

Quality Control System Applied in Libyan Cement Industry

Ashraf Elalam

School of Applied Sciences and Engineering Department of Mechanical
Industrial Engineering Division of Production Engineering
The Libyan Academy - Tripoli
Ashrof_alalem@yahoo.com

Abstract

The main objective of the research is to study the quality control system of Libyan cement industries. This research aims to contribute for developing this industry, and assist these products to achieve high level of quality. The existence of a quality management department of the company and named for the civil contribution since the establishment of its factories .And most of the factories in the global certificate get ISO quality system, one of the targets within the factories .and Quality Management check and monitor its operations and procedures in the implementation of departmental operations and plans. The researcher also recommended Interest in training courses and qualification programs to include staff and heads of departments . And Return to existing laws and recommendations for the management of quality in the ministry, and work by the ministry and factories.

Keywords

Quality, control system, cement industries. Quality management, ISO quality system

Introduction

The purpose of this research leads us to the final results of the search in light of the data collected and analyzed in the framework of the main goals of this research, and in the light of these results provided a number of recommendations that the researcher believes that it will help in the application of quality management system and contribute in overcoming the problems that exist in institutions (under Search)

1.1 Background

Quality is defined from the point view of customers as the ability of a firm to meet or exceed the expectations of the customer. Jablonski offers a five-phase guideline for implementing total quality management: preparation, planning, assessment, implementation, and diversification (Jablonski 1991). Quality is the degree to which an object or entity (e.g., process, product, or service) satisfies a specified set of attributes or requirements. The quality of something can be determined by comparing a set of inherent characteristics with a set of requirements (Diaz 2014). But for practical purposes, it is necessary to be more specific.

Quality has multiple dimensions in the mind of customer such as conformance to specifications, value, and fitness for use. In industry, it is extremely important that the dimensions for example and quality of individual products be known and maintained. This is of particular importance where large quantities of parts, often made in widely separated plants, must be capable of interchangeable assembly (Arthur and Detoro 1992). Otherwise, difficulty may be experienced in subsequent assembly or in service, and costly delays and failures may result. In recent years, defective products resulting in death or injury to the user have resulted in expensive litigation and damage awards against manufacturers. Inspection is that function which controls the quality (e.g., the dimensions, the performance, and the color) manually, by using operators or inspectors or automatically with machines. The challenge for business today is to produce quality products or services efficiently (Ulrika and Klesfsji 2000). This is an important finding for the

future success of the surveyed industry within Libya. Research limitations/implications Future research could be applied to cover other industries within Libya in order to investigate how widely these quality and manufacturing management techniques and philosophies from this research are reflected in other Libyan industries (Hokoma 2007).

1.2 Problem statement

Most of large, medium, and small size of Libyan industries are belongs to government sector. These industries can be classified into two kinds: one is designed and produced mainly for export (global market) such as oil industries, and the other one is designed and produced for domestic use (local market) such as cement industries. The first kind is run and controlled by qualified specialists with the help of foreign experts, and people are thrust in this kind of products and it has a high level of quality. However, the other kind is run and controlled mainly by local labors who have lower qualification than oil industry's labors.

In Libya there are about five factories producing cement. Although all of them using same raw material, there is a difference in the quality of the products. Similar to any other kind of products, the price of the cement products reflecting the difference in its quality level. In addition to that there is a complaint from the people towards these companies due to the difference in the price and quality of the products.

In addition to that, Libya is going to be developed, and all know that cement is essential for any construction. Due to that, now days there are huge demand of this kind of product (cement). So that in order to develop cement industries in Libya, it must be studied focusing on the quality control which make it competitive and in the standard level of international products.

Finally, it is useful to study the quality of the product through a period of time. Evaluating the Libyan cement production with respect to quality is one of the main motivation behind this research. Studying the quality of Libyan cement products will be the field of the current research.

Objectives

The main aim of the research is to study the quality control system adapted in the Libyan cement industries, as it is one of the main products highly needed now days and in the future. The method of approach has been to design and distribute three different forms of questionnaire, that is carefully prepared and given to the proper people and administrations. Answers are submitted and analyzed that gives the main results of the current research.

In order to achieve this aim, an extensive field and theoretical study has been conducted, these include the following:

- 1- Visiting different Libyan cement factories and monitoring the quality system applied for each factory.
- 2- Meeting of quality and management officers for each cement factories.
- 3- Visiting of Libyan ministry of industry and meeting the in-charge officers for quality and management administrations.
- 4- Studying the quality of Libyan cement products with respect to similar foreign products.
- 5- Finally, the research aims to come out with suggestions that contribute of developing Libyan cement industries in order to satisfy the customer need and make it competitive for local and global market according to international standard level of quality.

2. Method of data analysis

After the completion of the process of collecting questionnaires, was tabulated and analyzed the data obtained, symbolized answers and introduced directly, the research has used statistical method the descriptive frequency tables, and ratios the percentage of answers that have been obtained from the

vocabulary study population, and to provide and explain and interpret the content, and this is what will address the second part of the presentation of this chapter.

3. Analysis and discussion

After the data were collected from respondents through the questionnaire, will be presented with the following analysis and interpretation of the data collected for the three sections included in the questionnaire.

Respondents answer about whether there is a special section of Quality Management. From the table above that the percentage of factories that have a quality department amounted to 86% of any high percentage compared with plants that do not have quality department and this is an indication that the concept of quality is not a stranger to the industrial sector, particularly the cement industry.

Table 1 - Determine the existence of a special section of Quality Management

Answer/Statement	Number	Percent
Yes	6	86%
No	1	14%
Total	7	100%

3.1 First Section

This section includes the partial own factories that have a special section of quality management. Create a special section of the factory quality management. Knowing when your department was set up quality management. the goals of the factory in a practical way in first place, it was found that 50% of the departments of the plant achieved the goals in accordance with the method set, while 33% came in second place, which is the believing of senior management factories role of quality management in support of other departments. He said 17% that there is strong competition between institutions in the same activity.

Table 2 - Knowing when your department was set up quality management

Answer/Statement	Number	Percent
Since the establishment of the factory	6	% 100
A year ago,	0	% 0
Two years ago,	0	% 0
More than that	0	% 0
Total	7	100%

From Table 2 the Quality Management Department was established since the establishment of the factory, or about the end of the eighties, and this indicates the keenness of the factories to provide the quality of their products.

Table 3 - Knowledge of the extent of use of the institutions of global factories or local when you set up a special section of Quality Management

Answer/Statement	Number	Percent
Global company	4	%67
Local company	1	%16.5
Consulting only	1	%16.5
Do not make use of one of the works on the efficiency of existing staff	0	% 0
Total	6	100%

In the previous table show that, the gain of 67% of the factories employ international companies in quality management at the establishment of a special section of quality management, and this shows to keep up with the senior management in factories and openness to keep pace with international companies in the field of quality, in addition to the use of some local companies and consulting in the field of quality.

Table 4 . Type a quality system that is being followed by cement factories Libyan

Answer/Statement	Number	Percent
Full product is selected	2	% 33
Are selected random sample of the product per day	1	% 17
Are selected random sample of the product per week	0	% 0
Are selected random sample of the product per month	2	% 33
Are selected random sample of the product during the year	0	% 0
Another system	1	% 17
Total	6	100%

Know what type of quality system that is being followed in the factories in question. The table above prove their system to follow the quality factories was 33% of the answers he was taken samples of the whole product and be taking at random each month, either 17% said that there is another system followed the factory is in sampling depending on the type of samples, including per hour and another every two hours and calculate the average daily and another random.

3.2 The second section

This section is dedicated to questions from factories that do not have quality. Department is not applied so as to know some of the reasons include:

- The reason from non-application quality.
- Knowledge of the reasons for and the wishes of the departments in terms of quality.
- Assess the quality culture at the plant.
- The extent of their conviction quality management even defines reality and status of quality management have this factory and then determine the results and recommendations.

- How to monitor the samples they have.

Table 5 - The possibility of discussing the establishment of a special section of quality management in the meetings of the factory management

Answer/Statement	Number	Percent
Yes, with the recommendation to establish the quality department	1	% 100
Yes, without a plan for the establishment of the Department of Quality	0	% 0
Do not discuss this topic	0	% 0
Total	1	%

In the table above shows the plan, which does not have a quality department meeting and have recommended that they have a quality department and they have a clear vision of the importance of establishing the quality department they are in the process of working on it.

Adopt from the previous table that several departments have expressed their satisfaction with the establishment of the Department of quality and this indicates that the Del either on their awareness and their belief in the importance of the late-quality department or they have this awareness, but not in their hands the decision.

In this question the researcher that there are options and that the answer will be open from their point of view was the answer in two points:

- Clear separation of powers and the regularity of the workflow.
- Have an incentive to compete and development.

It turned out that there are powers at work wearing departments and overlapping business and hung their hopes in the quality department to separate them and identify the tasks and monitor the work of each department, as well as have an incentive to compete among other factories and development as a vision for the future.

The reasons for the refusal to set up a special section of quality Management (with mention some of them, if possible)

When asked about the reasons for rejection researcher the answer is as follows:

- There are no reasons to reject the establishment of a special section of the management of quality.
- It turned out that I have a factory sales of 140,000 quintals this year as the largest cement producer in Libya, said his sales precede any production slate that is manufactured today than a month already Sold
- The overcrowding at the request cement their quality and give rise needed, was not the quality of their meetings, even considering the priorities and are rejected.

3.3 The third Section

Targeted this section and cultivation industry because it is the first reference for each state factories. See the text of the legislation and the laws and regulations in the window and the Ministry of Industry on the

existence of the Department of Quality Management Libyan industrial enterprises in the private sector and public.

Table 6. Knowledge of the text of the legislation and the laws

Answer/Statement	Number	Percent
Yes	3	% 50
No	3	% 50
The public sector only	0	% 0
the private sector Only	0	% 0
Total	6	100%

Knowledge of the text of the legislation and the laws and regulations in the window and the Ministry of Industry on the existence of the Department of Quality Management Libyan industrial enterprises in the private sector and public. 50% had not been a plan to amend the laws and regulations so as to include the existence of quality management institutions, industrial and so perhaps to its existence already, and 17% would be discussing the subject in the future, and the proportion that there is a plan of adjustment is 33% , and that it is clear that the presence of industrial quality management institutions did not seem to have much attention and this may result in a lack of awareness of quality management work.

In the previous table was the question on the text of the ministry of the laws and legislation in the presence of the Department of Quality Management industrial enterprises were the answers are not clear where he made the first half yes and 50% and the second half without, which shows that there are laws and legislation and regulations provide for this but is not working out and not be considered it is not due to it originally . responsible by primarily compared with those of the products of Arab and international rate was more than 83% said their products medium quality and the rest of high quality, has not been mentioned as a few qualities, probably due so not to reveal that a few quality products because it will be the first place is to blame in this case.

Table 7. the ministry to encourage industrial enterprises in the high-quality work and production

Answer/Statement	Number	Percent
Yes, there is incentive awards	2	% 33
No	3	% 50
Other (mention)	1	%17
Total	6	100%

Although follow some factories in the work and produced a quality approach, but it turns out that these plants do not receive encouragement from the Ministry of Industry, and this is shown by 50% of respondents, there are 33 per cent that there is incentive awards by the Ministry of institutions Industrial high-quality, 17% said either that there is a rehabilitation program for the preparation of industrial enterprises for the Libyan relationship quality in coordination with the Center for specifications and standards.

4. Results and Summary

After the data were collected from respondents through the questionnaire, will be presented with the following analysis and interpretation of the data collected for the three sections included in the

questionnaire. In addition, most of the factories have obtained the global certificate of ISO quality system, which was one of the targets within the factories that have sought it, Also the quality management of the factories have auditing and monitoring the processes and procedures in the implementation of the departments for operations and plans with large proportions.

5. Conclusions and Recommendations

5.1 Conclusions

The main results of the current research can be concluded in the following points:

1. The existence of a quality management department of the company and named for the civil contribution since the establishment of its factories .
2. The Ahlia Cement Company includes six factories, namely :

Mergep Cement factory .

Souq Alkames factory _ Amsehel (cement and lime).

Lebda factory.

Zliten cement factory .

Msellath Bags .

Algebs factory (ber ganem)

3. The reasons of establishing a quality Department in factories is to achieve the goals that set by senior management, as well as believing in the role of quality management in factories to support the rest of the departments .
4. Quality Management factories do not have a major role in the development of plans and strategies.
5. Most of the factories obtain the global certificate of ISO quality system, which is one of the targets the factories sought to obtain.
6. The Recommendations that are placed by the Quality Management were only taken some of which, according to the desire of the staff.
7. Quality Management check and monitor its operations and procedures in the implementation of departmental operations and plans.
8. The Quality Management does not take part in taking decisions.
9. Alburge factory, the largest cement producer in Libya does not have a department for Quality Management and there are no reasons for a rejection of the establishment, but on the contrary, urged the administration that there should be a special section of quality and that the separation of powers between the departments and the regularity of the workflow in addition to that there will be an incentive to compete for R & D with other factories.
10. The existence of laws and regulations stipulates that the existence of quality management and industrial enterprises but they are not working out and refer to it.
11. The proportion of staff in the Ministry of Industry Department who did not receive quality training courses 67%.

5.2 Recommendations

Based on the conclusions of the research, some recommendations for future work can be summarized as following:

1. More concentration on training courses and qualification programs to include staff and heads of departments .
2. Supporting quality management by all means and involving them in decision-making .
3. Participation of qualified staff from the Department of quality in decision-making .

4. Set a monthly or semi-annually plan, including the assessment of the quality management to the other departments .
5. Alborg Factory, which is one of the largest cement plants in Libya and that precedes the sales of its products, not to forget the importance of quality and put the thought out plans and a clear and short term .
6. Return to existing laws and recommendations for the management of quality in the ministry, and work by the ministry and factories .
7. There Should be communication between the ministry of industry and the ministry of economy regarding the control of the local and the external products.
8. Working on the training and rehabilitation to the workers of Quality Department in the ministry.
9. The Ministry of Industry should increase the encouragement to the factories that follow the system of quality in its products, and to consider in factories that do not have quality department.
10. Finally, we recommend that there should be a study of comparison between the local and the imported cement.

References

- Arthur R. Tenner and Irving J. Detoro, Three Steps to Continuous Improvement, *Reading, Massachusetts: Addison-Wesley Publishing Company, Inc.* pp.32-33. 1992.
- Brocka and M., Implementing the Best Ideas of the Masters, *Op.cit.*, pp.22-44. 1992.
- Hokoma, RA., The states of manufacturing and quality control techniques and philosophies within Libyan manufacturing industries, *PhD, university of Bradford, Bradford.* 2007.
- Jablonski, J. Implementing Total Quality Management, USA. 1991.
- Enrique D., Geneva business news. Août 19, 2014.
- Ulrika H, Bengt K. TQM as a management system consisting of values, *Techniques and Tools.* 2000.

Biographies

Ashraf Elalam is currently a PhD candidate at the Department of Business Administration, University of Potomac. He earned a degree of Master of Science in School of Sciences and Engineering Department of Mechanical Industrial Engineering, The Libyan Academy – Tripoli. He earned B.E. from the Alrefaq University of Libya. Dr. Ashraf has taught undergraduate and post-graduate courses in industrial engineering, operations research, and supply chain management. His research interests include Quality control system, supplier selection, optimization, and manufacturing. He has published many research papers in leading journals and conferences.