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Research Article

THE IMPACT OF TOTAL QUALITY MANAGEMENT PRACTICES ON INNOVATION PERFORMANCE AND ORGANIZATIONAL PERFORMANCE

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ABSTRACT

The emergence of total quality management (TQM) has been one of the major developments in management practice. TQM and performance relationship is a popular discussion in the literature, organizational performance and TQM relationship is supported with various studies but the findings about innovative performance is inconsistent. However, most scholars stress on the importance of TQM activities on performance outcomes. The main goal of the study is to investigate whether TQM activities impact quality and/or innovative performance and also defining the effective components on these performance types. This study used a survey conducted among mid- and upper-level managers of companies in the Tehran. Totally 242 valid questionnaire from 100 companies in Iran are used for empirical analysis of the study. Factor analysis is used for the validity and cronbach alpha scale is used to estimate the reliability of the scales. Correlation and regression analysis are conducted to analyze the hypotheses of the study. SPSS software 18.0 used for the evaluation of data. Accordingly, we investigated literature to develop hypotheses and in order to test the research model, data were collected through a survey in Iran in Tehran city, and then statistically significant and positive relationship among TQM activities, organizational performance and innovation performance was found.

Keywords: *Total Quality Management, Innovative Performance, Organizational Performance*

INTRODUCTION

Total quality management (TQM) is one of the quality-oriented approaches that many organizations imply. TQM has attracted scholars because of the growing diffusion and acceptance in the business world. Especially over the two decades, TQM is one of the most popular and durable management concepts (Feigenbaum, 1983). Due to the absence of a uniform definition of TQM, defining TQM is quite problematic (Prajogo and Sohal, 2001). Well accepted definitions of TQM in the literature based on "quality gurus" (such as Deming, 1986; Juran 1988; Crosby, 1979; Feigenbaum, 1983). Views and prescriptions. For example, according to (Rahman, 2005). TQM is a management approach for improving organizational performance that encompasses a variety of both technical and behavioral topics. Another definition of TQM is that of (Kaynak, 2003). "TQM is a holistic management philosophy that strives for continuous improvement in all functions of an organization, and it can be achieved". TQM is a multidimensional construct. Like having various definitions, TQM consists of several activities. Different researchers have adopted different TQM activities for testing its effect on financial or non-financial performance. These activities are management leadership, role of the quality department, training, employee relations, quality data and reporting, supplier quality management, product service design, process management, strategic planning, customer focus, information technology and analysis, people management (Saraph *et al.,* 1989; Prajogo and Sohal, 2003).

The emergence of total quality management (TQM) has been one of the major developments in management practice. The recognition of TQM as a competitive advantage is wide spread around the world, especially in Western countries, and today very few (especially manufacturing) companies can afford to ignore the term TQM (Dean and Bowen, 1994). Despite numerous stories about TQM failures,

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previous empirical studies on the relationship between TQM and organizational performance, and in particular, quality, have indicated strong and positive results (Ahire *et al.,* 1996; Flynn *et al.,* 1994; Samson and Terziovski, 1999). On the other hand, innovation has also received considerable attention as having a crucial role in securing sustainable competitive advantage in the current market (Tushman and Nadler, 1986).

Given these two facts, there is a need to re-assess the role of TQM in determining innovation performance. Several rationales behind this need are as follows. First, as argued by several scholars (Bolwijn and Kumpe, 1990; Hamel and Prahalad, 1994; Tidd *et al.*, 1997), market conditions have changed, and so has the basis of competition with quality being considered more as a "qualifying criterion" – a term suggested by Hill (1985) – and has been replaced by other aspects such as flexibility, responsiveness, and particularly innovation, which function as "winning order criteria".

As a result, TQM as the primary resource behind quality has also received a similar challenge in the sense that organizations would ask: should we continue to implement TQM as a management model in the future, particularly if we want to pursue a higher level of innovation performance? Second, the need to address this inquiry is further substantiated by the fact that there is conflicting theoretical arguments appearing in the literature with regard to the relationship between TQM and innovation with one group of arguments affirming that TQM is not compatible with innovation because managing innovation is fundamentally different from managing quality, as asserted below (Maguire and Hagen, 1999).

In today's business environment the basis of competitive advantage has shifted from quality to innovation (Prajogo and Brown, 2004). Innovation allows companies adaption to changes quickly and helps for finding new products, markets, thanks to this protect themselves from unstable environment (Costa and Lorente, 2008).

Numerous companies which have benefited from innovation increased their profits and market share. But the important point is that, a firm cannot be successful with innovation if it cannot produce products that meet acceptable quality standards (Costa and Lorente, 2008) because of that TQM is a good way of improving quality while facilitating the innovation process (Prajogo and Brown, 2004). When the literature is examined, the findings are inconsistent and complex. Some scholars argue the positive link between TQM and innovation performance while others emphasized the negative link between them. The main reason for this complexity is both innovation and TQM are multidimensional in nature (Mielgo *et al.,* 2009). Scholars who support the negative relationship between TQM and innovation performance claim that TQM can lead organizations to be narrow-minded and hinder creativity due to the enforcement of standardization (Prajogo and Brown, 2004).

Arguments about the positive relationship between TQM and innovation performance focus on the customer orientation, management leadership and continuous improvement which are critical to innovation success. Miengo *et al.,* (2009) classified TQM elements into two large groups and demonstrated the relationship between organic elements of TQM (such as management leadership) and innovation. As a consequence, leadership (the organic element of TQM) encourages employees to suggest innovative ideas for solving problems or developing new products. Some scholars point out another key element of TQM -customer-focus- which has significantly positive relationship between innovative performances (Juran, 1988).

Being Customer-orientation encourages organizations to search consistently for new customer needs and expectations, so companies can survive in this globally competitive environment. Beside, continuous improvement is also critical to the success of innovation through encourages change and creative thinking in organizing works (Costa and Lorente, 2008). Sadıkoglu and Zehir (2010) found that all elements of TQM are significantly and positively associated with innovation performance. The empirical study which was done by (Hung *et al.,* 2011) confirms the positive relationship between TQM and innovation performance. Based on the literature review, this study proposes the following hypotheses:

H1: TQM practices have a positive effect on innovation performance.

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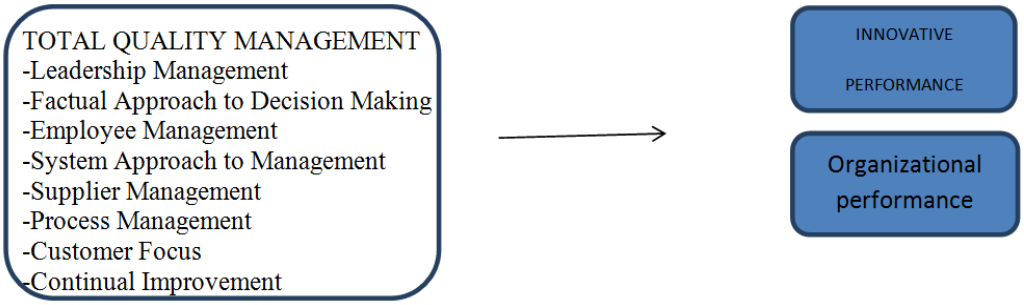

Figure 1: Conceptual Model

The links between TQM and performance have been investigated by numerous scholars. While examining the relationship between TQM and performance scholars have used different performance types such as financial, innovative, operational and quality performance. Although the effects of TQM on various performance types are inconsistent, quality performance generally indicated strong and positive relations (Prajogo and Sohal, 2003). Supporters of TQM suggest that implement it well generate higher quality products. According to Deming, quality is the principal determinant of success in competitive environments. Quality management is increasingly high-profile activities for all kinds of firms and is associated with gaining a competitive advantage (Mielgo *et al.*, 2009). After seeking the literature, Kaynak (2003) revealed the indicators of quality performance which is relevant to TQM. TQM practices help to promote quality performance. The indicators for quality performance are product/service quality, productivity, cost of scrap and rework, delivery lead-time of purchased materials, and delivery lead-time of finished products to customers. The aim of TQM activities such as employee involvement is to promote the human aspects of the quality system in order to adapt changing environment (Mielgo *et al.*, 2009). Customers focus and process management represents the major components of quality (Prajogo and Sohal, 2004). The quality is important for customers. Wilkinson *et al.*, (1998) suggest that; "in terms of TQM, the conception of quality should meet customer requirements". One of the main elements of TQM is the process management. Process management improves the quality of the product in the production stage (Sadıkoğlu and Zehir, 2010). The empirical studies show that process management directly and positively affects product quality. In addition, management leadership contributes to quality performance through accepting quality culture to employees. Since 1980s, top managers incorporated quality to strategic planning process for gaining**.**

Research Design

The present study used a survey conducted among mid- and upper-level managers of companies in the Tehran from various size manufacturing (43.6 %), information technology (5.2 %) and service (13.4) sector companies. While 45, 7% of the respondent companies were small and medium-scale; 34, 3% were large-scale. In addition to these 13, 7% of companies are international, 8% of them are regional and most (67, 5 %) of companies are national. Totally 242 valid questionnaire from 100 companies are used for empirical analysis of the study.

The demographic properties which are asked to the participants are prepared by the researchers. The other parts of the questionnaires in this study are developed by using scales adopted from prior studies. All constructs are measured using five-point likert scales (from strongly disagree =1 to strongly agree =5). The second part of the questionnaire is about Total Quality Management principles and the related 65 items are adopted from several related studies; these are Cua, *et al.*, 2006; Rahman and Bullock, 2005; Chong and Rundus, 2004; Fuentes and Montes 2008; Kaynak, 2003; Kannan and Tan, 2010. The third part assesses firm innovativeness and the questionnaire is developed by Hult *et al.*, 2004. The last part consists of performance scales; innovative performance scale (3 items) is adopted from Fuentes *et al.*, 2010; Bullock's 2005, study.

We used SPSS software 18.0 for the evaluation of our data. Factor analysis is used for the validity and cronbach alpha scale is used to estimate the reliability of the scales. Correlation and regression analysis

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are conducted to analyze the hypotheses of the study. According to anti-image table values; all variables are found to be higher than 0.50 (r>0.30), so all items took place in the factor analysis. Factor analysis with principal component by varimax rotation, was performed separately to find out the factor structure of dependent and independent variables For the independent variable since some items were below 0.50 or are having collinearity with more than one factor, and some factors contains one item, it is continued to perform factor analyzing by removing the items one by one till the ideal table. And totally 25 items are removed, rest of the items naturally revealed 8 factors as expected. KMO is 0,925 and significance value p=0.00; Total variance: 65,689 (and in turn variance values for factor 1: 11,210; factor 2: 9,642; factor 3: 9,177; factor 4: 8,991; factor 5: 7,560; factor 6: 7,201; factor 7: 6,267 and lastly for factor 8: 5,641). For dependent variables all items are composed the ideal table. KMO is 0,823 and significance value p=0.00; Total variance: 66,417 (variance value for factor 1: 37,622 and for factor 2: 28,794). Findings show that our sample is suitable for the hypothesis analyzes.

Table 1: Factor Loadings of the TQM and Performance Variables

TQM Practices	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
CI2	854							
CI4	737							
CI3	727							
CI1	743							
CI7	615							
CI8	598							
EM2		754						
EM3		711						
EM6		673						
EM8		780						
EM1		639						
EM2		680						
CF3			770					
CF1			701					
CF4			832					
CF2			621					
CF6			765					
L2				453				
L5				564				
L1				651				
L7				611				
L6				595				
SM7					812			
SM1					765			
SM3					709			
SM2					590			
D7						674		
D5						591		
D4						670		
D8						583		
SA1							770	
SA6							689	
SA2							731	
SA4							708	

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Performance items	**1**	**2**
QP5	801	
QP4	712	
QP3	842	
QP2	745	
QP1	684	
IP9		894
IP8		784
IP7		701

CI: Continuous Improvement, EM: Employee Management, PM: Process Management, CF: Customer Focus, L: Management Leadership, SM: Supplier Management, D: Factual Approach to Decision Making, SA: System Approach to Management, QP: Quality Performance, IP: Innovative Performance

We calculated means and standard deviations for each variable and a correlation analysis is conducted to investigate the relationship between dependent and independent variables. According to correlation analysis, all variables are correlated with each other as expected. In order to investigate the reliability scores factors, the cronbach alpha scale is used. Regarding to the results of the above statistical tests for reliability and validity, it is assumed that the factors of the variables are sufficiently valid and reliable to test hypothesis.

Table 2: Mean, Standard Deviation and Correlation Coefficients

	MEAN	**SD**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1. CI	2,6829	71199	802									
2. EM	4,5767	69560	642**	792								
3. PM	3,6243	79436	569**	436**	804							
4. CF	4,1643	64582	455**	505**	709**	860						
5. L	3,8980	67274	508**	671**	657**	765**	797					
				478**	470**	612**	452**	823				
				655**	567**	698**	632**	844**	789			
				459**	782**	780**	760**	712**	786**	811		
				675**	640**	734**	643**	809**	690**	870**	779	
				456**	432**	545**	578**	733**	699**	792**	678**	843

*** Correlation is significant at the 0.01 level SD = Standard Deviation () = Cronbach's alpha*

Analysis results are parallel to related literature and TQM dimensions are positively associated with both innovative and quality performance indicators. In terms of the findings, the main hypotheses of the study are supported empirically. According to regression findings as seen in the table sub-hypotheses are supported partially.

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Table 3: Regression Analysis Results

Independent / Dependent	Model Values	CI	EM	PM	CF	L	SM	D	SA
Innovative Performance	F=10,723 Ad. R2=,261 DW=1,679 P=0.00	-,172	,154*	-,054	,174*	-,022	,036	,119	,234*
Quality Performance	F=28,153 Ad. R2=,495 DW=1,673 P=0.00	-,055	,169	,134**	,132	,179*	,146**	,073	,176*

*Table columns contain standardized beta coefficients (**p<0.01, *p<0.05) VIF values are about 1.70 and 2.30*

CONCLUSION

The TQM first appeared in the manufacturing sector, but slowly affected the service sector organizations as well.TQM is a quality-oriented approach and has effects on quality performance that are supported by leading studies. Dimensions of TQM such as management leadership, process management, employee involvement and customer focus are commonly accepted activities to improve quality performance of firms (Mielgo *et al.,* 2009; Wilkinson *et al.,* 1998; Sadıkoğlu and Zehir, 2010; Cho and Pucik, 2005; Prajogo and Brown, 2004). In this study analysis results shows that; parallel to these empirical supports management. In addition to these, apart from recent studies supplier management and system approach to management are found to be significantly effective. However some studies (Prajogo and Brown, 2004) found all dimensions acceptable. In this respect this study contributes to the discussion about the most important dimensions. However significant relations which are stressed in this sample should be tested by future studies with different samples and organizational characteristics. Studies supported the management leadership, continuous improvement and customer focus for positive relations with innovative performance (Juran, 1988). In this study customer focus is supported as well. Beside these employee management and system approach to management positively affect innovative performance (Sadıkoglu and Zehir, 2010; Hung *et al.,* 2011); because of that TQM should be studied with different samples for innovative activities in order to clear the discussed relations. Lastly we should highlight that for two of performance indicators (quality and innovative) system approach to management dimension is found to be an important TQM component so firms should overrate that it is the most important activity for performance improving according to this study's findings. Like any empirical research effort, this study contains some methodological strengths and limitations. First, the results obtained from a local area; results may differ for firms located in different areas operating in different cultural, environmental and political conditions. One more limitation of this study collects the measure using the same method (self-report), future studies can use the non-self-report method.

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