*Research Article*

# A Study On Impact Of Quality Management System On Organizational Performance At Oil Seal Manufacturing Industries In Madurai

**R MuthuKrishnan[1], B SaiSivaSubramanian[2], S Saravanan[3], R.Bavya[4]**
Assistant Professor, School of Management, Sri Krishna College of Engineering and Technology, Coimbatore, India[1]
PG Student, School of Management, Sri Krishna College of Engineering and Technology, Coimbatore, India[2,3,4]

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**ABSTRACT**: Manufacturing units are often facing a challenge regarding the cost-reduction, product quality, and productivity in their operations, customer complaint and reduced customer relationship. To remain competitive, the industry must meet the optimal Production Lead Times and Prices, as well as provide outstanding customer service. As a result, companies are concentrating more on the needs and satisfaction of their customers. Mostly they use the Quality Management System to achieve the aforesaid objectives. This study focuses on the impact of Quality Management System on organizational performance in oil seal manufacturing plants at Madurai. Various literature reviews were studied and the hypothesis was framed. The analysis was done based on factors like customer satisfaction, product and process control, improved SCM, reduction in quality cost and improved employees' involvement. The result was in favor of the study which suggested that the Quality Management System impacts the organization in a positive way.

**Keywords:** Manufacturing, Quality Management System, Oil seal manufacturing plants, Madurai.

## I. INTRODUCTION

In this competitive and fast moving business world continuous improvement is the key tool for sustaining. Nowadays worldwide customers in general prefer quality rather than cost. This is a prime factor in major industries to improve the quality of the process or product by reducing or not altering the cost. This field gives a wide scope to the industry to strive forward. In a Different perspective, improvising the existing products or processes by reducing the defects, issues or problems faced in it may lead to improvise productivity. For this the area of defect must be identified and sorted out.

The modern day tools like TQM, 5S, TPM give business to identify the defects and problems, sort it out, find a solution to it and prevent the failure for the next time. These tools help to improve the overall quality of the product and ensure customers reliability towards the product supplied. These tools not only improvise the products and services but also set standards for the organisation to work defect free.

The above mentioned tools are the core principles of a system in organization known as the Quality Management System. Quality management system focuses on maintaining the quality of the organization by formulating, implementing and controlling tools, techniques, policies and procedures to improve the growth of the organization. This study mainly focuses on studying the impact of QMS on organizational performance involved in the oil seal manufacturing industry in Madurai and to identify the sustainability of the organization.

## II. PROJECT DESCRIPTION

### 1. SIGNIFICANCE OF THE STUDY

This study is to find the impact of Quality Management System [QMS] on organization's performance. The main area of the study is QMS, since the company's quality principles and policies are maintained by the QMS. If the impact of QMS is studied, then the contribution of the QMS will be known and by which the overall process can be enhanced and the importance of QMS will be known. The impact will be determined based on factors like customer satisfaction, product and process control, improved SCM, reduction in quality cost and improved employees' involvement. Thus this study is significant to analyze.

### 2. OBJECTIVES

i. To study the impact of Quality Management System on organization performance.
ii. To study the importance and roles of Quality Management Systems in the organization.
iii. To identify the contribution of Quality Management Systems to the factors that improve organizational performance.

## III. LITERATURE REVIEW

Effect of the Quality Management System on organizational performance is determined by three factors which are employee satisfaction, enterprise resource planning and job performance [1]. The impact of quality management tools on the performance of organisations utilizing the ISO 9001:2000 standard as a basis for a quality-management system and those utilizing the EFQM model was compared. The results suggested that the

ISO model has an effect on improving commercial performance [2]. The ISO certified and non-certified firm's performance was compared and the hypothesis was developed as the certified company has higher labor productivity, sales per employee and enhances human capital against the non certified firms. The finding also suggested that firms adopting ISO certificates show increased productivity and sales [3]. The impact of Quality Management System on performance of manufacturing industries of Pakistan was studied. The hypothesis was developed based on requirements of QMS, management responsibilities, resource management, product realization and analysis and improvement [4]. The relationship between Total quality management and business performance, ISO 9000 certified organization and business performance, HRM practices and business performances were studied. The findings suggested a mechanism based on company size and firm age for the impact of Quality Management System [5]. The quality control, employee engagement, performance improvement and customer satisfaction was studied for their relationship with the total quality control in Korea. The result showed a systematic relationship between quality control and customer satisfaction [6]. The importance of overcoming organizational resistance and QMS implementation were studied. The analysis showed that Deming concepts were dependent on organizational efficiency [7]. The relationship between TQM processes and market success were analyzed. The key contribution of the paper was the relationship between TQM, TPM, SPC, and lean practices were identified [8]. TQM managers' perception towards QMS was studied, in which TQM, output efficiency and customer performance had relationships [9]. Organization success and its relation with TQM implementation were researched. The problems faced by the firm have a significant influence over the TQM activity. Also the firm's success metrics were explored [10].

## IV. RESEARCH METHODOLOGY

The type of research used here is descriptive as we are in need of analyzing the impact of organization performance based on Quality Management System. The sample size for the research is 167 employees from oil seal manufacturing organizations in Madurai. The research methodology used for this research is the census method where the data are collected through questionnaires with the help of Google forms. The collected data has been analyzed and findings are interpreted.

## V ANALYSIS AND INTERPRETATION

### 1. Gender

The table I illustrate the distribution of respondents based on gender.

**Table- I**

| Gender | | | |
|---|---|---|---|
| | | Frequency | Percent |
| Valid | Male | 87 | 52.1 |
| | Female | 69 | 41.3 |
| | Prefer not to say | 11 | 6.6 |
| | Total | 167 | 100.0 |

Table I shows the distribution of respondents based on the gender. 52.1% of the respondents are male and 41.3% are female. Hence it is known that most of the companies are male dominant. But also the percent of female respondents is nearly one half, hence it is considered as uniformly distributed.

### 2. Department Working

The table II represents the distribution of respondents based on the department they work.

**Table – II**

| Department Working | | | |
|---|---|---|---|
| | | Frequency | Percent |
| Valid | Technical support | 56 | 33.5 |
| | Sales | 17 | 10.2 |
| | Finance/ Accounts | 24 | 14.4 |
| | Purchase | 13 | 7.8 |
| | HR | 19 | 11.4 |
| | Administration | 22 | 13.2 |
| | Others | 16 | 9.6 |
| | Total | 167 | 100.0 |

Table II shows the distribution of respondents based on the department they work. 33.5% of the respondents are from the technical support department, 13.2% of the respondents are from administration department, 14.4% of the respondents are from the accounts/finance department, 11.4% of the respondents are

from the HR department and 10.2% of the respondents are from the sales department. This data shows that there is no bias followed in data collection. Thus the impact of QMS identifying will be reliable.

**3. Experience**

The Table III illustrates the distribution of respondents based on the experience of their work in the organization. This data is collected such that the contribution of QMS on employee growth can be determined.

**Table- III**

| Experience of work | | | |
|---|---|---|---|
| | | Frequency | Percent |
| Valid | Below 5 years | 50 | 29.9 |
| | 5-10 years | 45 | 26.9 |
| | 10-15 years | 39 | 23.4 |
| | Above 15 | 33 | 19.8 |
| | Total | 167 | 100.0 |

Table III represents the distribution of respondents based on their experience of work in the organization. 29.9% of the respondents are from Below 5 years experience grade, 26.9% of the respondents are from 5-10 years grade, 23.4% of the respondents are from 10-15 years grade and 19.8% of the respondents are from Above 15 years grade. This data shows that the respondents are uniformly distributed and the majority lies in the first grade. Thus the employees are young and more prone to the latest quality tools.

**4. Certificates**

Table IV represents the quality certificates obtained by the respondents' organization. To know exactly the obtained certificates, multi-frequency analysis was done.

**Table IV**

| Certificates Obtained by your organization | | | | |
|---|---|---|---|---|
| | | Responses | | Percent of Cases |
| | | N | Percent | |
| Certificate | ISO 9001:2015 | 118 | 31.9% | 70.7% |
| | ISO 14001:2015 | 105 | 28.4% | 62.9% |
| | IATF 16349 | 94 | 25.4% | 56.3% |
| | ISO 45001:2018 | 53 | 14.3% | 31.7% |
| Total | | 370 | 100.0% | 221.6% |

Table IV represents the distribution of respondents rating on the certificates obtained by the organization. Majority [70%] rate that ISO 9001:2015 is obtained. Nearly one half of that ISO 14001:2015 [63%] and IATF 16349 [56%] certification is obtained. Only one third [31%] rate that ISO 45001:2018 certification is obtained.

**5. Use of QMS**

The respondents were asked about the use of Quality Management Systems in organization. Table V represents the respondent's perception about the use of Quality Management System.

**Table V**

| Use of QMS - Frequencies | | | | |
|---|---|---|---|---|
| | | Responses | | Percent of Cases |
| | | N | Percent | |
| Use of QMS | To improve quality | 88 | 27.4% | 53.0% |
| | To manage organization system | 77 | 24.0% | 46.4% |
| | To reduce cost | 69 | 21.5% | 41.6% |
| | To prepare plans | 50 | 15.6% | 30.1% |
| | All the above | 37 | 11.5% | 22.3% |
| Total | | 321 | 100.0% | 193.4% |

Table V represents the distribution of respondents rating on the use of QMS. Majority of the respondents' [53%] rate that QMS is used to improve quality. Nearly one half of the respondents' rates to manage organization systems [46%] and also to reduce cost [41%]. One third [30%] rate to prepare plans and only one fifth [22%] rate all the factors.

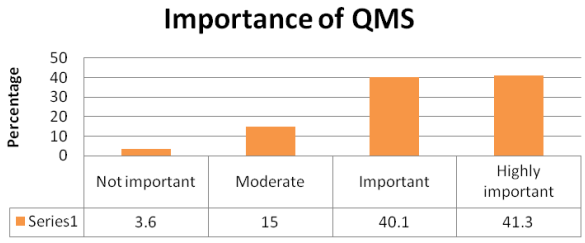
**6. Importance of QMS**

The respondents were asked about the importance of Quality Management systems in production. This helps to understand the awareness level of respondents regarding the importance of QMS.

**Table VI**

| Importance of Quality Management System in production | | | |
|---|---|---|---|
| | | Frequency | Percent |
| Valid | Not important | 6 | 3.6 |
| | Moderate | 25 | 15.0 |
| | Important | 67 | 40.1 |
| | Highly important | 69 | 41.3 |
| | Total | 167 | 100.0 |

Table VI represents the distribution of respondent's importance of QMS. Majority [80%] of the respondents prefer QMS as very important while only a minority [3.6%] considers QMS as not important.




**6. ANOVA**

The ANOVA analysis is done to identify the differences between two variables.

***Null hypothesis1 [$H_01$]***: There is no significant difference between experience and training programs organized

***Alternate hypothesis1 [$H_11$]***: There is significant difference between experience and training programs organized

***Null hypothesis2 [$H_02$]***: There is no significant difference between experience and impact of training programs organized

***Alternate hypothesis2 [$H_12$]***: There is significant difference between experience and impact of training programs organized

***Null hypothesis3 [$H_03$]***: There is no significant difference between experience and work life balance

***Alternate hypothesis3 [$H_13$]***: There is significant difference between experience and work life balance

**Table VI**

| ANOVA | | | | | | |
|---|---|---|---|---|---|---|
| | | Sum of Squares | df | Mean Square | F | Sig. |
| i | Between Groups | 3.228 | 3 | 1.076 | 1.293 | .279 |
| | Within Groups | 135.598 | 163 | .832 | | |
| | Total | 138.826 | 166 | | | |
| ii | Between Groups | 8.419 | 3 | 2.806 | 3.163 | .026 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Within Groups | 144.611 | 163 | .887 | | |
| | Total | 153.030 | 166 | | | |
| iii | Between Groups | 8.537 | 3 | 2.846 | 3.956 | .009 |
| | Within Groups | 117.236 | 163 | .719 | | |
| | Total | 125.772 | 166 | | | |
| | | | | | | |

**i.** From the table i, it shows that, the significance value is 0.279, which is greater than 0.05. i.e. Sig. [0.279] >0.05. Therefore the null hypothesis is accepted. So there is no significant difference between experience and training programs organized.

**ii.** From the table ii, it shows that, the significance value is 0.026, which is lesser than 0.05. i.e. Sig. [0.026] < 0.05. Therefore the null hypothesis is rejected and the alternate hypothesis is accepted. So there is a significant difference between experience and impact of the training programs organized.

**iii.** From the table iii, it shows that, the significance value is 0.009, which is lesser than 0.05. i.e. Sig. [0.009] < 0.05. Therefore the null hypothesis is rejected and the alternate hypothesis is accepted. So there is a significant difference between experience and Work life balance.

**7. Correlation**

The Correlation analysis is done to identify the relationship between two variables. Here the experience of work and the way of thinking is tested.

***Null Hypothesis [$H_0$]***: There is no significant relationship between the experience and way of thinking.

***Alternate Hypothesis [$H_1$]***: There is a significant relationship between the experience and way of thinking.

**Table VII**

| Correlations | | | |
|---|---|---|---|
| | | Experience of work | Quality Management System has improved the way of thinking |
| Experience of work | Pearson Correlation | 1 | .142 |
| | Sig. [2-tailed] | | .066 |
| | N | 167 | 167 |
| Quality Management System has improved the way of thinking | Pearson Correlation | .142 | 1 |
| | Sig. [2-tailed] | .066 | |
| | N | 167 | 167 |

From the table VII, the sig. value is 0.066. Which is greater than p value [0.01] i.e. .066>0.01, thus the null hypothesis is accepted. There is no significant relationship between the experience and way of thinking. It is positively correlated.

It shows that when experience increases there is an increase in the employees way of thinking which is improved by the Quality Management System.

**8. Paired sample**

The Organization performances for the two decades were studied with paired sample t-test.

***Null hypothesis [$H_0$]***: There is no significant difference between Organizational performance from 2000-2010 to 2011- 2021

***Alternate hypothesis [$H_1$]***: There is no significant difference between Organizational performance from 2000-2010 to 2011- 2021

**Table VIII**

| Paired Samples Test | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Organizational performance | Paired Differences | | | | | t | df | Sig. (2-tailed) |
| | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference | | | | |
| | | | | Lower | Upper | | | |
| Economic Performance from 2000-2010 - Economic Performance from 2011-2021 | -1.168 | .848 | .066 | -1.297 | -1.038 | -17.799 | 166 | .000 |
| Social performance from 2000-2010 - Social performance from 2011-2021 | -1.078 | .944 | .073 | -1.222 | -.934 | -14.752 | 166 | .000 |
| Environmental Performance from 2000-2010 - Environmental Performance from 2011-2021 | -1.180 | .933 | .072 | -1.322 | -1.037 | -16.333 | 166 | .000 |

Table VIII represents that, the significance value is .000 for all the three performances i.e. Economic, Social and Environmental performances. Here the significance value [.000] is lesser than 0.05, i.e. Sig. [0.000] <0.05. Therefore the null hypothesis is rejected and thus alternate hypothesis is accepted. Hence there is a significant difference between the organization's performances in the decades considered.

**9. Customer complaints**

**Table IX**

| Customer complains reduced | | | |
|---|---|---|---|
| | | Frequency | Percent |
| Valid | Disagree | 9 | 5.4 |
| | Neutral | 42 | 25.1 |
| | Agree | 67 | 40.1 |
| | Strongly Agree | 49 | 29.3 |
| | Total | 167 | 100.0 |

Table IX represents the respondents view on customer complaints reduced. Majority [70%] of the respondent's agree that customers' complaints are reduced and one fourth [25%] stand neutral about the reduction in customer complaints.

**10. Customer satisfaction**

**Table X**

| Satisfaction level of Customers | | | |
|---|---|---|---|
| | | Frequency | Percent |
| Valid | Dissatisfied | 5 | 3.0 |
| | moderate | 32 | 19.2 |
| | Satisfied | 63 | 37.7 |
| | Highly satisfied | 67 | 40.1 |
| | Total | 167 | 100.0 |

Table X represents the respondents view on the satisfaction level of customers. Majority [77%] of the respondents' state that customers are satisfied and minority [3%] state that the customers are dissatisfied.


## V. SUGGESTIONS

From the analysis and interpretation done in the previous segment suggestions are given. Quality objective and awareness can be increased since only one third answered that they are aware. Quality Management systems can increase the rate of training programs since the impact of the training is moderate among employees. Nearly one half stated that the Quality management system has improved their way of thinking. Hence the organization can enhance measures to implement tools to widespread QMS thoughts, so the way of thinking is improved henceforth. Overall efficiency of the organization has been improved by the Quality Management system; hence the small scale or new production companies can implement QMS effectively. By analyzing the performance of the organization for two consecutive decades, it shows a prominent result that there is an increase in performance of the organization. It is another supporting factor that suggests the small and medium scale industries to implement QMS.

## VI. CONCLUSION

The increasing competition in the industry is an important concern to satisfy the customer and to maintain long relationships. Quality Management Systems tools and principles support the organization to continuously improve and strive for zero defects. This study also evaluated the impact of Quality Management System on organizations performance. It was found that the Quality Management System has improved the customer satisfaction, customer relationship, cost reduction, employee way of thinking, and overall organization's performance. Thus it is strongly suggested that new, micro, small and mini scale industries can directly implement QMS and improve their performance. For future researchers, it is suggested to focus deeply on leadership and understanding level of employees along with the quality issues faced by the top management.

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