An Investigation on the Influence of Total Quality Management on Financial Performance the Case of Boutan Industrial Corporation

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Abstract

Nowadays, the quality of products has become one of the critical subjects in organizations to satisfy customers and gaining profit. In this respect, Total Quality Management (TQM) is recognized as one of the popular and effective systems in organizations. Although advantages of TQM are enormous, its implementation is justified only when it has a meaningful and considerable impact on financial performance of organization. The main aim of this paper is to investigate the influence of TQM on financial performance in Boutan Industrial Corporation. For this purpose, relevant literature is reviewed and the six ratios are considered for study as the most popular indicators of the financial performance and statues of organization, which include current ratio, quick ratio, return of assets ratio, return on equity ratio, debt to total assets ratio, and total assets turnover ratio. The findings of the investigation imply that almost all of the hypotheses are confirmed at 95% level of confidence, indicating that TQM can have strong and positive influence on financial performance and status of the organization.

Keywords: Total Quality Management, Financial Performance, Ratio, Boutan Industrial Corporation

1. Introduction

Due to the expanding global markets, the number of potential customers of organizations has been decreased, and the only way of survival is to retain current customers, which in turn requires processes to be changed in order to meet customers' needs and expectations and to guarantee required quality that they expect from products and services (Katller and Armstrong, 2004). Improving global competition and increasing requests for more qualified products by customers causes organizations to understand that the only way of survival in the market is to deliver better quality products to meet customers' needs. In this respect, nowadays many organizations spend a considerable amount of their funds in activities related to improving products and services. However, due to the vast applicability of Total Quality Management (TQM), it has been recognized as one of the most popular quality continuous improvement systems. In TQM, customer's satisfaction is increased by participation of all personnel (Demirbag, 2006). The main aim of TQM is to implement a management system and organizational culture to ensure the customers' satisfaction; customers who are more sensitive to quality standards and their expectations improve every day (Eriksdson and Hansson, 2002).

It should be noted that even if TQM is the best system for improving the quality of products and services and has a considerable influence on customers' satisfaction, its implementation is only acceptable and justifiable when it has defendable influence on organizational performance, particularly in case of financial aspect, since every organization (except nonprofit organizations) is going to make profit and an organization is called commercial when its activities are in line with making profit (Emadzadeh, 2005). The financial ability of an organization in making profit and productivity is called financial performance . Financial performance is measured in different conditions with various variables (Park, 2006) of which, the most primary measures include its influence on financial performance and status of organization. In this paper, this influence is investigated in Boutan Industrial Corporation (BIC) as one of the pioneer organizations in performing TQM in Iran. For this purpose in the following the literature is reviewed and six ratios are determined for analyzing the influence, which in turn indicate the financial status of an organization. The ratios are examined in the BIC; then findings are discussed and conclusions are made.

2. Research background

In spite of the importance of the subject, few research has been performed on the influence of TQM on financial performance of organization in the past, while in recent years, the number of studies have been increased. In spite of global interest towards TQM and research about the relationship between activities in line with TQM and financial performance of organization, unfortunately there seems no research has been conducted in Iran as a developing country in the Middle East. Literature review shows that almost all the previous researches imply the positive relationship between activities in line with TQM and financial performance of organization. In general, previous researches about the relationship between TQM and financial performance of organization can be divided into three general categories as:

1- Researches that directly study the relationship between TQM and financial performance and confirm the positive relationship (Fuentes et al., 2006; Lin and Chang, 2006; Bou and Beltran, 2005; Herrmann et al., 2004; Hasan and Kerr, 2003; Eriksson and Hansson, 2002; Hendricks and Singhal, 2001; Easton and Jarrell, 1998).
2- Researches that directly study the relationship between TQM and financial performance and do not confirm the positive relationship and claim that there is no meaningful relationship between implementation of TQM and financial performance of organization. Of course the number of researchers who reached to this conclusion is very few and they have mentioned in their studies that the reason is probably due to existence of uncontrollable factors such as low interval between implementation of TQM in organization and performing projects that impact on such relationship. It is important to note that few researches reject the positive relationship between TQM and financial performance (Gomez-Gras and Verdu-Jover, 2005; Agus, 2003).

Researches that indirectly study the relationship between TQM and financial performance of organization. Of course these researches have gone further than previous ones and not only did they accept positive relationship between implementation of TQM and financial performance, but also try to identify factors that can impact on this relationship, and in fact strengthen it; factors such as staff protection (Joiner, 2007) organizational strategy (Bou and Beltran, 2005), organizational size (Gomez-Gras and Verdu-Jover, 2004), quality performance (Agus, 2003) and the type of organizational activity (Anderson and Sohal, 1999). Regarding the point that the positive relationship between implementation of TQM and financial performance is not proven in Iran, the main aim of this research is to study the relationship between these two variables. On the other hand since the researches that confirm positive relationship between implementation of TQM and financial performance of organization are more than researches that reject such relationship, the hypotheses of this study are respectively developed. Therefore, literature on the positive relationship by Demirbag et al. (2006), Bou and Beltran (2005) and Hermann et al. (2004), and particularly, study of Hendricks and Singhal (1999) is relatively more concentrated in this investigation.

3. Total Quality Management (TQM)

A usual method for improving quality of products is to perform TQM effectively, and defining TQM because of its rather complicated nature and wide implicit meaning. In a very comprehensive definition offered by American Society of Quality Control (ASQC), TQM is defined as "A quality management system to succeed in long term period by meeting customer’s satisfaction. TQM is based on participation of all members of organization to improve processes, production, services, and a culture in which they work. TQM makes profit for all members of the organization and the community in which organization locates. The application of this approach can be found in instructions of world pioneers of quality management such as Crosby, Deming, Ishikava, Feigenbaum and Joran (Bemowski, 1992). Demirbag et al. (2006) provides another definition for TQM. They define it as an overall management system that its aim is to improve continuously all activities performed by an organization in order to deliver products and services that meet customers’ needs better, safer, more easily and faster than competitors and in this respect utilizes participation of all staff under leadership of top managers.

3.1. TQM Components

TQM like any other processes and systems existing in an organization is composed of various components, and in order to reach to its aim, uses different tools. In fact, in order to assess the way of implementation of TQM in an organization, indicators are needed. These indicators and in fact primary and basic tools that are used by TQM to improve the quality of organization's products/services include:

- Top managers' commitment: The commitment of senior managers is a necessary and essential means to perform comprehensive quality programs successfully. Senior managers are responsible for determining quality aims and strategies and necessary sources to implement TQM program (Deming, 1982; Garvin, 1987; Leonard and Sasser, 1982; Saraph et al.1989; Ahire et al.; 1996).

- Focusing on customer: Recent studies indicate that TQM cannot exist without focusing on customer. There should be systems and processes in the organization that continuously endeavor about customers’ needs and also how can raise their satisfaction and provide new information (Dean and Bowen, 1994; Anderson et al. 1995; Black and Porter, 1996; Ahire et al., 1996). It is also worth mentioning that in MBNQA more emphasis is on this criterion than other quality criteria (Baldrige, 1998; Collier, 1992).

- Relationship with suppliers: Deming was the first who defended the idea of decreasing the number of suppliers and creating long term relationship with them (Black and Porter, 1996). Researches indicate that organizations which select their suppliers according to non- liquidity and non- financial criteria and supervise them, gain remarkable improvement in their financial and operational activities (Ittner et al., 1997).

- Participation of all staff: As it was mentioned, primary endeavors in Japan for improving quality resulted in the formation of quality offices concept. Success of such offices relied basically upon active participation of all members of the organization (Lagrosen, 2003). Many researchers emphasize that in order to improve the quality of an organization's products/services, its responsibilities should be scattered into all units of the organization (Black and Porter, 1996; Deming, 1982; Garvin, 1987).

- Staff training: TQM includes concepts and activities in many fields (e.g. management, marketing, psychology, engineering…) and it is obvious that staff should get formal and specified trainings about concepts and tools of comprehensive quality in order to act perfectly. In addition to training quality concepts, perfect performance and staff satisfaction are obtained whenever the staff get periodical technical training in addition to formal training. This can improve their skills that are useful and valuable both for themselves and for the employers (Ahire et al., 1996; Sila and Ebrahimpour, 2005).

- Staff empowerment: Empowerment is defined as "training and authorizing staff whatever they need to manage their activities". Empowering staff encourages them to take the responsibility of their activities and be more active to find solution for the confronting problems (Glasman, 1995).

-Continuous improvement tools: There are specific tools for measurement and controlling deviations in the production process. Their primary form is the approach of Statistical Processes Control (SPC) which was first offered by Shwart and Deming. Afterwards many researchers emphasized that SPC is an effective way to improve quality continuously, especially for corporations that perform new quality activities in their organization.

- Improving design and process: Contains tools and activities that manage and control design and production systems to keep and improve quality in the organization. Improving design and process includes designing and controlling methods of performance, maintenance planning, Zero Defect; and improving process by analyzing the problem and controlling designing process (Motwani, 2001).

- Internal cooperation and open organization: Comprehensive quality culture highly emphasizes on cooperative behavior among members of the organization and encourages sharing information and assisting partners to complete duties and solving problems. Leonard and Sasser (1982) found out that the most effective quality programs are performed when organizations overcome traditional limitations (Waldman, 1994).

4. Financial performance

Generally speaking, performance refers to the nature and quality of an action which organization does to conduct its mission to make profit (Sink, 1991). Financial ability of an organization in productivity and making profit is called financial performance. Financial performance is assessed in different conditions and various variables (Park, 2006). Many of the performance measurement systems assess financial performance of organization such as profit, cost, return on investment (ROI), etc. These methods of performance measurement emphasize more on previous results of activities and organizations utilize them to distinguish the effect of strategies and programs which have already been performed (Holmberg, 2000) and have less the power of predicting performance. It means that these methods show the effects and results more than the causes (Eccles and Puburn, 1992).

There are many tools to survey the financial power and status of organizations, but the only experimental way to analyze financial power and status of an organization is the analysis of ratios. Of course choosing such ratios varies in different places. In general, it can be said that in order to assess financial performance of organization, the following subjects should be considered:

- Rate of profitability of organization during a given period
- Rate of risk that organization confronts during survey period
- Rate of efficiency of organization in using available resources
- Rate of growth of organization during survey period

On the other hand, there are generally four groups of financial ratios by which the financial performance of organization can be studied. These four groups include liquidity ratios, activity ratios, debts ratios and profitability ratios.

5. Research methodology

The main aim of this survey is to study the relationship between implementation of TQM and financial performance of organization during 1993-2003. For this purpose, financial ratios of these years are used for analysis; thus the statistical population of this survey include all financial ratios which are extracted during the mentioned years obtained from annual financial statements of BIC (as a case study corporation) and Parskhazar, Arj, and Azmayesh corporations (as standard index corporations). Purposive sampling is used for data collection since among existing financial ratios in the statistical population, only some of them are well indicators of financial performance of organization.

Respectively, the sample volume is equal to 240 ratio/year. The method of calculating is in such a way that in each financial period and for each organization, annual financial statement is considered and from each statement, six financial ratios are extracted. In this way, two periods of five years before and after implementation of TQM (i.e. 10 years) are considered; in general for each organization the sample volume will be equal to 60 ratio/year; and since for the aim of this survey, financial performance of four organizations are studied, the sample volume in general will be equal to 240 ratio/year. This survey includes one major hypothesis and six sub hypotheses. The main hypothesis of this survey is that there is a relationship between implementation of TQM in organization and financial performance. But financial performance of organization is a subjective concept and in fact no objective and single criterion is mentioned for it. To study each of the four dimensions of financial performance in this survey, one or several ratios are selected from various ratios. In order to select them and in addition to the point that selected ratios measure four dimensions, at least one ratio is selected from each group of ratios. On this basis, six financial ratios are selected as addressed in Table

1.Regarding this fact, the major and sub hypotheses of this study are defined as follows:
Major hypothesis: Implementation of TQM influences financial performance of BIC
Sub hypotheses:
i) Implementation of TQM influences current ratio of BIC
ii) Implementation of TQM influences quick ratio of BIC
iii) Implementation of TQM influences return on assets ratio of BIC
iv) Implementation of TQM influences return on equity ratio of BIC
v) Implementation of TQM influences debt to total assets ratio of BIC
vi) Implementation of TQM influences total asset turnover ratio of BIC

The research method of this survey includes four general steps, which are described in the following:
1) Determining appropriate standards of financial performance for BIC.
As it was mentioned earlier, financial performance is a concept for which no specific objective and criterion can be found. In fact one cannot find any number or index in financial statements of an organization solely indicating its financial performance. For this reason, researchers have suggested various methods of measurement of financial performance. One of such methods, and in fact the only experimental method, is performed by using financial ratios. Literature review indicates that six ratios which can be used as indicators of financial performance of organization include current ratio, quick ratio, return on assets ratio, return on equity ratio, debt to total assets ratio, and total asset turnover ratio.

2) Determining appropriate time period for measuring financial performance of BIC

One of the most important subjects on the relationship between TQM and financial performance of organization is to determine the starting time of measurement of financial performance, and the range of period in which this performance should be measured and compared. It should be mentioned that the best time to start measuring financial performance is the starting point of performing and implementation of TQM. According to literature, BIC from the very beginning of the year 1998 has started activities in line with implementation of TQM, and therefore this year is regarded as the basis for measuring financial performance of this organization. Furthermore, as it was emphasized by many researchers, implementation of TQM in an organization is a prolonged activity and in fact in order to see its impacts very well in an organization a long time is needed. Therefore, we should consider a period of time after implementation of TQM to observe very well the impacts of implementation of TQM on financial performance of organization. Respectively, in this survey the financial performance of BIC during a period of five years is studied.

The first period that is considered as “Before implementation" is a five years period from 1993 to 1997. In fact in this period, there has been no investigation about any activity related to implementation of TQM in the organization. The second period that is called "After implementation" is a period of investigating (BIC) while TQM is being implemented and naturally in this period, especially in its late; organization is witnessing impacts of implementation of TQM. This period starts from 1999 and ends in 2003. The selected periods to survey the relationship between TQM and financial performance of BIC are denoted in Figure 1. To survey the relationship between TQM and financial performance of BIC, financial ratios for each year are extracted from financial statements of the company and then financial ratios of after operation (which TQM influence organization) are compared with similar ratios before operation (which TQM is not implemented). In this respect, any change in financial performance of organization is determined. In the next step, it should be found whether the probable changes due to implementation of TQM are peculiar to BIC or other factors are effective.

3) Determining appropriate standard organizations to compare their financial performance with financial performance of BIC

As mentioned earlier, in the second step of the survey, probable changes in financial performance of BIC are studied. Supposing that financial performance of the organization in after implementation stage is improved, one still cannot assert definitely that obtained improvement has been due to implementation of TQM in the organization, but it can be occurred because of other factors that exist in the market and industrial environment in which Boutan is acting. To study this subject some organizations are also selected to be compared with financial performance of BIC. In fact, it should be said that in all organizations financial performance is a concept affected by industrial conditions, economical conditions of the country, economical conditions of the world, etc. whether the organization has implemented TQM or other managerial systems or not. determining standard organizations helps in ignoring the impacts of such factors on financial performance of organization. In order to determine standard organizations, several important points should be considered. First the determined standard organizations should not experienced TQM during the survey. Second, they should be similar to the studied organization (BIC) in case of size, type of products, total assets, and amount of sells as much as possible. Therefore, in this survey Parskhazar, Arj, and Azmayesh companies are determined as standard organizations that their financial performances should be compared with the financial performance of BIC.

4) Comparing financial performance of BIC with financial performance of determined standard organizations
After the first three stages, it is the time of comparing BIC performance with the determined standard organizations. At this stage, first the considered financial ratios for surveying financial performance of the organizations are extracted from their annual financial statements. Afterwards, the average of the ratios for determined standard organizations are calculated, and finally each one of the financial ratios of BIC is also compared with the average of the standard organizations ratios during considered years to identify the relationship between implementation of TQM and financial performance in BIC.

6. Case study and findings

To study the considered hypotheses in BIC, two ratios are used as ratio type one and ratio type two. These two ratios together with their calculation analysis are described in the following**.**

Ratio type one

As it was mentioned earlier, to investigate the sub hypotheses of the survey one should perform two stages. In each hypothesis, first the considered financial ratio should be compared in the periods of before and after implementation of TQM in BIC to determine if there is any difference in the considered financial ratio in two mentioned periods.

Then, in order to justify the point that if there is any probable changes due to implementation of TQM in BIC, the ratio in which the numerator is the financial ratio of the company and the denominator is the geometrical average of the corresponding ratio of the three other companies is computed for each year. As an example for the current ratio of the year 2004, ratio type one is calculated as:

$$\frac{\text{Current ratio of BIC}}{\text{Average of current ratio of the comparing companies}}$$

Comparing such ratio before and after implementation of TQM highlights any meaningful difference between these two periods due to the implementation of TQM in BIC.

Ratio type two

As mentioned earlier, financial performance of BIC is assessed by six ratios. To study the main hypothesis, the ratio called ratio type two is used. For this ratio, the average value of the four ratios of type one is calculated for two periods, i.e. before and after implementation of TQM. As an example, ratio type two of the current ratio for the period of before implementation is calculated as follows:

$$\frac{\text{Average of Current ratio of BIC}}{\text{Average of average values of current ratio of the comparing companies}}$$

Therefore for each period, six values are computed and their comparison indicates any meaningful difference between financial performance of BIC in the periods before and after implementation of TQM, and financial performance of standard organizations.

After calculating the ratios, the research hypotheses are examined and for this purpose, Wilcoxon nonparametric test is used.

The finding of the major hypothesis, i.e. "implementation of TQM influences financial performance of BIC" is presented in Table 2. As it is clear, the difference between ratio type two before and after its implementation is meaningful ($p<0.05$). Respectively, the null hypothesis is rejected and it is argued that implementation of TQM in BIC influences its financial performance.

On the other hand the average difference of the two groups is positive and it means that average of financial performance of BIC comparing to standard organizations in the after implementation period is higher than its average in the before implementation period. As addressed earlier, this survey includes six sub hypotheses that each one studies the influence of TQM on one of the considered financial ratios. Table 3 denotes the findings of the data analysis for the six sub hypotheses. As it is addressed, the significant level of all performed tests is less than 0.05 which means almost all of the hypotheses are acceptable at 95% confidence level and implementation of TQM has influenced the financial performance of BIC.

7. Discussion and conclusions

The main aim of this survey was to study the influence of implementing Total Quality Management (TQM) on financial performance of Boutan Industrial Corporation (BIC). After literature review, six sub hypotheses were developed in addition to the major hypothesis based on indicators of current ratio, quick ratio, return on assets ratio, return on equity ratio, debt to total assets ratio and total assets turnover ratio. Data was collected from the company and other three similar companies that had not experienced TQM. Wilcoxon nonparametric test was used for examination of the hypotheses. Findings imply that all of the seven hypotheses were confirmed at 95% level of confidence and respectively, it is concluded that implementation of TQM in BIC has significant and positive influence on current ratio, quick ratio, return on assets ratio, return on equity ratio, total assets turnover ratio and financial performance, and has negative influence on debt to total assets ratio. In addition to this result, the difference between BIC and three comparing companies indicates that the average financial performance of BIC compared to standard organizations in the period after implementation is higher than its average in the period before implementation, i.e. financial performance of this corporation compared to the period before implementation is improved.

This fact is compatible with the findings of sub hypotheses. Analysis of the sub hypotheses shows that TQM has positive influence on five financial ratios and has negative influence on one ratio, and thus it can be concluded that financial performance of the corporation has been improved due to TQM implementation. It should be noted that among the ratios, debt to total assets is the one which its excessive increase indicates weakness, while increase in other five surveyed ratios can strengthen financial performance of organization. Respectively, the findings indicate that compared to standard organizations in the period after implementation of TQM, five ratios have been improved, while one ratio has been weakened. Literature review shows that the investigations mostly confirm the influence of implementing TQM on financial performance. The findings of this investigation are compatible with the literature. It is important to note that while this investigation is an evidence of the influence of TQM on financial performance, it cannot be argued that those companies that do not implement TQM, will not witness growth in their financial performance. Another important issue is that the findings are limited to BIC and they could not be generalized to other organizations.

The most important reason of this limitation is that there are a few organizations which have implemented TQM effectively and experienced it in at least four years. Another limitation of this study might be the impact of uncontrollable variables on financial performance of BIC. However, to overcome such problem, those organizations which have had the most similarities with BIC were selected. Based on the findings, it is recommended to organizations to implement quality systems such as TQM in order to improve their performance, including financial performance. The findings indicate that the debt to total asset ratio of BIC in the period after TQM implementation compared to the period before it has been increased, showing the fact that this might be due to increase in organizational risk. Thus it is suggested that other organizations investigate the ways of supplying financial resources and to consider the amount of acceptable risk before implementation of TQM.

Regarding research findings and limitations, the following subjects are suggested for future studies:
- further investigation on the influence of TQM on financial performance in various organizations and industries, and comparison the results;
- investigating the impacts of organizational variables such as size of organization, organizational strategy, industry type, organizational structure, etc. on the relationship between TQM and financial performance;
- studying effectiveness of each various dimensions of TQM on financial performance of organizations;
- studying the impacts of other quality systems such as ISO 9000 on financial performance of organizations and comparing their impact with the influence of TQM;
- using other approaches such as price trend of organization's stocks, to survey economical impacts of effective implementation of TQM in various organizations and industries; and
- investigating different approaches of the implementation of quality systems and their impacts on financial performance along with an appropriate practical model for developing countries like Iran.

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Table 1. Selected financial ratios for surveying financial status and performance

Performance dimension	Ratio type	Selected ratio
Risk	Liquidity	Current ratio
Risk	Liquidity	Quick ratio
Efficiency-Profitability	Profitability	Return on Assets (ROA)
Efficiency-Profitability	Profitability	Return on Equity (ROE)
Financial risk	Debt	Debt to Total Assets
Growth-efficiency	Activity	Total Assets Turnover

Table2. Finding of the major hypothesis

Calculated Z	p-value
-1/992	0/046

Table 3. Findings of the sub hypotheses

Type one ratio	Calculated Z	p-value
Current ratio	-2.023	0.043
Quick ratio	-2.023	0.043
Return on Assets (ROA)	-2.023	0.043
Return on Equity (ROE)	-2.023	0.043
Debt to Total Assets	-2.023	0.043
Total Assets Turnover	-2.023	0.043

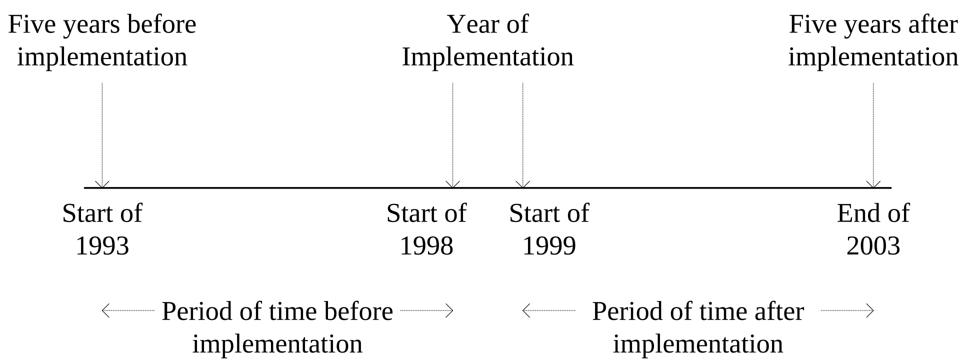

Figure 1. Periods before and after implementation of TQM in BIC