

## Total Quality Management Practices Adopted By Medium Enterprises: An Empirical Study Based On Owners' Perception

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### Abstract:

Total Quality Management (TQM) is a management philosophy, a paradigm, a continuous improvement approach to doing business through a new management model. TQM is equally important for Medium Enterprises and for large corporations. The present study focuses on the theory of TQM practices adopted by the Service-based and Manufacturing-based Medium Enterprises of Kamrup (Rural) and Kamrup (Metropolitan) Districts of Assam. The research design adopted in this study was exploratory and descriptive. Here, the researchers adopted quantitative research methods encompassing both primary and secondary data. The population of the study included 65 service-based medium enterprises and 77 manufacturing-based medium enterprises operating in the Kamrup (Rural) and Kamrup (Metropolitan) Districts of Assam registered under the Udyog Aadhar Memorandum till 30<sup>th</sup> June 2020. The researchers tried to note specific groups of respondent owners based on their experience (in years) who were sensitive to each of the points related to TQM. One-way ANOVA was used to find out those points (relating to TQM implementation). Thereafter, from descriptive statistics, the specific group of respondents based on their experience was identified where the aforesaid mean of owners' perception (regarding each of the above-mentioned points of TQM) was highest compared to other groups.

### Introduction:

Total Quality Management (TQM) is a management philosophy, a paradigm, a continuous improvement approach to doing business through a new management model (Oluwatoyin and Oluseun, 2008; Hoang, Igel and Laosirihongthong, 2010). The TQM philosophy evolved from the continuous improvement philosophy with a focus on quality as the main dimension of business. Under TQM, emphasizing the quality of the product or service predominates. TQM expands beyond statistical process control to embrace a wider scope of management activities of how they manage people and organizations by focusing on the entire process (Talib, Rahman and Qureshi, 2012).

TQM is equally important for Medium Enterprises and for large corporations. One reason is that some small local companies have been competing simultaneously with foreign firms for a long time. Another reason is that many large firms rely on several small companies for parts and services that they use in producing their products (Sahoo and Yadav, 2018). The need for continuous improvement to become part of the organizational culture is highly desired in Medium Enterprises as it is for large companies. Because of the competitive pressures created by globalization, quality has become a competitive weapon in most industries.

The present study focuses on the theory of TQM practices adopted by the Service-based and Manufacturing-based Medium Enterprises of Kamrup (Rural) and Kamrup (Metropolitan) Districts of Assam. Using historical case studies and survey research, the researcher intends to investigate TQM practices adopted by these two types of enterprises and provide a comparative view.

### Literature Review:

Gupta, McDaniel and Herath (2005) developed three major constructs from the review of literature which included organizational culture, leadership and employee commitment. According to the study, the firm should gain an understanding of customer needs and expectations before designing and implementing service quality improvements, which will lead to improved business process, improved service quality and high level of customer satisfaction.

Talib, Rahman and Qureshi (2012) demonstrate that TQM has a positive impact on service organization performance and has been adopted as a useful approach in several foreign as well as Indian industries such as health care, banking, etc. according to the researchers, the success or failure of TQM implementation largely depends on the initiatives and enthusiasm of the members contributing to the organization.

Akhtar, Zameer and Saeed (2014) found that all the aspects of TQM are utilized in the service organizations and there is a positive impact of TQM on the performance of the organizations. According to the researchers, the organizations cannot move towards progress without implementing TQM as it is useful in increasing output, customer satisfaction level, number of customers, increase in profit and increase in market share.

Mendes (2012) found that most of the SMEs had developed training programs focusing on quality improvements which indicate that top management is aware about the importance of training and development and focuses on quality improvement for effective employee participation on quality improvement initiatives. The researcher also found that smaller firms have higher propensity to develop HR initiatives directed towards quality improvement and to assure employees' training and development programs to quality issues.

Cornelison (2013) aimed to determine the TQM principals being used in the printing industry and which principals were given more emphasis. The researcher tried to determine whether the usage of these principals was beneficial to the company. For the study, those companies that were established for at least 5 years were considered and the study included members of various hierarchical levels.

Carstea, Paun, and Paun (2014) witnessed the enrichment of the quality concept which acquires an integrative dimension throughout the entire organization. The researchers said that to achieve a competitive advantage, the process of procurement and management of material resources must be carried out in accordance with the principles of the total quality concepts, providing the products that are required, with the required quality, in the desired quantity, at the desired time and at the lowest price possible.

Sahoo and Yadav (2018) examined the relationship between TQM and SME performance and tried to provide evidences regarding major TQM implementation barriers that are encountered by SMEs in India. By considering the manufacturing SMEs as the focal point of the research, the researchers found that there is a positive impact of TQM on the firm's performance and the success of any TQM initiative depends on the leadership style of the entrepreneur or the senior manager.

#### **Gap in literature:**

From the review of literature, it was found that a good number of researches have already been conducted on TQM both at national as well as international level. Various researchers have addressed the issues of TQM in the Service and Manufacturing Sector but none of the studies have addressed the issues of Total Quality Management practices adopted by the Service and Manufacturing-based industries operating in the Kamrup (Rural) and Kamrup (Metropolitan) Districts of Assam in North East India. The proposed study, therefore, intends to understand the TQM practices adopted by the Service and Manufacturing-based Medium Enterprises operating in these districts.

#### **Objectives of the study:**

- To understand the Total Quality Management Practices adopted by the Medium Enterprises of Kamrup (Rural) and Kamrup (Metro) Districts of Assam

#### **Methodology of the study:**

The research design adopted in this study was exploratory and descriptive. Here, the researchers adopted quantitative research methods encompassing both primary and secondary data. The population of the study included all the Service and Manufacturing Medium Enterprises operating in the Kamrup (Rural) and Kamrup (Metropolitan) Districts of Assam registered under the Udyog Aadhar Memorandum till 30<sup>th</sup> June 2020. According to this data, there were 65 service-based medium enterprises and 77 manufacturing-based medium enterprises. Required secondary data was collected from the District Industries and Commerce Centre, Guwahati (Kamrup (Metropolitan) district) and District Industries and Commerce Centre, Mirza (Kamrup (Rural) district).

The questionnaire included a five-point Likert scale to rank the perceptions of respondents related to each of the above points for implementation of TQM. The above five-point scale ranged from strongly agree, agree, neutral, disagree, and strongly disagree, respectively.

The researchers tried to note specific groups of respondent owners based on their experience (in years) who were sensitive to each of the points related to TQM. This was done with the help of One-way Analysis of Variance (ANOVA) via testing of the following hypothesis at a significance level ( $\alpha$ ) of 5% (0.05). Here, the above respondent owners' experience was treated as the independent variable and their perception regarding TQM was treated as the dependent variable.

One-way ANOVA was used to find out those points (relating to TQM implementation) wherein the above null hypothesis was rejected (p-value less than  $\alpha = 5\%$  (0.05)). Thereafter, from descriptive statistics, the specific group of respondents based on their experience was identified where the aforesaid mean of owners' perception (regarding each of the above-mentioned points of TQM) was highest compared to other groups. This specific group of respondents exhibits the highest sensitivity to each of the above points related to TQM. Hence, this group of owners requires greater emphasis by the management for the successful implementation of TQM in service-based and manufacturing medium enterprises.

#### **Analysis and Discussion:**

##### **Perception regarding Employee Involvement related activities and Experience of owners:**

Results of One-way ANOVA indicated that the null hypothesis ( $H_0$ ) stating that there exist significant differences among the means of perception of respondent owners regarding employee involvement in terms of the pay and promotion system acknowledges effort to improve quality across their experience can be rejected (p-value less than  $\alpha=5$  per cent (0.05)). This is shown in Table 1. This was observed with respect to service-based medium enterprises. This means that the above significant difference exists. It has been noticed from descriptive statistics that the above-mentioned means was highest for respondents having less than 5 years of experience compared to other groups. This shows that these groups of respondents are highly sensitive to the above-mentioned parameter related to employee involvement.

Here, the results of Games-Howell Post Hoc tests were shows that equal variances could not be assumed as there is a presence of significant differences between respondents with less than 5 years of experience as compared to other groups. This was because the p-value of homogeneity of variances test was less than  $\alpha = 5$  per cent (0.05).

Similar aforementioned null hypothesis ( $H_0$ ) could not be rejected in case of other parameters under employee involvement of the above enterprises as p-value of ANOVA in each such case was more than  $\alpha=5$  per cent (0.05) (refer to Table 1). This implies that owners' work experience in these enterprises do not have notable influence on their above perception (Chawla and Sondhi, 2011).

**Table 1 Means of experience of owners across employee involvement**

Employee Involvement	Service based Medium Enterprises							Manufacturing-based Medium Enterprises						
	Below 5 years		5-15 years		above 15 years		p-value	Below 5 years		5-15 years		above 15 years		p-value
	N	Mean	N	Mean	N	Mean		N	Mean	N	Mean	N	Mean	
Employees know that quality is their responsibility, and they are encouraged to meet customers' and the organization's objectives	4	1.5	28	1.68	33	1.79	0.56	14	1.57	45	1.73	18	1.44	1.4
Staff is continuously trained in the principles of quality, teamwork and job-specific skills.	4	1.5	28	1.5	33	1.36	0.55	14	1.57	45	1.42	18	1.33	0.48
Employees are actively involved in quality-related activities and the success of the enterprise, and many of their suggestions are implemented	4	1.25	28	1.78	33	1.61	0.09	14	1.71	45	1.69	18	1.89	0.39
Employees are responsible for quality and end results of the product/service. They can take decisions	4	1.75	28	1.57	33	1.67	0.75	14	2	45	1.96	18	2.17	0.39
The pay and promotion system acknowledges effort to improve quality	4	2	28	1.35	33	1.54	0.03	14	1.36	45	1.42	18	1.44	0.89

**Table 2 Results of Games-Howell post hoc tests in case of service based medium enterprises- the pay and promotion system acknowledge effort to improve quality (dependent variable) and experience (independent variable)**

(I) Experience in	(J) Experience in Years	Mean Difference (I-J)
below 5 years	5-15 years	0.64*
	above 15 years	0.45*
5-15 years	below 5 years	-0.64*
	above 15 years	-0.19
above 15 years	below 5 years	-0.45*
	5-15 years	0.19

**Note:** \* The mean difference is significant at 0.05

#### Perception regarding Customer Focused related activities and Experience of owners:

Results of One-way ANOVA indicated that the null hypothesis ( $H_0$ ) stating that there exist significant differences among the means of perception of respondent owners regarding customer focus activities in terms of long-term customer satisfaction is laid down as the organization's mission and basic principle and customers' grievances and complaints are used to improve product and/or service quality across their experience can be rejected ( $p$ -value less than  $\alpha=5$  per cent (0.05)). This is shown in Table 3. This was observed with respect to service-based medium enterprises. This means that the above significant difference exists. It has been noticed from descriptive statistics that the above-mentioned means was highest for respondents with more than 15 years of experience and 5-15 years of experience compared to other groups. This shows that these groups of respondents are more susceptible to the above-mentioned parameter related to customer focus.

Again, it was seen from the test of homogeneity of variances that equal variances could be assumed ( $p$ -value more than  $\alpha = 5$  per cent (0.05)) in case of service based medium enterprises (refer to Table no. 4). Hence, results of Bonferroni Post-hoc Tests indicated the presence of significant differences between respondents with 5-15 years of experience and those with more than 15 years of experience. This means that other groups can be treated as being equal.

The results of Bonferroni Post-hoc Tests indicated that there are significant differences between the respondents with 5-15 years of experience and more than 15 years of experience as compared to other groups. This was because the  $p$ -value of homogeneity of variances test was more than  $\alpha = 5$  per cent (0.05). This means that other groups can be treated as being equal.

Similar aforementioned null hypothesis ( $H_0$ ) could not be rejected in case of other parameters under customer focus of the above enterprises as  $p$ -value of ANOVA in each such case was more than  $\alpha=5$  per cent (0.05) (refer to Table 3). This implies that owners' experience does not have notable influence on their above perception (Chawla and Sondhi, 2011).

**Table 3 Means of experience of owners across customer focused**

Customer Focused	Service based Medium Enterprises							Manufacturing-based Medium Enterprises						
	Below 5 years		5-15 years		above 15 years		p-value	Below 5 years		5-15 years		above 15 years		p-value
	N	Mean	N	Mean	N	Mean		N	Mean	N	Mean	N	Mean	
Long-term customer satisfaction is laid down as the organization's mission and basic principle.	4	1.5	28	1.32	33	1.69	0.02	14	1.43	45	1.44	18	1.61	0.49
The customers' needs are passed on and are understood at all levels.	4	1.25	28	1.46	33	1.3	0.38	14	1.36	45	1.64	18	1.5	0.23
Customers' leave is thoroughly analyzed.	4	1.25	28	1.53	33	1.48	0.57	14	1.57	45	1.62	18	1.61	0.95
Customers' complaints and grievances are used to improve the products/services	4	1.25	28	1.54	33	1.48	0.004	14	1.57	45	1.62	18	1.61	0.53

**Table 3 Means of experience of owners across customer focused**

Customer Focused	Service based Medium Enterprises							Manufacturing-based Medium Enterprises						
	Below 5 years		5-15 years		above 15 years		p-value	Below 5 years		5-15 years		above 15 years		p-value
	N	Mean	N	Mean	N	Mean		N	Mean	N	Mean	N	Mean	
Present relationships with customers are analyzed and regular attempts are made to improve them.	4	1.5	28	1.71	33	1.3	0.63	14	1.36	45	1.53	18	1.44	0.08

**Table 4 Results of Games-Howell Post Hoc Tests in case of manufacturing-based medium enterprises-experience (independent variable)**

Long-term customer satisfaction is laid down as the organization's mission and basic principle (Dependent variable)			Customers' complaints and grievances are used to improve the products/services (Dependent variable)		
(I) Experience	(J) Experience	MD (I-J)	(I) Experience	(J) Experience	MD (I-J)
below 5 years	5-15 years	0.18	below 5 years	5-15 years	-0.21
	above 15 years	-0.19		above 15 years	0.19
5-15 years	below 5 years	-0.18	5-15 years	below 5 years	0.21
	above 15 years	-0.38*		above 15 years	0.41*
above 15 years	below 5 years	-0.19	above 15 years	below 5 years	-0.19
	5-15 years	0.38*		5-15 years	-0.41*

**Note:** MD refers to Mean Difference

#### Perception regarding Supplier Management related activities and Experience of owners:

Results of One-way ANOVA indicated that the null hypothesis ( $H_0$ ) stating that there exist significant differences among the means of perception of respondent owners regarding supplier management in terms of establishing close long-term relationships with suppliers to resolve quality related issues across their experience can be rejected ( $p$ -value less than  $\alpha=5$  per cent (0.05)). This is shown in Table 5. This was observed with respect to service-based medium enterprises. This means that the above significant difference exists. It has been noticed from descriptive statistics that the above-mentioned means was highest for respondents with 5-15 years of experience compared to other groups. This shows that these groups of respondents are more susceptible to the above-mentioned parameter related to supplier management.

Here, the results of Bonferroni Post Hoc tests were shows that equal variances could be assumed as there is a presence of significant differences between respondents with 5-15 years of experience and more than 15 years of experience as compared to other groups. This was because the  $p$ -value of homogeneity of variances test was more than  $\alpha = 5$  per cent (0.05).

Similar null hypothesis ( $H_0$ ) could not be rejected in case of other parameters under employee involvement of the above enterprises as  $p$ -value of ANOVA in each such case was more than  $\alpha=5$  per cent (0.05) (refer to Table 5). This implies that owners' work experience in these enterprises do not have notable influence on their above perception (Chawla and Sondhi, 2011).

**Table 5 Means of experience of owners across supplier management**

Supplier Management	Service based Medium Enterprises							Manufacturing-based Medium Enterprises						
	Below 5 years		5-15 years		above 15 years		p-value	Below 5 years		5-15 years		above 15 years		p-value
	N	Mean	N	Mean	N	Mean		N	Mean	N	Mean	N	Mean	
There is a close, long-term relationships with suppliers designed to resolve quality-related problems.	4	1.25	28	1.86	33	1.45	0.008	14	1.57	45	1.73	18	1.72	0.73
The suppliers help to improve products and/or services and also provide technical assistance.	4	1.25	28	1.75	33	1.85	0.15	14	1.57	45	1.51	18	0.61	0.86
The enterprise co-ordinates its strategies and its technical know-how with the suppliers	4	1	28	1.43	33	1.51	0.15	14	1.64	45	1.53	18	1.5	0.73



**Table 5 Means of experience of owners across supplier management**

Supplier Management	Service based Medium Enterprises							Manufacturing-based Medium Enterprises						
	Below 5 years		5-15 years		above 15 years		p-value	Below 5 years		5-15 years		above 15 years		p-value
	N	Mean	N	Mean	N	Mean		N	Mean	N	Mean	N	Mean	
The suppliers has a great strategic importance for the development of the enterprise	4	1.75	28	1.61	33	1.67	0.87	14	1.93	45	1.71	18	1.67	0.28
The enterprise invests substantial resources (e.g. time, money, contacts, and meetings) in the relationship with the supplier	4	1.75	28	1.64	33	1.64	0.91	14	1.64	45	1.62	18	1.67	0.95

**Table 6 Results of Bonferroni post hoc tests in case of service based medium enterprises- there is a close, long-term relationships with supplies designed to resolve quality-related problems (dependent variable) and experience (independent variable)**

(I) Experience in Years	(J) Experience in Years	Mean Difference (I-J)
below 5 years	5-15 years	-0.61
	above 15 years	-0.21
5-15 years	below 5 years	0.61
	above 15 years	0.4*
above 15 years	below 5 years	0.21
	5-15 years	-0.4*

**Note:** \* The mean difference is significant at 0.05

#### Perception regarding Process Centered related activities and Experience of owners:

Results of One-way ANOVA indicated that the null hypothesis stating that there is no significant difference among the means of the perception of respondent owners regarding process centered activities in terms of designing processes to ensure the skills and capacities meet the enterprise's needs, assessment of products, processes and procedures on regular basis, meticulous designing of new products and/or services to meet customers' needs, flexibility of all the processes and equal involvement of all departments during product/service development across their experience cannot be rejected (p-value more than  $\alpha = 5$  per cent (0.05)) (refer table no. 7). This means that experience of the owners of both the service and manufacturing medium enterprises does not have noteworthy influence on the above perception (Chawla and Sondhi, 2011).

**Table 7 Means of experience of owners across process centred**

Process Centred	Service based Medium Enterprises							Manufacturing-based Medium Enterprises						
	Below 5 years		5-15 years		above 15 years		p-value	Below 5 years		5-15 years		above 15 years		p-value
	N	Mean	N	Mean	N	Mean		N	Mean	N	Mean	N	Mean	
Processes are designed ensuring that skills and capacities are right for enterprise needs.	4	1.75	28	1.82	33	1.78	0.93	14	1.64	45	1.62	18	1.61	0.98
All processes, procedures and products are assessed regularly in an attempt to bring in change and improvement	4	1.75	28	1.53	33	1.64	0.61	14	1.43	45	1.62	18	1.56	0.48
New products and/or services are designed thoroughly and meticulously before being manufactured and/or marketed to ensure that clients' present and future expectations are met.	4	1.75	28	1.71	33	1.67	0.92	14	1.71	45	1.73	18	1.56	0.39
The processes are flexible.	4	1.5	28	1.75	33	1.64	0.53	14	1.78	45	1.69	18	1.61	0.58
All the departments are equally involved during the development of new products/services.	4	1.5	28	1.86	33	1.78	0.51	14	1.57	45	1.44	18	1.78	0.07

### Results of Hypothesis Testing concerning experience of owners:

As regards experience of the respondent owners, the results of hypothesis testing are indicated in Table 8 below.

**Table 8 Results of hypothesis testing concerning experience of owners**

Issues	Difference between Service and Manufacturing-based Medium Enterprises based on analysis results	Rejection of the above Null Hypothesis ((H <sub>0</sub> ) <sub>1</sub> )
<b>Employee Involvement</b>		
Employees know that quality is their responsibility, and they are encouraged to meet customers' and the organization's objectives	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
Staff is continuously trained in the principles of quality, teamwork and job-specific skills.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
Employees are actively involved in quality-related activities and the success of the enterprise, and many of their suggestions are implemented	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
Employees are responsible for quality and end results of the product/service. They can take decisions independently	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
The pay and promotion system acknowledges effort to improve quality	Present	(H <sub>0</sub> ) <sub>1</sub> can be rejected
<b>Customer Focused Activities</b>		
Long-term customer satisfaction is laid down as the organization's mission and basic principle.	Present	(H <sub>0</sub> ) <sub>1</sub> can be rejected
The customers' needs are passed on and are understood at all levels.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
Customers' leave is thoroughly analyzed.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
Customers' complaints and grievances are used to improve the products/services	Present	(H <sub>0</sub> ) <sub>1</sub> can be rejected
Present relationships with customers are analyzed and regular attempts are made to improve them.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
<b>Supplier Management Activities</b>		
There is a close, long-term relationships with suppliers designed to resolve quality-related problems.	Present	(H <sub>0</sub> ) <sub>1</sub> can be rejected
The suppliers help to improve products and/or services and also provide technical assistance.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
The enterprise co-ordinates its strategies and its technical know-how with the suppliers	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
The suppliers have a great strategic importance for the development of the enterprise	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
The enterprise invests substantial resources (e.g. time, money, contacts, and meetings) in the relationship with the supplier	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
<b>Process Centred Activities</b>		

**Table 8 Results of hypothesis testing concerning experience of owners**

Issues	Difference between Service and Manufacturing-based Medium Enterprises based on analysis results	Rejection of the above Null Hypothesis ((H <sub>0</sub> ) <sub>1</sub> )
Processes are designed ensuring that skills and capacities are right for enterprise needs.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
All processes, procedures and products are assessed regularly in an attempt to bring in	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
New products and/or services are designed thoroughly and meticulously before being manufactured and/or marketed to ensure that clients' present and future expectations are met.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected
The processes are flexible.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be
All the departments are equally involved during the development of new products/services.	Absent	(H <sub>0</sub> ) <sub>1</sub> cannot be rejected

**Conclusion:**

Implementing Total Quality Management (TQM) can be a complex process, and organizations often face various challenges along the way. These challenges include lack of available quality system documentation, lack of understanding of the process, high cost to implement TQM, lack of TQM exposure and lack of planning. Therefore, it is essential to address these challenges and develop strategies to implement TQM successfully. Addressing these challenges requires a systematic and committed approach, involving leadership, employees, and a comprehensive understanding of the organization's processes and goals. By enforcing a total quality manual and incorporating quality control and assurance mechanisms into all processes, these enterprises can enhance their competitiveness in the global market and ensure higher customer satisfaction with their products. This, in turn, can help prevent cost overruns and delays leading towards profitability and survival in the future.

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