

## Prioritizing Effective TQM Values on Financial Performance by Using AHP

Amene Kiarazm<sup>1</sup>, Farhad Koohkan<sup>2</sup>

<sup>1</sup>Department of accounting, Kashmar Branch, Islamic Azad University, Kashmar, Iran

<sup>2</sup>Department of Accounting, University of Science and Culture, Iran

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### ABSTRACT

Today, the survival of business enterprises is contingent upon continuous improvement of their performance to keep and increase their competitive power and to achieve more profits. This can be realized by determining goals and planning and consequently assessing organization performance. Therefore, one of the most essential circumstances here is to know the effective factors on financial performance of organization. This study has conducted to prioritize, from the viewpoint of managers, TQM values affecting financial performance of organization. To measure these values, comments by 43 top managers, quality managers and financial managers in this field of study has been collected through census method. Study tool is questionnaire whose reliability was measured by inconsistency coefficient and whose validity was measured by content-construct method by acquiring the opinions of experts and some managers in this field of study; and the results showed appropriate reliability and validity. Group AHP method was employed for analyzing data. The results showed that Return On Total Stockholders' Equity (ROE) and Return On Total Assets (ROA) have the highest weight (The highest effect on performance improvement) and then P/E ratio, Inventory Turnover Ratio and finally Current Ratio have the highest weight, respectively. The aim of this study is to examine and prioritize the effective factors of Total Quality Management on improvement of financial performance of organization for meeting financial expectations of beneficiaries and investors.

**KEYWORDS:** TQM, AHP, Financial Ratios, financial performance, Iran.

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### 1. INTRODUCTION

Organizations, in today's competitive world, aim at maintaining their market shares and acquiring satisfaction of their customers and beneficiaries. Some of the important factors for the survival of organizations are the correspondence between the quality of products or services and customers' expectations and also the satisfaction of investors and beneficiaries about financial status of organization. So, today, organizations are required to gain the satisfaction of their customers and beneficiaries to be able to keep their competitive situation. 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. 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.

### LITERATURE REVIEW

Hellsten and Klefsjo (2000) defined TQM in their research as a management system which is constantly evolving that includes values, methods and tools for increasing customers' satisfaction [4].

Singhal and Hendricks (2005) in a research titled "The Effect of Implementing TQM on Financial Performance" found that implementing TQM has low cost, increases sale, and affects financial performance [14].

Jelodar and Momghani (2005) in a research titled "Economic Quality Management" found that TQM has a direct effect on firm's financial performance [5].

Rahnama Roudposhti 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 [10].

Tehrani and Bajelan (2009) in a research titled "Investigating The Relation Between Firm Features and Financial Success" found that there is a direct relationship between Return On Assets and SG, which is affected by Return On Total Stockholders' Equity and dividend per share, and firm's financial performance [16].

NikzadZeydi and Tayebi (2012) in their research titled “The Effect of Establishing TQM System on Customers’ Satisfaction to Reach Sustainable Development” found that TQM affects customers’ satisfaction and also this relationship can be considered as one of those factors to attain sustainable development [9].

Shahin et al (2012) in their research titled “Analyzing TQM Factors Affecting Financial Performance” found that committed management, focus on customers and continuous improvement are among TQM factors affecting financial performance [12].

## **MATERIALS AND METHODS**

Many researches have been conducted to reach a suitable criterion for assessing organizations’ performance and being assured that organization is moving towards the benefits of investors and beneficiaries. 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 [2]. Regarding previous researches and more familiarity with them, Current Ratio, Inventory Turnover Ratio, Return On Total Assets, Return On Total Stockholders’ Equity, and Price-Earning Ratio have been used.

### **Financial Ratios research**

- 1- Current Ratio: It is calculated by dividing current assets to current Liabilities [15]. This ratio is more interesting to creditors because the bigger this ratio, the more assured creditors are to receive their Liabilities [8].
- 2- Inventory Turnover Ratio: It is calculated by dividing Cost of Goods sold to Average Inventory [15]. This ratio is more interesting to Stockholders and profit unit managers and the higher this ratio, the more efficient is profit unit in using total assets; and the relation between profitability and profit unit sale is measured by this relation [8].
- 3- Return On Total Assets: This ratio shows the amount of firm’s profit in relation to total assets used [15]. It also reflects management efficiency in using available resources to gain profit [8].
- 4- Return On Total Stockholders’ Equity: This ratio shows the return of common Stockholders’ investment [8]. Return On Total Stockholders’ Equity: Net Income/ Average Stockholders’ Equity [15].
- 5- Price-Earning Ratio: This ratio is calculated by dividing market price Per common Share to earnings Per common Share [15]. This ratio is desirable to be high because, in investors’ belief, it shows that firm has a good future [8].

### **Total Quality Management**

One of the fundamental bases in organizations’ success is quality improvement of products and services. Oxford dictionary defines quality as a degree or level of perfection. American National Standards Institute and American Society for Quality Control (ASQC) define quality as attributes of a product or service that can meet certain needs [11]. International Organization for Standardization (ISO) defines quality as all attributes of a product or service which should be able to meet stated needs. Organizations trying to improve quality are likely to use continuous improvement programs more; TQM is the most remarkable one among them. During last decade, quality management has been used by some as a management theory. Although, there are different descriptions of quality management, it looks at organization management from a new perspective and presents management with an innovative plan and comprehensive approach to improve efficiency of entire organization by controlling it. It is also considered as a framework for competitive management [4]. Followings are some of TQM’s definitions:

TQM is an integrated management approach to meet customers’ needs, achieved by participation of all employees [6].

Dahlgard: It is an organizational culture seeks to increase customers’ satisfaction by continuous improvement of activities of all employees [3].

Shiba: It is an implementing system included tools and methods for training firms’ managers about increasing customers’ satisfaction in a fast-changing world [13].

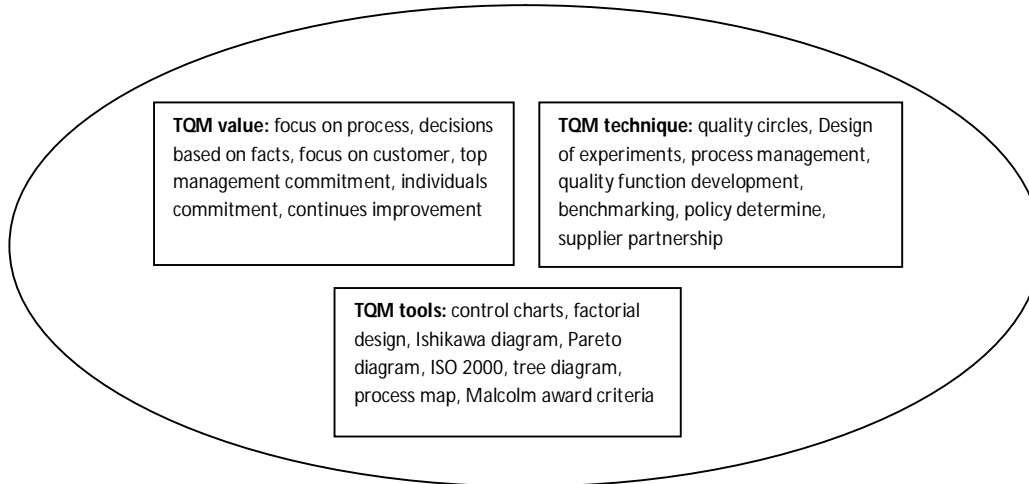
Hellsten&Klefsjo: It is a continuous improvement system included values, techniques and tools which increase the satisfaction of internal and external customers and decrease primary sources [4].

Reviewing three words consisting TQM can be helpful for its deep understanding.

- “Management” means quality being managed in organization, not just being kept high because of supervision and control. That pertains to the role of committed top managers.
- “Quality” means offering what customers expect.
- And “Total” means TQM includes all people and all affairs of organization. That indicates participation of organization’s employees in this process and also continuous improvement.

In this study, we used Hellsten’s definition of TQM, since it is more precise. This definition is shown in Figure1.

**Figure 1:** Three components of TQM



**AHP**

Analytic Hierarchical Process is one of the most used methods in decision making when decision makers come across quality measures. This method was introduced in 1980’s [1]. 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 [17].

Analytic Hierarchical Process has three steps as follow:

**First step:** Defining hierarchy structure. A complicated problem can be stated by dividing it to hierarchically considered subsets. The highest level is goal and the elements of the lowest level are alternatives. The elements of middle levels are criteria or sub-criteria related to assessing alternatives.

**Second step:** Measuring weight. In this step, elements of each step are compared pair wisely with their related elements in the higher level and their weights are established. Then, the final weight of every alternative is established by aggregating relative weights.

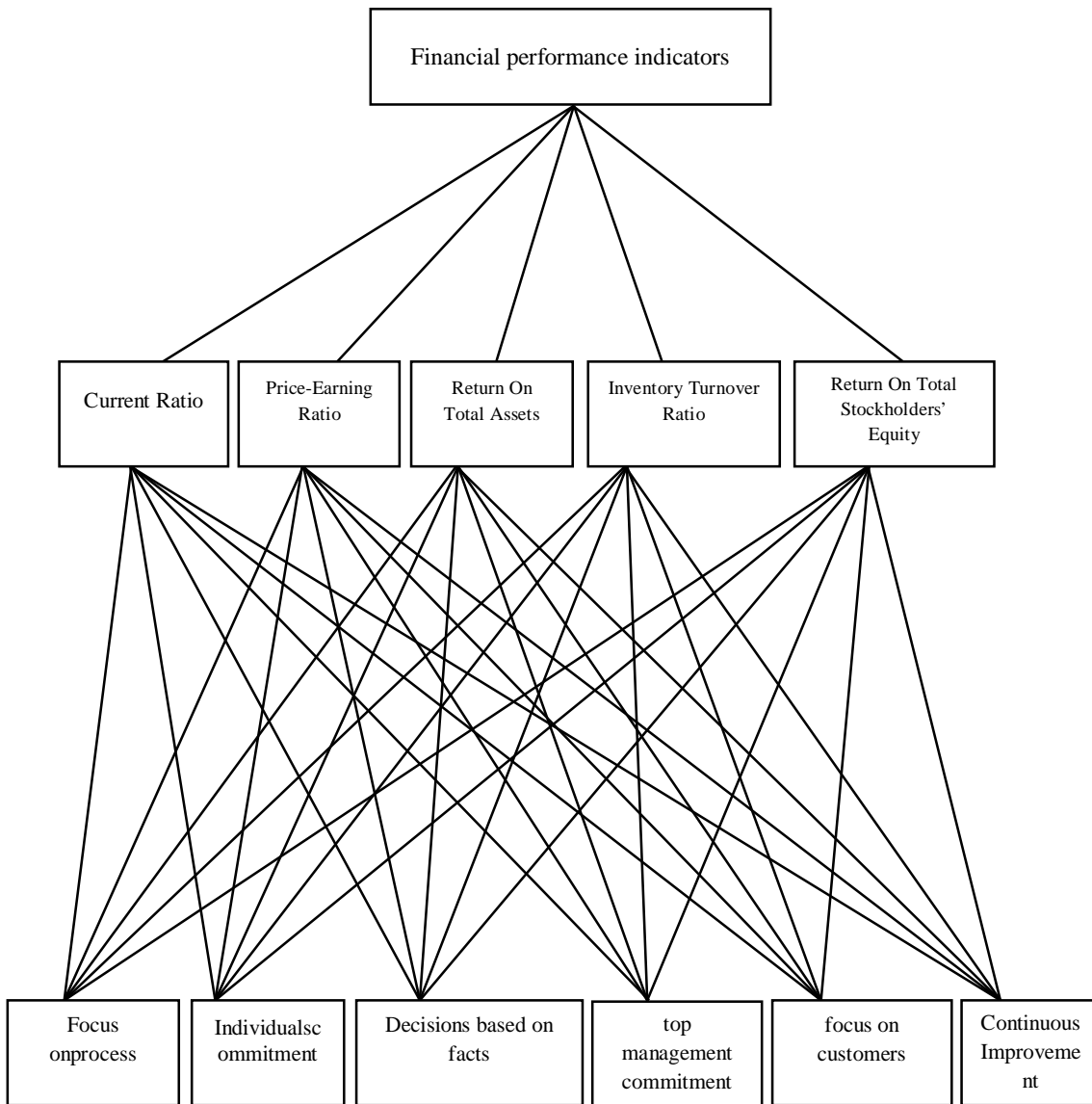
**Third step:** Consistency test. Calculations of analytic hierarchical process are done by primary judgment of decision maker which is presented in the form of pairwise comparative matrix. Every error in comparing or defining the priorities of alternatives can be detrimental to the final result. Inconsistency 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 [7].

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 examines and priorities values of TQM affecting financial performance by using group AHP approach.

The study was conducted in 2012 on home appliances. Population includes top managers, quality managers and financial managers 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.

**Figure 2:** Decision making hierarchical tree



**RESULTS**

Data from pairwise comparison questionnaire is presented in the following table.

**Table 1:** established weights for each of financial rates

Variable	P/E	ROE	ROA	Inventory Turnover Ratio	Current Ratio
Preferred Ratio	0.136	0.532	0.218	0.071	0.043
Rank	3	1	2	4	5

Since inconsistency ratio is calculated 0.09 (less than 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

**Table 2:** established weights for CurrentRatio

Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement
Preferred Ratio	0.08	0.113	0.11	0.392	0.177	0.128
Rank	6	4	5	1	2	3

Since inconsistency ratio is calculated 0.09 (less than 0.1), there is consistency between pair wise comparisons and reliability of questionnaire is verified.

**Table 3:** established weights for Inventory Turnover Rate

Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement
Preferred Ratio	0.07	0.12	0.08	0.341	0.25	0.139
Rank	6	4	5	1	2	3

Since inconsistency ratio is calculated 0.05 (less than 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

**Table 4:** established weights for Return On Total Assets Rate

Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement
Preferred Ratio	0.08	0.112	0.109	0.341	0.226	0.123
Rank	6	4	5	1	2	3

Since inconsistency ratio is calculated 0.07 (less than 0.1), there is consistency between pair wise comparisons and reliability of questionnaire is verified.

**Table 5:** established weights for Return On Total Stockholders' Equity Rate

Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement
Preferred Ratio	0.104	0.127	0.103	0.397	0.171	0.098
Rank	4	3	5	1	2	6

Since inconsistency ratio is calculated 0.09 (less than 0.1), there is consistency between pairwise comparisons and reliability of questionnaire is verified.

**Table 6:** established weights for Price-Earning Ratio Rate

Variable	Focus on process	Individuals commitment	Decisions based on fact	Commitment top management	Focus on customers	Continuous Improvement
Preferred Ratio	0.081	0.114	0.093	0.396	0.181	0.135
Rank	6	4	5	1	2	3

Since inconsistency ratio is calculated 0.08 (less than 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 TQM (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. Table 1 shows that Return On Total Stockholders' Equity and Return On Total Assets have the highest weight (the most effect on quality improvement); P/E Ratio, Inventory Turnover Ratio and finally Current Ratio are in the next places. Table 2 shows that based on Current Ratio, factors of committed top management have highest importance, after that focus on customers, continuous improvement, Individuals committed, decisions based on fact, and finally focus on process have important. Table 3 shows that based on Inventory Turnover Rate, factors of committed top management have highest importance, after that focus on customers, continuous improvement, Individuals committed, decisions based on fact, and finally focus on process have important. Table 4 shows that based on Return On Total Assets Rate, factors of committed top management have highest importance, after that focus on customers, continuous improvement, Individuals committed, decisions based on fact, and finally focus on process have important. Table 5 shows that based on Return On Total Stockholders' Equity Rate, factors of committed top management have highest importance, after that focus on customers, Individuals committed, focus on process, decisions based on fact, and finally continuous improvement have important. Table 6 shows that based on Price-Earning Ratio Rate, factors of committed top management have highest importance, after that focus on customers, continuous improvement, Individuals committed, decisions based on fact, and finally focus on process have important. Since Return On Total Stockholders' Equity and Return On Total Assets have higher importance in comparison with other financial ratios, and also because committed top management and focus on customers in these two financial

ratios have the highest priorities, to achieve the best financial performance in the factories under the study, we should pay more attention to them and as continuous improvement is in the third place in most ratios, we should consider it after committed top management and focus on customers.

## REFERENCES

1. Asgharpour, M. J., 2011. Multi criteria decision makings: Tehran university press, tenth publication. Tehran.
2. Azarbajani, K., Surushyar, A., and YarianKopaei, S., 2011. Searching the best measure of financial performance: The journal of Hesabras.
3. Dahlgaard, J.J., Kristensen, K. and Kanji, G.K., 1998. Fundamentals of Total Quality Management: Chapman & Hall, London.
4. Hellsten, U. and Klefsjö, B., 2000. TQM as a management system consisting of values, techniques and tools: TQM Magazine, Vol. 12 No. 4, pp. 238-44.
5. JelodarMomghani, B., 2005. Economic Quality Management, Tehran's Annual Conference on Quality Management.
6. Motwani, J., 2001. Measuring critical factors of TQM: Measuring Business Excellence, Vol. 5, No. 2.
7. Nahavandi, N., Yosofeian, M. H. and Bayat, A., 2009. IT outsourcing strategy determining in Iran Banks: Journal of modern Economics and Trade, Vol. 13, 89-110.
8. Nikoomaram, H., RahnamayRoodposhti, F., and Heybati, F. 2002. Fundamentals of Financial management: Termehpublishes, pp: 79-109.
9. NikzadZeydi, M., Tayebi, M.J., 2012. The Effect of Establishing TQM System on Customers' Satisfaction to Reach Sustainable Development: Urban Economics, Issue 13, PP. 99-104.
10. RahnamayRoodposhti, F., and Jalilee, M., 2008. 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: Basirat Quarterly, Volume 15, Issue 40, PP. 36-50.
11. Russell, R., & Taylor, B., 2008. Operations Management, translated by J. Faizabad, Mohammad Reza Akhvan&ShyranaMhloji. Tehran: The Publishing Mehrban publication.
12. Shahin, A., ArefNejad, M., Faghani, F., 2012. Analyzing TQM Factors Affecting Financial Performance: Journal of Industrial Management, Issue 19, PP. 37-50.
13. Shiba, S., Graham, A. and Walden, D., 1993. A New American TQM: Four Practical Revolutions in Management, Center for Quality Management: Productivity Press, Portland, OR.
14. Singhal, V., and Hendricks, K., 2005. The Impact of Total Quality Management (TQM) on Financial Performance: DuPree College of Management. Georgia Institute of Technology.
15. Talaneh, A. R., 2011. ENGLISH FOR THE STUDENTS OF ACCOUNTING: Kumarspublishes, pp: 46-47.
16. Tehrani, R., Bajelan, S., 2009. Investigating The Relation Between Firm Features and Financial Success: Journal of Executive Management, Issue 33, PP. 77-102.
17. Tsinidou, M., Gerogiannis, V., & Fitsilis, P., 2010. Evaluation of the factors that determine quality in higher education: Quality Assurance in Education, Vol. 18(3), 227-244.