

Total Quality Management and the environmental performance in the oil industry

Hamid Mokbel

PhD student

Limkokwing University, Malaysia

Abstract : The purpose of this research is to study the impact of total quality management towards the organization's environment in terms of performance and product quality in oil field industry. The study will discuss the principles of Total Quality Management (TQM) and their effect individually and grouped in order to escalate the environment performance and the quality of the product to gain stakeholder's and customer's satisfaction. TQM practices are discussed along with their effect on the environmental performance in the organization. A comparison among certain counties that have applied TQM in their fields regardless the major of each field. Two data collection methods will be used for the sake of this study; secondary and primary data collection methods, where secondary data collection method will be used for the purpose of this paper.

1. INTRODUCTION

Total quality management (TQM) is a method of continues improvement for the quality of products, services, processes by considering the customers' requirements and expectation in order to enhance the satisfaction and firm performance level up to some perfection. Environment management is potential to provide a sophisticated role in the financial performance. Several studies have indicated that the profitability is hurt by the higher production costs of environmental management initiatives, while other studies have proved the opposite. TQM is applied in many organizations as a method and tool to improve quality corporate performance, especially in oil industry. Due to the success of TQM, it has been recognized as a successful management philosophy in manufacturing and services industries which leads to success especially when it is applied in oil industry as well.

Recently many countries have started to adopt TQM principles, however, the performance quality management still limited, even though different studies showed the positive impact of total quality implementation on organizational performance, but it looks like TQM is not applied well from authorities.

2. TOTAL QUALITY MANAGEMENT

Companies and industries especially those who are involved with oil have to follow certain principles in order to apply TQM successfully. Several researches have been carried out and different instruments were developed by individual researchers, such as Flynn [1]. Has defined certain principles that have to be applied as follows:

2.1 CUSTOMER FOCUS

In any industry a company and organization, they do rely on customer, because end of the day they all need to do business and get profit, therefore taking care of the customer is a factor that cannot be ignored under any circumstances. There has to be an understanding of the customers' needs, requirements and expectations in terms of product and service [2].

2.2 LEADERSHIP

This element is considered the level of acceptance of quality responsibility by top level management of the organization in terms of what concerns the customer in terms of requirements [37]. Identifying culture of quality, commitment for quality improvement, and affecting the company in setting quality strategy direction and spectacular effective leadership through the organization. The top management members will usually draw policies, plan strategy for staff to execute [3, 34].

2.3 EMPLOYEE INVOLVEMENT

Employees have to be involved and committed to their commitments and obligations, it is the quality enhancement. All employees must engage with the available activities such as teamwork, employee suggestions, and commitments [4].

2.4 PROCESS MANAGEMENT

In order to success in management, there should be effective and efficient design management in which it satisfies the top management in terms of requirements. When design is efficient enough, it increases the value of the product, therefore the company gains customer loyalty and satisfaction, moreover increasing the satisfaction and trust of stakeholders [5].

2.5 CONTINUES IMPROVEMENT

In order to keep TQM on track, it is important to keep and continue improvement of the product. Improvements always leads to higher quality and satisfaction. The need of improvements always opens a room for creativity and innovation in which the organization can keep a strong place in the market to what is related to its industry [6].

2.6 FACT-BASED MANAGEMENT

In order to make a proper decision regarding any impasse or situation in the company, it has to be based on a critical analysis via an expert analytical fellow. In order to do analysis perfectly, the information has to be collected and formed from the stakeholders who are involved in the problem or the purpose. Accuracy and validity of the collected information is very important in order to form correct effective decision. Analysis requires tools, methods and statistical techniques which will be used to build logical correct analysis [7].

2.7 SUPPLIER MANAGEMENT

Organization and suppliers have to work together in terms of satisfying the customer through improving the product quality, good communication, maintaining the relationship to be up to standards between the suppliers and the organization. Once the organization and the supplier keep good relation, they will gain a lot of benefits such as increase the ability to create value for participants, gain long terms customer's commitment, mature trust, flexibility and speed of joint responses to changing market or customer needs and expectations and optimization of costs and resources. TQM includes several elements in order to keep quality at some relevant level in any organization. It has relation with environmental performance of some elements such as [8].

3. ENVIRONMENTAL PERFORMANCE

Environmental performance relay and depends on the method of applying and implementing TQM principles. In the environmental performance, there are certain elements that have to be taken care off in order to create healthy and liveable environment for humans, following are the elements;

3.1 WASTE MANAGEMENT

Waste management process has provided recycling services for a long period of time. It is the complicated area legally, technically and commercially. Very few organizations depend on the waste collection services provided by local authorities as a complete answer to the waste management obligations. Therefore, many firms need to be identified and contracted. A key development in a waste management is the focus of preventing the production of waste through waste minimization. In terms of oil industry, it is important to consider the method to be used for waste management, in order to keep the quality up to good level [9].

3.2 POWER CONSUMPTION

National economy requires sufficient energy amount for development and living in some respective level. When the consumption of power increases unreasonably, it leads to losses while transmitting and distributing energy. It is necessary to conduct an energy saving plan in order to achieve the efficient level required for good performance. Recently creating effective energy supply systems is the world's most potential trends of fuel and energy complex efficiency increasing. The energy strategy of Russia for the period up to 2030. One of major priority directions of scientific and technical progress in the field of electric energy industry is creating new-generation highly integrated intelligent system-forming and distributing electrical grids in United energetic system of Russia [10].

3.3 AIR POLLUTION

According to studies, a roughly estimate of 7 million people per year die from diseases coast by air pollution; diseases include stroke and heart disease, respiratory illness and cancer. This makes the world's largest environmental health risk and among the largest global

health risks comparable with traditional health risks such as smoking, high cholesterol, high blood sugar and obesity [11]. Toxic air pollutants or air toxics cause cancer and other serious health effects such as reproductive effect or birth defects. Toxic can be benzene which is found in gasoline; perchloroethylene, that is emitted from dry cleaning facilities and methylene chloride which is used as a solvent and paint stripper by a number of industries [12].

3.4 WATER CONSUMPTION

Water is essential to sustain life. Authorities have to set plan of rules to protect the water from being the source of disease. A standard procedure has to be set for the different types of water, drinking water is different from service water, and each has to be treated differently when using the cleaning chemicals. Consumers have to be trained via the media on how to consume the water without exhausting the source or wasting it [13]. Poor using of water can lead to huge amount of wasted water, which means increase of the treatment of it that consumes huge amount of power. This all can be prevented by teaching the consumer the importance of water, and propose healthy good ways of using it. Presenting the consumers with the danger of wasting water is a good method of teaching to them on how to reasonably use it. Educating the children from young age about the importance of water in life can create a generation that respects the value of water which leads to better consumption.

4. PROBLEM STATEMENT

TQM is very important method and tool to improve the quality of the product. It joins three elements together, customer, employee and managers. The principles of TQM ensure the communication and connections among those three elements are up to excellent level to achieve satisfactory over all [14, 35]. Several studies are conducted for TQM in the Middle East, a critical was found in applying total quality management, moreover the concept of it was very broad and lack of focus. According to the previous studies, only few literatures were found regarding the relation between TQM and culture and TQM and environment performance [35, 36]. Until now it is still a problem finding proper plan or implementation in regards culture, environment and TQM, there is always differences occurred, this always leads to failure in the implementation [35]. Communication among the customer, employees and managers was not efficient enough to achieve the goals set by the top management and meet the customer's requirements, training was not provided effectively and does not focus on the main major tasks of the company. TQM has to be taken more seriously in order to achieve the goal of top quality to gain satisfaction and loyalty [16, 36].

5. RELATED STUDIES

In the oil industry, Iran is considered the biggest company, as compare to the Middle East. The company that controls the oil in Iran has a major role in the economy [17]. As a leading company that owns most of the oil, the company is involved in many useful activities in the industry of quality management. Some other committees have established several systems to enhance the TQM process with most important goal being to the highest customers' satisfaction. Even though many companies and organizations in the oil industry have done and established several TQM processes and plans to ensure quality, yet there will be a question that is to what level of success the goals are met [18].

According to the current studies, TQM has been considered as mediator and a method of examining the effect of organizational culture on performance. In certain organization, when managers are influencing certain culture, they cannot actually create or direct it because the atmosphere is not static to one condition or a situation, the culture will vary according the condition of the environment surrounding. Recently a lot of organizations and companies in Jourdan have adopted TQM principles in order to improve the quality of the product and gain customer satisfaction and loyalty. Even though Jourdan started applying good TQM principles, yet the execution of the plan was poor, therefore the impact of TQM is still limited especially in oil industry [19,36,37].

The companies in Greek have provided evidence that soft and hard aspects of TQM provide significant role in gaining benefits from the quality management system inside and outside the business industry in terms environment and quality of products to gain customer satisfaction. Organizations in Greek have two elements of in terms of TQM, they are soft and hard elements. Soft element has been proven to be more effective than hard element [20].

Successful implementation and execution of TQM has been delayed due to lack of clear implementation guidance particularly for organizations in regions where traditional business practices are often very different from those in which TQM evolved and is widely followed.

In turkey, there are firms of Turkish Quality Association and the firms are located in the Kocaeli-Gebze organized Industrial Zone. The members of the Quality Association were more likely to excel in TQM practices and to have ISO certification. Organizations in turkey apply training in order to achieve excellent level of TQM [21]. The environment in any organization is about treating employees as a valuable resource increases their loyalty to the firm, motivates them and makes them proud of their jobs, improves their work-related performances, decreases absenteeism, and reduces intentions to quit [22].

6. RELATIONSHIP BETWEEN TQM AND ORGANIZATION PERFORMANCE

According to the current and previous done and conducted in the area of oil and manufacturing in terms of quality and improvements, there is an impact of TQM on the performance and satisfaction of the employees, there is an improvement of the product's quality which increases the satisfaction of customers towards their requirements, However, success of TQM principles vary from country to another, from organization to another; mainly depends on the execution and understanding of the importance of it.

According to studies done by Das et al in 2006, there is a positive and significant linking among TQM implementation, organizational performance, TQM principles, customer requirements focus, management, stakeholders, staff commitment, and communication, when all these elements fall together elegantly, they do create an innovative product, therefore fine level of customer satisfaction. When customer is satisfied, the employees will gain more confidence, there will be more creative [23].

It was proven a positive link by Salaheldin in 2008, where implanting and executing TQM principles correctly will surely create positive impact on the performance of the organization in terms of product quality and environment. The success only happens due and according to proper plan which always leads the best outcomes in terms of production [24].

According to Sadikkoglu and Olcay (2014), the nature of the outcome is related to the way TQM principles are applied and used. He has mentioned that the main lack of execution of the principles is the employees' involvement, awareness and commitment towards the tasks given by the management. Resources are very important for every organization in order to achieve and hit the target drawn by the stakeholders and customer [25].

Abuzaid, (2015) has discussed the situation of Jourdan in terms of applying the TQM principles in the private sectors, especially the health industries, the main focus is customer satisfaction and requirements, then comes the supplier management [26].

7. RESEARCH MODEL

The current research studies the practices of TQM which are moderated by ISO14001. The research is divided into two groups under ISO14001, first group is about the TQM practices that can be applied and implemented in the organization, the second is group is about the environmental performance. The discussion will suggest a method to connect both groups in order to escalate the environment performance. Improving the performance in any organization can always guarantee satisfaction of the customer and stakeholders as well.

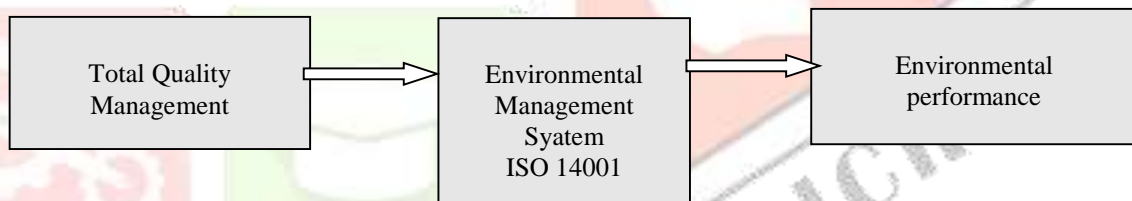


Figure 1 Research model elements

8. CONCLUSION

According to the previous studies that are conducted in the area of management, applying TQM was a success in most of the organizations that used it and implemented its practices and principles, it was found that TQM was applied in oil, health, and business industry and will be applied in many industries in the future as the success continues. It was proven that TQM increases the bond relationship between the customer and the employees and it has improved the communication among them. This success was due to good implementation, good planning, good training and good understanding. The employees were giving a room to be creative, free thinking. TQM has ensured that managers understand the environment and they culture of their employees and created better relationship among them. Having TQM to improve the consumption of water and improving the practices that prevent air pollution is a perfect method to ensure better environment.

REFERENCES

- [1] Biro, M. M. (2015). 4 reasons social media is a critical recruiting tool. In *Leadership, Forbes*. Retrieved June 10, 2017, from <https://www.forbes.com/sites/meghanbiro/2015/11/25/4-reasons-social-media-is-a-critical-recruiting-tool/#6e44e44f6168>.
- [2] Marsteller, S. (2012). Use of social media by companies to reach their customers. *SIES Journal of Management*, 8(1), 47-55.

- [3] Bruns, T.A, 2013, using Social media in Libraries: Best Practise edited by Charles Harmon and Michael Messina. Public services Quarterly, Vol.9,no.4,pp.313-314
- [4] Burns, J. (2015). Personalization Key to Attracting and Retaining Swirling Students. The EvoLLLution, March 30, 2015. Retrieved on June 10, 2017, from <http://evollution.com/opinions/personalization-key-attracting-retaining-swirling-students/>.
- [5] Chen, S. (2001). Assessing the impact of the Internet on brands', Journal of Brand Management, Vol. 8 No. 4, 288 – 302.
- [6] Clements, A. (2012). Social media and recruitment: time for a coherent HR strategy. HR Magazine. Retrieved June 9, 2017, from <http://www.hr magazine.co.uk/article-details/social-media-and-recruitment-time-for-a-coherent-hr-strategy/>.
- [7] Düweke, E. and Rabsch, S. (2011) Erfolgreiche Websites: Suchmaschinen-Optimierung, online- marketing, usability. Bonn: Galileo Press
- [8] Erffmeyer, Robert C., and Dale A. Johnson “An Exploratory Study of [1] Ebrahimi, M., & Sadeghi, M. (2013). Quality management and Performance: An annotated review, International Journal of Production Research. 51(18), pp: 5625-5634
- [9] Ebrahimi, M., & Sadeghi, M. (2013). Quality management and Performance: An annotated review, International Journal of Production Research. 51(18), pp: 5625-5634
- [10] Didik Wahjudi1, Moses L. Singgih,,and Patdono Suwignjo (2012). Impact of quality management practices on business performance: A research model development. International Conference on IML, pp: 289-294
- [11] Zhang, Zhihai, (2000), Implementation of Total Quality Management An Empirical Study of Chinese Manufacturing Firms. Unpublished Ph.D. thesis. <http://www.rug.nl/research/portal/files/10216034/thesis.pdf>
- [12] Ebrahimi, M., & Sadeghi, M. (2013). Quality management and Performance: An annotated review, International Journal of Production Research. 51(18), pp: 5625-5634.
- [13] Sadikoglu, Esin. and Oclay,Hilal. (2014).The Effects of Total Quality Management Practices on Performance and the Reasons of and Barriers to TQM Practices in Turkey, Advances in Decision Sciences. Hindawi Pblishing Corporation. Doi: <https://www.hindawi.com/journals/ads/2014/537605/>
- [14] Shobaki, D Salman, Fouad H Rami. & Al-Bashir, Adnan. (2010). The Implementation of Total Quality Management (TQM) for The Banking Sector in Jordan, Jordan Journal of Mechanical and Industrial Engineering. 4, (2), pp :304 – 313.doi: <https://www.researchgate.net/publication/228345113>
- [13] Ware, Emmanuel Opoku. (2014). Investigating the Benefit Practice of Total Quality Management as Competitive Advantage in Corporate Institution: A case study of Coca-Cola Bottling Company Ghana Ltd. Research Journal of Finance And Accounting .5,(23), pp: 97-99. www.iiste.org
- [14] D. I. Prajogo and D. M. McDermott, “The Relationship between Total Quality Management Practices and Organizational Culture,” International Journal of Operations & Production Management, Vol. 25, No. 11, 2005, pp. 1101-1122. doi:10.1108/01443570510626916
- [15] Kolechitskaya N.A., Lazarev N.S., Shul'Gara R.N., Zmieva K.A. Ferroresonant phenomena on 6- to 10- kV substation buses // Russian Electrical Engineering. Volume 84, Issue 4, April 2013, Pages 177-18.
- [16] Daly, A. and P. Zannetti. 2007. An Introduction to Air Pollution – Definitions, Classifications, and History. Chapter 1 of ambient air pollution (P. Zannetti, D. Al-Ajmi, and S. Al-Rashied, Editors). Published by The Arab School for Science and Technology (ASST) (<http://www.arabschool.org.sy>) and The EnviroComp Institute (<http://www.envirocomp.org/>).
- [17] Builtjes, P. (2003) The Problem – Air Pollution. Chapter 1 of AIR QUALITY MODELING – Theories, Methodologies, Computational Techniques, and Available Databases and Software. Vol I – Fundamentals (P. Zannetti, Editor). EnviroComp Institute (<http://www.envirocomp.org/>) and Air & Waste Management Association (<http://www.awma.org/>).
- [18] Camacho, J. Villaseñor, Martínez, A. De Lucas, Gómez, R. Gómez and Sanz, J. Mena (2007). A Comparative Study of Five Horizontal Subsurface Flow Constructed Wetlands using Different Plant Species for Domestic Wastewater Treatment. Environmental Technology, Vol. 28, No. 12, Taylor and Francis Ltd,pp. 1333-1343
- [19] Prajogo D.I., McDermott C.M., The relationship between total quality management practices and organizational culture, International Journal of Operations & Production Management, 25, 11, 1101–1122, 2005.
- [20] Besterfield D.H., Besterfield-Michna C., Besterfield G.H., Besterfield-Sacre M., Total Quality Management, Prentice Hall, Upper Saddle River, 1999.
- [21] Evans J.R., Total Quality Management, Organization, and Strategy, Rob Dewey, Canada, 2005.
- [21] J. Y. Jung and S. Hong, “Organizational Citizenship Behaviour (OCB), TQM and Performance at the Maqui-ladora,” International Journal of Quality & Reliability Management, Vol. 25, No. 8, 2008, pp. 793-808. doi:10.1108/02656710810898612
- [22] A. Ngowi, “Impact of Culture on the Application of TQM in the Construction Industry in Botswana,” International Journal of Quality & Reliability Management, Vol. 17, No. 4-5, 2000, pp. 442-452. doi:10.1108/02656710010298517
- [23] U. Hellsten and B. Klefsjö, “TQM as a Management System Consisting of Values, Techniques and Tools,” The TQM Magazine, Vol. 12, No. 4, 2000, pp. 238-255. doi:10.1108/09544780010325822
- [24] Yadollah Karimi, Sharifah Latifah & Abdul Kadir” The Impact of Organisational Culture on the Implementation of TQM: Empirical Study in the Iranian Oil Company” American Journal of Industrial and Business Management, 2012, 2, 205-216 <http://dx.doi.org/10.4236/ajibm.2012.24027> Published Online October 2012

- [25] D. I. Prajogo and D. M. McDermott, "The Relationship between Total Quality Management Practices and Organizational Culture," *International Journal of Operations & Production Management*, Vol. 25, No. 11, 2005, pp. 1101-1122. doi:10.1108/01443570510626916
- [26] R. A. Al-Damen," The impact of Total Quality Management on organizational performance Case of Jordan Oil Petroleum Company", *International Journal of Business and Social Science* Vol. 8, No. 1; January 2017.
- [27] E.Sadikoglu and H. Olcay," The Effects of Total Quality Management Practices on Performance and the Reasons of and the Barriers to TQM Practices in Turkey" *Hindawi Publishing Corporation Advances in Decision Sciences Volume 2014*
- [28] E. Sadikoglu and T. Temur, "The relationship between ISO 17025 quality management system accreditation and laboratory performance," in *Quality Management and Practices*, K. S. Ng, Ed., chapter 13, pp. 221–230, InTech, Croatia, Rijeka, 2012. 15,16,10.
- [29] Das, A, etal. (2006). TQM Implementation in the Thai Manufacturing Industry. *International Journal of Innovation and Technology Management* 3, (4) pp: 361–37
- [30] Salaheldin, Ismail (2009). Critical success factors for TQM implementation and their impact on performance of SMEs *International Journal of Productivity and Performance Management* Vol. 58 No. 3:215-237. http://www.csfstudy.com/uploads/Salaheldin_2008.pdf
- [31] Sadikoglu, Esin. and Oclay,Hilal. (2014). The Effects of Total Quality Management Practices on Performance and the Reasons of and Barriers to TQM Practices in Turkey, *Advances in Decision Sciences*. Hindawi Pblishng Corporation. Doi: <https://www.hindawi.com/journals/ads/2014/537605/>
- [32] Abuzaid, Ahmad Nasser. (2015). Examination the impact of total quality management practices in achieving strategic agility: applied study on the Jordanian private hospitals, *European Journal of Business and Management*, .7 (.27, pp:87-96. <http://www.iiste.org/Journals/index.php/EJBM/article/view/25553/26480>
- [33] Irani Z., Beskese A., Love P.E., Total quality management and corporate culture: constructs of organizational excellence, *Technovation*
- [34] Al-Tahitah, A., et al., Paper Review on the Relationship Between Transformational Leadership and Readiness for Change. *International Journal of Energy Policy and Management*, 2018. 3(1): p. 1-7.
- [35] Al-Maamari, Q.A., et al., The Relationship Between Total Quality Management Practices and Individual Readiness for Change at Petroleum Exploration and Production Authority in Yemen. *International Journal of Business and Industrial Marketing*, 2017. 6(2): p. 48-55.
- [36] Al-Maamari, Q. A., Abdulrab, M., Al-Jamrh, B. A. & Al-Harasi, A. H. 2017. The Relationship between Total Quality Management Practices and Individual Readiness for Change at Petroleum Exploration and Production Authority in Yemen. *International Journal of Business and Industrial Marketing*, 6, 48-55
- [37] Al-Tahitah, Ali & Mihlar Abdul Muthaliff, Mohamed & Abdulrab, Mohammed. (2016). Transformational Leadership and Readiness for Change in Educational Public Sector in Yemen: A Review and Research Agenda.