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AN EMPIRICAL STUDY ON QUALITY MANAGEMENT PRACTICES IN TURKEY

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TÜRKİYE'DEKİ KALİTE YÖNETİMİ UYGULAMALARI ÜZERİNE GÖRGÜL BİR ÇALIŞMA

ÖZET

Bu makalede, Türkiye'deki kalite yönetimi uygulamalarının içerik ve kapsamını belirlemeye yönelik yapılan bir araştırmanın sonuçlarına yer verilmiştir. Araştırma kapsamında tesadüfî olarak belirlenen KOBİ'lere anket uygulanarak söz konusu firmaların kalite yönetimi uygulamaları hakkında bilgi toplanmıştır. Daha sonra anket sorularına verilen cevaplar Toplam Kalite Yönetimi (TKY) felsefesinin boyutları ile ilişkilendirilmiştir. Bu şekilde TKY'nin KOBİ büyüklüğündeki Türk firmalarında uygulanma düzeyi ile uygulamada ön plana çıkan faktörler belirlenmeye çalışılmıştır. Araştırma sonuçları kalite yönetim uygulamalarının firma büyüklüğü ile doğru orantılı olduğunu, firmanın büyüklüğü arttıkça kalite konusundaki bilinç ve buna bağlı olarak uygulamanın kapsamının arttığını ortaya koymaktadır. Ayrıca TKY'nin hizmet firmalarında, üretim firmalarına oranla daha sıkı bir şekilde uygulandığı belirlenmiştir.

Anahtar Kelimeler: *Kalite, TKY, ISO 9000 ve KOBİ*

ABSTRACT

This paper reports the results of a study aimed at assessing the extent and the manner of quality management practices in Turkey. The information about the firms' quality management practices was obtained by conducting the survey on the randomly selected small and medium-scale enterprises (SMEs). Their responses then were related to the dimensions of the TQM philosophy. In doing so, the purpose was to identify the extent and nature of TQM practices across SME-level firms in Turkey. Some pertinent conclusions from the survey reveal that larger companies are more exposed to, aware of and are consequently more likely to implement and practice their form of quality management. Also, TQM is found to be more actively pursued among service firms than those in manufacturing.

Keywords: *Quality, TQM, ISO 9000 and SME*

1. INTRODUCTION

In the beginning of 1980s, Turkey gave a start to its liberalization process with the purpose of transition to the market economy, which has greatly influenced Turkish business environment. The economic model set up with that initiative and currently being implemented could be characterized by the deregulation of markets, freeing of interest rates, full convertibility of Turkish Lira and introduction of foreign investment. As a result, Turkish firms found themselves operating in a volatile and uncertain environment (Mellahi and Eyüboğlu, 2001). They also faced severe foreign competition and had a hard time achieving customer satisfaction. Even in domestic market, corporate customers and final customers tended to prefer imports. This competition intensified after 1989, with Turkey's entry to the European Common Market.

In response to these developments, both manufacturing and service firms increasingly concerned with the need for upgrading the quality of their products and services. For these firms, quality has become a primary issue in making corporate strategies and many of them have started implementing TQM to strengthen their competitive positions and to fulfill the needs of both local and foreign customers.

To facilitate their drive towards higher quality levels, it is important to identify the degree to which quality management practices are present in Turkish firms. So, the goals of this research is to define the level of quality management application in Turkish firms and to investigate the most significant factors with respect to the application of a quality system. The results of this research can be used to establish the priorities for quality management programs and develop an adequate database for future empirical research.

2. RESEARCH METHODOLOGY

The study was conducted between May and June 2007. Small and Medium Enterprises Network of Industry and Trade Ministry (KOBINET) database was used as a sampling frame, which gave the most comprehensive list of SMEs operating in Turkey.

2.1. Sample

Simple random sampling was used for selecting respondent companies for the survey. The total number of selected companies amounted to 830. The target respondents for the survey were quality managers or directors since they were directly involved in the process and had first-hand experience related with quality implementation in their businesses. Consequently, the companies were requested to assign the most senior persons with explicit responsibility for quality to answer the questionnaire. The profiles of the respondent companies are displayed in Table 1.

The two e-mailings of questionnaire yielded 154 returns with a response rate of 23 %. Among them there were 85 manufacturing firms and 69 service firms. A response rate of 25-30 percent was the normal for mail and internet surveys and the 23% obtained in this study was felt to be a reasonable (Cronbach, 1984; Fink and

Kosecoff, 1995) one considering the KOBİ.NET Directory (an authoritative representation of the SMEs in Turkey), which was used in selecting companies.

Table 1: Profile of Respondent Companies

	n	percent
Company Type		
Manufacturing	168	64.6
Service	92	35.4
No. of employees		
Below 50	164	63.0
50-99	55	21.1
100-499	32	12.3
500 +	9	3.4
Total Sales Volume (in US $)		
0-100.000	58	22.3
101.000-250.000	41	15.7
251.000-500.000	23	8.8
501.000-1 Million	66	25.3
More than 1 Million	54	20.7
No response	18	6.9
Length of quality management program		
No specific program	70	26.9
1-2 years	48	18.4
3-4 years	61	23.4
5-6 years	39	15.0
7-8 years	25	9.6
More than 8 years	17	6.5
Certification status		
ISO 9000	83	31.9
Non-ISO 9000	177	68.0
Total	260	100.0

2.2. Questionnaire

To evaluate quality management implementation status, it is important to have a valid instrument for measurement. The 8-dimension 75-item instrument of Saraph et al. (1989), which was verified and validated by Baş (2003) for Turkish firms, was used to serve this purpose. The questionnaire used in this study consisted of two main sections: the background of the company and the critical success factors. The first section was intended to determine the fundamental issues, including company type, number of employees, total sales volume, length of quality management program and the certification status. The second part of the questionnaire consisted of the critical success factors (CSF). The factors include:

(1) Role of management and quality policy

(2) Role of quality department

(3) Training

(4) Product/service design

(5) Supplier quality management

(6) Process management/operating procedures

(7) Quality data and reporting

(8) Employee relations

Respondents were asked to rate the extent to which they thought it was currently practiced in their organization. The rating for the extent of practice was given as '1' 'very' to '5' 'very high'.

2.3. Statistical Methods

The results of the survey were analyzed by descriptive statistics. The mean value of all the items measuring a particular factor is taken (e.g. F1) as the value of that factor. The value of quality management implementation is derived by an average of all the factors, i.e. F1-F8.

The *t* test was used to analyze the differences according to types of the companies' i.e manufacturing/service and ISO 9000/non-ISO 9000. For this purpose SPSS-Compare Means Procedure was employed. To assess the association between implementation level and the other key variables such as number of employees, total sales volume and year in service, Spearman's Rank Correlation was used.

3. RESULTS AND DISCUSSION

This section presents the findings of the empirical research on TQM implementation in Turkey. While each question yielded pertinent information, we report only the significant findings, which are worthy of special notice.

3.1. Level of Implementation of Quality Management

In this study companies scoring above the mean value of 3 were assumed to have taken determined efforts to practice quality management. On the other hand, companies below the mean value of 3 were assumed to have negative level of quality management implementation and regarded as if they lacked the effort to practice quality management. The factors, their means, standard deviations and reliability values are given in Table 2.

Table 2: Results for Level of Implementation of Quality Management

Factors	Number of items per factor	Mean	SD	Alpha
F1 Role of management and quality policy	12	3.83	.63	.93
F2 Role of the quality department	6	3.68	.80	.90
F3 Training	9	3.37	.96	.95
F4 Product/service design	8	3.76	.70	.91
F5 Supplier quality management	10	3.54	.75	.91
F6 Process management/operating procedures	13	3.52	.77	.94
F7 Quality data and reporting	9	3.42	.98	.95
F8 Employee relations	8	3.34	.94	.94
Overall				

It is shown in Table 2 that a dominant part of the companies are aware of the prevalent quality management practices and report that they are used to it at a certain level of sophistication. In addition, it is found that equal importance was given to all aspects of quality management implementation rather than putting emphasis on individual quality management factors. This means Turkish companies see quality management as an integrated approach and this view positively affects implementation outcomes.

Factor 1 "Role of management and quality policy" with a mean value of 3.83 was ranked the highest by the respondents, where 5 represents maximum positive evaluation and 1 means the maximum negative evaluation. This demonstrates that management believes in quality and is involved in developing quality policies. This result and Factor 2 "Role of quality department" with a mean value of 3.67 also suggest that the quality implementation was accomplished by the joint efforts of the management and quality department personnel. The results of Factor 2 itself shows that most of the quality departments in Turkey are visible, autonomous, and have direct access to management. The second highest ranking factor was number 4 "Product/service design" with a mean of 3.76, which provides support for the product/service design efforts of Turkish firms. With regard to other factors, companies assigning higher values to Factor 5 "Supplier quality management" (3.54); this means that they are making remarkable efforts to manage their relationship with their customers. Factor 6 "Process management/operating procedures" has one of the higher values (3.61), and this demonstrates that most of the Turkish firms use process approach and have a documented quality system. Engagement in human resource factors is confirmed by Factor 3 "Training" (3.37) and Factor 8 "Employee relations" (3.34). The results of Factor 7 "Quality data and reporting" (3.43) show that most of the Turkish firms know the value of quality data and use it to improve the level of quality.

While the average mean values of all factors are above 3, some individual items fall below this value. The mean scores of items 26 "Training in the basic statistical techniques" (2.41), 27 "Training in advanced statistical techniques" (2.03) and 49 "Use of control charts for statistical process control" (2.24) show that statistical techniques are the least applied tools. So it is important to underline that statistical

techniques, widely used in other countries where quality was previously developed, such as Japan and US, are still not applied in Turkey in an integrated way. The other individual item having the average mean below 3 is "Impact of labor union on quality improvement" (1.96), and this shows the weak cooperation between Turkish companies and labor unions.

3.2. Comparison Between Manufacturing And Service Firms

Comparative data on manufacturing and service firms are provided in Table 3. From Table 3, it can be clearly seen that, except F6 "Process management/operating procedures", the mean quality scores recorded by service firms were higher than the corresponding mean scores recorded by manufacturing firms on all other critical factors. It is, however, useful to examine the test of statistical differences provided in Table 3 to see where recorded differences between the two groups are significant. A look at Table 3 will show that beside "Overall quality implementation level", there are three other factors, with significant statistical difference between the mean scores of manufacturing and service firms. These factors are F1 "Role of management and quality policy quality", F3 "Training" and F8 "Employee relations". In conclusion, from Table 3, it is evident that the companies in service industry have higher level of quality management implementation than do the companies in manufacturing sector.

Table 3: Comparison between Manufacturing and Service Firms–Level of Implementation of Quality Management

Factors	Manufacturing (n=168)		Service (n=92)			
	Mean	SD	Mean	SD	*t* value	Sign.
F1 Role of management and quality policy	3.72	.65	4.02	.56	3.71	.01
F2 Role of the quality department	3.67	.81	3.69	.81	.11	n.s.
F3 Training	3.21	.88	3.68	1.05	3.74	.01
F4 Product/service design	3.74	.68	3.80	.74	.87	n.s.
F5 Supplier quality management	3.49	.67	3.63	.87	1.42	n.s.
F6 Process management/operating procedures	3.54	.64	3.49	.98	.39	n.s.
F7 Quality data and reporting	3.35	.98	3.56	1.01	1.62	n.s.
F8 Employee relations	3.22	.90	3.57	.98	2.89	.01
Overall	**3.49**	**.66**	**3.68**	**.78**	**2.07**	**.05**

3.3. Comparison Between ISO 9000 and non-ISO 9000 Firms

Table 4 compares the ISO 9000 and non-ISO 9000 firms' responses on each of the eight aspects of quality management.

Table 4: Comparison between ISO9000 and Non-ISO9000 Firms–Level of Implementation of Quality Management

Factors	ISO 9000 (n=83)		Non–ISO 9000 (n=177)			
	Mean	SD	Mean	SD	*t* value	Sign.
F1 Role of management and quality policy	3.76	.64	3.86	.63	1.18	n.s
F2 Role of the quality department	3.80	.78	3.62	.80	1.69	n.s.
F3 Training	3.27	.74	3.42	1.06	1.15	n.s.
F4 Product/service design	3.69	.70	3.80	.71	1.17	n.s.
F5 Supplier quality management	3.41	.81	3.60	.70	1.93	n.s
F6 Process management/operating procedures	3.56	.68	3.50	.82	.48	n.s.
F7 Quality data and reporting	3.45	1.07	3.42	.96	.08	n.s.
F8 Employee relations	2.99	1.03	3.51	.85	4.27	.01
Overall	**3.49**	**.71**	**3.59**	**.72**	**1.04**	**n.s.**

On seven of the eight quality dimensions, there are no significant differences between the mean responses of the ISO 9000 and non-ISO 9000 firm respondents. The largest and the only significant difference between the two groups occurs within the employee relations, where non-ISO 9000 firms have better relationship with their employees than ISO 9000 firms do. Thus, we find differences between two groups that are smaller than one might expect from reading the literature.

3.4. Degree of Association with Number of Employees, Total Sales Volume and Years-in-Service

To understand better the degree of association between the implementation level and the other key variables such as number of employees, total sales volume and the length of quality management program, Spearman Rank Correlation is calculated. Table 5 shows the results of these tests.

Table 5: Spearman's Coefficient of Correlation for Number of Employees, Total Sales Volume and Year

Factors	Number Of Employees		Total Sales Volume		Length of Program	
	r	Sign.	*r*	Sign.	*r*	Sign.
Imp. Level of TQM	.63	.05	.67	.05	.21	n.s.

From Table 5, the Spearman's correlation coefficient of .63 reveals significant level ($p < .05$) agreement between the "quality management implementation level" and the "number of employees". There is also higher association between the "quality management implementation level" and the "total sales volume" which are significant at $p < .05$. These two results indicate that large companies appear to have a better understanding and implementation of quality management compared with the smaller ones. Quite interestingly, the Spearman's correlation between the "quality management implementation level" and the "length of quality management program" was only .21, indicating almost no association.

4. SUMMARY AND CONCLUSIONS

In Turkey, there is now a shift towards better management and the emulation of western management approaches such as quality management are gaining acceptance either as a way of maintaining the competitive edge. This is especially important since Turkish firms are now facing a severe competition from low cost and high value rivals in EU and the Far East. From this perspective, the current study was carried out to report on the degree to which quality management is being implemented in SMEs in Turkey and look for areas where they can make improvement in their quality management implementation.

It is found in the survey that Turkish firms have practiced quality management programs extensively in recent years. Nearly every respondent in the survey is found to have implemented certain kinds of quality systems and programs. This means they are generally conscious of the importance of quality. A disaggregation of the main results has also been done by sector. Here again, generally well-established knowledge and usage of quality management practices is found in both sectors. However, there are significant differences especially between the 'role of management' and the 'level of education' with which service companies outperform those in the manufacturing. While the implementation of quality management for the companies in both sectors are at a 'positive' level, they need to increase their pace of quality management implementation and recognize their weakness in their quality journey, particularly with respect to quality data/reporting, employee relations and training.

Furthermore a similar breakdown has been done by ISO 9000 certification status. Even though the results vary to a certain degree between groups, except "employee relations", no significant difference was found. The analysis revealed that companies that registered ISO 9000 standards did not necessarily obtain better quality management practices than those that had not yet registered. This is inconsistent with the general belief that achieving ISO 9000 registration is a useful step towards achieving total quality (Shih *et. al.* 1996; Lee and Palmer, 1999; Beattie and Sohal, 1999; Çalışır *et. al*., 2001). So, contradictory to this long-held belief, the result of our analysis suggests companies should not mistakenly consider ISO 9000 certification as a substitute for their quality management task and should not care about the certificate of ISO 9000 only for marketing purpose.

Additionally it is notable that the 'employee relations' score in non ISO 9000 companies was significantly higher than that ISO 9000 companies. But, it should be noticed that without commitment, involvement and support of the human resources of the organization, any program, no matter how well-designed, conceptualized or implemented, is doomed to failure. Quality management is no exception.

A correlation model was also devised in which the implementation level of quality management was explained by key variables such as number of employees, total sales volume and years in service. Significant relationship is found between the

number of employees and the incidence of adopting state-of-the art quality methods. Additionally companies with higher sales volume were seen to be better quality implementers. The tendency of a higher percentage of the larger companies to use more quality practices is common in most countries, and is a reason why many governments are keen to target small and local resource companies with their quality initiatives. On the other hand, contrary to common sense, this study found that the time length of quality management implementation is not related to TQM practices. Companies that had practiced quality management for a long time did not display better quality management practices than those with a shorter period of practice.

There are also some problems in quality management in Turkish companies. For instance, in general, many companies did not put much emphasis on statistical techniques, so, the managers and employees in such companies could not fully implement quality management tools and methods. Statistical tools and techniques, where appropriate, should be introduced into the industry. Adequate funding and proper retraining on quality improvement tools must be given serious thought if the continuous improvements are to be achieved.

Moreover, it is found that the labor representatives were seldom invited by the management to discuss quality issues, make a quality plan or design a quality program. Cooperation is the foundation of quality management. So, the relations with labor unions should also be improved.

In sum, this research gives the evidence for considerable enthusiasm among SMEs in Turkey to increase the use of modern quality practices in their companies. Given the fact that the current level of management commitment is encouraging and the high percentage of the companies are using quality practices on their own accord, it is likely that quality improvement initiatives will progress in Turkey.

This study suggests some guidelines for quality planning and research by providing the country's average and sector specific levels of quality management implementation. The elaboration in the analysis of quality management practices permits managers to obtain a better understanding of quality management practices as well as to allow researchers to proceed with the task of developing and testing theories of quality management.

The research findings also suggest interesting directions for future research. More direct extensions of this paper could either take the form of replicating the study in more specific industries such as public, construction etc. or use the findings of the present research as a hypothesis for a survey research. To develop true profile of quality management in Turkish firms, workers and managers at the different levels of the organizations should also be surveyed. In addition, customer satisfaction should be taken into account to understand and evaluate the practice ratings better through "adequacy" ratings as seen by the customers.

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