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UNCOVERING THE DIMENSIONS OF ISO 9001 CERTIFICATION EXPERIENCE: AN EXPLORATORY FACTOR ANALYSIS

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ABSTRACT

This study investigates the multifaceted experiences of organizations after achieving ISO 9001 certification, with a focus on uncovering the underlying dimensions that shape their journey. Employing exploratory factor analysis, this research identifies key parameters that influence the certification experience, providing a comprehensive understanding of the benefits, challenges, and outcomes encountered by respondents. By shedding light on these critical factors, this study offers actionable insights for organizations seeking to optimize their quality management practices and maximize the value of ISO 9001 certification.

KEY WORDS: *ISO 9001 Certification, Parameters of Experience, Quality Management Practices*

INTRODUCTION

ISO 9001 certification is a cornerstone of quality management excellence. Examining the post-certification experiences of organizations can reveal valuable lessons for enhancing quality management systems, driving continuous improvement, and sustaining long-term success. This knowledge can also inform the development of effective support systems, training programs, and policy initiatives that foster a culture of quality and excellence.

STATEMENT OF THE PROBLEM

Despite the widespread adoption of ISO 9001 certification, there is a lack of understanding about the experiences of organizations after obtaining certification, particularly in the context of Madurai District's industrial estates. This knowledge gap hinders the ability of organizations to optimize their quality management practices and maximize the benefits of certification.

NEED FOR THE STUDY

This study aims to address this knowledge gap by exploring the experiences of organizations after obtaining ISO 9001 certification in Madurai District's industrial estates. By identifying the key factors that influence the certification experience, this study will provide valuable insights for organizations seeking to improve their quality management practices, policymakers, and certification bodies. The findings will also contribute to the development of effective support systems, training programs, and policy initiatives that foster a culture of quality and excellence in the region.

OBJECTIVES

- To identify the important parameters of respondents' experience after getting ISO 9001 certification
- To reduce the dimensions of the experience using exploratory factor analysis.

METHODOLOGY

This study employed a survey-based approach to collect data from 424 respondents from different industry scales, including Medium Industry, Micro Industry, Small-scale Industry, and Large-scale Industry, located in Madurai District, specifically in Urk-Pudur Industrial Estate, Uranganpatti Industrial Estate, Kappalur Industrial Estate, and other locations. Data collection was conducted using a 5-point numerical scale, and exploratory factor analysis (EFA) with varimax rotation was performed to analyze the data and identify the underlying factors.

Exploratory Factor Analysis for parameters experience after getting ISO 9001 CERTIFICATION

Exploratory factor analysis was performed in order to identify the important parameters of respondent's experience after getting ISO 9001 CERTIFICATION.

Initially, the scores of the seventeen parameters of experience after getting ISO 9001 certification (obtained from 5 point numerical scale) have been taken for testing the validity of data for factor analysis. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test of sphericity have been tested. The KMO measure of sampling adequacy of 0.639 is greater than required minimum of 0.5, and the zero per cent level of significance of chi-square value satisfies the data validity for factor analysis. Then, the scores of the seventeen items of experience after getting ISO 9001 certification in organization are taken for factor analysis in order to summarize these 17 items into meaningful factors. The factor analysis results in five important factors from seventeen attributes of experience after getting ISO 9001 certification. The five important kinds of experience after getting ISO 9001 certification, number of variables in each factor, its reliability co-efficient, Eigen value and the per cent of variance are illustrated in table 1

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TABLE -1
RESULTS OF KMO AND BARTLETT'S TEST

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		**0.639**
Bartlett's Test of Sphericity	Approx. Chi-Square	730.222
	Df	78
	Sig	0.000

TABLE- 2
FACTOR ANALYSIS FOR EXPERIENCE AFTER GETTING ISO 9001 CERTIFICATION

Sl.No	Factor	Statement	F-Loading	Eigen Value	Percentage of Variance	Cumulative Percentage
	Factor1	To see the efficiency of company processes after implementing ISO 9001 and improve the weak areas	0.742	1.807	14.851	14.851
		Company identification increased	0.727			
		To get new customers	0.704			
		Quality of the product increased	0.699			
	Factor 2	Redundancy of the work is eliminated by defining the responsibility and authority of each employee	0.712	1.547	11.567	26.418
		Employee motivation improved due to ISO certification	0.693			
		To collect the process data to analyse and take corrective actions to align with yearly turn over	0.686			
	Facor3	To verify the product scraps, root cause analysis, corrective actions to prevent the	0.741	1.523	11.889	38.307
		Identification and traceability of the product increased	0.719			
		To reduce scrap cost and improve process efficiency to increase profit	0.613			
		To understand the business environment to be a competent player in the business	0.602			
	Factor4	After ISO 9001 certification able to identify the skill, knowledge level required for	0.749	1.481	11.395	49.702
		ISO 9001 is a requirement to do manufacturing business to global standards as we are	0.714			
		Able to evaluate our strength and weakness wrt ISO 9001 by implementing Internal audit,	0.684			

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	Factor5	To know what is Quality policy, Quality objectives, What is corrective action, preventive action and non-conformity management, calibration of instruments	0.725	1.470	11.310	61.012
		To verify the records at end of the year for all the process	0.687			
		To demonstrate process implementation to the customer by documentation	0..610			

Source: Primary Data

The above table exhibits that the components of experience after getting ISO 9001 CERTIFICATION of the enterprise are analyzed through the factor analysis by the varimax method of orthogonal rotation. The rotation of components states that there are five factors, which have Eigen value more than1. The last column in the table shows that the five factors extracted together account for 61 per cent of total variance. Thus, the above 17 variables are reduced to 5 factors. One has lost about 39 per cent of the information content, while 61per cent is retained by the 5 factors extracted out of the 17 original variables.

On factor 1, the four variables have loadings of 0.742 ,0.727 ,0.704,, and 0.699 respectively. This suggests that factor1 is a combination of these 4 original variables. They are: To see the efficiency of company processes after implementing ISO 9001 and improve the weak areas ,Company identification increased, To get new customers, Quality of the product increased . The factor1 could be named as ‘’"**Operational Excellence**" ‘’

On factor 2, the three variables have loadings of 0.712 ,0.693 and 0.686 respectively. This suggests that factor2 is a combination of these 3 original variables. They are: Redundancy of the work is eliminated by defining the responsibility and authority of each employee ,Employee motivation improved due to ISO certification .To collect the process data to analyze and take corrective actions to align with yearly turn over. The factor2 could be named as “**Process Optimization**”

On factor 3, the four variables have loadings of 0.741,0.719, 0.613 , and 0.602 respectively. This suggests that factor3 is a combination of these 4 original variables. They are : prevent the reoccurrence of the same ,Identification and traceability of the product increased ,To reduce scrap cost and improve process efficiency to increase profit ,To understand the business environment to be a competent player in the business . The factor3 could be named as "**Quality Management and Competitiveness**".

On factor4, the three variables have loadings of0.749 ,0.714 and 0.684 respectively. This suggests that factor4 is a combination of these 3 original variables .They are :After ISO 9001 certification able to identify the skill, knowledge level required for each process and training requirements of new and existing employees, ISO 9001 is a requirement to do manufacturing business to global standards as we are linked with global economy, able to evaluate our strength and weakness wrt ISO 9001 by implementing Internal audit, Management review meeting regularly . The factor4 could be named as "**ISO 9001 Compliance and Capability Building".**

On factor5 the three variables have loadings of0.725 ,0.687 and 0.610 respectively. This suggests that factor5 is a combination of these 3 original variables .They are : To know what is Quality policy, Quality objectives, What is corrective action, preventive action and non-conformity management, calibration of instruments, To verify the records at end of the year for all the process done, To demonstrate process implementation to the customer by documentation, The factor5 could be named as **"Quality Management System (QMS) Governance"**

RESULTS

- Five factors emerged from the analysis, accounting for 61% of the total variance
- Factors were named as:
  1. Operational Excellence
  2. Process Optimization
  3. Quality Management and Competitiveness
  4. ISO 9001 Compliance and Capability Building
  5. Quality Management System (QMS) Governance

CONCLUSION

ISO 9001 measurements are completed by machines and equipment that are verified for use, or have already been approved by their requirements. ISO 9001is a useful basis for organization to be able to demonstrate that they are managing their business so as to achieve consistent quality products and services.The study identified the important parameters of respondents' experience after getting ISO 9001 certification. The five factors emerged from the analysis can be used to improve quality management practices and enhance the benefits of ISO 9001 certification.

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