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A Study of Quality Practices of Manufacturing Industries in Gujarat

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Abstract

There are so-many organizations having their Quality Management Systems (QMS) Implemented and also claim to be following Benchmarking Certifications like, ISO 9001: 2008. We have undertaken a pragmatic study on the Real Quality Practices of Gujarat based Manufacturing Industries. During the course of this research we have planned to Interview various manufacturing organizations' Top Management & Second Line Managers with the predefined Questionnaire. The questionnaire is in parts including: A) Organizations' own QMS Practices and, B) Organizations' Suppliers' QMS Practices (perceived by Organization's persona). The research covers topics including the QMS practices like, Quality Plan, Testing & Recording; Supplier Assessments & Evaluations; Consultants & Certifications Practices; Customer Satisfaction; Documentation; etc. The outcome of this research will help gauge the level of Quality Practices which also may lead to the suggestive steps to be implemented by other Organizations in the Country as a whole.

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Keywords: Quality; QMS; Quality Management System; QMS Implementation; Quality Practices in Gujarat; Quality in Manufacturing Industry; Manufacturing Industries in Gujarat

1. Introduction

1.1 Significance of the Study

QMS (Quality Management Systems) is implemented in today's scenario within the organizations with respect to different international standards like, ISO 9001: 2008, ISO 13485: 2003 (Medical Devices), ISO / TS 16949: 2011 (Automotive), ISO 29001: 2011, etc. According to ISO 9001: 2008 QMS Certification is more as a marketing tool certificate in the organization from any certification body, which is not reliable about the rather than the need of quality management / system improvement. Having a hanging implemented system in place and charging the lowest possible. The other side Customer is also not aware about the requirements of the standards and / or not looking much conscious to see the reliability of the ISO certificate which the supplier is having. Hence, it looks some loopholes in the philosophy of the entire implementation of QMS if we are keeping ISO Certifications at center point. Hence, How the Quality Management Practices Implemented within the Organizations? The research identifies the actual Implementation level of QMS, drives throughout the organizations and its importance.

1.2 ISO 9000 Standards for Quality Management System

ISO (International Organization for Standardization) is a network of the national standards institute of 164 countries, on the basis of one member per country, with a Central Secretariat in Geneva, Switzerland, that coordinates the entire System of Standardizations. More than half a million organization in more than approximately 200 countries are implementing QMS with respect to ISO 9001 Standard's requirements, which provides a framework throughout the processes of providing and delivering products and services for the

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customer. ISO 9000 series is more concerned with quality management systems. This standard expect firms to have a quality manual that meets ISO guidelines, documented quality procedures and work instruction, with verification of the compliance by third-party auditors (www.iso.org).

1.3 ISO 9001 (Quality Management Systems – Requirements)

The most successful standard ever published by ISO. The standard specifies requirements for the QMS (Quality Management System) where an organization needs to demonstrate its ability to consistently provide products (including services) that meet customer and applicable statutory and regulatory requirements, thereby enhancing customer satisfaction. There are several ways in which an organization may choose to demonstrate conformity to ISO 9001, but the most common method is by accredited third party certification. There are currently around 1,000,000 organizations worldwide that have achieved such certification (UNIDO, 2009).

The fundamental concepts which are necessary to understand the ISO's various Management System based Standards' Implementations are PDCA, Process Approach and The Eight Management Principals. Besides that, the understanding of definitions & benefits, and establishment of Quality Management System as per 8 Clauses of ISO 9001: 2008 Standard to make Management System in the organization more efficiently.

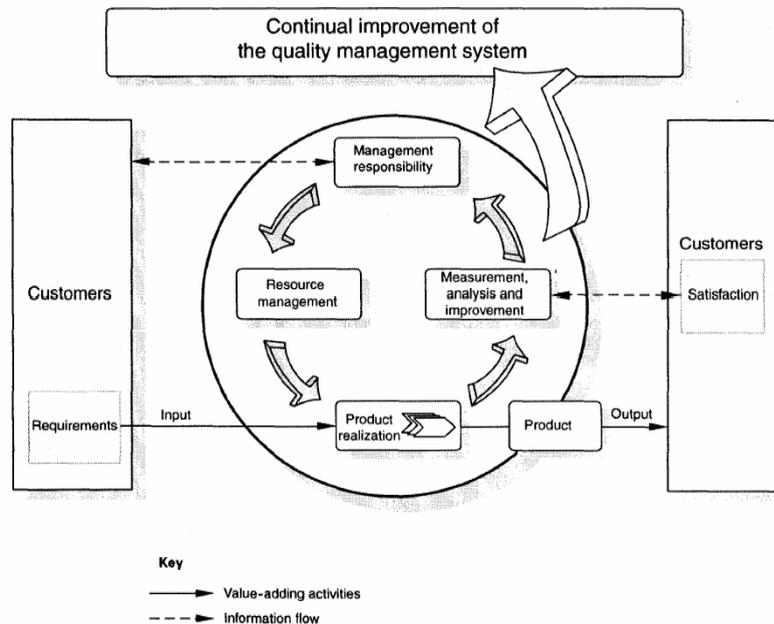


Fig. 1. Model of a process-based Quality Management System, Source: IS / ISO 9001: 2008 Requirements

In general, this model (Fig.1.) emphasizes the importance of identifying and understanding customer needs and expectation to ensure that customer requirements are met. Measurements of customer satisfaction are then used as feedback to evaluate and validate whether customer requirements have been achieved. The management review will then provide feedback to top management for change authorization and improvement opportunities (IS / ISO 9001: 2008).

The ISO 9000 QMS is also an achievable goal to many service organizations, especially in the public and non-profit sectors, remains a matter for discussions. There is an interesting relationship between the reasons for the implementation of ISO 9001 QMS and the corresponding performance outcomes. According to various pieces of research, organizations maximize their benefits, if they achieve ISO 9001 Standard's requirements implement based on internal motivations. Organizations that pursue ISO 9000 certification willingly and have a positive attitude towards it are more likely to report improved organization performance than organizations that pursue ISO 9000 certification in a reactionary mode due to customer pressure.

Very important is the appropriate maintenance of QMS during the post-certification period. During this period, activities such as management reviews, internal and external audits, collection and analysis of data, measurement & monitoring of performance and continual improvement through corrective & preventive actions, are of key importance.

1.4 Need of the Research

- The research will identify the effects of various organizations' considerations for the Implementing of Management Systems designed by ISO for various Industries.
- The study will attempt to understand the real benefits of going for the QMS Implementation.
- There is a lack of published research of QMS Implementation in Indian context in general & Gujarat in particular.

2. Research Objective

Objectives of the Research are as follows:

- To understand the Quality Management Practices in the Manufacturing Industries of Gujarat
- To understand the issues & challenges of QMS Implementation in the Manufacturing Industries of Gujarat

3. Literature Review

There are many studies which have been done on the impact of QMS implementation; findings of some of the more relevant one are described below.

The choice of QMS Organizations should adopt is essentially dependent on the objectives of the organization and the existing structure of the organization. The system for QMS Implementation should be adapted to the specific requirements of the organization because there is no model that provides a solution that fits every organization (Maguad, 2006). Models for quality management are also provided with the basis or a suggested guideline of how organization can work towards quality (Maguad, 2006; Dale et al., 2007). Implementation models for a QMS usually describe a step-by-step approach, with incremental changes to ease the transition from 'old' management system to the 'new' quality management system (Dale et al., 2007).

Most of the cases QMS is getting procured and used in order to achieve a certain quality certifications like, ISO 9001. Striving for a QMS certification is a good way to work towards the increasing in Quality of Products and Services in an Organization. However, as (Hoyle, 1994) said about the value of ISO 9000 Certifications: "ISO 9000 certification is the beginning only; it provides a mechanism with which to bring about systematic improvement but it does not improve performance itself."

While studying (Beckford 1998) the factors inhibiting the implementation of QMS, found that the systems and procedures; the organizational culture; the design of the organization; the managerial and employee recognition of the importance of quality and attitudes towards it; and the costs of quality resulting from not maintaining a certain quality level; are the important elements.

Survey carried in Australian ISO 9000 certified SME's found that ISO 9000 certification should be implemented as a means for internal reasons such as improve customer service, improve efficiency etc. rather than for external reasons, to perceive more benefits (Van Der Wiele, and Brown, 1997). Another study in Greek ISO 9000 certified organizations found that the ISO implementation is mainly for internal reasons such as quality improvement and less in response to customer demand and pressure. Moreover, standards contributed higher to organizations implementing ISO 9000 for quality and performance improvement of their operations (Gotzamani, and Tsiotras, 2002).

A Study was conducted for analyzing the effectiveness of QMS in the Canadian contexts, wherein data from 32 different respondents from the Canadian Organizations was analyzed (Bhatia & Awasthi, 2014). The results of the research clearly indicate that organizations often implement QMS as a catalyst for change and organizations use QMS in daily practice. The major reasons for implementation of QMS are found to be the mix of both internal and external reasons.

Force Field Analysis (D Sandström, M Svanberg, 2011), found factors for change and factors against change as depicted in the Fig. 2. They have also identified that the quality department, and policies and goals could not be identified as either force for or against the change towards QMS, and needs to be considered independently.

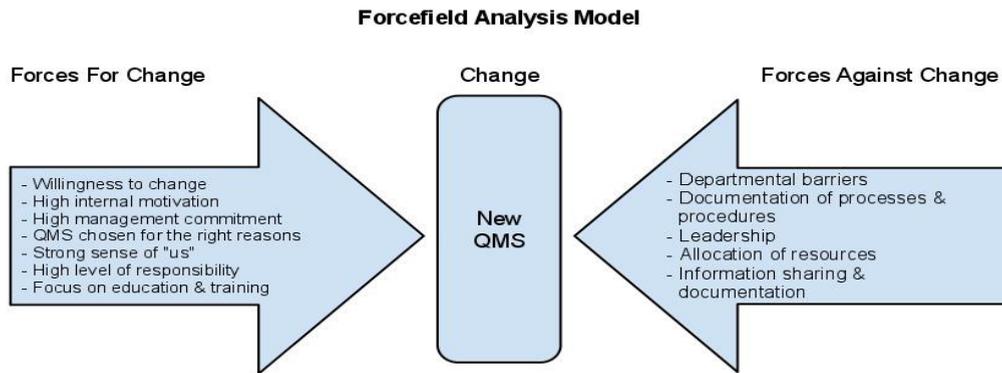


Fig. 2. Force Field Analysis Model

[Source: D Sandström, M Svanberg, (2011)]

Positive relationships were found between supplier management practices and operational performance measures. The study found positive relationship between supplier assessment and quality performance. Further, strategic long-term relationship and logistics integration were found to be positively related to delivery, flexibility and cost performance (Prajogo, et. al., 2012).

Based on the above studies we can say that the QMS Implementation certainly brings a Positive Improvement in the functioning of the Organizations. It is also clear that the family of ISO 9000 Standards is becoming a preferred tool for implementing QMS. However, it needs to be seen as to what are the findings of the same in the Indian context. It was found that implementation of TQM Practices and ISO 9000 Standards together, rather than separately, as done in many research studies. It was found that internal motivation to implement ISO 9000 standards resulted in high performance, whereas external motivation did not. Also, implementation of TQM resulted in both improved internal and external results (Martínez, et. al., 2008). Another research found that Quality Management methods have positive effects on product quality (Zhang, Z., 2000).

4. Research Methodology

4.1 Research Design

The research under taken is a Combination of Exploratory & Descriptive in nature. Only Primary data have been used for the study.

4.2 Data Collection & Analysis Tool

We have developed a Questionnaire to study the Quality Practices existing in the Manufacturing Organizations of Gujarat. The survey-questionnaire was divided into three Parts, Part – A, Part – B and Part – C. The Part – A consists of questions related to Organization's own QMS. Part – B consists of Supplier's QMS and Part – C consists of questions on Demographic Profile. Part – A contained total of 15 Questions in which Question 5 is having 14 sub-questions. Part – B also contained total of 15 Questions including 16 sub-questions under Question 4. MS Excel & its graphical tool have been used for Analyzing data.

4.3 Source of data

The questionnaire was administered on 62 respondents out of which 54 have been found to be valid (due to incomplete questionnaire). These 54 respondents belonged to 41 different Manufacturing Organizations of Gujarat. The level of respondents was senior executives having designations including MD, GM, VP, Production Head, Quality Head, etc. of a mix of Large & SME Organizations. Most of the respondents were interviewed in person while responding to the questions, while 2 respondents have sent their responses via email. The respondents were the working professionals from the organizations such as TATA Chemicals Ltd., Reliance Industries Ltd., HNG Glass Ltd., EIMCO – ELECON Electricals Ltd., SKF Bearing Ltd., INOX India Ltd., Bosch Ltd., Torrent Power Ltd., etc. and some SMEs also like, CANPAC Trends Pvt. Ltd., Jembychem Ltd., Adachi Natural Polymers Pvt. Ltd., Chhatariya Foods Pvt. Ltd., TDSL, A M Steels, Uteshiya Medicare Pvt. Ltd., etc.

5. Data Analysis & Results

The Analysis of Questionnaire based Interviews is defined here as following with each question wise considerable significant outcomes. Again, the total numbers of Respondents considered are 54 Individuals from different Manufacturing Industries and different Places of Gujarat.

5.1 PART A

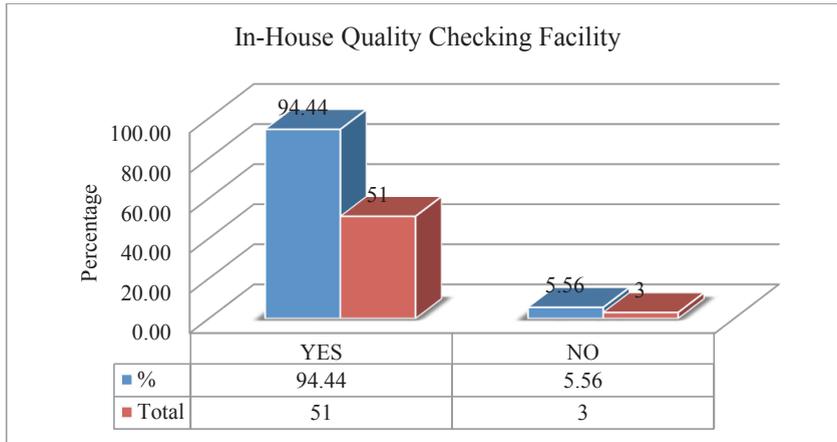


Fig. 3. In-House Quality Checking

According to Fig. 3, when asked about ‘Own In-House Quality Checking Facility’, majority of the organizations (94.44%) having their own in-house Quality Checking Facility, which shows its need & importance for a company. However, one cannot conclude that all the respondents have full-fledged Quality Checking Facility In-house; there might be a possibility of having partial facility. Companies who have not responded to this question may be due to their internal policy of confidentiality.

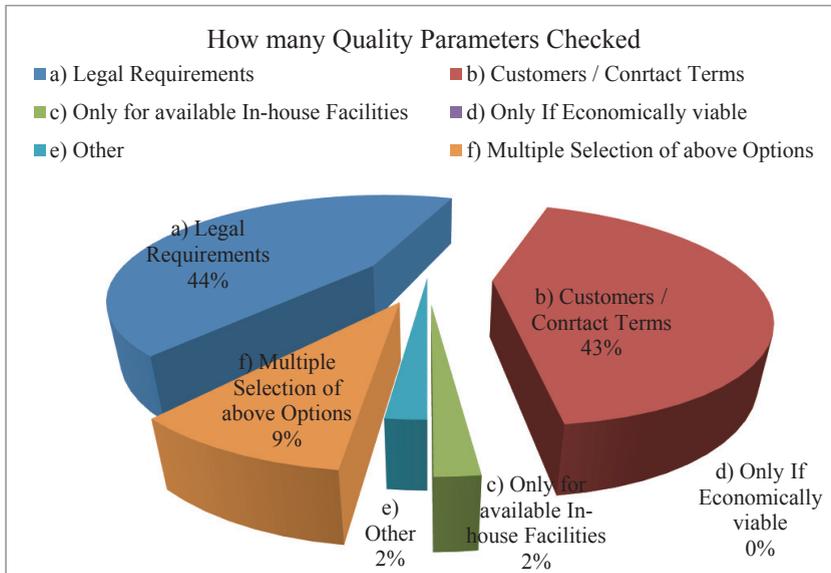


Fig. 4. Quality Parameters Checked

The responses of Quality Parameters checked by the Organization, in Fig. 4., it is clearly defined that the Legal & Customers / Contractual Requirements are given more weightage in most of the cases. The Legal Requirements

are considered while deciding Quality Checking Parameters, followed by Customer / Contractual Terms. Few respondents have also selected multiple options, though the question was with caption of any one selection. Because 9% of the respondents selected multiple options we have created a separate category ‘f’ and the same is displayed in the figure. It is worth noting that this Option ‘f’ contained both Legal & Contract Terms only. Some of the renowned organizations follow their own Quality Standards and such category is reflected as option ‘e’ (2%).

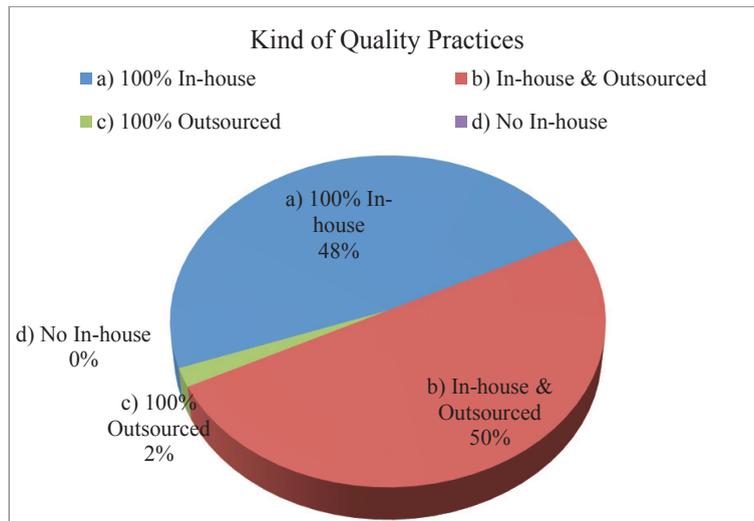


Fig.5. Quality Practices Outsourcing

As per Figure: 5, while analyzing this question in the light of Question A1 (Figure: 1), we can conclude that about half of the companies surveyed have full-fledged in-house QC Facilities.

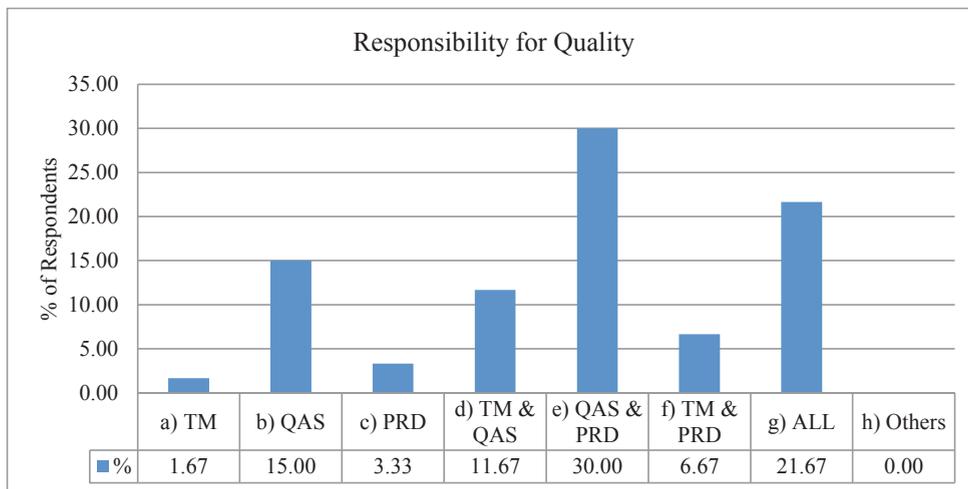


Fig. 6. Responsibility for Quality

Note: TM = Top Management, QAS = Quality Assurance System Department, PRD = Production Department.

And most of the rest are having a combination of In-house with some Outsourced Laboratories dependencies. There is no any company which says that we don't do any Quality Checking. Again comparing with question A1 (Figure: 3) we can say, companies which don't have In-house are definitely dependent on outside laboratories.

Majority of the respondents feels that Quality is the Responsibility of Production & Quality Department (Figure: 6); the Second Highest Group (21.67%) belongs to the one which says Quality is the responsibility of all in the Organization equally. It clearly indicates that the understanding of the people is matching with the TQM Concept, though they might not be aware of such terminology. Hence, we can also conclude that the acceptability of the TQM Concept would be quite easy & feasible. Another contrasting feature of the result is that only 3.33% respondents are considering Quality as the Responsibility of Production Department.

Question No. A5.1 to A5.14, A6, A7, are asked based on 1 to 5 Likert Type Scale to analyze the Degree of Satisfaction. In each one of these questions a sixth category “0 = Not Applicable / Not Established” was also added. The average of the averages is found ‘3.88’ for question A5.1 to 5.14. This is close to ‘Satisfied’ category, which means the overall Quality Documentation Processes are followed & documented satisfactorily. Above ‘4’ parameters are the one which are related directly with customers. This proves the organizations consciousness towards customers. The results also clearly show the lack of suppliers’ evaluation on the part of organization (3.57 & 3.70 rating for such questions), see Figure: 7.

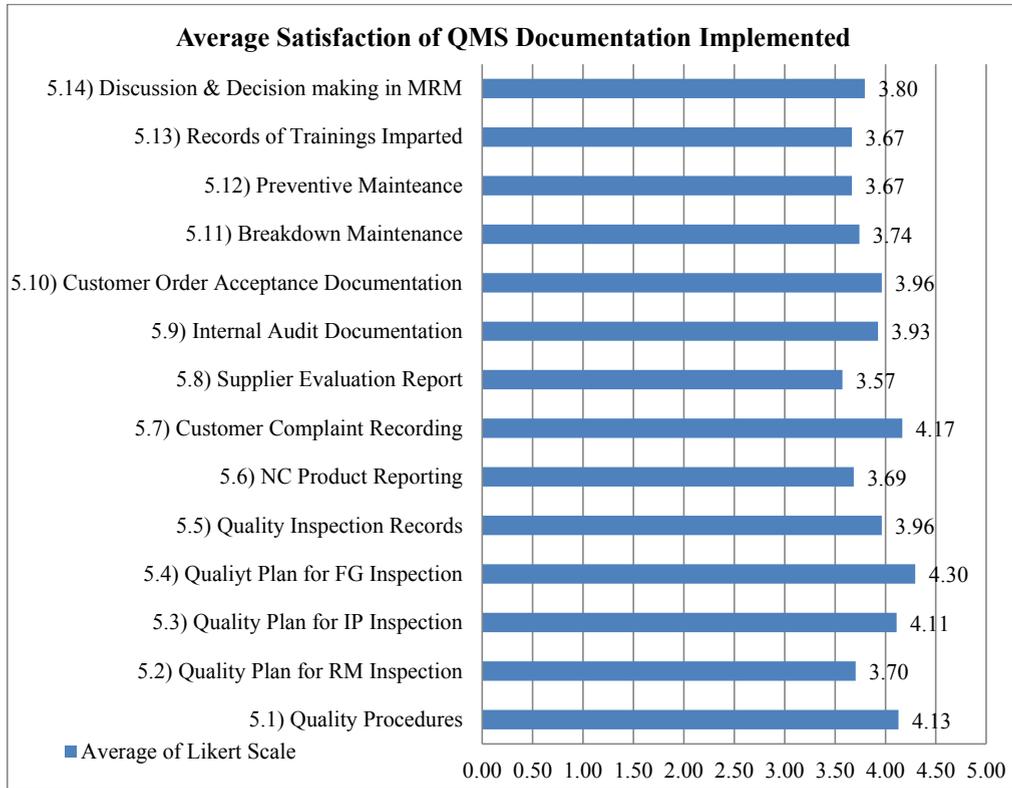


Fig. 7. Satisfaction with Document Implementation

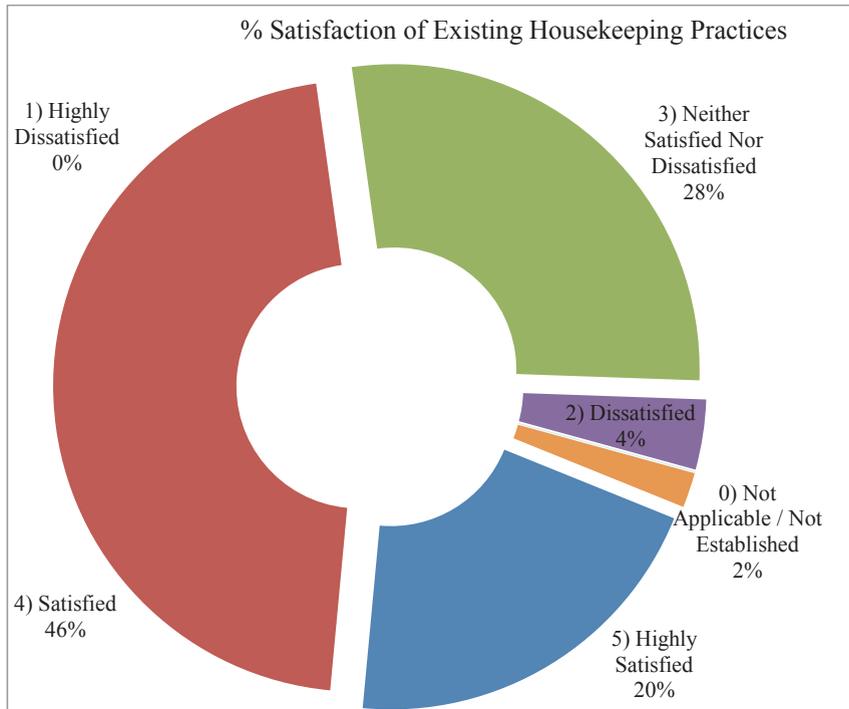


Fig. 8. Satisfaction with House Keeping Practices

Organizations don't have exposure or awareness about the Good Housekeeping Practices (28% - Figure: 8) this also shows a significant scope (28+4+2 = 34%) of Improvement for Good Housekeeping Practices.

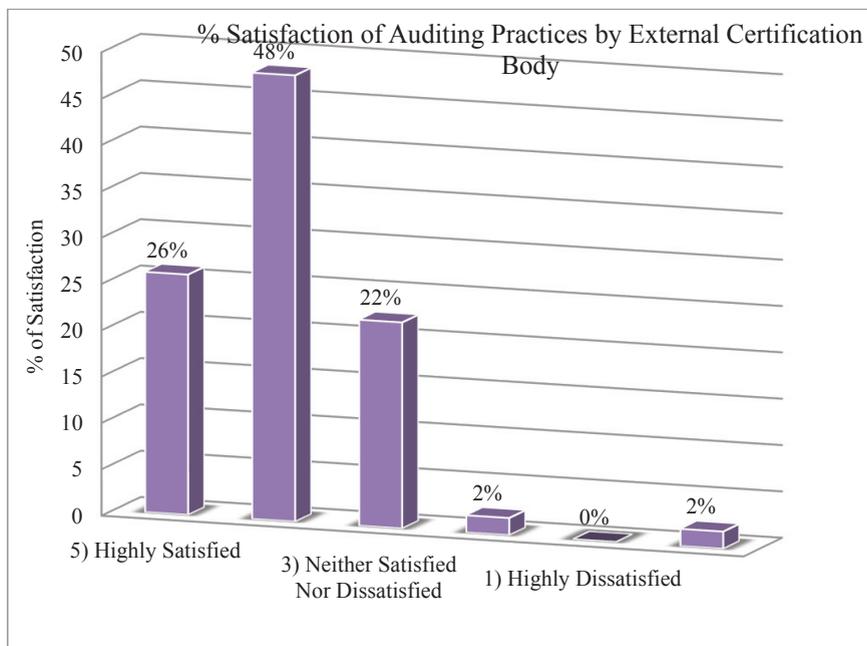


Fig. 9. Satisfaction with Auditing Certification Bodies

Just about half of the Respondents (48%, Figure: 9) have shown their Satisfaction in dealing with External Certifications Bodies; however, 26% are highly satisfied with them. Good inputs for Certifications Bodies for their introspection. 22% of the not satisfied respondents are however neutral.

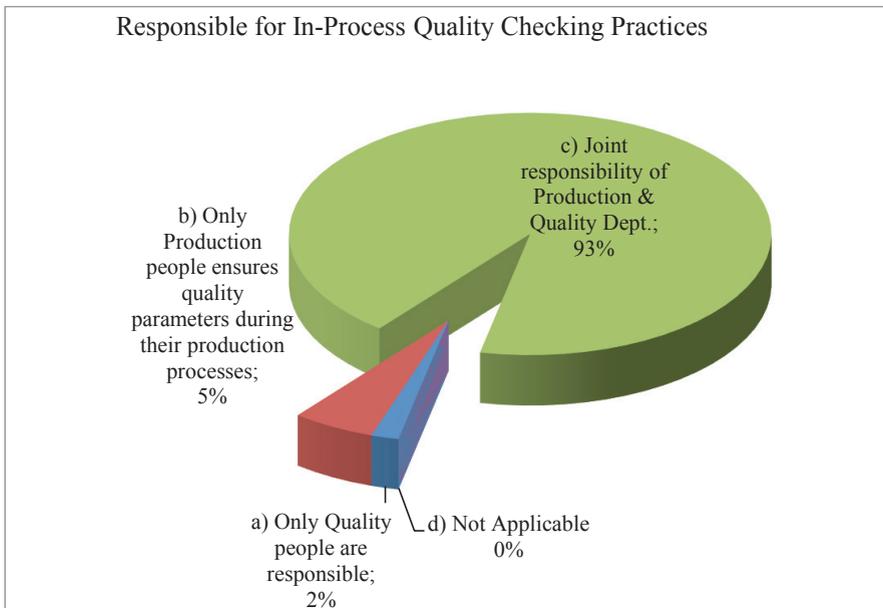


Fig. 10. In-Process Quality Checking Responsibility

As far as In-Process Quality Checking Practices are concerned (Figure: 10), most of the respondents (93%) are considering In-Process Quality Checking Practices as the Joint Responsibility of Production & Quality Department of the Organization.

Figure: 11 shows that the Production people are free to interact with Top Management and are also empowered to stop the production line for any Quality related issues. However, production people are not encouraged to interact freely with suppliers and customers. This proves confidentiality takes priority over the Trust of the employees.

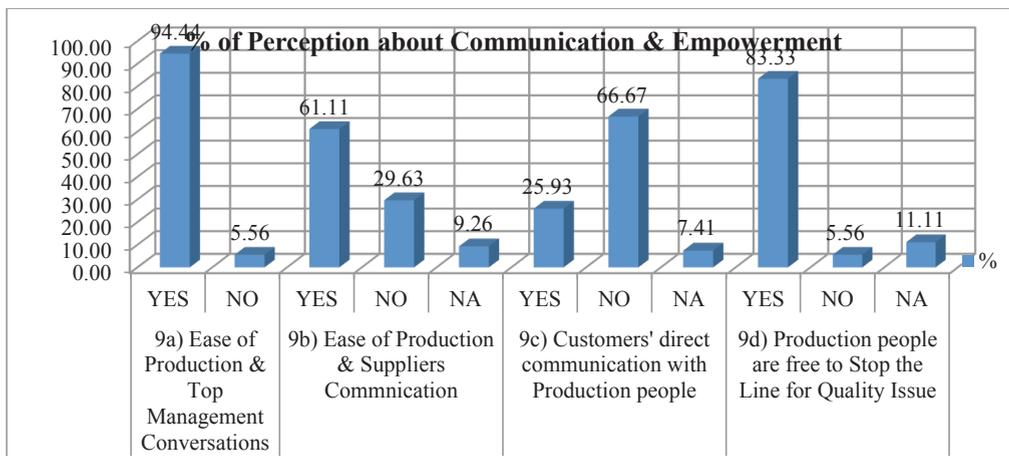


Fig. 11. Communication and Empowerment

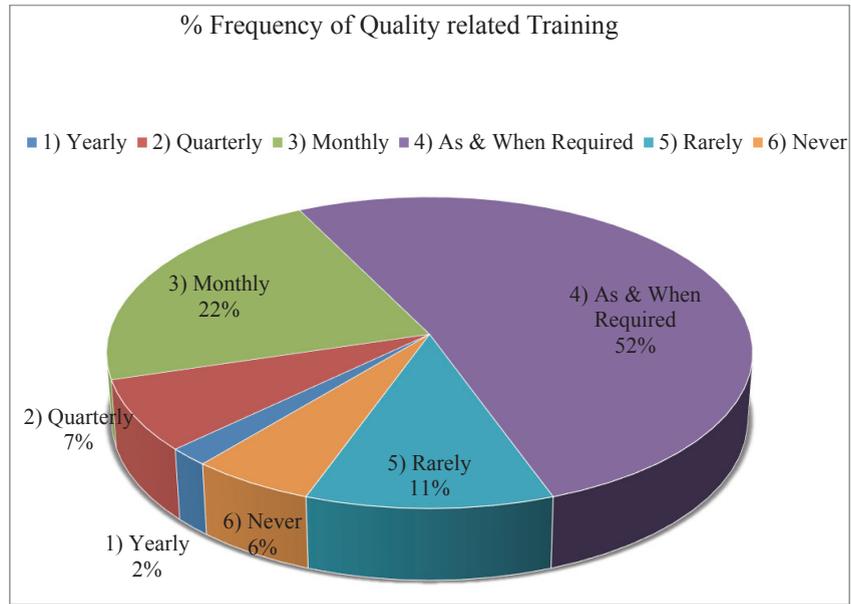


Fig. 12. Frequency of Training

The frequency of Quality related Training is very rare, Monthly (22%) & Quarterly (7%) "As & when required" category is 52%. This proves the Training is not the priority for Top Management (Figure 12). There is a clear lack of any Scheduled / Pre-planned Quality Related Trainings for the respondent organizations. The researchers noted the truthfulness of the respondents in their reporting that they don't organize any Quality related training in their Organization (11.11% rarely & 6% never).

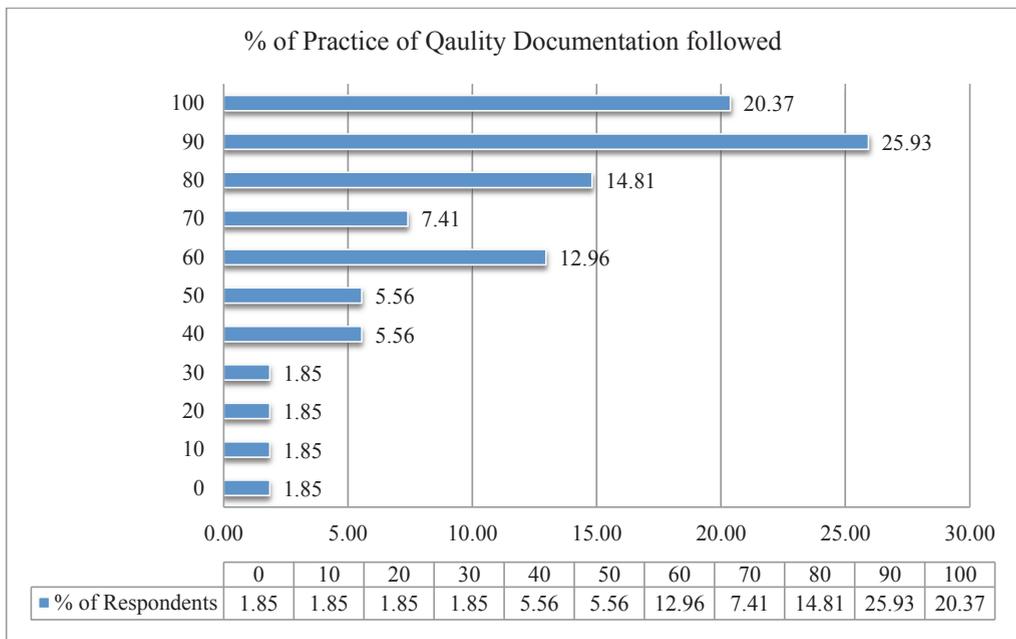


Fig. 13. Quality Documentation Followed

Question No. A10 to A14 are asked on Percentage Scale of 0 to 100.

Majority (20.37+25.93+14.81 = 61.11%, Figure: 13) of the respondent organizations' responded that above 80% practices of Quality Documentation (Quality Plan / Records) are followed by them.

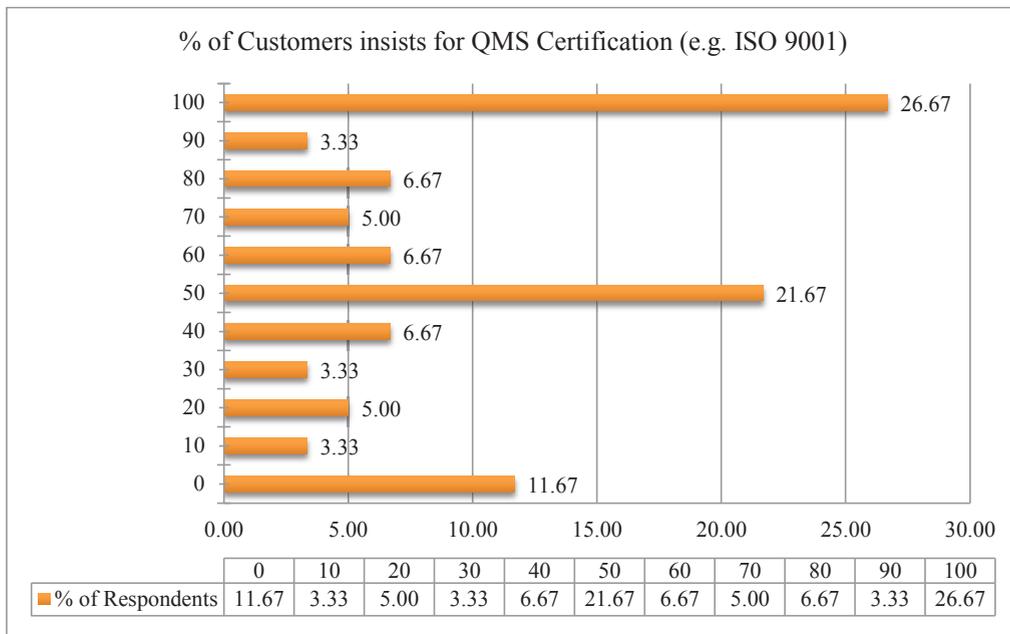


Fig. 14. Customers Insisting for Certification

Majority (26.67%, Figure: 14) of respondents replied that 100% of their customers are asking for QMS Certifications, in-fact 70.01% respondents said that more than 50% of their customers are insisting for it. 21.67% of respondents accepted 50% as the rating for this question; the researchers believe this could be due to the ignorance on the part of respondents (as some of the respondents either not having the responsibility of interacting with customers or not having an accurate idea). 29.99% of respondents said that very few of their customers insist on QMS Certifications, this shows their lack of concern for Quality as they may be only concerned with Price.

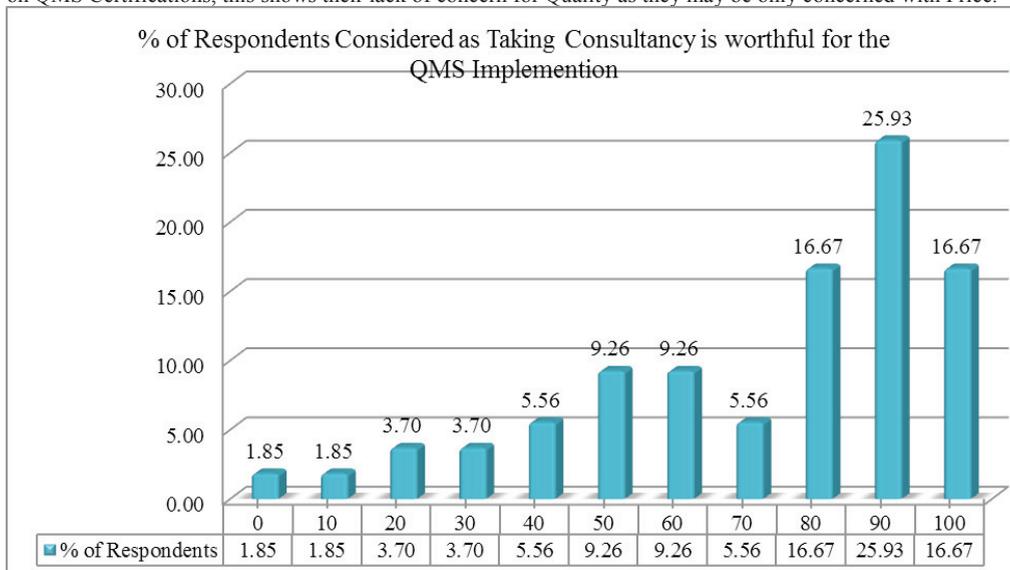


Fig. 15. Consultancy for QMS Implementation

Which group of respondents is good or bad cannot be concluded from above findings because these results may be industry specific and therefore it calls for further investigation. 83.34% of respondents (Figure: 15) have expressed the worth-fulness of taking consultancy for the implementation of QMS in the organizations. The rest of the respondents (16.66%) who have expressed less need of Consultants for QMS Implementation may be due to the fact that they are self-confident for getting the QMS Implemented in their organization.

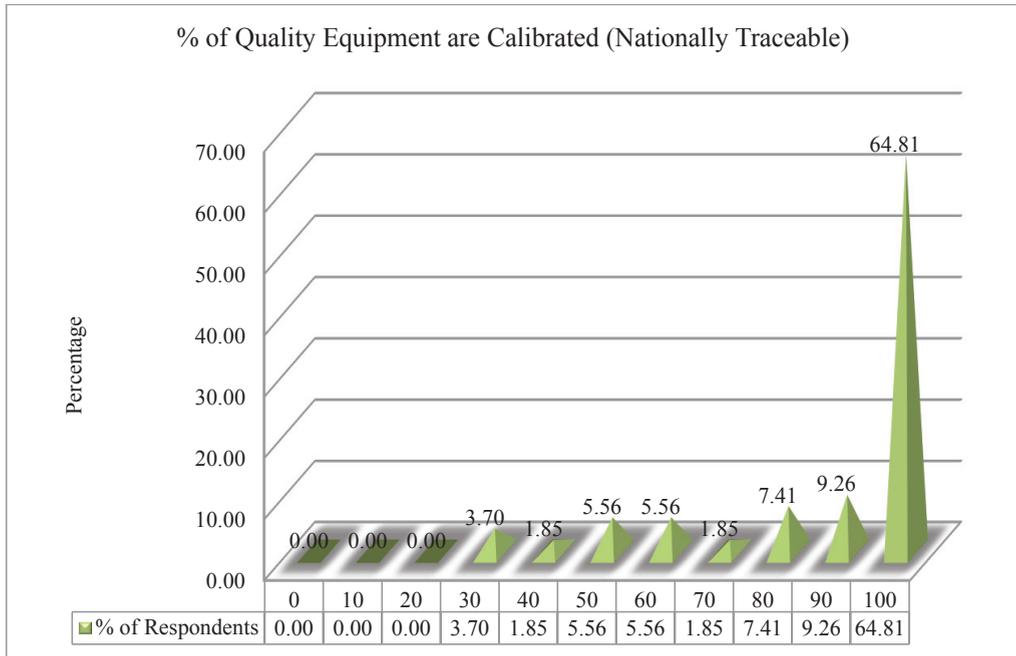


Fig. 16. Equipment Calibration

One-sided response found here as 64.81% of respondents have their all the equipment are Calibrated (Figure: 16). Only 42.59% of respondents (Figure: 17) feel that 100% of their employees take interests in resolving customer complaints. A whopping 87.04% of the respondents do believe that their more than 50% of employees take interest in resolving non-conformities.

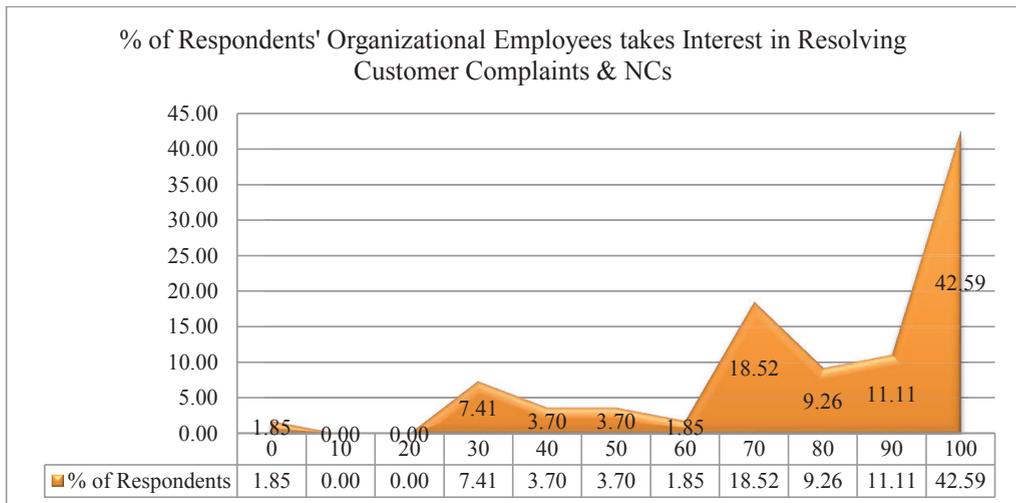


Fig. 17. Customer Complaints

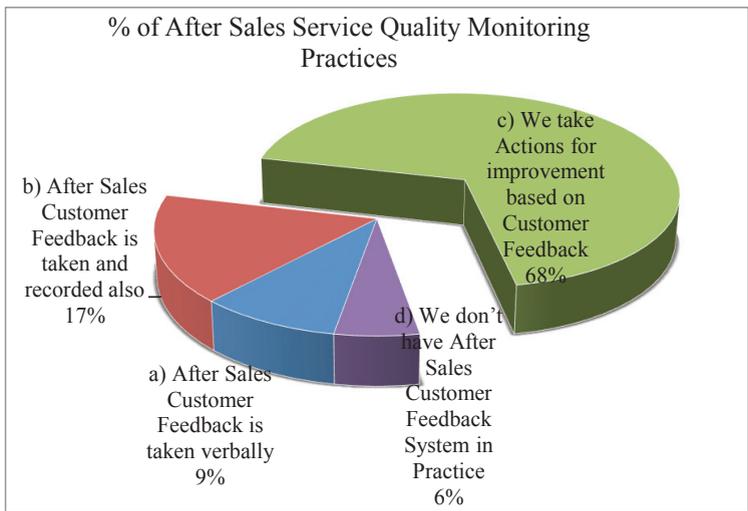


Fig. 18. Quality Monitoring Practices

68% of the respondents (Figure: 18) do take actions for improvement based on customer feedback. And the rest of 32% respondents do not act on the customer feedback.

6. Discussion & Conclusion

In this research, our main goal was to understand QMS Practices, Issues & Challenges during the Implementations in manufacturing industries of Gujarat. The majority (94.44%) of respondent organizations are having either Quality checking facilities in-house or getting Quality checked by their suppliers or third party testing laboratories. Satisfactions of Quality Documentation Processes are followed & documented results into a rating of '3.88', shows an above average consciousness of the respondent organizations towards customers. In-process Quality Checking Practices are considered as a joint Responsibility of Quality & Production functions, as is clear by the 93% of the positive responses. Production people are free to interact with Top Management and are also empowered to stop the production line for any Quality related issues. However, production people are not encouraged to interact freely with suppliers and customers. This proves confidentiality takes priority over the Trust of the employees. Production people have freehand to stopping the line for any Quality related issue but Quality Trainings are ignored. 70.01% Customers are demanding for Third Party Certified QMS. 83.34% have accepted the need of Consultants in QMS Implementation. Employees are taking interests in Resolutions of Customer Complaints Sincerely. 32% respondents are found to be not taking actions on Customer complaints. The researchers conclude that the successful acceptance and implementation of quality into industry are assisted by internally & most importantly by Top Management of the Organizations. These results are in contrast to the findings of *Idrus, 2001*; and *Packard, 1995* where they concluded that such implementations are often assisted by externalities such as conducive government regulations, economic conditions, confident leaderships and a certain level of stress to initiate a need for a change.

The Quality Management System was intended to form the base for a TQM culture of continuous improvement across the industries. *Kanji (1999)* concluded that ISO 9000 could be integrated with TQM for the development of a total quality system where quality improvement can be achieved by examining the organization's processes in terms of process definition, process improvement and process design. In this way the credibility of ISO 9000 Standards' can also be increased, a concern discussed in the paper of *Ramesh & Jain, 2013*. Our findings indicate that only 21.67% respondents have considered Quality as the responsibility of everyone in the Organization, which is alarming and calls for change in the culture of our organizations.

Overall the research conclude that although there is an awareness on the part of the Indian Organizations with respect to Quality Management Systems and procedures, however a lot needs to be done when it comes to the actual adherence to the Quality Principles. We don't know what may be preventing these organizations from not following the QMS Practices but there is an urgent call for us to understand and implement really in letter and spirit such practices.

7. Limitations & Future Scope

There are a number for suggestions for researchers in this field for future research. In this research, Quality Management Systems has been considered as a single factor limiting up to Manufacturing Industries only. In future, impact of a specific element of QMS on a specific performance factor can be studied, like, Service Industries or other Specific Industries (e.g. Automotive, Food, Pharmaceutical, etc.). Also, further research can be done to study the impact of implementation of specific QMS such as TQM, ISO, etc. This can help organizations to bring about improvements in some particular elements of QMS. Secondly, sample size of the survey could be increased to incorporate views from more number of Quality Professionals. Research could be conducted with respect to specific states of India, as work culture of organizations differs in different states irrespective of limiting here up to Gujarat only. With respect to some Organizational Policy or there might be due to some Confidentiality issues few respondents have left some replies blank, these were assorted separately and calculated with average of that particular option respectively.

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