Libya: Implementing Total Quality Management in Ceramic Industry

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***Abstract*— This paper is going to answer the question of the main problem poses by defining Total Quality Management and identifying areas in Libyan Ceramic Industry where and how it can be implemented. Further, it going to identify how total quality management can be used to save on time, money and resources that are wasted on Ceramic projects due to poor quality control during and after Ceramic production process.**

***Keywords*— Total Quality Management, Ceramic Industry, Quality Control, Quality Assurance, Continues Quality improvements, Quality Award Models.**

I. INTRODUCTION

The Ceramic industry has remained inactive to implement Total Quality Management, probably due to the age of the industry and the reluctance to reform traditional management techniques.

Ceramic projects are getting significant and more complex while clients are demanding higher standards of quality of the end product. A lot of time, money and resources are wasted on Ceramic projects as a consequence of poor-quality management. It is important for Ceramic companies to provide consistent value and quality to the products they made to remain competitive in today's Ceramic Market.

The cost of Ceramic is always increasing and it makes sense to try and save as much money as possible. A lot of money was lost, not just during the Ceramic period but also after the project is completed because of possible defects, which arise from poor Ceramic practices. Possible defects are also bad for the company's reputation and it is very important to keep a good company reputation. It is time for Ceramic companies to develop better and more direct relationships with employers, to initiate more teamwork at the job site, and to produce high-grade quality products. Such goals require that a continuous improvement process is established within the company in order to provide quality management. This continuous improvement process is referred to as Total Quality Management.

Total Quality Management is a management style that tries to incorporate all organizations functions to meet the client's needs as well as the organizations' objectives to deliver a quality end product to the client. Total Quality Management empowers employees in an organization within the responsibility of ensuring quality in their tasks and duties. Employees that are empowered ranged from the laborers on site to the directors. Total quality management is dependent on people, so it is not a system that a company can purchase. TQM System could be implemented in seven steps (Fig. 1).

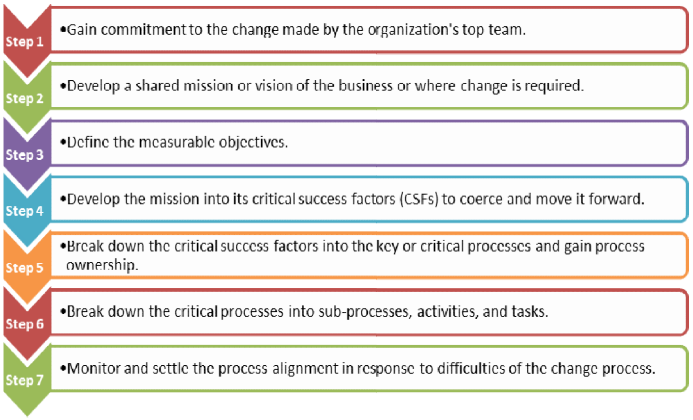

Fig. 1. Seven Steps of Implementing TQM System.

II. MAIN PROBLEM STATEMENT

What is Total Quality Management? and how could it be implemented in the industrial section in Libya?

This paper will try to answer these questions by defining total quality management and identifying areas in Industrial Company (Ceramic of Libya) where it can be implemented. It also aims to identify how total quality management can be used to save on time, money and resources that are wasted on Ceramic industry projects due to poor quality control during and after Manufacturing.

III. MAIN PROBLEM HYPOTHESIS

Total Quality Management is a management tool that can be used by the management team of the Ceramic of Libya company to increase the standard of quality of industry projects. It has to be implemented throughout the entire company and monitored on a continuous basis to remain effective and to be beneficial to the company.

IV. RELATED WORK

A. Total Quality Management

The quality management concept was known since early times in Japan in the 1930s after World War II. Later, many firms in the industrial sector were concentrated on enhancing quality

and using tools that directly aim to control quality at those firms [1], [2]. Moreover, both the USA and the UK accepted the concept of quality management (QM) mainly in the industrial sector in those countries. Finally, QM has been accepted widely in many international standards such as ISO 9000 and the concept of QM has been largely accepted those standards [3]. Various principles were approved at each TQM practices and the principles are explained in Fig. 2.

Fig 2. Principles of TQM practices [4].

Moreover, total quality management includes all organization team members in the process of embracing customers' expectation by using problem-solving approaches to improve the quality of all organizational services and products. The main focus of total quality management theory is to obtain a comprehensive integration between the organizational team and their functions in order to obtain satisfying enhancement, improvement, and preservation of products and services quality to gain customer satisfaction [5].

This managerial theory is concentrating on enhancing business quality and satisfaction of managers through enhancing the employee's engagement in decision-making processes by using teams of quality improvements and quality circle strategies [6].

Moreover, one of the most important elements that ensure the success of TQM exercises is management responsibility. Another essential organizational condition to realize TQM success is organizational knowledge and corrections. Consequently, total quality management is a managerial strategy that points to improve organizational performance and efficiency by enhancing the quality of services and products [7].

Reference [8] showed that TQM was widely accepted at various services areas as a managerial strategy that essentially points to improve the performance of organizations. Furthermore, TQM is recognized as comprehensive integration between several models, procedures, individuals and communication processes to meet customer requirements.

B. Organizational Performance

One of the main factors to obtain effective organizational management processes is performance analysis. The performance of an organization can be immediately related to its ability to reach its strategic and financial goals. The performance of organization was largely ignored in past researches [9], whereas some other handling the organizational performance relating to the financial performance, were also handling the organizational performance by measuring financial and market harmonious performance, which covers the return on investment measures (ROI), sales profit, growth and market share progress.

A fact must be also noticed here is that the organizational performance is measured based on operational performance, which is indicating to the entire performance of an organization that includes financial performance, customer satisfaction and effectiveness of product quality [10]. The operational performance of an organization is directly managed with the enhanced delivery performance, flexibility, minimizing costs, failures and enhancing process productivity.

C. Total Quality Management and Organizational Performance

Analysis of performance is regarded as an essential factor at all managerial methods. Cost and quality are the main measurements of organizational performance, which directly influenced by the total quality management exercises. Reference [11] accepted that applying various TQM exercises such as training, process management, customer management, etc. influence employees' performance which directly affect the entire organization performance. Reference [8] similarly indicated that TQM greatly influences organizational performance, mainly in financial performance.

Based on the increasing needs to reach high-quality services and products, organizations have realized the importance of applying total quality management exercises to the production process to minimize cost and produce products with high-quality properties. TQM is realized as a strategy that recognized customers as the main concern, which directly aims to implement them with high-quality service and products by attaching continuous improvements in the production process.

References [12], [13] explained the influence of TQM exercises on the level of customer satisfaction, mainly in the sector of public services and from the managers' viewpoint. The focus was planning in a strategic approach, management of processes and employees, leadership, customer concern, and measuring both internal and external customers' satisfaction level for the quality of recognized services and products. This research indicated that there is a positive correlation between TQM exercises and concentrating on the satisfaction levels of customers. The study findings a strong relation between manager commitment and satisfaction of

customers. In contrast, some TQM exercises such as planning in a strategic approach and management of processes have less impact on satisfaction levels of customers.

Reference [14] interpreted that the management of the quality process must begin at the beginning of the project, and ends after reaching the quality standards. Each organizational member is responsible for some extent on the organizational enhancements.

References [15], [16] showed that the exercises of TQM are directly participating in improving the performance by minimizing costs, improving the performance of staff members, and increasing the level of customer satisfaction.

V. IMPLEMENTATION AND PRACTICES OF TQM IN LIBYAN CERAMIC INDUSTRY

Different methods were applied to implement total quality management at organizations, we will take Libya as an example. Libya is one of the main countries that used total quality management exercises and implement such methods at a huge number of their organizations by using different implementation methods as discussed below. The main levels of implementing total quality Management strategies are:

A. Level 0

No control/no customer focus level, organizations did not focus on achieving customer satisfaction as much as services and products characteristics especially the quality. In some countries such as Libya, there is no credit for the weak performance of organizations. So, this will drive to customers' unsatisfaction.

B. Level 1

Quality Control level, organizations usually have multiple laboratories and analysis offices in order to enhance the quality of their services and products by testing and improving managerial systems. the statistical method control is the most frequently used method to handle such measurements. Quality control methods were not largely used in Libyan Ceramic Industrial companies in order to implement TQM exercises and strategies as mentioned by [17].

C. Level 2

Quality Confidence level, organizations that are used this method believe that products are the output of various processes. Moreover, the quality of products cannot be achieved without controlling each process separately. Quality confidence is widely attended in many organizations by implementing programs that focused on quality (such as ISO 9000, ISO 9000-2000) by using some managerial tools to guarantee quality such as affinity diagrams, Pareto charts, etc.

D. Level 3

Continues Quality improvements level, the organizations consider that the improvement of the quality of products is related to the employee's efficiency, responsibility and the presence of team-work sense within the organization members. Many operations were planned in these organizations to enhance QM capabilities of functional organization members by examining some exercises such as weekly or monthly assignments.

E. Level 4

Quality Award Models level, the organizations are regarded as dominant companies on the market as well as a universal supporter with their services and products. These organizations try to provide customers with an indicator of valuable quality performance. The organizations define the quality as the process of obtaining the satisfaction of customers. Reference [18] illustrated studies on the influences of models of the quality award on services foundations and they clarified that such companies used a different tool such as reengineering process, and computer software in to enhance organizational performance with reference to their quality characteristics. foundations that implement TQM through quality award models did not exist in Libya.

VI. CONCLUSION

This paper answers the question of the problem coming up by defining TQM and identifying areas in Libyan Ceramic Industry where and how it can be implemented. It further identifies how TQM can be used to save on time, money and resources that are consumed on Ceramic projects due to poor quality control during and after Ceramic production processes.

There are many issues that affect the implementation of a successful TQM system. If TQM system is chosen to be utilized as a management tool, it should be utilized before the implementation process. The TQM system should be continuously monitored to stay effective.

Training applications are very important. All employees in a Ceramic company has to be trained. The amount of training that the employee will require depends on the level of his education. The general workers, managers, and supervisors are the most challenging to train in most cases. They will offer the most resistance to change.

Managers must understand and pursue never-ending improvement. This should cover planning and operating processes, providing inputs, evaluating outputs, analyzing performance and adjusting processes and inputs. There are three essential principles of continuous improvement: focusing on the customer, understanding the process and recognizing that all employees are committed to the quality. In the model for TQM, the customer-supplier chains form the core, which is surrounded by the hard management necessities of a good quality system, tools, and teamwork.

TQM philosophy extends behind management systems related to the production process. TQM embraces the philosophy, principles, processes, exercises, and procedures required for

providing customer satisfaction as well as reaching significant improvements in productivity and company performance.

Commitment and stability of senior management, as well as employees, are important when get started on the quality procession. Contractors must understand that results will not happen overnight; it will take time for the organization to adapt, change and learn.

The hypothesis of the main problem is: TQM is a management tool that can be used by the management teamwork of a Ceramic company to increase the standard of quality. TQM has to be implemented by the company and monitored on a continuous basis to stay effective and beneficial.

REFERENCES

[1] Mehmet Demirbag, Ekrem Tatoglu, Mehmet Tekinkus and Selim Zaim, "An Analysis of the Relationship between TQM Implementation and Organizational Performance,"*Journal of Manufacturing Technology and Management*, vol. 17, no. 6, pp. 829-847, 2006.

[2] Faisal Talib, Zillur Rahman and M. N. Qureshi, "The Relationship between Total Quality Management and Quality Performance in the Service Industry: A Theoretical Model," *International Journal of Business, Management and Social Sciences*, vol. 1, no. 1, pp. 113-128, 2010.

[3] Anish Sachdeva and Vishal Sharma,"Impact of ISO 9000 Certification on Performance of SMEs: A Study of Indian Industry,"*International Journal of Management Practice*,vol. 2, no. 3, pp. 226-239, 2007.

[4] *Quality Assurance*, Northlink College, 2019. [Online]. Available: https://www.northlink.co.za/quality-assurance/

[5] Faisal Talib, "An overview of total quality management: understanding the fundamentals in service organization,"*International Journal of Advanced Quality Management*, vol. 1, no. 1, pp. 1-20, 2013.

[6] Yusuf Y., Gunasekaran A. and Dan G., "Implementation of TQM in China and Organizational Performance: An Empirical Investigation,"*Total Quality Management*, vol. 18, no. 5, pp. 509-530, 2007.

[7] Veeri Arumugam, Keng-Boon Ooi and Tuck-Chee Fong, "TQM Practices and Quality Management Performance- An Investigation of their Relationship Using Data from ISO 9001:2000 Firms in Malaysia,"*The TQM Magazine*, vol. 20, no. 6, pp. 636-650, 2008.

[8] Gharakhani, D., Rahmati, H., Farrokhi, M. andFarahmandian, A.,"Total Quality Management and Organizational Performance,"*American Journal of Industrial Engineering*, vol. 1, no. 3, pp. 46-50, 2013,doi:10.12691/ajie-1-3-2.

[9] Katou Anastasia, "Measuring the impact of HRM on organizational performance," *Journal of industrial engineering and management*, vol. 1, no. 2, pp. 119-142, 2008, doi:10.3926/jiem.

[10] Brah, S., A., Wong, J., L., and Rao, B.M.,"TQM and business performance in the service sector: a Singapore study," *International Journal of Operations & Production Management*, vol. 20, no. 11, pp. 1293-1312, 2000.

[11] BrunA.,"Critical success factors of six sigma implementation in Italian companies," *International Journal of Production Economics*, pp 1-7, 2010.

[12] Wen Y., Ken Boon Binshan L. and Alin, "TQM and customer satisfaction in Malaysia's Service Sector," *Industrial Management and Data Systems*, vol. 109, no. 7, pp. 957-975, 2009.

[13] Letica, M., S.V., "TQM and Firms performance: An EFQM excellence model research-based survey," *Journal of Business Science & Applied management*, vol. 2, no. 2, pp. 11-31, 2007.

[14] Lord B.R. and Lawrence S., "TQM implementation: a case of MQT (Management's Questionable Technology)," Paper presented at the Third Asian Pacific Interdisciplinary Research in Accounting, University of Adelaide, 2001.

[15] Lakhal L., Pasin F. and Liman M.,"Quality management practices and their impact onperformance,"*International Journal of Quality &Reliability Management*, vol. 23, no. 6, pp. 625-646, 2006.

[16] TalhaM., "Total quality management (TQM): an overview,"*The Bottom Line*, vol. 17, no. 1, pp. 15-19, 2004.

[17] Kamran Moosa, "Designing organizational infrastructure for world class quality," *Libya institute of quality control*, (ICQI), 1998.

[18] K.A.S.P Kaluarachchi, "Organizational culture and total quality management practices," A Siri Lankan Case, *The TQM Journal*, vol. 22, no. 1, pp. 41-55, 2010.