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Research Article

Effectiveness of Total Quality Management: An Industrial Undertaking

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Abstract

This research examines the efficacy of Total Quality Management (TQM) practices within the automotive sector, with a focus on a reputed company in Hosur. Recognizing TQM as crucial for organizational success in today's competitive landscape, the study fills a notable gap in research regarding TQM's application within the automobile industry. Using a descriptive research methodology and a sample of 110 employees selected through the Krejcie and Morgan technique, the study delves into various facets of TQM, including customer focus, people management, supplier quality management, continual improvement, process management, and barriers to implementation. Hypotheses are formulated to analyse relationships among these factors, offering valuable insights into TQM dynamics within the organization. Despite challenges such as time constraints and language barriers, the research perseveres, employing the Likert scale for data collection and ensuring tool validity through pre-testing. Findings aim to contribute to academia and practitioners, guiding organizations toward sustained success through suggestions for organizational enhancement, HRD strategies, and quality research and design department improvements. By shedding light on TQM's significance in the automotive sector, this study facilitates informed decision-making and fosters a culture of quality excellence within organizations.

Keywords: Total quality management, Customer focus, People management, Supplier quality management.

Introduction

Total Quality Management (TQM) has garnered significant global attention in the current competitive landscape and is being implemented by diverse industries to enhance corporate efficiency. The evolution of Total Quality Management may be attributed mostly to shifts in the global business and economy, along with market forces and demand. Organizations and different industries have their own special ways of keeping their products up to par in terms of quality. The industry's use of traditional control techniques to guarantee quality has not produced the desired outcomes. In addition, customers have higher expectations and are in constant need of high-quality products from the company due to the quickly evolving nature of technology. The industries have already begun to concentrate on managing the quality of their products. Total Quality Management encompasses all aspects of an organization's life cycle and brand in the marketplace. These two factors, along with the company's goods and services, determine how effective the company is. Being able to handle both the internal and external environments is what makes Total Quality Management strategic for an organization.

Beyond systems engineering, TQM offers concepts of human engineering, leadership, and organizational design. In an organization, it serves as the system integrator, bringing together people, machinery, tools, and processes to successfully meet client expectations. The TQM research outline a management strategy that guarantees the cooperation of all individuals within an organization and related business processes in order to generate goods and services that satisfy—and ideally surpass—the demands and expectations of clients. The organization's competitiveness in the business and in customer interactions is attributed to the quality of its products. Why it will once more become a marketing top management issue (Williams, 2004). Rahman (2005) conducted research on the connection between organizational performance and TQM techniques. Data from 261 Australian manufacturing companies were used in their analysis. The focus of their study was on developing a Total Quality Management (TQM) model that included the following ten TQM elements: computer-based technologies, just-in-time principles, workforce commitment, shared vision and customer focus, use of teams, personnel training, cooperative supplier relations, and technology utilization.

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Both hard and soft aspects were recognized by the researcher. The workforce dedication, shared goal, customer focus, teamwork, employee training, and cooperative supplier connections were identified as the soft aspects. Computer-based technologies, just-in-time concepts, technology use, and enablers of continuous improvement were among the hard components of their architecture. Shiroya (2015) has presented opinions on how quality planning and policy should be implemented strategically, how to properly record customer attention and how process improvement can enhance quality, business, and organizational performance. Quality performance and quality culture for organizational performance are two more essential TQM approaches. TQM is an essential management philosophy that enhances the performance of organizations. Rai (2016) in her research revealed the lack of talent pool centres in Indian industries is an essential TQM application that motivates to serve for the betterment of the organization. Many industries in India have not taken TQM as a subjective approach, even though TQM principles are getting appreciation. So, bits and piece of TQM practice is not enough but the totality of TQM principles are essential. The development of human resources has a vital role to play for continuous improvement, customer satisfaction, and return on investment. It can be retained by Total Quality Management towards the organization.

Numerous studies have demonstrated the importance of total quality management in helping firms achieve their desired levels of business efficiency. Certain principles, approaches, and procedures are essential in many different fields. With today's significant technological advancements and abundant resources, industry competition is fierce. Numerous studies on TQM have been done, and they have shown how crucial it is to implement it inside the company. No research has been done on the application of Total Quality Management (TQM) in the automotive industry to determine the benefits and significance of doing so. Therefore, the researcher has given this issue some thought in order to investigate the efficacy of Total Quality management. None of the previous studies in this subject have addressed the research problem of this study. Furthermore, no prior research in this field has examined the notion or concept of overall quality management in the automobile sector. In addition to the aforementioned, there is a need for freshly updated research on total quality management in the automobile industry because the current study is out of date. TQM has a significant impact on the growth and development of the organization. TQM covers every facet of the business world. Its main ideas are performance measurements, treating suppliers as partners, continuous improvement, customer focus, management commitment, and everyone's involvement.

To analyze and understand the effectiveness of practicing Total Quality Management in the reputed automobile company in Hosur, the following objectives were focused on this study.

- To study the overall implication of the Total Quality Management Practices in the organization.
- To analyze the impact of education qualification and customer focus of Total Quality Management.
- To understand various department association with the practices of Total Quality Management.
- To study the impact of training programmes attended and continual improvement TQM.

Methodology

Research design: The descriptive technique of research makes use of various approaches to comprehend and investigate a research subject. The researcher will use a descriptive methodological approach to identify the factors contributing to awareness of total quality management among employers and employees in the automobile industry, as this study aims to understand the effectiveness of total quality management in the organization.

Universe & sampling: The research was conducted in a well-established and reputable major automobile industry situated in Hosur. With a total population of 850 respondents within the industry, among the population only the on-role employees 250 were taken for the study. The researcher strategically opted to gather a sample size of 110 (44%). This decision was guided by the Simple random sampling technique by using the Random number generator, A sort of probability sampling known as "simple random sampling" involves the researcher choosing a selection of participants at random from a population. Every person in the population is equally likely to be chosen. By employing this method, the study aims to ensure the reliability and generalizability of findings within the specific context of the automobile industry.

***Tool of data collection*:** The Likert scale was employed by the researcher for this study. A popular psychometric instrument for assessing people's attitudes, beliefs, perceptions, and behaviours is the Likert scale. Respondents commonly select from a range of options to express their level of agreement or disagreement with a series of statements or questions. Typically, this is done on a scale of five or seven points. The reliability of the tool was found to be .712 Cronbach's alpha.

Results and Discussion

Based on the data presented in the Table 1, it is evident that a majority (60.0%) of the respondents possess low knowledge regarding the implementation of Total Quality Management (TQM) practices. Similarly, slightly less than a majority (59.1%) exhibit low knowledge concerning customer focus, while over half (51.8%) demonstrate a lack of understanding regarding People Management.

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Table 1. Distribution of Respondents based on the Effectiveness of TQM.

Overall effectiveness of TQM	Low	Percentage	High	Percentage
Implication of TQM	66	60.0	44	40.0
Customer Focus	65	59.1	45	40.9
People Management	57	51.8	53	48.2
Supplier Quality Management	61	55.5	49	44.5
Continual Improvement	56	50.9	54	49.1
Process Management	56	50.9	54	49.1
Barriers to TQM Implementation	58	52.7	52	47.3
Overall Effectiveness of TQM	56	50.9	54	49.1

Furthermore, a significant portion (55.5%) of respondents display low levels of practice and knowledge regarding supplier quality management, with a similar proportion (50.9%) exhibiting a deficiency in understanding continual improvement practices and process management. Additionally, more than half (52.7%) of the respondents demonstrate low awareness regarding barriers to TQM. It is notable that just over two-fifths (40%) of the respondents exhibit high knowledge of TQM, with similar proportions (40.9%) demonstrating high levels of understanding concerning customer focus. However, less than half (48.2%) exhibit high levels of knowledge regarding People Management, and only slightly more than two-fifths (44.5%) demonstrate high practices in supplier quality management. Less than half of the respondents exhibit high levels of understanding regarding continual improvement practices (49.1%), process management (49.1%), awareness of barriers to TQM (47.3%), and overall effectiveness of TQM (49.1%).

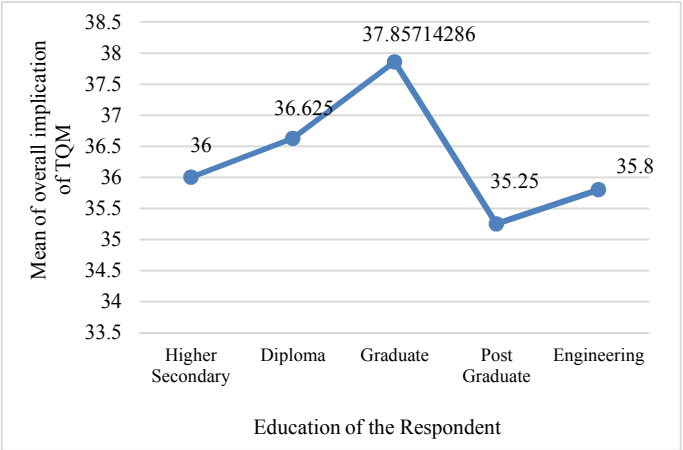
From the presented Table 2, illustrates that there is significant difference among the education of the respondents and implementation of TQM. It is denoting that there is no significant difference among the education of the respondents and the other dimensions of the study which include; Customer Focus, People Management, Supply Quality Management, Continual Improvement, Process Management, Barriers to Total Quality Management Implementation, Overall Effectiveness of Total Quality Management.

H1: There is a significant difference among the education qualification of the employees and implementation of TQM.

Ho: There is no significant difference among the education qualification of the employees and implementation of TQM.

Result: One way analysis was applied to the variances and it was revealed that there is a significant difference among the education of the respondents and implementation of TQM. Hence the research hypothesis is accepted and the null hypothesis is rejected.

Fig. 2. The education of the respondents and implementation of TQM.



The inferred Table 3, illustrates that there is no significant difference among the departments of the respondents and overall practices of TQM. It is evident that there is no significant difference among the departments of the respondents and dimensions of the study which include; Implication of Total Quality Management, Customer Focus, People Management, Barriers to Total Quality Management Implementation, Overall Effectiveness of Total Quality Management.

H1: There is a significant difference among the various departments of the organization and overall TQM practices.

Ho: There is no significant difference among the various departments of the organization and overall TQM practices.

Result: One way analysis was applied to the variances and it was stated that there is no significant difference among the various departments of the organization and overall TQM practices. Hence the null hypothesis is accepted.

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Table 2. One way analysis of variance among the education of the respondent and implication of TQM.

Factors		Sum of Squares	df	Mean Square	F	Statistical Inference
Implication of Total Quality Management	Between Groups	102.834	4	25.708	2.704	Sig. = 0.034 P< 0.05 Significant
	Within Groups	998.157	105	9.506		
	Total	1100.991	109			
Customer Focus of Total Quality Management	Between Groups	78.794	4	19.698	1.448	Sig.= 0.223 P> 0.05 Not Significant
	Within Groups	1428.197	105	13.602		
	Total	1506.991	109			
People Management	Between Groups	108.452	4	27.113	1.510	Sig.= 0.205 P> 0.05 Not Significant
	Within Groups	1885.921	105	17.961		
	Total	1994.373	109			
Supply Quality Management	Between Groups	22.901	4	5.725	0.764	Sig. = 0.551 P> 0.05 Not Significant
	Within Groups	786.563	105	7.491		
	Total	809.464	109			
Continual Improvement	Between Groups	13.860	4	3.465	0.374	Sig. = 0.827 P> 0.05 Not Significant
	Within Groups	973.604	105	9.272		
	Total	987.464	109			
Process Management	Between Groups	12.360	4	3.090	0.400	Sig. = 0.808 P> 0.05 Not Significant
	Within Groups	810.995	105	7.724		
	Total	823.355	109			
Barriers to Total Quality Management Implementation	Between Groups	139.224	4	34.806	0.758	Sig.= 0.555 P> 0.05 Not Significant
	Within Groups	4824.376	105	45.946		
	Total	4963.600	109			
Overall Effectiveness of Total Quality Management	Between Groups	1075.147	4	268.787	1.199	Sig.= 0.316 P> 0.05 Not Significant
	Within Groups	23543.807	105	224.227		
	Total	24618.955	109			

G1=Implication of TQM; G2= Customer Focus of TQM; G3= People Management; G4= Supply Quality Management; G5= Continual Improvement; G6= Barriers to TQM Implementation; G7 = Overall Effectiveness of TQM.

From the presented Table 4, it is evident that there is a significant relationship between the number of training programmes attended and continuous improvement. It is also inferred that there is no significant relationship between the number of training programmes attended by the respondents and the other dimensions of the study which include: Implication of Total Quality Management, Customer Focus, People Management, Supply Quality Management, Process Management, Barriers to Total Quality Management Implementation, Overall Effectiveness of Total Quality Management.

H1: There is significant relationship between the No. of training programs and the continuous improvement in the organization.

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Table 3. One way analysis of variance among the departments of the respondents and overall TQM.

Factors		Sum of Squares	df	Mean Square	F	Statistical Inference
Overall Implication of Total Quality Management	Between Groups	106.879	10	10.688	1.064	Sig.= 0.397 P> 0.05 Not Significant
	Within Groups	994.112	99	10.042		
	Total	1100.991	109			
Overall Customer Focus of Total Quality Management	Between Groups	169.363	10	16.936	1.253	Sig. = 0.267 P> 0.05 Not Significant
	Within Groups	1337.628	99	13.511		
	Total	1506.991	109			
Overall People Management	Between Groups	217.404	10	21.740	1.211	Sig. = 0.293 P> 0.05 Not Significant
	Within Groups	1776.969	99	17.949		
	Total	1994.373	109			
Overall Supply Quality Management	Between Groups	82.040	10	8.204	1.117	Sig. = 0.358 P> 0.05 Not Significant
	Within Groups	727.423	99	7.348		
	Total	809.464	109			
Overall Continual Improvement	Between Groups	96.653	10	9.665	1.074	Sig. = 0.389 P> 0.05 Not Significant
	Within Groups	890.810	99	8.998		
	Total	987.464	109			
Overall Process Management	Between Groups	111.173	10	11.117	1.545	Sig.= 0.135 P> 0.05 Not Significant
	Within Groups	712.182	99	7.194		
	Total	823.355	109			
Overall, Barriers to Total Quality Management Implementation	Between Groups	685.816	10	68.582	1.587	Sig. = 0.121 P> 0.05 Not Significant
	Within Groups	4277.784	99	43.210		
	Total	4963.600	109			
Overall Effectiveness of Total Quality Management	Between Groups	2918.589	10	291.859	1.331	Sig.= 0.224 P> 0.05 Not Significant
	Within Groups	21700.366	99	219.196		
	Total	24618.955	109			

Ho: There is no significant relationship between the No. of training programs and the continuous improvement in the organization.

Results: The correlation test was applied with the variables and it was evident that there is significant relationship between the No. of training programs and the continuous improvement in the organization. Hence the research hypothesis is accepted the null hypothesis is rejected.

Suggestions: This study's recommendations are based on some of the key findings. Additionally, studies have shown that the most important components in enhancing the efficacy of Total Quality management within their company and implementing the effective way of practices of TQM.

Suggestions for the Organization: The Company can make an investment on the on-role employees to make them more efficient in their work by identifying the need for the training programmes on regular basis.

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Table 4. Correlation between the number of training program attend and continuous improvement.

Variable	Correlation Value	Statistical inference
Implication of Total Quality Management	0.002	P>0.05 Not Significant
Customer Focus of Total Quality Management	0.104	P>0.05 Not Significant
People Management	0.172	P>0.05 Not Significant
Supply Quality Management	0.085	P>0.05 Not Significant
Continual Improvement	.208*	P<0.05 Significant
Process Management	0.088	P>0.05 Not Significant
Barriers to Total Quality Management Implementation	0.165	P>0.05 Not Significant
Overall Effectiveness of Total Quality Management	0.146	P>0.05 Not Significant

***. Correlation is significant at the 0.01 level (2-tailed); * . Correlation is significant at the 0.05 level (2-tailed).*

The company can provide ongoing training on TQM principles and methodologies for all employees. Perform periodic reviews of TQM implementation to identify areas for enhancement. Equip employees with the necessary skills to identify and solve quality-related issues by providing adequate training to them. Implement quality management software for tracking and managing quality initiatives in the company so that the defects can be reduced. Leverage data analytics and artificial intelligence for proactive quality management.

Suggestions for the HRD team: *Training and Development for Employees:* To improve the skills and knowledge of employees at all levels regarding quality management concepts, identify and offer pertinent training programs. Provide chances for ongoing learning to ensure that staff members are knowledgeable about the most recent approaches to quality improvement and industry standards. *Benchmarking:* Promote benchmarking against rivals and industry best practices. Determine what the company can do better and put plans in place to outperform the industry norms.

Communication and feedback mechanisms: Create transparent channels of communication for exchanging ideas and opinions about initiatives aimed at enhancing quality. To keep everyone involved and informed, management and staff should promote two-way communication.

Ongoing education: Arrange information-sharing meetings where groups can talk about their achievements and setbacks while putting TQM into practice. Encourage staff members to go to quality management-related conferences, workshops, and seminars. Create a resource library covering TQM practices and concepts.

Current trend TQM practices: The human resource development team can enhance the knowledge of the employees about the recent quality management strategies that are in trend. The HRD team can also concentrate on the effective recruitment process because it enhances the efficiency of the department and the organization.

Suggestion for quality research and design department: When process-based improvement approaches are implemented and used efficiently, money should be invested in new machinery and equipment to increase productivity. Organize frequent workshops that include representatives from various departments that are relevant, like production, marketing, and customer support, as well as members of the quality research and design department. Better communication and comprehension of the requirements and difficulties faced by each department will result from this meeting. Promote a culture of ongoing development in the department. Conduct routine process evaluations and ask for feedback from the entire team to find areas that could use improvement. Feedback sessions and occasional retrospectives can help with this. Work closely with suppliers to guarantee that high-quality requirements are met by the materials and components utilized in the design process. Create effective channels of communication and incorporate quality control procedures throughout the supply chain.Perform routine internal audits and assessments to gauge TQM practices' efficacy. As needed, apply the results to make modifications and enhancements.

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Implication of overall effectiveness of TQM: Most respondents knew very little about how Total Quality Management methods are implemented in the organization. The primary cause of this issue is a lack of knowledge about overall quality management and the new approaches that are becoming popular nowadays. The quality of the product will create the brand of the company in the market so the initiatives have to be taken and systematic planning for the improvement of the implication of the total quality management in the organization.

Conclusion

The concept of Total Quality Management (TQM) has garnered significant attention on a global scale in the past few years. From a conceptual standpoint, total quality management, or TQM, is a management philosophy that aims to continuously enhance the calibre of performance across all of an organization's processes, procedures, products, and services. It highlights the significance of measurement, the role of the customer, the comprehension of variety, and the engagement of staff members at all organizational levels in the pursuit of this kind of development. Organizations can achieve long-term success by using total quality control. While quality management is a method of organizing, planning, and directing that will facilitate and integrate the capabilities of all employees for continuous improvement of anything and everything in an organization to attain excellence, customer satisfaction, employee satisfaction, product quality assurance in all its stages, and continuous improvement and innovation are the main ingredients of total quality control. As a result, TQM in a company unites everyone to guarantee and enhance the quality of the product-process, the workspace, and the workplace culture.

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