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**AN ANALYTICAL STUDY OF TOTAL QUALITY MANAGEMENT OF  
SERVICES IN M.S.E.D.C.L AND RESPONSE PROVIDED BY  
VARIOUS CATEGORIES OF M.S.E.D.C.L CONSUMERS TO IT  
WITH REFERENCE TO WARDHA DISTRICT**

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**ABSTRACT:**

Total Quality Management (TQM) Its common belief that an organization can build long-term success by having all its members, from low-level workers to its highest-ranking executives focus on improving quality and, thus, delivering customer satisfaction. As Maharashtra State Electricity Distribution Company Limited (M.S.E.D.C.L.) is directly related to general public and whether its total quality management of services are effective or efficient to M.S.E.D.C.L. consumers or not. With this consideration, the aim of the present study is to carry out the analytical study of total quality management of services in M.S.E.D.C.L and response provided by various categories of M.S.E.D.C.L. consumers to it with reference to Wardha district. A survey in the form of questionnaires was given to 659 M.S.E.D.C.L. domestic, commercial, industrial and agricultural consumers using descriptive research design techniques and analysis has been carried out by Chi square ( $\chi^2$ ) test was adopted with 0.05 % level of significance. The calculated value of  $\chi^2$  is greater than the table values of  $\chi^2$ . Hence the null hypothesis is rejected with acceptance of alternative hypothesis and concluded that, there is a significant effects of consumer response / attitude towards services provided by M.S.E.D.C.L. employees as well as the total quality management of services offered to Wardha district consumers possess low risk tolerance.

**Keywords:** M.S.E.D.C.L., Consumers, Total Quality Management, Chi square ( $\chi^2$ ) test, Wardha District.

**Introduction:**

Total Quality Management (TQM) serves as a strategic approach for MSEDCL to ensure continuous improvement, enhance customer satisfaction, and optimize operational efficiency. Maharashtra State Electricity Distribution Company Limited (MSEDCL), one of the largest state electricity distribution

utilities in India, plays a crucial role in powering homes, businesses, agricultural and industries across Maharashtra. With a vast consumer base and extensive operational network, maintaining high standards of service quality is essential<sup>1,2</sup>.

The Maharashtra State Electricity Distribution Company Ltd. (MSEDCL) is a Company formed under the Government of Maharashtra General Resolution No. ELA- 1003/P.K.8588/Bhag- 2/Urja-5 dated January 24, 2005 with effect from June 6, 2005 according to the provisions envisaged in the Electricity Act 2003 and the Electricity (Amendment) Act, 2007, No.26 of 2007. MSEDCL is in the business of distribution and supply of electricity in the entire State of Maharashtra, except the Mumbai. MSEDCL is also known as Mahavitaran or Mahadiscom. Mahadiscom is one of the largest public sector company engaged in the business of electricity distribution with annual turnover of Rs. 84,000 Crores. It serves 2 crore 84 lakhs consumers in Maharashtra State with a committed pool of over 80200 employees<sup>3,4</sup>.

#### M.S.E.D.C.L. consumers in Wardha District

**Table 1: M.S.E.D.C.L. consumers in Wardha District**

Sr. No.	Type of Consumers	Number of consumers
01.	Residential	307000
02.	Commercial	20000
03.	Industrial	4500
04.	Agricultural	68670
05.	Street Light	1600
	Total	402000

Various services provided by M.S.E.D.C.L to the consumers like issue of new connection to the applicant within time limit, maintain uninterrupted power supply and to resolve consumer complaint related to power failure immediately<sup>5,6</sup>.

It has been said that, Total Quality Management (TQM) is an enhancement to the traditional way of doing business. It is a proven technique to guarantee survival in world-class competition. Only by changing the actions of management will change the culture and actions of an entire organization be transformed. Literature also revealed that it is a proven technique to guarantee survival in world-class competition<sup>7,8</sup>.

Literature review attracts the importance of TQM in M.S.E.D.C.L. Services and customer responses to them<sup>9</sup>, Effects of TQM practices on employees work-related attitudes<sup>10</sup>, TQM on Organizational Performance<sup>11</sup>, TQM on Manufacturing Organization Performance<sup>12</sup>, TQM & Service Sector<sup>13</sup>, Effective TQM Implementation in the Service Industry<sup>14</sup>, TQM and its Impact on Level of Customer Focus within Construction Project Management in Ghana<sup>15</sup>.

Keeping in mind, all these approaches of TQM it is necessary to check/evaluate

whether at present any system has been built or not in M.S.E.D.C.L. for providing total quality management system and consumer responses to it or not is part of consideration. With this consideration, the aim and objectives of the present report is to study the response provided by various categories of M.S.E.D.C.L. consumer to Total Quality Management (TQM) of Services of M.S.E.D.C.L., whether M.S.E.D.C.L. customer approach towards M.S.E.D.C.L. employees in providing or adopting total quality management services or suggestive area of implementation to cope up consumer satisfaction.

### Research Methodology

**Research Design:** Present research study was carried out using the techniques of descriptive research design and followed following research design to complete the research.

**Aim and objectives:** Aim of present study is “An Analytical Study of Total Quality Management of Services Provided by Maharashtra State Electricity Distribution Company Limited in Wardha District”.

**Geographical Dimension:** The survey has been conducted in Wardha District.

### Sample Design:

**Target population:** All categories of M.S.E.D.C.L. consumers in Wardha district.

**Sample Unit:** All categories (Residential, Commercial, Industrial & Agricultural) of M.S.E.D.C.L. consumers in Wardha district will be the target population for the said study.

**Sample size:** Sample size was chosen as 659 M.S.E.D.C.L. consumers including Residential, Commercial, Industrial & Agricultural in Wardha District with a well-structured questionnaire.

A sample is selected by using combination of random stratified sampling and convenience sampling methods. The survey was conducted during the period between August 2023 to November 2024.

Four categories of 659 M.S.E.D.C.L. consumers were selected and asked to participants to answer the questionnaires. Apart from this they are asked to give their opinion regarding the agreement/disagreement on how each factor has been operationalize in M.S.E.D.C.L. services with the five statements, which have been placed on the Likert's scale (five points). The responses are given codes from 5 to 1, in order to evaluate the levels of agreement or disagreement.

During this process, the understanding of the terms used by them in the questionnaire was ensured. After that some of the questions have been modified and made them to understand the kinds of practices they are adopting are related to the quality improvement. All the questions were explained them to avoid bias. The data analysis was carried out with the responses of participants. The levels of agreement or disagreement for each of the questions were examined by calculating mean scores of the answers sought. To check whether there was significant

difference or not for the means, t - test values were calculated. The significance/confidence level was considered to be at 5%. In order to find out whether any relationship exist between the variables in the factors, factor analysis was conducted and coefficient of correlation was calculated. Based on its value in comparison to the table value at 5% level of significance, it would be concluded whether the hypothesis can be accepted. After testing of the hypothesis, conclusions were made on the effects of consumer response / attitude towards services provided by M.S.E.D.C.L. employees as well as the total quality management of services offered to consumers possess low risk tolerance. The questions, which related to each category, were grouped later and the responses analyzed with the help of SPSS software. The statistical techniques used for this research study were t-test, coefficient of correlation matrix and factor analysis.

#### Research Objectives:

The objectives of research study are as under

- To know regarding how various services offered by the M.S.E.D.C.L. to consumers.
- To study role of M.S.E.D.C.L. management and employees in providing quality services to consumer to cope up consumer satisfaction.
- To study Government policies and their effectiveness regarding quality management services.
- To study of effective and efficient services provided by M.S.E.D.C.L. to its consumers.
- To study the role and responsibility of M.S.E.D.C.L. employees towards consumers complaints and services offered by them.
- To study the benefit of Total Quality Management to consumers.
- To suggest the area of improvement in TQM of M.S.E.D.C.L.

#### Limitations of the Study:

The research is concerned only about total quality management of M.S.E.D.C.L. for providing services to the consumers in Maharashtra, however electricity distribution in the premises of industries, residential and commercial places may be explored in the study.

The geographical area consider for the research is only limited to Wardha district.

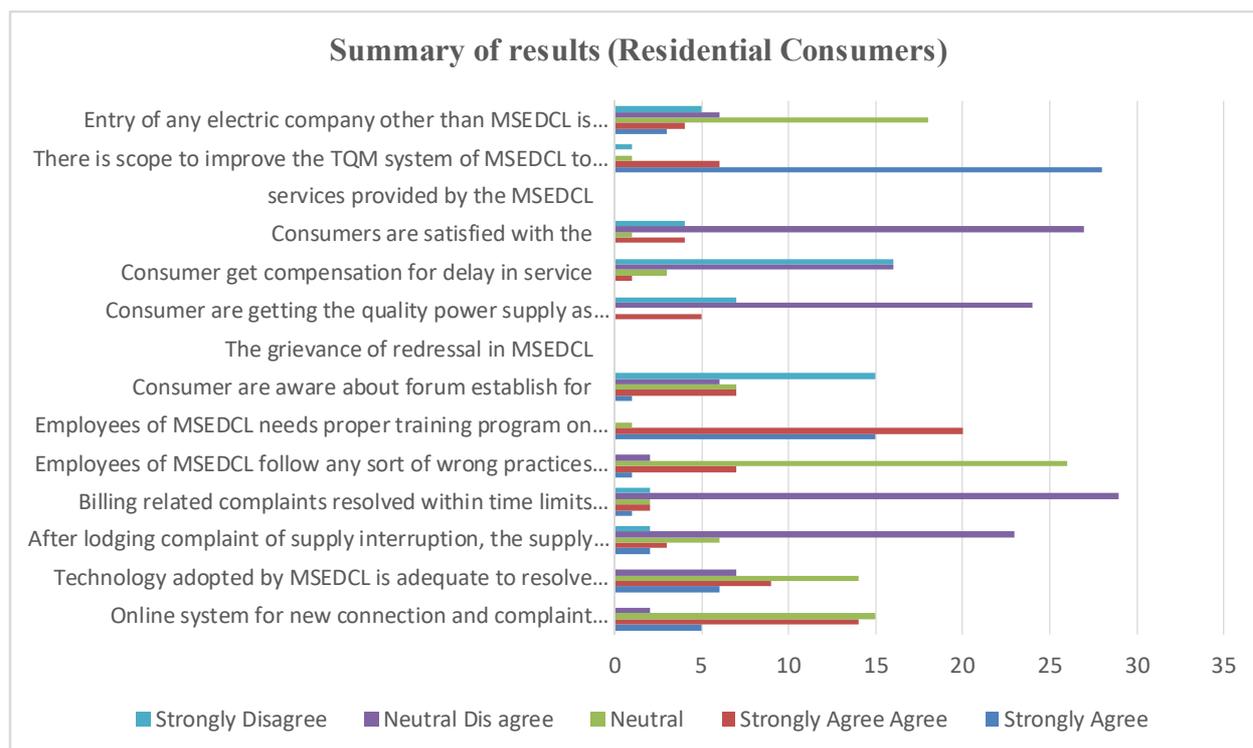
The implementation given by the respondents might be biased or some of them may not be interested to give correct information.

Some of the respondent might not be able to answer the questions due to lack of knowledge.

#### Data Analysis and Survey Results:

A set of questionnaires to each category consumers (659 in numbers) were provided and the responses analyzed in Likert rating scale (1-Strongly agree, 2-Agree, 3-Neither agree nor disagree, 4- Disagree, 5-Strongly disagree) that measures how consumer feel about a statement or question and summary of result was given in Table 2, Overall average mean (3.28), standard

deviation (2.93) and Chi square ( $\chi^2$ ) value (10.74) of all type of consumers data was calculated with 0.05 % level of significance, summarized in Table 2 – Table 5 and Fig. 1 – Fig. 4. The calculated value of  $\chi^2$  (10.74) is found to be greater than the table values of  $\chi^2$  value (9.49), summarized in Table 6.



**Fig.1: Summary of results (Residential Consumers)**

**Table 2: Summary of results (Residential Consumers)**

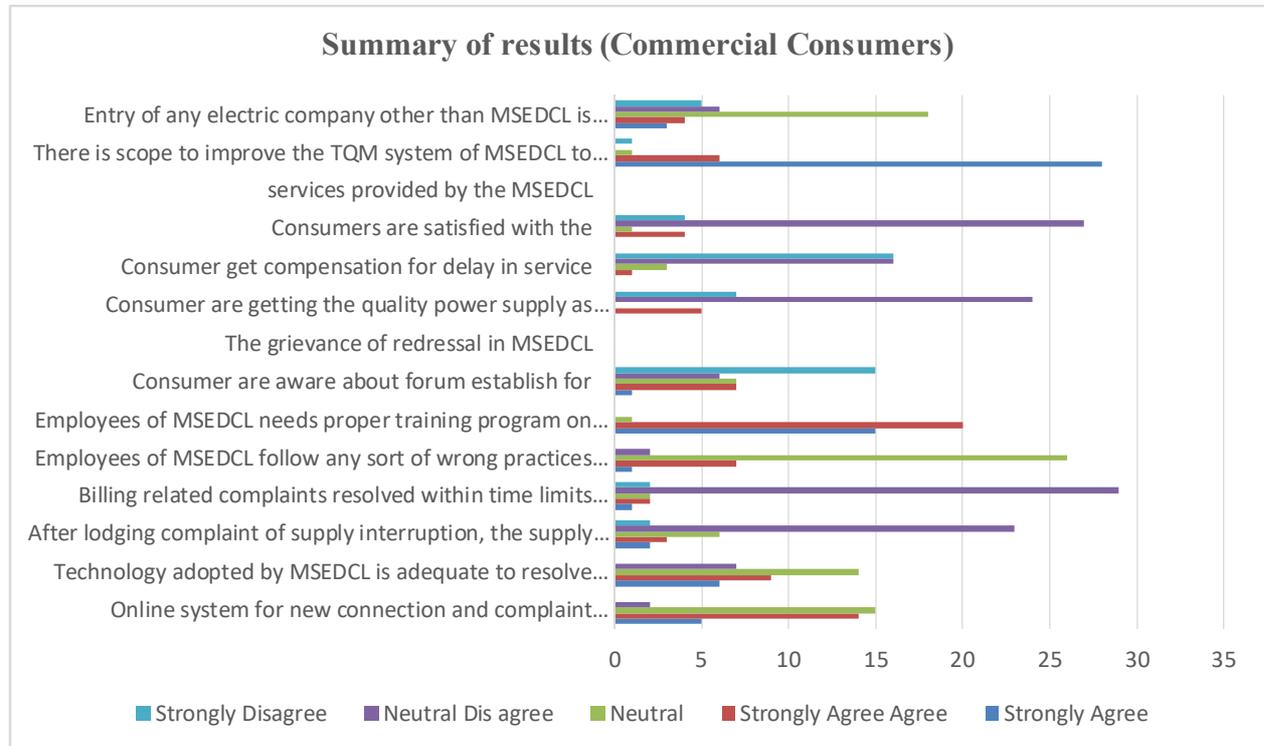
Sr. No.	Particulars	Strongly Agree	Agree	Neutral	Dis agree	Strongly Disagree	Mean	SD	Rank
1	Online system for new connection and complaint registration help to improve the services of MSEDCL.	252	208	18	14	15	4.32	3.89	1
2	Technology adopted by MSEDCL is adequate to resolve the complaint as per MERC regulation 2020	88	144	52	184	39	3.11	2.87	4
3	After lodging complaint of supply interruption, the supply restored immediately	94	114	50	205	44	3.02	2.79	6

4	Billing related complaints resolved within time limits prescribed by TQM of MSEDCL	76	158	44	202	27	3.1 1	2.8 4	5
5	Employees of MSEDCL follow any sort of wrong practices while Providing services to you	85	126	202	85	9	3.3 8	3.0 1	3
6	Employees of MSEDCL needs proper training program on TQM services to improve the services	264	140	76	23	4	4.2 6	3.8 4	2
7	Consumer are aware about forum establish for The grievance of redressal in MSEDCL	23	105	167	184	28	2.8 2	2.4 7	6
8	Consumer are getting the quality power supply as prescribed by TQM of MSEDCL	41	155	35	182	94	2.7 4	2.5 3	4
9	Consumer get compensation for delay in service	53	108	85	188	73	2.7 6	2.5 3	4
10	Consumers are satisfied with the services provided by the MSEDCL	94	103	61	155	94	2.9 0	2.7 3	3
11	There is scope to improve the TQM system of MSEDCL to provide services to consumers	249	182	53	18	5	4.2 9	3.8 5	1
12	Entry of any electric company other than MSEDCL is needful for betterment of service	15	103	188	114	87	2.6 9	2.3 9	2
	<b>Overall Result (Nos.)</b>	1334	1646	1031	1554	519			
	<b>Overall Percentage (%)</b>	21.93	27.05	16.95	25.54	8.53	3.28	2.98	

**Table 3: Summary of results (Commercial Consumers)**

Sr. No.	Particulars	Strongly	Agree	Neutral	Dis	Strongly	Mean	SD	Rank
1	Online system for new connection and complaint registration help to improve the services of MSEDCL.	39	55	3	0	2	4.30	3.84	1
2	Technology adopted by MSEDCL is adequate to resolve the complaint as per MERC regulation 2020	5	50	10	27	7	3.19	2.87	5
3	After lodging complaint of supply interruption, the supply restored immediately	10	48	9	28	4	3.32	2.99	5
4	Billing related complaints resolved within time limits prescribed by TQM of MSEDCL	9	54	9	24	3	3.42	3.06	3
5	Employees of MSEDCL follow any sort of wrong practices while Providing services to you	6	17	38	34	4	2.87	2.50	8
6	Employees of MSEDCL needs proper training program on TQM services to improve the services	41	41	9	7	1	4.15	3.73	1
7	Consumer are aware about forum establish for The grievance of redressal in MSEDCL	4	38	20	33	4	3.05	2.70	5
8	Consumer are getting the quality power supply as prescribed by TQM of MSEDCL	6	49	8	26	10	3.15	2.86	3
9	Consumer get compensation for delay in service	8	27	19	43	2	2.96	2.63	4
10	Consumers are satisfied with the services provided by the MSEDCL	5	47	10	22	15	3.05	2.79	3
11	There is scope to improve the TQM system of MSEDCL to provide services to consumers	38	42	13	4	2	4.11	3.69	1
12	Entry of any electric company other than MSEDCL is needful for betterment of service	4	13	50	26	6	2.83	2.44	2
	<b>Overall Result (Nos.)</b>	175	481	198	274	60			

<b>Overall Percentage (%)</b>	14.7	40.4	16.			3.3	3.0	
	31	9	67	23.06	5.05	7	1	

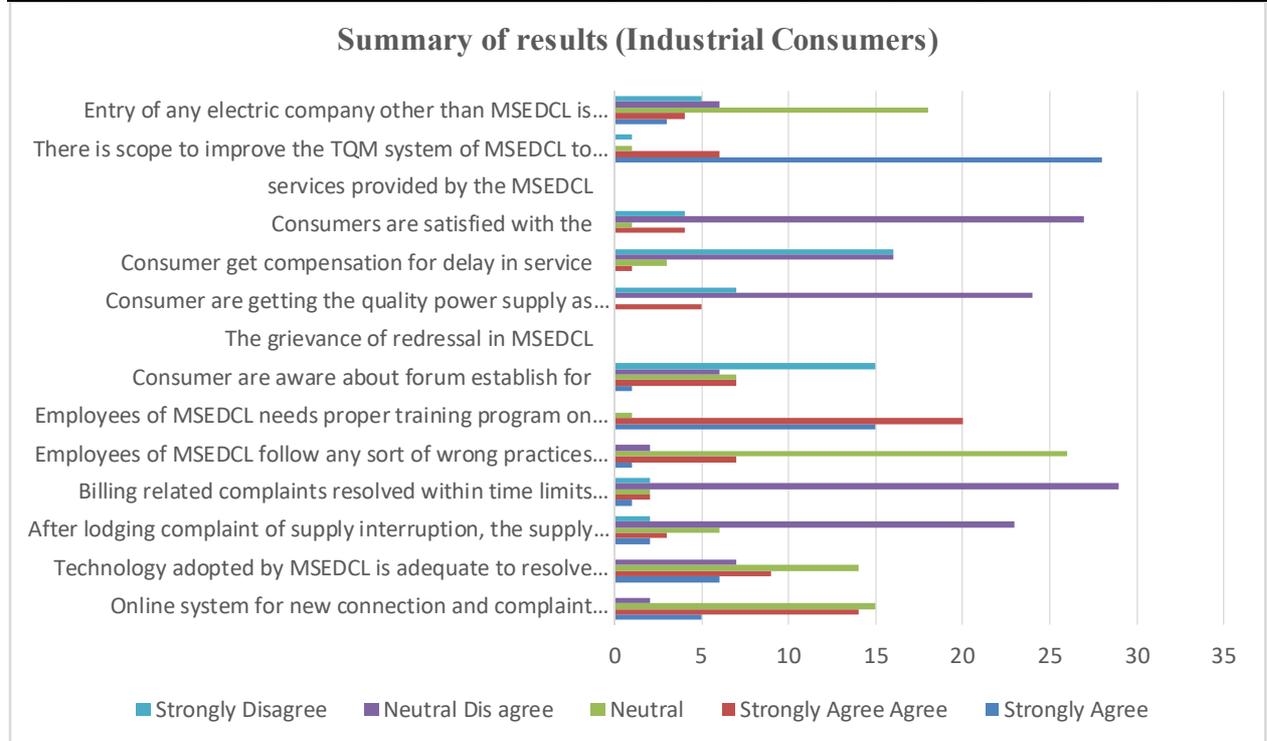


**Fig.2: Summary of results (Commercial Consumers)**

**Table 4: Summary of results (Industrial Consumers)**

Sr. No.	Particulars	Strongly	Agree	Neutral	Dis	Strongly	Mean	SD	Rank
1	Online system for new connection and complaint registration help to improve the services of MSEDCL.	13	3	1	0	0	4.71	4.21	1
2	Technology adopted by MSEDCL is adequate to resolve the complaint as per MERC regulation 2020	2	12	1	2	0	3.82	3.38	7
3	After lodging complaint of supply interruption, the supply restored immediately	10	5	0	2	0	4.35	3.94	1
4	Billing related complaints resolved within time limits prescribed by TQM of MSEDCL	8	8	0	1	0	4.35	3.90	1
5	Employees of MSEDCL follow any sort of wrong practices while Providing services to you	0	2	2	5	8	1.88	1.64	9
6	Employees of MSEDCL needs proper training program on TQM services to improve the services	0	6	2	3	6	2.47	2.30	7
7	Consumer are aware about forum establish for The grievance of redressal in MSEDCL	7	8	2	0	0	4.29	3.82	1
8	Consumer are getting the quality power supply as prescribed by TQM of MSEDCL	8	6	1	2	0	4.18	3.77	1
9	Consumer get compensation for delay in service	1	6	1	3	6	2.59	2.47	4
10	Consumers are satisfied with the services provided by the MSEDCL	6	9	0	2	0	4.12	3.69	1
11	There is scope to improve the TQM system of MSEDCL to provide services to consumers	3	14	0	0	0	4.18	3.66	1
12	Entry of any electric company other than MSEDCL is needful for betterment of service	1	3	0	5	8	2.06	1.97	2
	<b>Overall Result (Nos.)</b>	59	82	10	25	28			

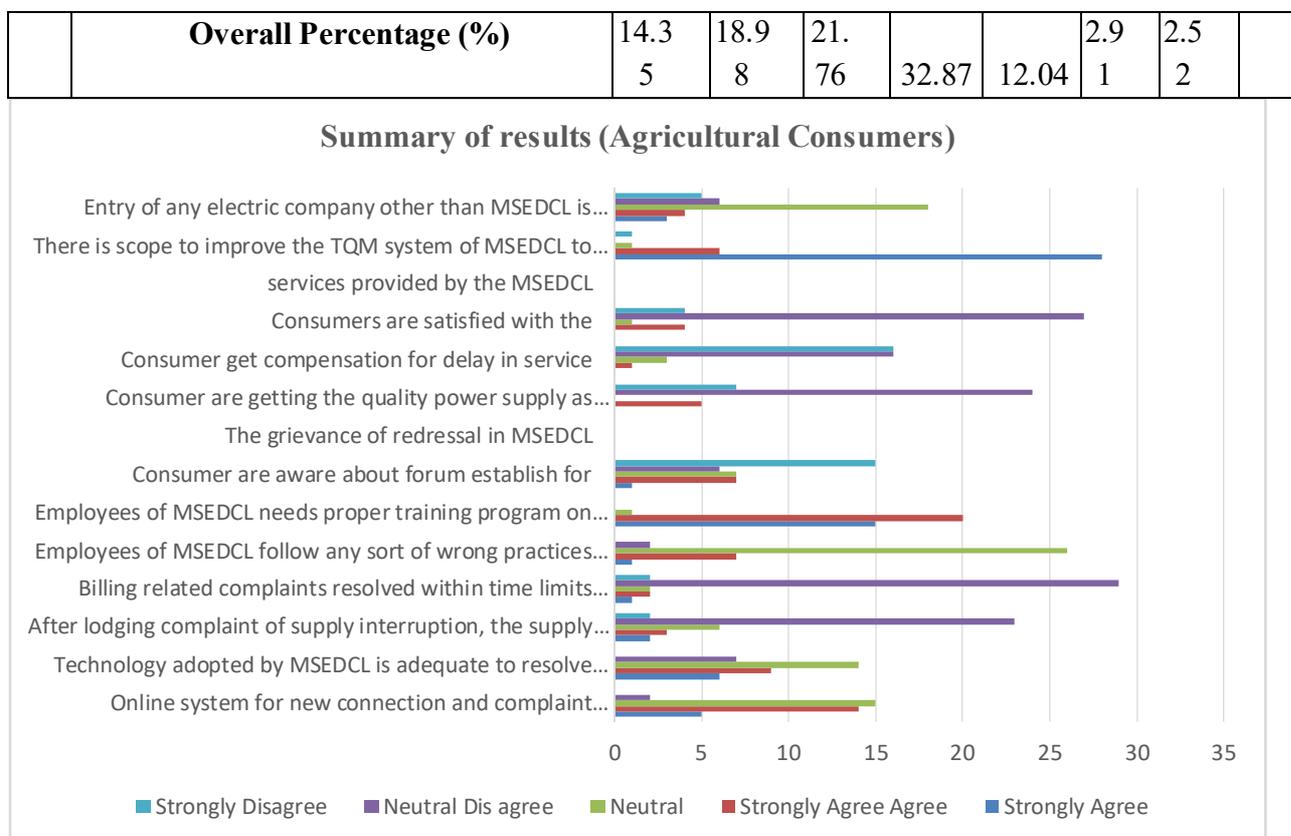
<b>Overall Percentage (%)</b>	28.9	40.2	4.9			3.5	3.2	
	2	0	0	12.25	13.73	8	3	



**Fig.3: Summary of results (Industrial Consumers)**

**Table 5: Summary of results (Agricultural Consumers)**

Sr. No.	Particulars	Strongly	Agree	Neutral	Dis	Strongly	Mean	SD	Rank
1	Online system for new connection and complaint registration help to improve the services of MSEDCL.	5	14	15	2	0	3.61	3.17	3
2	Technology adopted by MSEDCL is adequate to resolve the complaint as per MERC regulation 2020	6	9	14	7	0	3.39	3.01	3
3	After lodging complaint of supply interruption, the supply restored immediately	2	3	6	23	2	2.44	2.09	7
4	Billing related complaints resolved within time limits prescribed by TQM of MSEDCL	1	2	2	29	2	2.19	1.78	7
5	Employees of MSEDCL follow any sort of wrong practices while Providing services to you	1	7	26	2	0	3.19	2.71	3
6	Employees of MSEDCL needs proper training program on TQM services to improve the services	15	20	1	0	0	4.39	3.89	2
7	Consumer are aware about forum establish for The grievance of redressal in MSEDCL	1	7	7	6	15	2.25	2.09	4
8	Consumer are getting the quality power supply as prescribed by TQM of MSEDCL	0	5	0	24	7	2.08	1.73	5
9	Consumer get compensation for delay in service	0	1	3	16	16	1.69	1.31	5
10	Consumers are satisfied with the services provided by the MSEDCL	0	4	1	27	4	2.14	1.73	4
11	There is scope to improve the TQM system of MSEDCL to provide services to consumers	28	6	1	0	1	4.67	4.21	1
12	Entry of any electric company other than MSEDCL is needful for betterment of service	3	4	18	6	5	2.83	2.52	2
	<b>Overall Result (Nos.)</b>	62	82	94	142	52			



**Fig.4: Summary of results (Agricultural Consumers)**

**Table 6: Summary of Results (For successful implementation of TQM)**

Type of Consumers	Overall Mean	Overall SD	$\chi^2$ Value	Table Value of $\chi^2$	P value
Residential	3.28	2.98	10.60	9.49	0.0073
Commercial	3.37	3.01	10.66	9.49	0.0063
Agricultural	2.91	2.52	11.95	9.49	0.0043
Industrial	3.58	3.23	9.77	9.49	0.0142
Average	3.285	2.935	10.7475	9.49	0.008025

**Summary and Conclusions**

The calculated value of  $\chi^2$  is found to be greater than the table values of  $\chi^2$ . Hence the null hypothesis is rejected and alternative hypothesis is accepted. Therefore, it is concluded that, there is a significant effects of consumer response / attitude towards services provided by M.S.E.D.C.L. employees as well as the total quality management of services offered to all categories of Wardha district consumers possess low risk tolerance.

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**Questionnaire:**

To be filled by M.S.E.D.C.L. Residential Consumers, Commercial Consumers, Industrial Consumers, Agricultural Consumers –

This information will seek opinion of M.S.E.D.C.L. consumers. Please remember that your responses are completely ANONYMOUS. Please note that the word “TQM” used for “Total Quality Management”.

Name of Respondent:

Age of respondent:

Gender of respondent:

Designation of the respondent:

Sr. No.	Statement	1-Strongly agree 2-Agree 3-Neither agree nor disagree 4- Disagree 5-Strongly disagree				
		1	2	3	4	5
1	Online system for new connection and complaint registration help to improve the services of MSEDCL.					
2	Technology adopted by MSEDCL is adequate to resolve the complaint as per MERC regulation 2020					
3	After lodging complaint of supply interruption, the supply restored immediately					
4	Billing related complaints resolved within time limits prescribed by TQM of MSEDCL					
5	Employees of MSEDCL follow any sort of wrong practices while Providing services to you					
6	Employees of MSEDCL needs proper training program on TQM services to improve the services					
7	Consumer are aware about forum establish for The grievance of redressal in MSEDCL					
8	Consumer are getting the quality power supply as prescribed by TQM of MSEDCL					
9	Consumer get compensation for delay in service					
10	Consumers are satisfied with the services provided by the MSEDCL					
11	There is scope to improve the TQM system of MSEDCL to provide services to consumers					
12	Entry of any electric company other than MSEDCL is needful for betterment of service					

Thank you for your precious time & valuable feedback.