

Analyzing and Prioritization of Total Quality Management values on Modern Financial Performance Indices with AHP Method

Amene Kiarazm¹, Farhad Koohkan²

¹Department of accounting, Kashmar Branch, Islamic Azad University, Kashmar, Iran ²Department of Accounting, University of Science and Culture, Tehran, Iran

ABSTRACT

Nowadays world markets condition, resources restriction and competition have led the organizations to make proper procedures. One of these procedures is TQM, in the other hand; the survival of economic agencies is possible by determining the goals, planning and so evaluating performance. The aim of this research is, giving priority to the effective of TQM values on financial performance from stated organizations managers' point of view. To measure these values, comments by 43top, quality and financial directors in this field of study has been collected through census method. Study tool is questionnaire. Group analytical hierarchical process method was employed for analyzing data. The results showed that Economical value added (EVA) and Residual Income (RI)have the highest weight (The highest effect on performance improvement) and then Return on investment (ROI) ratio and finally sale return Ratio have the highest weight, respectively.

KEYWORDS: TQM, AHP, ROI, RI, EVA, sale return method

1. INTRODUCTION

Increasing the competition in production and services aspects, has led the organizations to get a proper procedure. One of these methods is TQM, which guarantees the performance of crucial methods in every organization [4]. In fact changing program will start from higher layers of organization and will move to lower layers and if properly is applied for organization it will cause furtherance flexibility in organization, increase cooperation in staff, decrease costs, increase satisfaction of staffs and customer and finally improvement the occupation[6].So TQM is one of the most important tools used by organizations to reach a high level of quality and customers' satisfaction. On the other hand, the desired performance of organization causes beneficiaries'

satisfaction. Analyzing financial ratios is one of the best tools used to determine financial status of organization. Financial strengths and weaknesses of firm can be identified by financial ratios[9]. Therefore, this study was conducted to examine and prioritize the effective factors of Total Quality Management on improvement of financial performance of organization; then, to look at the role of TQM in satisfying financial expectations of beneficiaries and investors alongside customer-oriented TQM.

THEORETICAL FRAMEWORK

Total quality management (TQM) has gained an increased interest in practice and literature during the 1990s. Lagrosen (2001) writes that TQM has become well established as a system for improving both the performance of corporations, and the satisfaction of customers. Despite its popularity, the meaning of TQM is rather ambiguous. Amsden et al.(1996) state that many business people and academics regard the development and practices of TQM as an evolutionary process rather than a revolutionary one. It is also considered to be either a buzzwordor something to reach for in order to enhance corporate competitiveness and profitability in the marketplace[7, 13]. Some of researchers state total quality management can be described as a management revolution, a revolutionary philosophy of management, a new way of thinking about the management of organizations, a paradigm shift, a comprehensive way to improve total organizational performance[2]. As can be seen in many Books and article [1, 2,9,13, 14]there are many different definition for TQM. In this study, we used Hellsten's definition of TQM, since it is more precise. Hellsten and Klefsjo"(2000) state that TQM consists of three components, namely core values, techniques and tools. Other similar wordings are also used to describe these phenomena, words which include, but are not restricted to, principles, procedures, and tools. The core values are supposed to support the techniques and the tools (see Figure 1) [13].

Corresponding Author: Farhad Koohkan, Department of Accounting, University of Science and Culture, Tehran, Iran. Faculty member of University of Science and Culture, Tehran, Iran. kohkan_farhad59@yahoo.com

Figure 1: The relationship between TQM values and TQM techniques and tools



As for importance of TQM values compared with TQM techniques and tools, in this research just focus on TQM values. TQM values are consisting of six components: focus on process, decision based on facts, focus on customer, top management commitment, individual's commitment, and continues improvement[13,9, 8]. On the other hand according to the importance of modern financial ratio and also lack of application of these ratios in previous research, in this research, modern financial ratios have been used.

Modern financial ratios that are used in this research are consist of return on investment, residual income, economical value added and the sale return method.

- 1. Return on investment (ROI): one of the most popular methods in performance evaluation of production units is the return on investment method. The return on investment is the product of profit to sales ratio in applied capital flow times[15].
- 2. Residual Income (RI): one of the methods that by applying it in somewhat can decrease the restriction of return on investment method is residual income method. The residual income means operating profit after reduction of capital cost of applied asset[15].
- 3. Economical value added (EVA): in fact this method is a special type of residual income that recently gets noticeable attention to itself. In comparison with residual income method, the economical value added method considers to the operating profit after reduction of taxes and it considers the expected rate of return Equal to weighted average cost of capital, and applied capital is equal to the sum of asset minus to the current debt. The economical value added helps management in investment for long time asset and in working capital[15].
- 4. The sale return method: The sale return obtains from the division of operating profit to sale income [15].

LITERATURE REVIEW

Eriksson (2003) analyzed the TQM implementation effectiveness on financial performance of 34 Swedish companies that had receive the quality prize in 1994-1999, in comparison with their competitors performance concluded that the companies that have quality prizes in this periods had higher return asset that their competitions[5].

Nazemiet al (2010) in his research with this title "giving priority to the key successful factors in TQM for reduction of gap performance by fuzzy AHP" tries to find this question that in order to improve the total quality of current condition what parts should be in priority improvement. The result of research show that among the sixteen analyzed factors, group working, cooperation of staffs and reward were put from first to third[11].

Rahnamay Roodposhti and Jalilee (2008) in a research titled "Scientific Principles and Modern Method of Calculating Economic Value Added (EVA) and Its Usage for Financial Performance Assessment and Capital Management in Tehran Stock Exchange" found that EPS, NET INCOME, ROE, ROA, EVA affect firm performance directly [12].

Watson (2003) in a research concluded that doing TQM will improve the financial performance of companies that are small or medium [17].

RESEARCH METHOD

Analytical Hierarchical Process

The analytical hierarchical process (AHP) is a multi-criteria decision making (MCDM) method that was introduced by Saatyin 1980 [3]. MCDM is a well known class of decision making, which addresses decision problems that are related with a number of decision criteria. Common MCDM methods include priority based, outranking, distance based decision making etc. Each method based on its characteristics can be classified as deterministic/stochastic/fuzzy method or depending upon the number of decision makers, as single/group decision making method. In this process, problem is analyzed into smaller parts understandable for decision maker and alternatives are compared by pair-wise comparison matrix and numbers between 1/9 to 9 are attributed to them according to individual preferences [16].In the first step you define hierarchy structure, at the next step measure weight. Finally calculate consistency rate. Consistency rate is a tool which shows how much the priorities resulted from pairwise comparisons can be relied on. Experience has shown that if consistency rate

is less than 0.10, consistency of comparisons is acceptable; unless, those comparisons should be revised [10]. As it was said in first step, the highest level is goal and the elements of the lowest level are alternatives. The elements of the middle levels are criteria or sub-criteria. Although, it should be considered that this study aims at establishing the weight of every criterion in relation to its criterion in the higher level. We don't aim at selecting one alternative among all, so we don't assess the alternatives. This study priorities the value of total quality management affecting financial performance by using group analytical hierarchical process approach. The study was conducted in 2012 on home appliances. Population includes top, quality and financial directors of 5 factories located in Eastern Iran producing home appliances. Data was collected through census. Tool for data collection is questionnaire and finally data from 43 questionnaires was formed the basis of analysis. Conceptual model of Research is presented in the form of a hierarchical tree in Figure 2.





RESULTS

Table No. 1 show the data of pairwise comparison extracted from questionnaire

Table1: financial states weights.						
Variable ROI RI EVA Sale						
Rate weight	0.102	0.314	0.493	0.091		
Rank	3	2	1	4		

Since consistency ratio is calculated 0.074 (less that 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement	
Component weight	0.088	0.115	0.102	0.371	0.187	0.137	
Rank	6	4	5	1	2	3	

Table 2: The weight of each component of TOM values for ROI financial rate.

Since consistency ratio is calculated 0.096 (less that 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

Table 3: The weight of each component of TQM values for RI financial rate.							
Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement	
Component weight	0.083	0.118	0.107	0.391	0.175	0.126	
Rank	6	4	5	1	2	3	

.

Since consistency ratio is calculated 0.065 (less that 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

Table 4. The weight of each component of TQWI values for E VA inflateral rate.							
Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement	
Component weight	0.104	0.139	0.125	0.381	0.162	0.089	
Rank	5	3	4	1	2	6	

Table 4: The weight of each component of TQM values for EVA financial rate

Since consistency ratio is calculated 0.058 (less that 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

Table 5: The weight of each component of TQM values for Sale return financial rate.							
Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement	
Component weight	0.070	0.117	0.104	0.341	0.232	0.136	
Rank	6	4	5	1	2	3	

Table 5: The weight of each component of TOM values for Sale return financial rate

Since consistency ratio is calculated 0.093(less that 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

Calculations

Today, high quality of products is one of the biggest tools used by organizations to meet the expectations of consumers and as a result gain more profits. In this regard, this study, has conducted to examine and prioritize values of Total Quality Management (as a factor in increasing the quality of product) affecting financial performance of organization. The study has analyzed and prioritized factors of committed top management, focus on customers, continuous improvement, focus on process, decisions based on fact, and Individuals committed; having collected information, Analytic Hierarchical Process approach has shown that committed top management, focus on customers, and continuous improvement have the highest weight among modern financial ratios in this study; next, EVA and RI have the highest weight (the most effect on quality improvement); ROI Ratio, and Sale return Ratio are in the next places. Since EVA and RI have higher importance in comparison with other modern financial ratios, and also because committed top management and focus on customers in the study, we should pay more attention to them and as continuous improvement is in the third place in most modern financial ratios, we should consider it after committed top management and focus on customers.

REFERENCES

- 1. Aghaei, A., 2000. Word roots, history, defining the concept of total quality management, Articles Collections. Second International Conference on Quality Management, Tehran.
- Andersson, R., H.ErikssonandH. Torstensson, 2006. Similarities and differences between TQM, six sigma and lean: The TQM Magazine., 18 (3): 282-296.
- 3. Asgharpour, M. J., 2011. Multi criteria decision makings: Tehran university press, tenth publication. Tehran.
- Doolen, T.,E.Van Aken, J.Farris, J.Worley and J.Worley, 2008. Kaizen events and organizational performance: a field study, International Journal of Productivity and Performance Management., 57(8): 637-658.
- 5. Eriksson, H., and J.Hasson, 2003. The impact of TQM on financial performance, measuring business excellence,7(1):36-50.
- 6. Gorji, M., 2011. The Study of the Relationship between Total Quality Management and Service Quality Improvement Leading to an Optimal Model Presentation, Australian Journal of Basic and Applied Sciences,5(11):1742-1749.
- 7. Ganguli Sh. and S.K. Roy, 2010.Service quality dimensions of hybrid services: Managing Service Quality journal, 20(5): 404-424.
- Hellsten, U. and B. Klefsjo[°], 2000.TQM as a management system consisting of values, techniques and tools: TQM Magazine.,12(4): 238-44.
- 9. Kiarazm, A. and F.Koohkan, 2013. Prioritizing Effective TQM Values on Financial Performance by Using AHP, Journal of Basic and Applied Scientific Research, 3(4):197-202.

- 10. Nahavandi, N., M. H. Yosofeian, and A. Bayat, 2009.IT is outsourcing strategy determining in Iran Banks: Journal of modern Economics and Trade, 1(3): 89-110.
- 11. Nazemi, Sh., M. Kazemi, and A. H. Okhravi, 2010.Giving priority to the key successful factors in TQM for reduction of gap performance by fuzzy AHP: Strategic Management Thought., 4(2): 183-210.
- 12. Rahnamay Roodposhti, F., and M.Jalilee, 2008. Scientific Principles and Modern Method of Calculating Economic Value Added (EVA) and It's Usage for Financial Performance Assessment and Capital Management in Tehran Stock Exchange: Basirat Quarterly, 15(40): 36-50.
- 13. Svensson, G., 2006. Sustainable quality management: a strategic perspective, The TQM Magazine., 18 (1): 22-29.
- 14. Tahan, P., 2000. Quality management processes and Description of way the founders. Second International Conference on Quality Management in Tehran.
- 15. Talaneh, A. R., 2011. ENGLISH FOR THE STUDENTS OF ACCOUNTING: Kumars publishers: 46-47.
- 16. Tsinidou, M., V.Gerogiannis, and P.Fitsilis, 2010. Evaluation of the factors that determine quality in higher education: Quality Assurance in Education, 18(3): 227-244.
- 17. Watson, J., and R.Kober, 2011. The impact of total quality management adaption on small and medium enterprises financial performance, Accounting and Finance, 18 (4): 46-61.