Original Paper

Exploring the Main Characteristics of Turkish Firms Practicing Total Quality Methods

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Abstract

This study paper reports the findings of a survey on Total Quality Management (TQM) in Turkey. The primary objective of this paper is to explore how the companies in Turkey plan, execute and control their processes towards a total quality management system and in doing that what characteristics they show and display. For this purpose a structured survey was conducted with the top 106 firms who either have applied or intend to apply for the Quality Prize awarded by Turkish Society for Quality. The following were specified as the aims of this study: to specify the typical behavioral attributes of Turkish firms who decide to improve their processes by TQM methods; to reveal the barriers to the TQM activities; to understand the significant changes in firm's performances after TQM methods have been applied. The survey was conducted in cooperation with the Turkish Society for Quality.

Keywords

Total Quality Management, Customer Satisfaction, Quality Circles, Turkish business

1. Introduction

Since the 1980's, increasing global competition has forced Turkish companies to think about their systems and processes. Therefore using contemporary quality methods in order to be ahead of their rival companies was mandatory in the race for making a better quality product. Total quality is a philosophy which does just this. It transfers the limits of a problem beyond the company; to a framework where the firm is examined as a whole provided that the bigger picture of the environment in which it exists is not overlooked. Zero defects, least waste, maximum customer satisfaction, employee awakening are the main targets. Total excellence is the ultimate goal. Systems approach, top management support, customer focused product design, employee involvement, empowerment, cross

functional teams, continuous and sustaining improvement are the means to achieve such targets. As it is well known there are diverse methods like benchmarking, problem solving techniques, kaizen, QFD, SPC, FMEA to be employed in the process improvement phase. Which one(s) to choose from these methods depends on the conditions of company or the organization, thus creating a new culture which is specific to that organization and it is known as *corporate quality culture* or briefly *corporate culture*. As a matter of fact every company has its own culture which is put together and learned within the organization through years. On the other hand, we also know that the countries have different cultures and they have characteristics specific to that country. This study intends to try to reveal some of the characteristics which underline the main features of Turkish quality programs by means of a survey carried out with the leading Turkish companies that have certain quality programs.

2. Turkish Experience with Quality Methods

A substantial number of Turkish companies are familiar with these methods and the philosophy itself since 1990's. Turkish industry has been applying TQM methods in an increasing pattern. By the end of 20th century every big company has had applied either one or two of such methods in their processes although success was not guaranteed because it usually lacked a total look which embraces all the processes in the company. Originally the holding companies have started employing quality methods. In fact the first companies that grabbed the biggest prize in annual EFQM (European Foundation for Quality Management) contest were from the two giant Turkish conglomerates, namely Sabanci and Koç groups.

Nevertheless there is not a detailed survey which unveils the main characteristics of Turkish firms applying TQM methods. Is there really a Turkish way? Certainly every country has its own way but the important issue is if it is a succeeding route or not? How did they start and what were their intentions at the start? What difficulties have they encountered on that route? These are some of the questions that remain open to be answered and we are going to try to answer these questions in the paper.

2.1 Quality Background of Turkish Industry

Turkish industry is a dual system in structure, having big corporations (mainly private) at the center surrounded by small and independent enterprises (Buğra, 1990). Industrial development started in 1980's. Before then it was more or less a closed economy with companies producing mainly import substitute goods. But after an industrial reform which came in mid-1980's and brought new regulations imposing for registered transactions together with free circulation of foreign currencies in Turkey it was a period of export sales boom. This trend forced companies to abide with standards of global economy hence a struggle to get certificates like ISO 9000 was accelerated. Total quality concepts were well understood by the pioneers of Turkish industry by the end of 1980's and pro-quality campaigns were hastily started at the beginning of 1990's.

The following facts are some milestones of Turkish quality history: First "Quality" journal was published by Şişe Cam Group (Turkish Glassware Co.) in 1988. First company to obtain ISO-9000

34

certificate was Turk Siemens whereas TQM methods were being applied by Şişe Cam group during the second half of the 1980's and they started with QC circles. Turkish Society for Quality was established in 1991. First Quality Congress was held in 1993. Companies that apply for National Quality Award go a long way from preliminary appraisal to field inspection. The outcome of the final evaluation is declared every year in National Quality Congress. Brisa, the winner of the first national award in 1993 also grabbed the EFQM Quality Award in 1996. Brisa, a tire producer firm, was founded as the joint venture of Sabanci Group and Bridge stone Corporation. It was established in 1988 and is the first tire producer to acquire ISO-9001 quality certificate in Turkey and became the first Turkish company to receive the Quality Awards both at home and in Europe. Koç Group, another giant firm, started a full-scale training program in 1993 based on a corporation-wide plan including the first-tier suppliers. Such efforts have had an positive outcome in 2000 with Arçelik, the group's biggest industry company, winning the EFQM Quality Prize in Large Scale Organizations.

3. Methodology of Research

This paper presents an exploratory study similar to Mandal, Shah, Love and Li (1999) and tries to explore the current status of firms applying TQM methods in Turkey. Because of the fact that it is the first such attempt it can be regarded as a preliminary analysis exploring the current status. As it is well known, that the term "TQM" does have several dimensions; from simply applying teamwork at the bottom level in the form of Quality Circles (QC) to the Quality Improvement Teams (QIT) at the middle level and the more sophisticated techniques such as QFD and the like. In this study we shall regard all such applications in one bundle without differentiating among them.

3.1 Data Collection Procedure

In this survey which is based on a exploratory research model, the population consisted of 100 firms who either have been a member of Quality Society of Turkey (QST) or a participant of National Quality Initiative (NQI) (a campaign under the supervision of QST) or both including the ones who have won national or EFQM quality prizes as well. A structured survey was decided as the main tool for data collection and the questionnaires were sent by e-mail and despite the follow-up by phone only 32 filled in questionnaires were mailed back with a 30 percent return rate. This figure is quite reasonable and well within the world standards for return and thus acceptable for evaluation in the later stages of the research.

3.2 Research Design

The questionnaire consists of 19 questions and it has three main sections. The first group of questions was aiming at identifying the general characteristics of the firm: legal name of the firm, year it is established, industry within which the company is operating, main area of occupation, number of employees, turnover, name and position of the contact person in the firm. The questions in the second section identifies the necessary activities of the company related to quality improvement: the drives behind the TQM activities, the goals of TQM activities, the existence or non-existence of customer

35

satisfaction (both internal and external) measurements, the scope and magnitude of quality training programs, the existence of teamwork activities and availability of outside facilitator/consultancy parties. The third section aims to reveal the outcome of the activities planned for quality improvement: organizational and technical difficulties, the areas where the most satisfying improvements have been made, the indicators of performance in areas where a considerable change in operational results have been achieved.

3.3 Sample of Data

The overwhelming majority of the companies which participated in the survey was in the industrial and consumer goods industries, namely electrical and electronic goods, clothing and textile, food and beverage, metal/machining industries and only 15% was in the service industry. Among the participating companies, 47 percent were over 30 years of age while 28 percent have been in the business less than ten years. Therefore it is not logical to make a statement like "if companies are older they are more open to TQM" or "old companies have more epitaph for TQM". However it is much more logical to state that inclination toward TQM is much more related to other factors than the age of the firm. Among the 32 participating companies, 44 percent employs over 500 employees while 43 percent employs over 100 whereas only 13 percent employ less than 100 employees. Thus, most of the firms participating in the study can be regarded as either medium or large-scale firms (Table 1).

Table 1. The Classification of Companies by the Number of Employees

Number of employees	Percentage of Companies
Less than 100 (Small)	13
Between 100 and 500 (Medium)	44
More than 500 (Large)	43
Total	100

In general, large companies use more diverse quality tools and techniques. The results support those of Yavas and Rezayat (2003) who utilized in their study data from the United States, Japan, Taiwan, and Hong Kong that a larger organization size is associated with a larger alignment with industry standards, which relates to information and analysis. Pino (2004) reports that in Peru the case is just about the same or similar.

4. Findings of the Survey

Among the 32 firms, vast majority (75 percent) declared that they were applying TQM methods. In other words, three out of four firms are actually practicing TQM. The other firms are either in the implementation phase or not yet started although willing to do it. These figures indicate that this ratio is

relatively higher than those in the similar studies; such as 60 percent in Australia (Mandal, Shah, Love, & Li, 1999). Another point worth mentioning is that the companies in goods manufacturing industries have more tendency than those in service industries to improve their system by a ratio of 6.5:1.

4.1 Quality Circle Groups

Quality Circle (QC) groups have an important role in TQM applications. One out of every two companies that apply TQM methods has already integrated this practice into their quality system. This practice alone is counted for 60 percent of participants in the survey (Table 2).

Table 2. Quality Circle Groups in Comparison to TQM Phase

QUALITY CIRCLES

TQM phase / any QC in use?	No	Yes	Total
Not applied	6	0	6
Being implemented	0	2	2
in application	8	16	24
Total	14	18	32

Out of 32 participant firms, 18 of them stated that they have already QC teams working and only two of them were at the implementation phase of TQM. This implies that there is a meaningful relationship among having QC's and applying TQM methods. Even the presence of QC alone can be regarded as an evidence for a TQM system since there is not a single company which does not assume that it is vital for any working quality program.

4.2 Employee Suggestion Systems

Employee ideas and suggestions are integral parts of any TQM system because of its inherent structure. This system is a people based system which emphasizes on the customer requirements and involves direct contribution from the employees as well. If we are talking about improvement this cannot be achieved this without employee involvement because every employee suggestion points out a potential improvement area.

Table 3. **Employee Suggestion System in Comparison to TQM Phase**

SUGGESTION SYSTEM: is it used?

TQM phase / SS in use? >	No	Yes	Total
Not applied	3	3	6
Being implemented	1	1	2
in application	2	22	24
Total	**6**	**26**	**32**

Employee suggestion system is used very effectively as the survey shows that 82 percent of the participating firms actually benefit from this instrument. This is a fairly high number for employee involvement but the actual number of suggestions that have been applied is much less (Table 3). According to the results of survey only 12 percent of the companies declare that the number of suggestions they have applied and in place is above 50 percent. This shows that benefiting from the ideas and suggestions of employees have been far below the expectations on behalf of direct and active participation. These findings certainly remain too low comparing the best practices of TQM worldwide. For example, at Toyota factory in Japan the number of suggestions that were put into application was 94 per cent in 1980 (Belohlav, 1993). On the other hand, another survey shows that the leading firms are more inclined to have employee suggestion systems than others (Samson, 1997).

4.3 Customer Satisfaction

It is shown clearly that the ratio of firms using surveys to measure external customer's satisfaction to the firms which don't is about the same for both of those who are either applying TQM or not (Table 4). This can be shown as a further evidence that whether they are applying TQM methods or not firms are very conscious about the importance of external customer satisfaction.

Table 4. Customer Satisfaction Surveys in Comparison to TQM Phase (for External Customers)

CUSTOMER SATISFACTION : is it measured?
Crosstab for External Customers

TQM phase / CS measured?	No	Yes	Total
Not applied	1	5	6
Being implemented	0	2	2
in application	3	21	24
Total	4	28	32

Similarly the results in essence for internal customers are not much different from those of for external customers; the firms which do not measure external customer satisfaction being only 12 percent while this figure stands at 8 percent for internal customers (Table 5).

Table 5. Customer Satisfaction Surveys in Comparison to TQM Phase (for Internal Customers)

CUSTOMER SATISFACTION : is it measured?
Crosstab for Internal Customers

TQM phase / CS measured?	No	Yes	Total
Not applied	4	2	6
Being implemented	1	1	2
in application	2	22	24
Total	7	25	32

4.4 Measurement of Quality Costs

Quality costs are not given sufficient consideration even among the companies who advanced considerably in TQM journey. Of the participants in the survey there is a substantial number which does not measure costs of quality. Our survey shows that nearly one third of those (29 percent) is not persistent on this feature of TQM. On the other hand 60 percent of the participants state that they are measuring quality costs. This number indicates that there is a perceived reluctance of the companies towards measurements of quality costs (Table 6).

39

Table 6. Cost of Quality Measurement in Comparison to TQM Phase

COST of QUALITY : is it measured?

TQM phase / CQ measured?	No	Yes	Total
Not applied	5	1	6
Being implemented	1	1	2
in application	7	17	24
Total	13	19	32

4.5 Quality Certificates

An outstanding number of 82 percent of the participating firms have a quality certificate whether it is ISO 9000, 9001 or other. In fact 76 percent had ISO certificates ranging from the one obtained in 1991 to the one in 2006. Only 9 percent of the firms have hold quality certificates other than ISO. This leaves only 9 percent of the firms that do not have any quality certificates whereas overwhelming majority of 91 percent of the firms has actually gone through the certification process with success. Thus we can claim that for any company who wishes to implement TQM in Turkey it is almost an industry standard to get a quality certificate most preferably ISO one.

As a firm confirmation of this hypothesis, in a study of Norwegian firms Sun (1999) finds out that having a ISO 9000 certificate and the amount of practice with TQM are closely related to getting better results and concludes that it looks as if a tendency for the ISO 9000 standards is to be taken as part of a TQM program in the future.

This assumption brings forward another question: Do such certificates really contribute towards TQM? Although this needs to be further studied still some studies across the globe deny or at least doubt this remark. A study of Greek industry shows that ISO 9000 certification can be used as the "first" but not the "last" step towards quality improvement (Gotzamani et al., 2006). Although the standard's implementation helps companies to achieve an initial improvement in their quality performance, it cannot guarantee that this improvement continues after certification. Another study in Spain puts out that the ISO standard can be an obstacle when implemented jointly with a TQM system, interfering in the normal operation of the business and allowing the auditor to "inspect" too many aspects of the quality system and slowing it down (Costa & Lorente, 2004). Terziovski, Samson, and Dow (1997) conclude that ISO 9000 certification does not have any effect on performance when implemented with TQM nor when implemented alone. In an identical study carried out in Australia, Rahman (2001)

40

reaches similar conclusions. Less than half of the Turkish companies have sought for outside help. 60 percent of the companies have stated that they started without any external consultancy assistance. This figure shows that companies prefer to go it alone. How they achieve their goals is beyond the goals of this study.

4.6 Quality Techniques

The quality techniques practiced most frequently in the companies involved in this survey are as follows: *Problem Solving Techniques* (Seven Tools of Quality) is at the top of the list by 24 percent and followed closely by *Brainstorming* with 22 percent and *Benchmarking* with 21 percent.

4.7 Quality Training Programs

Another finding of the survey is the diversity of training programs. Although the participating firms had been able to state as many as they wish the final score was a little bit too high. 26 different training subjects were referred in the survey. Among these, *Process Management* training was the most referred one with 7 occurrences. 6 of the participating firms have had *Internal Auditor* training, *EFQM Excellence Model* training, *Total Quality Management* training seminars. 5 firms have gone through *Problem Solving Techniques* training and 4 of them have chosen *ISO 9001 Quality Assurance System*, *Self-evaluation* training and only 3 had referred to *ISO 9001*. The rest of the training programs were referred by only one or two firms.

Among the participating firms, the average number of annual training hours per employee has been found out as 14. In the analyses carried out further it has been found out this had no relationship with either the number of employees or the annual turnover of the firm, i.e., this figure didn't differ significantly with changing the said variables. In general, the results show that the level of TQM training is not related to company size or turnover.

5. Pros and Cons of TQM Applications in Turkish Business

The increase in customer satisfaction was the most welcomed outcome. 44 percent of participating firms endorsed this. Below are the other most notable achievements:

- The increase in the product (goods/services) quality by 38 percent
- Establishing contemporary management with statistical data by 36 percent
- Penetrating into new markets outside Turkey by 29 percent
- The increase in employee motivation and companywide communication by 29 percent

Corporate culture is the biggest obstacle on the road to total quality. 56 percent the participants have claimed that making corporate culture quality-focused imposes the biggest barrier on the road to the success of the TQM projects. 50 percent has thought that the *inadequate level of knowledge and training* was the biggest hurdle. 46 percent referred to the *digestion of TQM by the employees* as the biggest barrier. The others were *the lack of top management support* and *the inadequate/improper use of statistical tools*, each one being 33 percent of the participating firms.

41

One notable finding of the survey was the most interesting result they achieved in the improvement of company's performance (Table 7).

Table 7. Degree of Actual TQM Achievement

FACTORS of ACHIEVEMENTS

Criteria for Achievement	Percentage of development	Percentage of participants
Rise in Productivity	10-25	54
Cut in Unit costs	<10	50
Cut in Product Development time	25-40	40
Rise in Poor Quality Costs	10-25	40
Rise in Profitability	<10	38
Rise in Employee Satisfaction	25-40	38
Rise in Overall Sales	10-25	36
Rise in Export sales	60-80	33
Rise in Customer Satisfaction	10-25	33
Rise in Public image of company	80-100	31

Degree and occurrence of actual TQM achievement

The biggest achievement that affects the performance of the company was the *rise in prestige and image of the company*. 31 percent of the firms has agreed with it and reported that on average the rise was 80 to 100 percent. In fact the highest proportion of the answers was *the rise in productivity* by 54 percent and second was *the reduction in the unit costs* by 50 percent. A substantial increase in export sales might be considered as expected since the importing countries mandate exporting firms that products must suit exactly the needs of their customers. In fact this is quite so in today's high competitive world of business. But the most surprising result is the dramatic increase in the public image of the company. Public image is how company is perceived by customers, suppliers, partners and the competitors or more generally by people. The great deal of the elevation in the firm's public image can hardly be explained otherwise; being more prestigious firm with better public image is therefore one of the most compelling reasons of jumping to TQM journey. In fact, one last question was about the reasons for starting TQM journey. The first seven reasons are listed below (see Table 8). The reason that was marked by majority of the firms is the apparent need of proving the quality of their products to their customer base. Thus applying TQM is regarded as a sign of higher quality by 38 percent of the firms. This reason is well suits the previous finding of the survey: higher quality better public image. Sun (1999) also reports that the components of a TQM program may vary from country to country and further suggests that the Quality Award Models should be used for guidance rather than as a model to copy. Our findings are also compatible with this suggestion.

Table 8. Reasons for Starting TQM Projects

FIRST SEVEN REASONS

Reason for starting TQM	Order of importance	Percentage %
to prove product's quality to customers	1	38
to be more profitable by productivity gain	2	35
to reduce customer complaints	3	33
to step into global markets	4	29
for employee satisfaction	5	27
to win quality prize	6	25
to get a better image by means of advertising	7	25

6. Conclusions and Further Remarks

As a conclusion it is better to sum up the guidelines of TQM applications in Turkey with reference to our study of leading corporations in quality.

- − Companies in goods manufacturing industries have a much more tendency than those in service industries to improve their system.
- − Due to the growing competition in the global markets, medium and large corporations are more open to adopt new ideas and principles and more ready for taking on such endeavors.
- − Although a considerable emphasis is given on encouraging the employees to put forward suggestions the same amount of concern is not shown towards applying them.
- − Another fact is that firms do not regard QC as a must factor if they ever want to implement TQM in their organizations.
- − ISO 9000 is considered as a starter or gateway to TQM activities.
- − The public image of corporations is affected to a great deal by the quality enhancements.
- − Companies see the difficulties in building up a sound corporate culture as the main barrier to TQM applications.

This survey was conducted in the second decade of 21st century. Generally speaking there were quite a few researches studying the TQM practices of Turkish institutions, some in service industry, e.g., in healthcare and in education respectively (Dilber et al., 2005; Töremen et al., 2009) also some in manufacturing industry (Beyazıt, 2003). There was one particular study in the public sector (Coşkun, 2002) but hardly any survey covering exclusively private sector. It is not a secret that there are probably more surveys conducted but not published or accessed openly yet there exists some recent studies dealing with this subject like that of Sadıkoğlu and Olcay (2014). To sum it all up, the more

up-to-date surveys shall be conducted to assess the changes in the attitudes of companies in Turkish business world. Nevertheless the findings in this survey may serve as a benchmark in evaluating the changes and relevant improvements of the companies in their approach toward the quality programs.

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44

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