



Quality Management System for Enhancing Customer Satisfaction: An Onsite Assessment Conducted in Accordance with ISO 9001

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Abstract

Business and customer are two age-old entities that mutually exist complimenting each other. Many theories exist and evolved on customer satisfaction which is considered to be a significant aspect for sustained business. ISO 9001:2015 standard provides a framework for sustainable development capability for the organization adopting the quality management system. ISO 9001:2015 standard provides an opportunity to increase the satisfaction of the customer by effective implementation of the quality management system. The process approach is encouraged by the quality management system for fulfilling the requirements of the customer to obtain enhanced satisfaction of the customer. To determine the conformance to the criteria on Customer Satisfaction; this work has assessed 533 organizations across ten countries, spending 918 man-days onsite assessing the organizational capability to demonstrate the evidence of compliance to ISO 9001:2015. Primary data was collected through verifying documents and records maintained by the certified organization, by interviewing the concerned process owners, and by onsite observation to endorse what the ISO 9001 certified organization say-and-do to obtain the objective evidence. Research data were analysed using statistical software to determine the extent of conformity and various factors influencing customer satisfaction.

Disciplinary: Industrial, Productivity, and Quality Management, Business Management, Organization & Reliability Management.

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1 Introduction

ISO 9001 standard although being generic in nature widely recognized and adaptable to every industry sector across the globe. The quality management system is based on the principle of Plan, Do, Check, Act and encourage Process approach which is a framework to ensure compliance with the applicable regulatory and customer requirements. ISO 9001 provides an opportunity to fulfill customer requirements and monitor the customer's perception for continual improvement. Customer satisfaction is the ultimate goal of every business in view of growing competition and globalization. While some organizations engage a third party to seek impartial feedback from their customers as input for improving their products and services, some organizations survey formal means like circulating questionnaires among their client base and few organizations are ignorant on this requirement of the quality management system and conduct business organically. There are exclusive standards for customer satisfaction in the ISO 10000 series which provides a framework for handling customer complaints, code of conduct, dispute resolution, quality plan, monitoring, and measuring. ISO 9001 standard insists for the organizations implementing the quality management system to fulfill customer requirements along with applicable regulatory and statutory requirements. The annual survey conducted by the International Organization for Standardization indicates that there are 8,83,521 ISO 9001 Certificates issued across the world. Every industry sector as per EA Classification has identified the potential benefits of implementing ISO 9001 standard for their business requirements either voluntarily or as insisted by their Principles or Suppliers. ISO 9001 ensures to fulfill the requirements of customers and continually monitors their perception through framing quality objectives, analyzing and evaluating the data, reviewing with the top management, and focus to enhance customer satisfaction.

2 Literature Review

Saleh et al. [1] surveyed a sample size of four organizations in the Damascus Governorate. The survey was done by distributing a questionnaire to 340 customers and the feedback collected from 249 organizations was analyzed to conclude that certified organizations have positive correlations with customer satisfaction. Various factors support the fact such as certified organizations can handle customer complaints and monitor customer perception. Santos [2] surveyed by emailing a questionnaire to 426 certified organizations in Portuguese. The response from the survey was 61.03% in which the researcher aimed to determine the motivation and benefits associated with the adoption of the quality management system. Luc [3] conducted an online survey in Spain on a sample size of 428 customers to determine a positive correlation on customer satisfaction with online banking. However, there is no correlation between customer satisfaction on certified and non-certified banking customers for online banking processes. Luc [4] surveyed through a questionnaire on a sample size of 123 customers to determine the correlation between ISO 9001 and perception of the customer and loyalty on service recovery and satisfaction. Vahid [5] has conducted a case study to determine the effect on customer satisfaction through the implementation of ISO 9001. The questionnaire was filled by 15 respondents and the data collected

was analyzed by using Expert Choice software. The outcome indicates the increment of customer satisfaction index within eleven months of implementation of the quality management system in the Kitchen workshop. Dino [6] conducted a study on customer satisfaction in ISO 9001 certified public sector organizations in Bosnia and Herzegovina. Fifty-four elements were evaluated through a questionnaire in sixteen public services and the data was analyzed using SPSS. Greater customer satisfaction was determined for the IOS 9001 certified organizations. Evangelos [7] surveyed a sample size of one hundred ISO 9001 certified organizations and data was gathered through a questionnaire filled by the quality managers. The research outcome indicates that there is a significant correlation between the implementation of the ISO 9001 standard requirement and the improvement in organizational operational performance. Federica [8] surveyed through a questionnaire in Italy with 2080 respondents to determine the perception of the customers on the quality management system. Five sets of questionnaires are framed and the data collected through direct interview, web-based interview, and self-compiled interview on paper are analyzed using SPSS software by using a five-point Likert scale. Abbas [9] surveyed through a questionnaire in 130 certified organizations in Jordan to determine a positive correlation between customer satisfaction and the quality management system by using a five-point Likert scale. Franka [10] surveyed through a questionnaire on a sample size of 212 ISO 9001 certified organizations in Solvenia to determine the correlation between customer satisfaction and ISO 9001 certification. Paweł [11] surveyed eight organizations as a case study in Poland and Spain through interviews to determine the level of understanding and awareness among the Spa's to fulfill their commitment towards customer satisfaction in accordance with ISO 10000 series. Alexandra [12] surveyed 76 certified organizations for ISO 9001 and ISO 14001. In his survey structural equation modeling and exploratory factor analysis were used to determine the correlation between the integration of the multiple standards, innovation, and customer satisfaction. Celestin [13] conducted a random survey on 110 respondents among organizations of Cape Town. A significant correlation is determined between the satisfaction of customers and the certified organizations for ISO 9001. Various benefits associated with the effective implementation of the quality management system leading to customer satisfaction are explained.

3 Method

3.1 Research Methodology

This study conducted an onsite assessment on 533 organizations in ten countries including India, UAE, Oman, Qatar, Saudi Arabia, Kuwait, Bahrain, Malaysia, Australia, and New Zealand. After spending 918 man-days onsite auditing the organizations to determine the conformance to the requirements of ISO 9001 standard that ISO 9001 is a generic standard and applicable to most of the organizations, the sampled organizations are not homogenous in nature. This work has audited organizations classified under European Accreditation Codes. Table 1 indicates countrywide audits conducted by the researcher in various industry sectors.

Table 1: Selected countries audits.

Country	Number of Organizations	EA Code
India	365	02, 04, 05, 06, 07, 08, 09, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 33, 34, 35, 37, 39
United Arab Emirates	128	06, 07, 08, 09, 12, 15, 16, 17, 18, 19, 22, 23, 24, 27, 28, 29, 30, 31, 32, 34, 35, 37, 39
Sultanate of Oman	13	12, 15, 16, 17, 18, 19, 21, 23, 28, 29, 32
Kingdom of Bahrain	2	17, 18, 19, 31
Kingdom of Saudi Arabia	4	17, 29
Malaysia	02	19
Australia	01	19
New Zealand	01	19
Kuwait	05	17, 28, 33
Qatar	12	17, 28

Table 2 indicates the consistency of the questionnaire which was framed in accordance with the ISO 19011 standard, *Guideline for auditing management system*. The Cronbach alpha value was 0.895 indicating the acceptance of the conformity assessment variable questions.

Table 2: Scale Reliability Statistics

	Mean	SD	Cronbach's α
Scale	3.78	0.391	0.895

Table 3: indicate mean and standard deviation for the individual conformity assessment variable as determined in ISO 9001:2015. The lowest mean recorded is 3.57 for the conformity assessment variable "Improvement". The mean and SD for the conformity assessment variable on "Customer satisfaction" is 3.83 and 0.531.

Table 3: Reliability Statistics of Criteria.

Item	Mean	SD
Determining the Scope of QMS	3.88	0.344
Customer Focus	3.93	0.539
Quality Objectives	3.83	0.529
Customer Satisfaction	3.83	0.531
Analysis and Evaluation	3.80	0.480
Management Review Input	3.62	0.501
Improvement	3.57	0.540

4 Result and Discussion

Table 4 gives the descriptive statistics of 533 samples, the average mean of 3.88 with a median of 4, SD 0.344 (variance 0.118). The lowest point in the five-point Likert scale is 3 and the highest is 5.

Table 4: Descriptives of the studied sample

Item	Determining the Scope of QMS	Item	Determining the Scope of QMS
N	533	Minimum	3
Missing	0	Maximum	5
Mean	3.88	Skewness	-1.83
Median	4	Std. error skewness	0.106
SD	0.344	Kurtosis	3.33
Variance	0.118		

Figure 1 indicates the Pearson correlation between the range -1.0 to 1.0. Conformity assessment variables: determining the scope of the quality management system, Customer focus, Quality objectives, Customer satisfaction, Analysis and evaluation, Management review input, and Improvement are within the defined range.

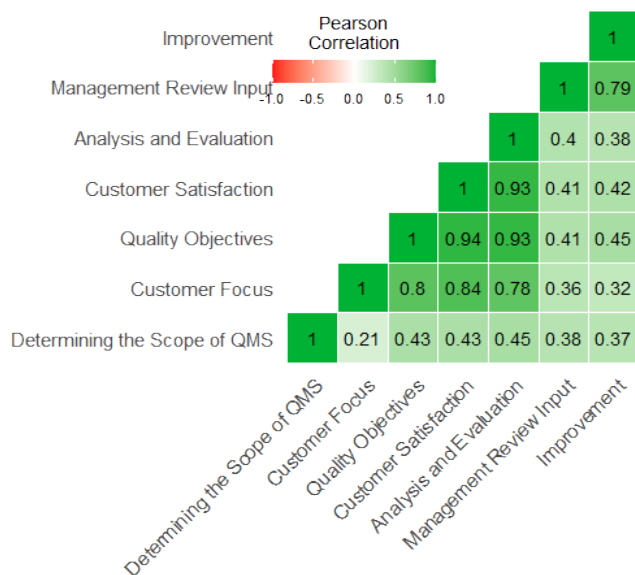


Figure 1: Correlation Heatmap

Table 5: mention the distribution of the five-point Likert scale for the conformity assessment variable on *Customer focus*. 70.5% of the sample conformed to the requirement of the criteria, 11.4% could demonstrate the effectiveness of the actions taken whereas 18.0% demonstrated inadequate evidence to determine either conformance or non-conformance and it requires further evidence to determine the conformity.

Table 5: Frequencies of Customer Focus

Levels of Likert Scale	Counts	% of Total	Cumulative %
3	96	18.0 %	18.0 %
4	376	70.5 %	88.6 %
5	61	11.4 %	100.0 %

Table 6 mention the distribution of the five-point Likert scale for the conformity assessment variable on *Quality objectives*. The sample 69.2% were conforming to the requirement of the criteria. 06.9% of the sample size could demonstrate the effectiveness of the actions taken. 23.8% of the sample size demonstrated inadequate evidence to determine either conformance or non-conformance as the researchers are required further evidence t determine the conformity.

Table 6: Frequencies of Quality Objectives

Levels of Likert Scale	Counts	% of Total	Cumulative %
3	127	23.8 %	23.8 %
4	369	69.2 %	93.1 %
5	37	6.9 %	100.0 %

Table 7 mentions the distribution of the five-point Likert scale for the conformity assessment variable on *Customer satisfaction*. 69.0% of the sample size was conforming to the requirement of the criteria. 7.1% of the sample size could demonstrate the effectiveness of the actions taken. 23.8% of the sample size demonstrated inadequate evidence to determine either conformance or non-conformance as thus require further evidence t determine the conformity.

Table 7: Frequencies of Customer Satisfaction

Levels of Likert Scale	Counts	% of Total	Cumulative %
3	127	23.8 %	23.8 %
4	368	69.0 %	92.9 %
5	38	7.1 %	100.0 %

Figure 2 represents a violin graph on the conformance of the sample to criteria exclusively determined under customer satisfaction against the five-point Likert scale. 368 organizations out of 533 sample organizations could demonstrate evidence of conformance to the requirement of this parameter. 38 organizations out of 533 organizations demonstrated the effectiveness of the actions taken to achieve enhanced customer satisfaction. 127 organizations out of 533 organizations demonstrated inadequate evidence to determine the conformance to the requirement of the standard.

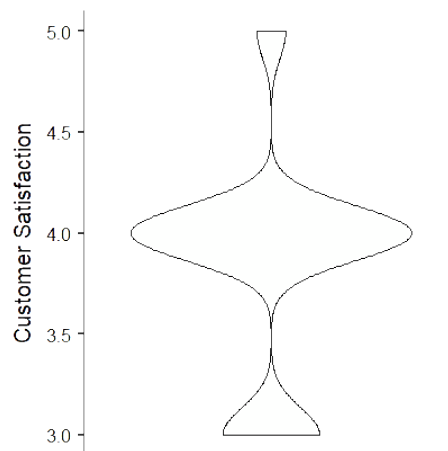


Figure 2: Customer satisfaction on Likert scale

Table 8 for the conformity assessment variable on *Analysis and evaluation*, 72.8% of the sample agree with the requirement of the criteria. 03.4% of the sample size could demonstrate the effectiveness of the actions taken. 23.8% of the sample size demonstrated inadequate evidence to determine either conformance or non-conformance as requires more evidence to determine the conformity. Table 9 for the conformity assessment variable on *Management review input*, of the sample 60.4% conformed to the criteria requirement, 38.8% demonstrated the effectiveness of the actions taken. 0.8% demonstrated inadequate evidence to determine either conformance or non-conformance thus needed further evidence to determine the conformity.

Table 8: Frequencies of Analysis and Evaluation

Levels of Likert Scale	Counts	% of Total	Cumulative %
3	127	23.8 %	23.8 %
4	388	72.8 %	96.6 %
5	18	3.4 %	100.0 %

Table 9: Frequencies of Management Review Input

Levels of Likert Scale	Counts	% of Total	Cumulative %
3	207	38.8 %	38.8 %
4	322	60.4 %	99.2 %
5	4	0.8 %	100.0 %

For the conformity assessment on *Improvement* Table 10, the samples 52.2% were conforming to the criteria requirement, 02.3% could show the effectiveness of the actions taken, 45.6% demonstrated inadequate evidence to determine either conformance or non-conformance, thus needed more evidence to determine the conformity. Table 11 represents the correlation matrix for the various conformity assessment variables ensuring fulfillment of customer requirements.

Table 10: Frequencies of Improvement

Levels	Counts	% of Total	Cumulative %
3	243	45.6 %	45.6 %
4	278	52.2 %	97.7 %
5	12	2.3 %	100.0 %

Table 11: Correlation Matrix

Variable		Determining the Scope of QMS	Customer Focus	Quality Objectives	Customer Satisfaction	Analysis and Evaluation	Management Review Input	Improvement
Determining the Scope of QMS	pearson's r	—						
	p-value	—						
Customer Focus	pearson's r	0.212	—					
	p-value	< .001	—					
Quality Objectives	pearson's r	0.430	0.805	—				
	p-value	< .001	< .001	—				
Customer Satisfaction	pearson's r	0.429	0.841	0.936	—			
	p-value	< .001	< .001	< .001	—			
Analysis and Evaluation	pearson's r	0.448	0.775	0.929	0.934	—		
	p-value	< .001	<.001	<.001	<.001	—		
Management Review Input	Pearson's r	0.375	0.359	0.409	0.410	0.402	—	
	p-value	< .001	<.001	<.001	<.001	< .001	—	
Improvement	Pearson's r	0.366	0.315	0.448	0.422	0.375	0.785	—
	p-value	< .001	< .001	< .001	< .001	< .001	< .001	—

5 Conclusion

The analysis of onsite assessment indicates that the positive inclination towards customer satisfaction was the result of the top management's commitment to comply with the customer requirements along with applicable regulatory and statutory requirements. Those organizations which have effectively implemented the criteria on *Quality Objective, Monitoring Customer Perception, Analysis and Evaluation, Management Review and Continual Improvement* demonstrated higher customer satisfaction and retention with the lowest customer complaints and customer concerns. Irrespective of the size of the organization, nature of their products or services, local or MNC, the highest customer satisfaction is achievable through effective implementation of the *quality management system*. The factors that contributed to lower customer satisfaction from the sample organization audited revealed that *Lack of management commitment* after the award of the ISO 9001 Certificate, *Ineffective implementation of the Quality Management System* requirements were the two major bottlenecks. ISO 9001:2015 standard provides a framework to tap the potential endless opportunities for continual improvement and customer satisfaction.

6 Availability of Data and Material

Data can be made available by contacting the corresponding authors.

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