

Quantitative Research Modelling: Hard and Soft Criteria of Total Quality Service in ISO 9001 Certified Sme's in Tamilnadu

P.M.Aswini* & Dr. N. Senthil Kumar**

*Research Scholar, Department of Management Studies, Anna University, Chennai - 600 025, TamilNadu, India

**Associate Professor, Department of Management Studies, Anna University, Chennai - 600 025, TamilNadu, India

ABSTRACT: *The major intend of this research study is on hard and soft criteria of Total Quality Service (TQS) in ISO 9001 certified SME's in TamilNadu. The nature of the research is exploratory method, and the sample size is 401 respondents from purposively selected ISO 9001 certified SME's companies in TamilNadu with regard to the hard and soft criteria of TQS. First the analysis of the general profile of SME's is given and data collection method used in the research is "Questionnaire Method". Data has been analyzed by using SPSS 20.0 & Smart PLS 3.0. Findings, suggestions and conclusions were made by keeping an eye on the research objectives.*

Keywords: *Total Quality Service, ISO 9001, Hard and Soft Criteria, Exploratory Method and Questionnaire Method*

I. INTRODUCTION

The effectiveness of quality management programmes at resulting in improved business piece has been a major subject of concentration for business and academic world equally. In service organizations, customer-perceived service quality is well thought-out as one of the key determinants of business performance. As SME's play a prevailing role in most developed or developing countries, there have been a number of studies concerning quality management in SME's. Some of the preceding studies have also paying attention on the role of soft and hard aspects of TQS on TQM success and thereby organizational recital. The findings of the previous studies are also conflicting or non-conclusive. ISO 9000 is a series of international standards developed by the intercontinental organization for standardization for quality management and assurance. ISO 9000 standards assess quality of management. These standards do not have any specific itinerary of action and expertise. Their trauma is in the areas where firms need quality standards and make organizations conscientious for providing the standards. The standards only provide details of the crucial fundamentals of a ceremonial quality assurance system. The most important intend of this research to assess the factors thought-provoking and study the brunt of hard and soft criteria of total quality service in ISO 9001 certified companies with substantiation from SME's in TamilNadu.

1.1 Background of the Problem

Total Quality Service rises to the business confront of the 90s. It explains in the most concise terms possible for the principles of TQS. The research stands-most dejected customers do not complain. Instead, they never again buy from businesses that just once left them disgruntled. In the simplest terms, it is the true commitment to operationalizing the concept of customer focus, establishing service performance standards, measuring performance against benchmarks, recognizing and rewarding exemplary behaviour, and maintaining enthusiasm for the customer at all times. Companies that do not provide quality service not only won't compete—they won't exist. Let TQS put you and your employees on the cutting edge of customer satisfaction. Although there are studies that analyse the influence of TQM on TQS, few centre on pointing out the role of soft and hard aspects of TQM on results or performance. In general, the fictions point towards that the soft factors of TQM on TQS are the strongest predictors of organizational piece. Most works are gallop on the study of this rapport.

1.2 Problem Statement

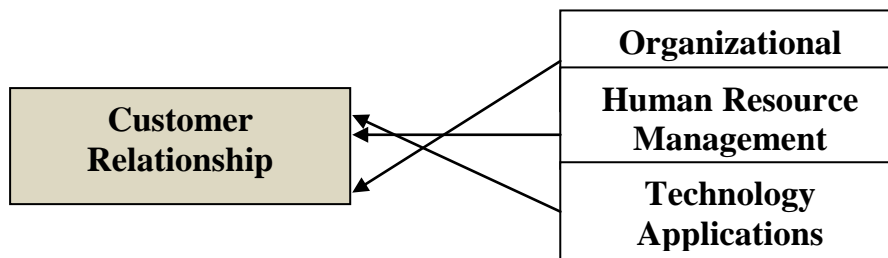
The study found that certification has an optimistic collision on a range of specifications of purchasing performance. They felt that certification will improve keep an eye on product quality, scrutinize of supplier quality assurance systems and supplier performance in areas of quality, delivery and service. Positive views are held about certification's ability to improve supplier selection process, to ensure that purchase of material meets specifications, and to meet the recall process for defective parts. In this connection researcher strenuous on hard and soft criteria of total quality service in ISO 9001 certified SME's in TamilNadu, Indian milieu.

II. RESEARCH METHODOLOGY

The most important propose of this research to weigh up the factors thought-provoking and study the impact of hard and soft decisive factors of total quality service in ISO 9001 certified companies with evidence from SME’s in TAMILNADU. The nature of the research involved in this study is exploratory method and data was accumulated from 401 respondents from indiscriminately selected ISO 9001 certified SME’s in TamilNadu with regard to the hard and soft criteria of TQS. Data collection method used in the research is “questionnaire method” by conducting personal interviews from the samples drown from the total population. Data have been validated and interpreted by using SPSS 20.0, AMOS 21.0, Minitab 17, AHP software & Smart PLS 3.0. Results, connotation and conclusions were made by observance the gaze at on the research problems, questions and objectives.

1.3.1 Theoretical Research Model

Figure -1 Research Model



1.3.2 Justification for Selected Dimensions or Factors

Table 1 Justification for Selected Dimensions or Factors

Dimensions/Factors	References
Customer Relationship	Abdullah & Jose, 2012; Bon & Mustafa, 2013
Organizational Management	Calvo-Mora Schmidt et.al., 2013; Kumar & Antony, 2008
Human Resource Management	Bon & Mustafa, 2013; Calvo-Mora Schmidt et.al., 2013
Technology Applications	Abdullah & Jose, 2012; Arumugam et al., 2008; Valmohammadi, 2011

1.3.3 Proactive Stage of Study

Pilot testing of the questionnaire was done with respondents from randomly selected samples. After conducting pilot study, following changes were made to make the questionnaire more comprehensible and persistent.

- In the question related type of area open end question was made changed into multiple choices.
- Few statements in organizational management related factors which were irrelevant were deleted.
- Few statements in ambiguity related factors which were irrelevant were deleted.
- Few statements in technology applications related factors which were irrelevant were deleted.

1.3.4 Reliability Test for Data Collection Instrument

The reliability of a measure indicates the immovability and uniformity with which the mechanism way the notion and helps to weigh up the ‘goodness’ of a measure. A measure is unswerving to the degree that it supplier consistent results.

The overall Cronbach’s Alpha coefficient for hard & soft criteria of total quality service in ISO 9001 certified with evidence from SME’s in TamilNadu factor is 0.631, which indicates that the reliability of data is high and its reliable for further research study.

1.3.5 Validity Test for Data Collection Instrument

The instrument is premeditated based on validated instruments from the literature survey. Sixty eight item questionnaires have been given to the respondents from arbitrarily selected ISO 9001 certified SME’s in TamilNadu with regard to the hard and soft criteria of Total Quality Service and replica and indistinct items were removed. A test survey has been conducts among fifty respondents to guarantee the face validity and based on the feedback 53 items were preferred.

1.3.6 Measurement Model of the Study

The constructs identified for the present study are customer relationship, organizational management, human resource management and technology applications. Each of these constructs are validated and accepted in independent measurement model by performing confirmatory factor analysis. It helps to study the model very closely. The results are presented in below table 2.

Table 2 Reported Values of Model Fit for the Measurement Model

Absolute Fit Measures				RMSEA		Incremental Fit Measures		Parsimony Fit Measures
Criteria	χ^2	Df	χ^2/df	GFI	RMSEA	NFI	CFI	AGFI
Obtained	473.010	243	1.119	0.916	0.006	0.966	0.988	0.972

(Note: χ^2 : Chi-square; Df: degree of freedom; GFI: Goodness of fit index; RMSEA: Root mean square error of approximation; NFI: Normated fit index; CFI: Comparative fit index; AGFI: Adjusted goodness of fit index)

The confirmation of the measurement model and model fit data were adequately well, such that, standard regression weight were all greater than 0.6, standard residual value were all within the accepted level, and CR values were above 1.96. In summary, the results confirmed that model was fit to the data and it's also confirmed that data has more validity for further research.

Figure 2 : Measurement Model of the Study

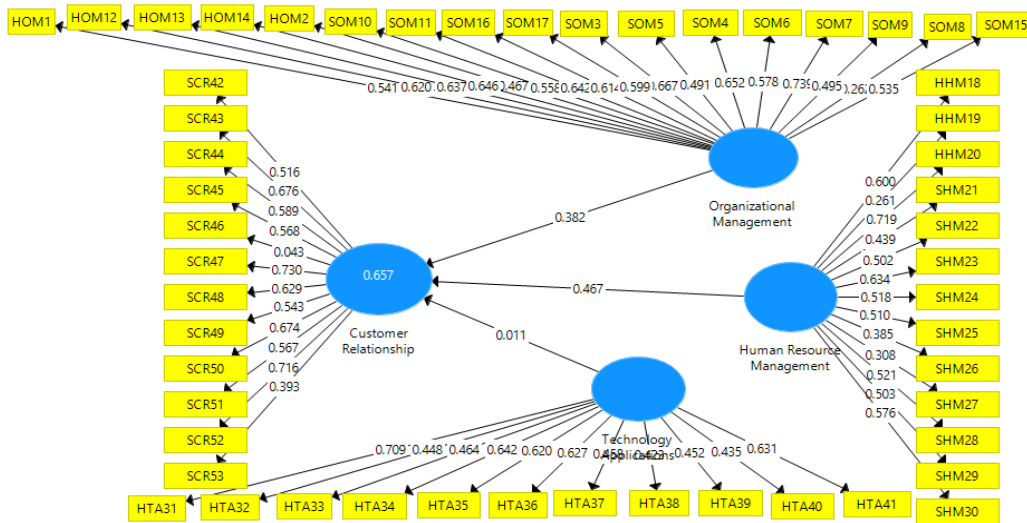


Table 3: Inter Correlation Matrix of Independent Dimensions

Factors	Organizational Management	Human Resource Management	Technology applications
Organizational Management	***		
Human Resource Management	0.015	***	
Technology Applications	0.19	0.13	***

The diagonal values are less than average variance extracted (AVE) and also it ensures that data has discriminate validity of the model.

III. DATA ANALYSIS AND FINDINGS

1.4.1 The Application of AHP Approach for Evaluating Hard and Soft Criteria of Total Quality Service

According to literature survey, there are extensive assortments of criteria that guide to evaluate criteria of TQS. In this study, it provides us with hierarchically representation of four major criteria which are important are presented below:

Major Criteria 1: Organizational Management 1a. Bench Marking 1b. Leadership 1c. Service Culture 1d. Servicescape 1e. Strategic Planning 1f. Top Management Commitment	Major Criteria 2: Human Resource Management 2a. Continuous Improvement 2b. Employees Union Intervention 2c. Recruitment and Selection 2d. Rewards and Recognition 2e. Supplier Relationship 2f. Training and Development
Major Criteria 3: Technology Applications 3a. Information and Analysis 3b. Information Technology 3c. Innovation 3d. Systems Approach 3e. Technical System 3f. Tools and Techniques	Major Criteria 4: Customer's Relationship 4a. Communication 4b. Customer Focus 4c. Customer Management 4d. Customer Satisfaction 4e. Service Marketing 4f. Social Responsibility

Rating

Rating	Definition	Rating given in Questionnaire
9	Row extremely more important	Right 9
8	Row very strongly to extremely more important	Right 8
7	Row very strongly more important	Right 7
6	Row strongly to very strongly more important	Right 6
5	Row strongly more important	Right 5
4	Row moderately to strongly more important	Right 4
3	Row moderately more important	Right 3
2	Row equally important to moderately more important	Right 2
1	Row and column equally important	Equal 1
0.5	Column equally important to moderately more important	Left 2
0.333333	Column moderately more important	Left 3
0.25	Column moderately to strongly more important	Left 4
0.2	Column strongly more important	Left 5
Rating	Definition	Rating given in Questionnaire
0.166667	Column strongly to very strongly more important	Left 6
0.142857	Column very strongly more important	Left 7
0.125	Column very strongly to extremely more important	Left 8
0.111111	Column extremely more important	Left 9

Pair wise comparisons are functional to all factors or component with reverence to their corresponding level.

Item No.	Item Number	1	2	3	4	5	6
	Item Description	Bench Marking	Leadership	Service Culture	Servicescape	Strategic Planning	Top Management Commitment
1	Bench Marking		0.125	0.14286	0.14286	0.125	0.11111
2	Leadership	8.00		0.14286	0.125	0.16667	0.125
3	Service Culture	7.00	7.00		0.16667	0.14286	0.125
4	Servicescape	7.00	8.00	6.00		0.16667	0.14286
5	Strategic Planning	8.00	6.00	7.00	6.00		0.125
6	Top Management Commitment	6.00	8.00	8.00	7.00	8.00	

And then, priority weights among the elements in the hierarchy are established. All the evaluation factors (criteria or attributes) and their corresponding weights are presented.

Benchmarking	Leadership	Service Culture	Servicescape	Strategic Planning	Top Management Commitment
37.00	30.13	22.29	14.43	9.60	1.63

The priority weight of criteria and attribute is calculated using the eigenvector method aforementioned first, a pair wise comparison matrix is developed for each criterion, and then the resulting matrix is normalized to unify the result. To get priority of a single criteria (or attribute, or alternative)-relative weights- pairwise comparisons are aggregated by averaging the corresponding values.

	Bench Marking	Leadership	Service Culture	Servicescape	Strategic Planning	Top Management Commitment	Weight
Bench Marking	0.03	0.00	0.01	0.01	0.01	0.07	2.1%
Leadership	0.22	0.03	0.01	0.01	0.02	0.08	6.0%
Service Culture	0.19	0.23	0.04	0.01	0.01	0.08	9.5%
Servicescape	0.19	0.27	0.27	0.07	0.02	0.09	15.0%
Strategic Planning	0.22	0.20	0.31	0.42	0.10	0.08	22.1%
Top Management Commitment	0.16	0.27	0.36	0.48	0.83	0.61	45.3%

From the above table, it is noted that *Top Management Commitment* is given first priority over the others. Strategic planning and servicescape also important and ranked 2nd and 3rd. Bench marking is given least priority overall among the organizational management criteria. Consistency ratio for the expert's judgments was calculated and checked. In Table, the results reveal that all CR value are greater than .01, thus the consistency of all the judgments are not satisfactory.

Respondent	Consistency Ratio Value	Consistency
1	0.282	Not Consistent
2	0.231	Not Consistent
3	0.320	Not Consistent
4	0.303	Not Consistent
5	0.248	Not Consistent

Using geometric mean of pairwise comparison rating of 5 company responses, the following table is constructed.

Item No.	Item Number	1	2	3	4	5	6
	Item Description	Bench Marking	Leadership	Service Culture	Servicescape	Strategic Planning	Top Management Commitment
1	Bench Marking		0.1562	0.19521	0.23579	0.16994	0.14509
2	Leadership	6.40		0.15343	0.1716	0.18429	0.12932
3	Service Culture	5.12	6.52		0.16994	0.18928	0.23677
4	Servicescape	4.24	5.83	5.88		0.20879	0.25571
5	Strategic Planning	5.88	5.43	5.28	4.79		0.1611
6	Top Management Commitment	5.43	7.73	4.22	3.91	6.21	

And the group CR is calculated as **0.191**, still it is not consistent.

CR Value =	0.223		Not Consistent			
Pairwise comparisons						
Item Number	1	2	3	4	5	6
Item Description	Continuous Improvement	Employees Union Intervention	Recruitment and Selection	Rewards and Recognition	Supplier Relationship	Training and Development
Continuous Improvement		0.19712	0.14877	0.17064	0.1528	0.34072
Employees Union Intervention	5.07		0.30514	0.56098	0.786	0.17625
Recruitment and Selection	6.72	3.28		0.15735	0.20164	0.17383
Rewards and Recognition	5.86	1.78	6.36		1.43097	0.14485
Supplier Relationship	6.54	1.27	4.96	0.70		0.25325
Training and Development	1.27	5.67	5.75	6.90	3.95	

CR Value =	0.145		Not Consistent			
Pairwise comparisons						
Item Number	1	2	3	4	5	6
Item Description	Information and Analysis	Information Technology	Innovation	Systems Approach	Technical System	Tools and Techniques
Information and Analysis		0.13599	0.2857	0.14877	0.16639	0.13775
Information Technology	7.35		0.18	0.18564	0.16856	0.14404
Innovation	3.50	5.56		0.42168	0.17526	0.25654
Systems Approach	6.72	5.39	2.37		0.19442	1.88818
Technical System	6.01	5.93	5.71	5.14		0.13967
Tools and Techniques	5.93	6.94	3.90	0.53	7.16	

CR Value =	0.174		Not Consistent			
Pairwise comparisons						
Item Number	1	2	3	4	5	6
Item Description	Communication	Customer Focus	Customer Management	Customer Satisfaction	Service Marketing	Social Responsibility
Communication		0.14345	0.15194	0.14345	0.15343	0.16761
Customer Focus	6.97		0.72478	0.2117	0.1567	0.17383
Customer Management	6.58	1.38		0.14404	0.16252	0.17625
Customer Satisfaction	6.97	4.72	6.94		0.16761	0.14794
Service Marketing	6.52	6.38	6.15	5.97		0.14345
Social Responsibility	6.38	5.75	5.67	6.76	6.97	

Best Criteria: Obtaining the Final Ranking

Criteria	Statements	Weights	Global Rank	Local Rank
Organizational Management	Bench Marking	2.90%	22	6
	Leadership	6.40%	19	5
	Service Culture	10.80%	14	4
	Servicescape	16.30%	10	3
	Strategic Planning	23.40%	7	2
	Top Management Commitment	40.20%	3	1
Human Resource Management	Continuous Improvement	4.40%	21	6
	Employees Union Intervention	8.90%	16	5
	Recruitment and Selection	11.40%	13	4

	Rewards and Recognition	17.70%	9	2
	Supplier Relationship	15.70%	12	3
	Training and Development	42.00%	2	1
Technology Applications	Information and Analysis	2.30%	24	6
	Information Technology	6.30%	20	5
	Innovation	9.30%	15	4
	Systems Approach	21.60%	8	3
	Technical System	28.40%	5	2
	Tools and Techniques	32.00%	4	1
Customer's Relationship	Communication	2.70%	23	6
	Customer Focus	7.00%	18	5
	Customer Management	7.30%	17	4
	Customer Satisfaction	15.90%	11	3
	Service Marketing	23.90%	6	2
	Social Responsibility	43.20%	1	1

The upshot of the analytical hierarchy process, which gives you an idea about that social responsibility construct, should be given more importance, training and development constructs are second important. Top management commitment constructs another important aspect in total quality service improvement of SME's in TamilNadu.

IV. CONCLUSION

ISO 9001 certification is an independent factor taken into test its influence on soft TQS elements. It shows that there is significant difference with respect to variables focusing on top management commitment, recruitment and selection, communication and organizational culture. The results of the study mentioned above will undoubtedly stimulate and help companies make the transition to the revised standard and effectively adapt to the modifications of the new standard's requirements. Analytical hierarchy process shows that the respondents judgment is that social responsibility should be given as top priority, training and development as second importance. Top management commitment is third important aspect in TQS improvement followed by tools and techniques. With the long form in the methodology of the study limit the generalisability of the findings, we believe our research provides a useful starting point for considering both soft TQS and hard TQS implementation in SME's in TamilNadu. The whole study represents Micro and Small Medium Enterprises (MSME's) in TamilNadu should be given top most priority to the TQS aspects on social responsibility, training and development, top management commitment and tools and techniques for the successful operationalization of the MSME's. Similarly all the policy makers should take note of the above aspects of the TQS with regard to MSME's for their phenomenal growth and development and it will generate good customer satisfaction and organization's overall performance.

REFERENCES

- [1] Augustyn, M.M., & Pheby, J.D. (2000). ISO 9000 and performance of small tourism enterprises: A focus on Westons Cider Company. *Managing Service Quality*, 10(6), 374–388.
- [2] Bhuiyan, N., & Alam, N. (2005). An investigation into issues related to the latest version of ISO 9000. *Total Quality Management & Business Excellence*, 16(2), 199–213.
- [3] Hansson, J., & Klefsjo, B. (2008). Sustaining quality management implementation in small organizations - experiences from quality award recipients. *International Journal of Management Practice*, 3(1), 31–50.
- [4] Hurley, R. F., M. T. Gropper, and G. Roma, 1996, the role of TQM in advertising: a conceptualization and a framework for application, *Journal of Marketing Theory and Practice* 4, 11–23.
- [5] Lee, P.K.C., To, W.M., & Yu, B.T.W. (2009). The implementation and performance outcomes of ISO 9000 in service organizations. An empirical taxonomy. *International Journal of Quality & Reliability Management*, 26(7), 646–662.
- [6] Mady, M.T. (2009). Quality management practices. An empirical investigation of associated constructs in two Kuwaiti industries. *International Journal of Quality & Reliability Management*, 26(3), 214–233.
- [7] Powell, T. C., 1995, Total quality management as competitive advantage: a review and empirical study, *Strategic Management Journal* 16, 15–37.
- [8] Stenzen, P.L. (2000). Can the ISO 14000 series environmental management standards provide a viable alternative to government regulation?. *American Business Law Journal*, 37(2), 237–298.
- [9] Terziovski, M., and D. Samson, 1999, the link between total quality management practice and organizational performance, *International Journal of Quality and Reliability Management*, 16, 226–237.
- [10] Wahid, R.A., Corner, J., & Tan, P.L. (2011). ISO 9000 maintenance in service organizations: Tales from two companies. *International Journal of Quality & Reliability Management*, 28(7), 735–757.
- [11] Zutshi, A., & Sohal, A. (2005). Integrated management system. The experience of three Australian organizations. *Journal of Manufacturing Technology Management*, 16(2), 211–232.