2nd GLOBAL CONFERENCE on BUSINESS, ECONOMICS, MANAGEMENT and TOURISM, 30-31 October 2014, Prague, Czech Republic

The effects of total quality management on the business performance: An application in the province of Kütahya

Aysel Cetindere[a]*, Cengiz Duran[b], Makbule Seda Yetisen[c]

[a] Balıkesir University, Dursunbey Vocational School, Balıkesir 10000, Turkey
[b]Dumlupınar University, Faculty of Economics and Administrative Sciences, Kütahya 43000, Turkey
[c] Dumlupınar University, Kütahya 43000, Turkey

Abstract

The quality and the satisfaction of the employees for increasing productivity, their motivation and rewarding, the use of performance evaluation and performance measurement techniques, elimination of errors and mistakes in the organization, concentrating on team work, benefitting from the experience of successful organizations, making the strategic planning and such like targets underline at the sense of Total Quality Management (TQM). With this study, the correlation of TQM components with the organization performance have been examined individually in order to understand the effects of the executives, employee, customers and processes on the business performance at the TQM. The correlation of TQM with the business performance was analysed by means of data based on conducting a questionnaire. According to regression analysis results which was carried out to present the performance features of organizations concerning TQM criteria (education, leadership, continuous improvement, internal customer and external customer), it was observed that the criteria related with leadership and education have a stronger correlation with the performance. Accordingly organizations should give the necessary education and training about the quality to their employees and support the improvement under the leadership of the top management.

* Aysel Çetindere Tel.: +0-266-662-4940; fax: +0-266-662-4941
  E-mail address: acetindere@hotmail.com

Selection and/ peer-review under responsibility of Academic World Research and Education Center
doi:10.1016/S2212-5671(15)00366-4

1. Introduction

Under the developing and changing world conditions, businesses in the race which is excessively competitive and to be able to grab rapidly increasing market share with the developing technology have to revise their understanding of quality and decrease the margin of error in the product or service they produce in order to be able to survive, compete and reach the level they want and maintain this level. In this context, companies began a "quality race" and Total Quality Management approach gained importance. TQM can be described as "a combination of participatory management and team work, produce defect-free products or customer satisfaction". TQM including the human and the quality-productivity relationship; compromises the process in which requires improving performance at all levels and activities of everyone in the organization.

In 16th century, the word "performance" was used for achieving the military orders and instructions different from current meaning (Lawson, 1995). But today performance is used to mean a point which is reached through plans made for a certain target. In otherwords, performance is the result that is gained by "an employee by fulfilling given mission in a certain time period" (Bingöl, 2003).

We could define the performance of a business system as its output or operation results after a certain period of time. The degree with which the management goals are achieved should be evaluated according to these results. Therefore, performance could be defined as the evaluation of all the efforts in pursuit of the realization of management goals (Akal, 2000; Şimşek & Nursoy, 2002).

2. The relationship between total quality management and performance dimensions

Principles of management are generally listed as profitability, productivity, economy, social responsibility and quality. Indicators of management principles are actually performance indicators for the business (Efil, 2010). Organizational performance concept is defined with its 7 performance dimensions in the literature. These are as follows (Kenger, 2001);

1. Effectiveness
2. Efficiency and utilization of resources
3. Productivity
4. Quality
5. Quality of work life
6. Innovation
7. Profitability and budget compliance

The proportion of the general standards determined for resources to be used in activities to the currently available resources show the effectiveness of resource utilization (Chiu, 1999). The similarity of the effectiveness dimension regarding resource utilization is only with respect to its goals. While effectiveness is an output oriented dimension, utilization of resources is considered more to be an input oriented dimension. As for productivity, according to an overly general definition adopted by Japan Productivity Center, it is a rational way of living aiming at performing right work in the right way and with economy of effort (Lenger, 1997). And quality is a performance dimension that allows efficient utilization of resources, provides suitability for use for products and services, and establishes a production concept in accordance with customer requirements.

A successful business can be maintained by ensuring, first of all, the quality of work life for members of the organization. Several techniques such as alternative working models like job enrichment and independent work groups, quality control groups, representation of the staff in the board of management, making staff partners to the company are included in programs on work life quality (Dinçer & Fidan, 1996).

Today customer desires and needs are continuously increasing together with the rapid progress in science and technology and businesses can be successful to the degree they can produce goods and services that are more creative of higher quality and more suitable to customer requirements (Nicholas, 1998). Profit planning, one of the important standards of performance dimensions is considered as a management activity involving careful consideration of various factors determining the profit and maintaining the necessary accord between them. Profit could be generally defined as, the increase of the equity capital in hand prior to activities in the equity capital after

the activities (Büyükmirza, 2001). In the studies carried out profitability emerges as the most important indicator of management performance. This demonstrates that the term performance for businesses is generally used with the meaning of profitability (Kald & Nilsson, 2000).

3. Application

3.1. Study Model

The aim of this study is to examine the relationship between the elements of total quality management (training, leadership, continuous improvement, internal customer and external customer) and business performance in companies with quality certificates operating in production industry in Kütahya Organized Industrial Zone. The study model is given in Figure 1.
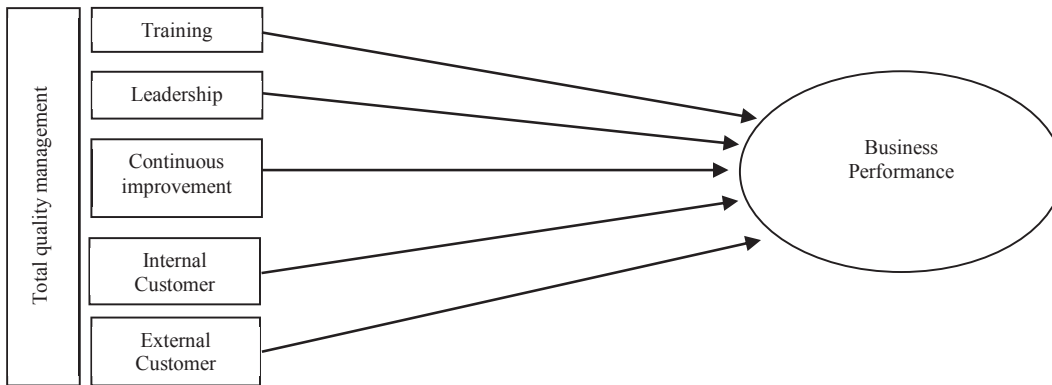

Figure 1. Study model

Based on this model, 6 different hypotheses were formed;
Hypothesis 1: There is a significant and positive correlation between training and business performance.
Hypothesis 2: There is a significant and positive correlation between leadership and business performance.
Hypothesis 3: There is a significant and positive correlation between continuous improvement and business performance.
Hypothesis 4: There is a significant and positive correlation between the degree of importance given to internal customers and business performance.
Hypothesis 5: There is a significant and positive correlation between the degree of importance given to external customers and business performance.
Hypothesis 6: There is a significant and positive correlation between training, continuous improvement, leadership, internal customer and external customer and business performance.

3.2. Study Method

The study was carried out on companies with quality certificates operating in production industry in Kütahya Organized Industrial Zone. Surveys were given to the quality managers working at the 32 sample companies among the 65 operating in Kütahya. In the survey studies for the evaluation of the relationship between quality management practices and business performance the five criteria that total quality management bring in to the companies were used and their effects on performance were evaluated. These criteria were determined to be respectively as follows;
   1. Leadership correlation
   2. Staff participation correlation
   3. Staff training correlation
   4. Customer focus correlation
   5. Effect on business performance

There a total of 6 statements for the five criteria. In order to determine the degree with which the participants agree with the statements, a five answer Likert Scale consisting of 1) Strongly disagree 2) Disagree 3) Neither agree nor disagree 4) Agree 5) Strongly agree were used in the answer section. The survey data was analyzed using the SPSS software.

In this study, a correlation analysis was used to analyze the relationships between the variables. Means and standard deviations for the variables were also calculated. After the determination of the correlation between the variables, regression analyses were carried out to determine the effect of characteristics of companies concerning TQM practices on business performance.

3.3. Results

The data from the survey examining the correlation between total quality management and business performance was tested for reliability and accuracy with the SPSS software and the reliability criteria α values were determined to be over 0.6 (Cronbach α value) and has demonstrated the survey's reliability. The results of the reliability analysis of the survey questions prepared in 5 parts shows that the questions were highly reliable, i.e. consistent with each other and homogeneous.

Mean, standard deviation, reliability coefficients and Pearson correlation values of all variables are given in Table 1.

Table 1. Mean, standard deviation and correlation analysis results

	Ort.	St.Sp.	1.	2.	3.	4.	5.	6.
1. Training	3,72	,5450	1,0					
2. Leadership	4,37	,6221	,828**	1,0				
3.Continuous improvement	4,28	,6285	,827**	,876**	1,0			
4. Internal customer	3,96	,6959	,810**	,799**	,874**	1,0		
5. Foreign customer	4,45	,6642	,720**	,785**	,741**	,763**	1,0	
6. Business performance	4,19	,5509	,764**	,720**	,656**	,676**	,518**	1,0

** significant at .01 level

Inspection of correlation analysis results shows that the variables have positive and relationships statistically significant at 0.01 level both between variables and with performance. The regression models (Model 1, 2, 3, 4, 5 and 6) for the regression analyses carried out in order to demonstrate the effects of the characteristics regarding Total Quality Management practices on business performance with criteria regarding TQM practices being independent variables and business performance being the dependent variable are as follows respectively;

Model 1:
BP= $\beta_0 + \beta_1$ * TRAINING + e   (BP=Business Performance, e=error term)

Table 2. Summary of model 1

Independent Variables	Dependent Variable Business Performance	
	B	T
Constant	1,316	2,942**
Training	,773	6,495**
F	42,187**	
R^2	,584	

** Model and coefficients significant at .01 level

R^2 is the best indicator of the explanatoriness degree of the regression model. Here, a 58% linear correlation was found between R^2 the dependent variable (business performance) and the independent variable (training). This means that 58% of the business performance variable is explained by the training variable.

It is also possible to carry out an "F-Test for linear correlation" to test if there is a linear correlation between the dependent variable and the independent variable. The F-value is the ratio of the explained regression change to the unexplained error term change. Here, the F-value was shown to be significant. This means that the independent

variable (training) linearly affects the dependent variable (business performance). To evaluate the effect of each independent variable, we look at the coefficients in the output. In this part of the output, the beta value, beta standard error and p significance value of beta is given for each variable in the equation. The power of each independent variable to affect the dependent variable can be measured by the beta probability value by looking at the beta p values. It can be seen that the p values of all independent variables are significant. For comparison, it is possible to say that all independent variables have a definite deterministic effect on the business performance as the dependent variable. The β coefficients in the model were found to be positive; and this shows us that the training variable has a positive effect on the business performance.

H1: The hypothesis that there is a significant and positive correlation between training and business performance is accepted.

Model 2:

BP= β_0 + β_1 * LEADERSHIP + e

Table 3. Summary of model 2

Independent Variables	Dependent Variable Business Performance	
	B	T
Constant	1,405	2,833**
Leadership	,637	5,675**
F	32,210**	
R^2	,518	

** Model and coefficients significant at .01 level

In Model 2, a 52% linear correlation was found between R^2 the dependent variable (business performance) and the independent variable (leadership). 52% of the business performance variable is explained by the leadership variable. It can be seen that the p values of all independent variables and the F-value regarding the significance of the model is significant. The β coefficients in the model were found to be positive; and this shows us that the leadership variable has a positive effect on the business performance.

H2: The hypothesis that there is a significant and positive correlation between leadership and business performance is accepted.

Model 3:

BP= β_0 + β_1 * CONTINUOUS IMPROVEMENT + e

Table 4. Summary of model 3

Independent Variables	Dependent Variable Business Performance	
	B	T
Constant	1,730	3,313**
Continuous Improvement	,575	4,763**
F	22,682**	
R^2	,431	

** Model and coefficients significant at .01 level

In Model 3, a 43% linear correlation was found between R^2 the dependent variable (business performance) and the independent variable (continuous improvement). 43% of the business performance variable is explained by the continuous improvement variable. It can be seen that the p values of all independent variables and the F-value regarding the significance of the model is significant. The β coefficients in the model were found to be positive; and this shows us that the continuous improvement variable has a positive effect on the business performance.

H3: The hypothesis that there is a significant and positive correlation between continuous improvement and business performance is accepted.

Model 4:

BP= β_0 + β_1 * INTERNAL CUSTOMER + e

Table 5. Summary of model 4

Independent Variables	Dependent Variable Business Performance	
	B	T
Constant	2,074	4,842**
Internal Customer	,535	5,022**
F	25,224**	
R^2	,457	

** Model and coefficients significant at .01 level

In Model 4, a 46% linear correlation was found between R^2 the dependent variable (business performance) and the independent variable (internal customer). 46% of the business performance variable is explained by the internal customer variable. It can be seen that the p values of all independent variables and the F-value regarding the significance of the model is significant. The β coefficients in the model were found to be positive; and this shows us that the internal customer variable has a positive effect on the business performance.

H4: The hypothesis that there is a significant and positive correlation between internal customer and business performance is accepted.

Model 5:

BP= $\beta_0 + \beta_1$ * FOREIGN CUSTOMER + e

Table 6. Summary of model 5

Independent Variables	Dependent Variable Business Performance	
	B	T
Constant	2,281	3,912**
Foreign Customer	,429	3,314
F	10,980**	
R^2	,268	

** Model and coefficients significant at .01 level

In Model 5, a 27% linear correlation was found between R2 the dependent variable (business performance) and the independent variable (external customer). 27% of the business performance variable is explained by the external customer variable. It can be seen that the p values of all independent variables and the F-value regarding the significance of the model is significant. The β coefficients in the model were found to be positive; and this shows us that the external customer variable has a positive effect on the business performance.

H5: The hypothesis that there is a significant and positive correlation between external customer and business performance is accepted.

Model 6:

Different from the other models, multiple regression analysis was used in this model.

BP= $\beta_0 + \beta_1$ * TRAINING + β_2*LEADERSHIP+ β_3*CONTINUOUS IMPROVEMENT+ β_4*INTERNAL CUSTOMER + β_5*EXTERNAL CUSTOMER +e

Table 7. Summary of model 6

Independent Variables	Dependent Variable Business Performance	
	B	T
Constant	1,381	2,784*
Training	,559	2,360*
Leadership	,449	1,811***
Continuous Improvement	-,258	-,961
Internal Customer	,240	1,144
External Customer	-,243	-1,444
F	9,582**	
R^2	,648	
Adjusted R^2	,581	

* Coefficients significant at .05 level ** Model significant at .01 level   *** Coefficients significant at .01 level

The results show that the model built is significant at %1 significance level. Here, the adjusted R^2 has to be taken into account as a multiple regression analysis was used. Adjusted R^2 is considered in situations where there is more than one independent variable in multiple regression analysis. The adjusted R^2 is approximately 58%. With respect to this result, independent variables (training, leadership, continuous improvement, internal customer, external customer) explain 58% of the independent variable (business performance). This means that the explanatoriness power of the ratio is good. In the light of the data from the regression analysis, it can be said that an increase in the emphasis of training and leadership by businesses will have a more positive effect on business performance than other criteria.

H6: The hypothesis that there is a positive and significant correlation between training, leadership, continuous improvement, internal customer, external customer and business performance is partially accepted.

4. Result and Evaluation

With the contemporary increasing competition conditions, replying to increasing customer demands with immediate and high quality products has become of the most important factors for businesses to increase their competitiveness. Having both internal and external customers in the organization reinforce the understanding of quality in the organization. While internal customer is the organization's staff, external customer is the organizations target group. Production of high quality products results in high customer satisfaction and loyalty; and high customer satisfaction and loyalty reduces demand elasticity. As a consequence, the company can make higher profits by selling more expensive products and services.

In the regression analyses carried out to demonstrate the effects of TQM characterics of businesses (training, leadership, continuous improvement, internal customer, external customer) on performance, it was observed that all TQM characteristics affected the performance variable. This can be interpreted as an increase/decrease in the emphasis on TQM by businesses results in an increase/decrease in their performance. When the results are viewed in the light of correlation degree, it was observed that TQM's leadership and training criteria have a higher correlation with performance than other criteria. Companies should ensure their staff receive the necessary training on quality and support continuous improvement under the leadership of senior management. In the light of the study results, it is possible to say that business desiring to increase their performance should place more emphasis on TQM criteria. If businesses adopt and properly practice the TQM concept, they shall realize that the results are desirable and headed towards perfection.

References

Akal, Z., (2000). *İşletmelerde performans ölçüm ve denetimi: Çok yönlü performans göstergeleri*. Ankara: MPM Yayınları, No: 473.

Bingöl, D., (2003). *İnsan kaynakları yönetimi*. İstanbul: Beta Yayınları, 5. Baskı.

Büyükmirza, K., (2001). Kobilerin finansman ve pazarlama sorunları. Nevşehir: *Kosgeb Yayınları. 1. Orta Anadolu Kongresi*.

Chiu, R.,(1999). Employee involvement in total quality management programme: Problems in Chinese firms in Hong Kong. *Managerial Auditing Journal, 14* (1/2), 8–1.

Dinçer, Ö. & Fidan, Y.,(1996). *İşletme yönetimi*. İstanbul: Beta Yayınları, 1. Baskı.

Efil, İ. (2010). *İşletmelerde yönetim ve organizasyon*. Bursa: Dora Yayınları, 11. Baskı.

Kald, M. & Nilsson, F.,(2000). Performance measurement at Nordic companies. *European Management Journal, 18* (1), 113-127.

Kenger, E., 2001. Denetçi yardımcıları eğitim notu. http://www.ydk.gov.tr/egitimnotlari/denetim.htm. (10.03.2011).

Lawson, P., (1995). Performance management: An overview. In Walters, M. The Performance Management Handbook. London: *Institute of Personel and Development*.

Lenger, A., (1997). *Verimlilik kavramında sorunsaldan çıkış veya yeni bir kargaşaya doğru ilk adım denemesi*. Verimlilik Dergisi, Ankara: MPM Yayınları.

Nicholas, J. M.,(1998). *Competitive manufacturing management*. New York: McGraw-Hill International Editions.

Şimşek, M. & Nursoy, M., (2002). *Toplam kalite yönetiminde performans ölçme*. İstanbul: Hayat Yayıncılık.