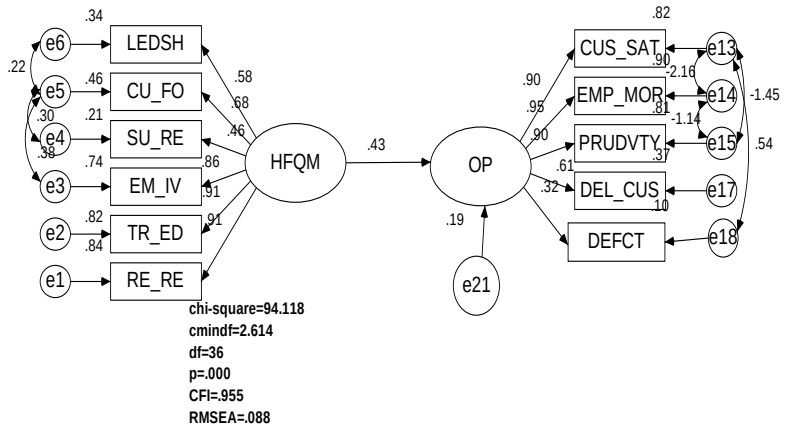

Figure 2: Structural model of relationship between human factors and organizational performance

Table 3: Fit indices for the structural model of the relationship between human factors and organizational performance

			Unstandardized	Standardized	S.E.	C.R.	R2	P
Organizational Performance	<---	Human factors	.108	.432	.017	6.527	.186	000

Discussion

The results of this study reveal that the human factors of quality management have an important role in the implementations of total quality management and directly impact organizational performance (Dow et al., 1999). So, due to this importance, these factors must get enough attention when the companies reengineering their process to implement total quality program (Wilkinson, 1992).

Despite the fact that there is lack of studies emphasis on the human factors, many studies carried out to contribute the design development and application of the total quality system (Dow et al., 1999). Furthermore, in Middle East countries, actually, at the knowledge of the current researcher there is no research to date interested on the human side of quality management. Moreover, in the implementation of total quality management there is insufficient attention paid for the human factors. This may be due to the production orientation of total quality management leaders (Wilkinson, 1992; Louise, 1996; and Lau and Adris, 2001).

Lau & Idris (2001) suggested that it is necessary to study the critical soft factors (human factors) of quality management due to their important role to the implementations of total quality management in addition to their contribution in changing the thinking of the managers and employees, and permeating the total quality management throughout the whole organization.

According to Tamimi & Sebastianelli (1998), 48% were identified as barriers to total quality management due to human side of quality management. Motwani et al., (1994) considered the human factors (such as leadership, organizational skills and culture) as a key player acting to achieve quality performance. Previous studies bring evidences that the human factors have important role in the implementation of total quality management (Abdullah et al., 2008; Rahman & Bullock., 2005; Flynn et al., 1995). Following this same logic, this research established to examine the relationship between the human factors and organizational performance. However, the structural equation model was estimated to test this relationship.

In general, the results of this study confirmed that there is a significant relationship between the human factors and organizational performance, in which the human factors directly impact organizational performance, and the standardized coefficient is .432, and significant at .001 level (P = .000). Five out of the six human factors have a significant relationship with organizational performance. These factors are leadership, customer focus, employee involvement, training and education and reward and recognition, which make this research consistent with previous studies such as Flynn et al. (1995), Rahman & Bullock (2005), Abdullah et al. (2008) and Ho et al. (2001) On the other hand, the results of this study didn't find any positive relationship between supplier relation and organizational performance. This result, however, agrees with the results obtained by Powel (1995) and Dow (1999) who suggested that a factor such as supplier relations could only be context-dependent. In sum, this research confirmed previous suggestion that claimed the important role of the human factors of quality management in the implementation of total quality management and organizational performance.

Conclusion

This study determined, described, and explored the contribution of the human side of quality management to the implementation of total quality management program through examine the direct impact of human factors on organizational performance. The study carried out through 87 companies of Yemeni Industrial Sector by sample of three managers from each company (one of top managers and two quality managers). In methodology, this study used a quantitative approach by designed questionnaire. The study involved a sample of 87 companies; they were different sized population from small, medium and large. They were also different in terms of local and international certified. In term of analysis, this study used correlation analysis to examine the relationship among variables, and the structural equation model was used by Amos program to evaluate the direct impact of human factors on organizational performance. The analysis results found a

positive relationship among the variables of this study; thus, it showed that human factors have a significant direct impact on organizational performance.

Although, this study was conducted successfully without problems, but it is like any other study; has some limitations. Firstly, in instrument, the employee morale and customer satisfaction were evaluated by the managers perception, which perhaps make it relatively weak. Secondly, other Middle East Countries such as Saudi Arabic, UIA, Qatar, Bahrain, Oman, Kuwait, Jordon, Egypt, Iran and Turkey could be included in order to make comparisons in terms of human side of quality management and organization performance. Finally, other human factors of quality management such as communication, empowerment, teamwork, quality culture, human resource management, and employee satisfaction could be included as well. However, this can be the issue of a future research.

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