

PRIORITIZING SERVICE QUALITY FACTORS FOR INDUSTRIAL TRAINING INSTITUTES AND SKILL IMPARTING INSTITUTES AS PER STUDENT'S PERCEPTION IN THE STATE OF M.P. INDIA.

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Abstract: This work aims to improve the performance of Madhya Pradesh, India's industrial training and skill imparting institutes by prioritizing recognized service quality factors. Based on expert opinion and an extensive assessment of the literature, ten factors related to service quality have been identified. Data is gathered through the distribution of questionnaires to students enrolled at M.P.'s six government and private ITIs. The research indicates that the three most crucial service quality factors for improving the quality of education in ITIs are infrastructure, training and academic performance. The research's findings would be beneficial to ITI administration in helping them to identify the best practices to follow and, in turn, create educational policies.

Keywords: education, industrial training institutes; ITIs; students; service quality factors; relative importance index technique; Microsoft excel software; Cronbach's alpha.

1 Introduction:

Industrial Training Institutes (ITIs) have been essential to the expansion and advancement of industries during the last many decades. The Union Government, the Ministry of Skills Development and Entrepreneurship, and DGET (Directorate General for Employment and Training) founded Industrial Training Institutes to offer training in several trades. These ITIs have trained a significant portion of the workforce for industry in a variety of economic sectors, which has assisted in maintaining a stable supply of competent laborers in numerous trades for the industries. Only when competent pass out from diverse ITIs are able to match industry expectations regarding their skill acquisition will industries be able to expand and prosper. In order to ensure systematic training to increase the quality and quantity of industrial production, lower unemployment among educated youth by giving them employable training, and foster a technical and industrial attitude in the minds of the younger generation, it is necessary that ITIs impart training in line with industry demands.

(Palve and Khaire, 2018) have highlighted the vital role that ITIs plays in fostering entrepreneurship and employment growth. They also touch on the influence that ITIs have on the nation's economy and stress the significance of technical education for contemporary development. Kumar, 2015) has recognized the importance of technical education and highlights the role of ITIs in providing high-quality technical education to support the nation's

modern development and advancement. However, it also highlights the difficulties these institutions face, including heightened competition, antiquated staffing, obsolete equipment, outdated curriculum, and outdated infrastructure and discussed the significance of ITIs in the area, acknowledged the difficulties they encounter, and pushed for raising the standard of services these institutions offer in order to solve trainee unemployment. (Sahney et al., 2011a) have determined that customer satisfaction and service quality are crucial considerations for every educational institution's growth, survival, and success. Students' expectations in this case must be identified in terms of service quality aspects, and they must be prioritized for improving the ITIs' quality.

A crucial factor in assessing customer satisfaction performance is service quality. The elements affecting service quality were determined by a thorough review of the literature on the subject in several educational fields as well as the professional judgment of ITIs. The author of this study conducted a survey among six government and private ITIs in the Indian state of M.P. A questionnaire is used in the survey to evaluate a number of variables pertaining to the level of service provided by these ITIs. The current study's main goal is to discover the variables that affect ITIs service quality and then rank them according to significance using the Relative Importance Index (RII) method.

1 Literature review

This study aims to investigate pertinent literature on education quality, variables influencing it, and methods for putting service quality first in industrial training and skill-imparting institutes in Madhya Pradesh, India. As a result, it is necessary to evaluate the literature on the idea of service quality, as well as its applications in the field of technical education and related tools and procedures. Contributions from different authors, adopted different methodologies, are included in this section regarding service quality in various educational institutions.

Sahney et al. (2003) have employed the quality function deployment technique to raise the standard of higher education institutions' services. (Bayraktaroglu and Atrek (2010) have been applied to compare the suitability of the servqual and servperf approaches for assessing service quality in higher education institutions using confirmatory factor analysis. (Hanaysha et al. (2012) have examined the following five aspects of service quality: tangibility, reliability, assurance, responsiveness, and empathy. These dimensions are used to gauge satisfaction of students in Malaysian universities. (Pandi and sethupathi (2013) have proposed ten integrated educational quality management system (IEQMS) important parameters for attaining excellence in engineering education institutions. (Bharwana et al. (2013) have elucidated the significance of service quality in Pakistani private colleges for student contentment and to compete with other institutions. Soni et al. (2014) an attempt has been made to create sub-modules of significant stakeholders in order to analyse the impact of several critical technical education system factors for quality enhancement.

Kumar (2015) have outlined the significance of in plant training in industrial training institutions to impart quality improvement. Rus et al. (2015) have presented a work-based learning model that relies on a number of service quality parameters to improve trainee performance awareness in Malaysian educational institutions, substantial coding was also utilized in the data analysis. Kanchan and varshney (2015) has described the importance of

skill and knowledge for students through exploratory research. Saha et al. (2016) have explained the quality perspective of polytechnic education institutes and discussed about various factors which directly and indirectly influences the effectiveness of technical education in West Bengal. Abouelenein and Mohamed (2016) have analyzed the importance of training of university faculty members in order to achieve the desired quality in the light of technological innovations. Jambo and Pilz (2017) have discussed the issues of the attractiveness of vocational education and training (VET) in India under the exploratory study approach.

Theresia and bangan (2017) have investigated the service quality for ITIs students and data is collected by questionnaire and processed by SPSS software, also reliability is validated by the value of cronbach alpha. Palve and khair (2018) have critically analyzed the role of ITIs in the employment generation, skill development and entrepreneurial activities. Puthal et al. (2018) have developed a structural model that links service quality to the outcome and the reputation of the institute, also the model is analyzed using structured equation modelling technique. Sallaudi et al. (2019) have evaluated the effects of service quality through stimulus organism response (SOR) model, also adapted quantitative method where questionnaires used as an instrument for data collection and then data is analyzed by PLS-SEM. Kinker et al. (2020a) have designed a framework to improve service quality in polytechnic education institutes (PEIs) in M.P. India through QFD and TISM techniques. Koltharkar et al. (2020) have discussed various factors that affect the system of higher educational institutes (HEIs) and factors are identified and prioritized by using multi criteria decision making (MCDM), fuzzy TOPSIS technique. Kinkar et al. (2020b) have studied to identify and access the critical barriers affecting the quality of service in Polytechnic Education Institutes (PEIs) in M.P. India through an integrated ISM- MICMAC approach. Kinker et al. (2021) have suggested various parameters to prioritize service quality of PEIs in M.P. India as per National Board of Accreditation (NBA) quality standards by considering the impact of service quality variables on students' perspectives and data is analyzed by fuzzy kano and QFD techniques. Anandkumar (2022) has discussed the significance of technical education for the growth of India also emphasized major challenges and their remedies in the technical educational institutes.

Kinker et al.(2022a) have ranked the design characteristics (DCs) using the Quality Function Deployment (QFD) method and the Fuzzy Kano Approach, which ranks service qualities into various kano categories. Ajithkumar and pilz (2019) have studied about the attractiveness of ITIs in India through the perception of students and their parents when choosing their educational pathways. Zenner et al. (2017) have used a three-step approach following the theories of 'prescribed', 'adopted', or 'enacted' curriculum, also explained the role of entrepreneurship education which is an essential element in preparing young people for self-employment in ITIs.

Neroorkar and Gopinath (2019) have identified various factors that affects the employability of Industrial training graduates in Mumbai, India and used qualitative approach in the research. Kinker et al. (2019) have proposed 10 service quality indicators and applied the Relative Importance Index for polytechnic engineering institutions in M.P., India the data and

method for ranking these criteria are examined using Excel and SPSS software, and the reliability of the results is confirmed using the Cronbach's alpha value. Sahu et al. (2008) developed a mathematical model to assess the efficacy of technical education through exploratory research after examining the effectiveness of numerous aspects.

2 Service Quality Factors in Industrial Training and skill Imparting Institutes:

This project intends to improve the quality of services provided by Madhya Pradesh, India's industrial training institutes. Ten service quality factors are chosen for this purpose after a thorough review of the literature, with expert opinion being the final deciding factor. Table 1 contains a tabulation of the factors that were identified for this study and their interpretation.

Table 1. Service Quality Factors and their interpretations.

S.No.	Service Quality Factors	Interpretation
1.	Infrastructure	Advance labs (shops), smart classrooms library, canteen, hostel, playground, washrooms & parking.
2.	Academic performance	Institute results, placements, attendance and fairness in the conduct of exams.
3.	MOUs with industry	Number of MOUs signed with industry for industrial visit and expert lecture for the students to become entrepreneur.
4.	Training	Training facilities, soft skills, theory teaching, job making, instructor's experience, delivery of trainers.
5.	Feedback from students	Student's opinion is to be taken for the improvement in training in ITIs to make necessary correction by the policy developers.
6.	Curriculum structure	Industry demanded trades, syllabus, yoga, NCC, NSS, sports and extracurricular activity etc. are to be designed by experts in the field for framing of student's curriculum.
7.	Student /trainee performance	skill, knowledge, result, attitude, discipline, scholarship, and reward at the district/state/national level.
8.	Office automation system	For better record keeping, render services and mobilization support
9.	Student support services	To establish placement & entrepreneurial cell, complaint box, wi-fi, emergency medical facility, gender equality and notice board updating.
10.	State of art technology	Latest technology must be implemented in ITIs.

4. Relative Importance Index Method

RII is a technique for ranking the quality criteria based on the opinions of stakeholders. For Likert scale problems with five points, the Relative Importance Index (RII) approach is employed. Through the questionnaire, the RII uses perception by asking the respondent to rate how they perceive the factors that have been identified. The RRI method provides accurate ranking based on customer feedback and prioritizes criteria in fewer steps than other ranking MCDM systems. Kometa et al. (1994) has determined the relative relevance of the delay causes using the RII approach. Kinker et al. (2019) have applied this method to rank the service quality factors for the improvement of service quality in polytechnic engineering institutes of M.P., India. The identified service quality factors at the industrial training institutes of M.P., India, are prioritized using the same methodology in this study. RRI's higher value indicates more significance. The formula is used to determine the RRI score is given as equation (1).

$$\text{RRI} = \frac{\sum W}{AN} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1}{5N} \quad (1)$$

Where,

n_1 - minimum rating given by respondents,

n_5 - maximum rating given by respondents,

W - Weighting given to each variable by respondents, (in 1 to 5 ranges)

A - Highest weight (5 for this case).

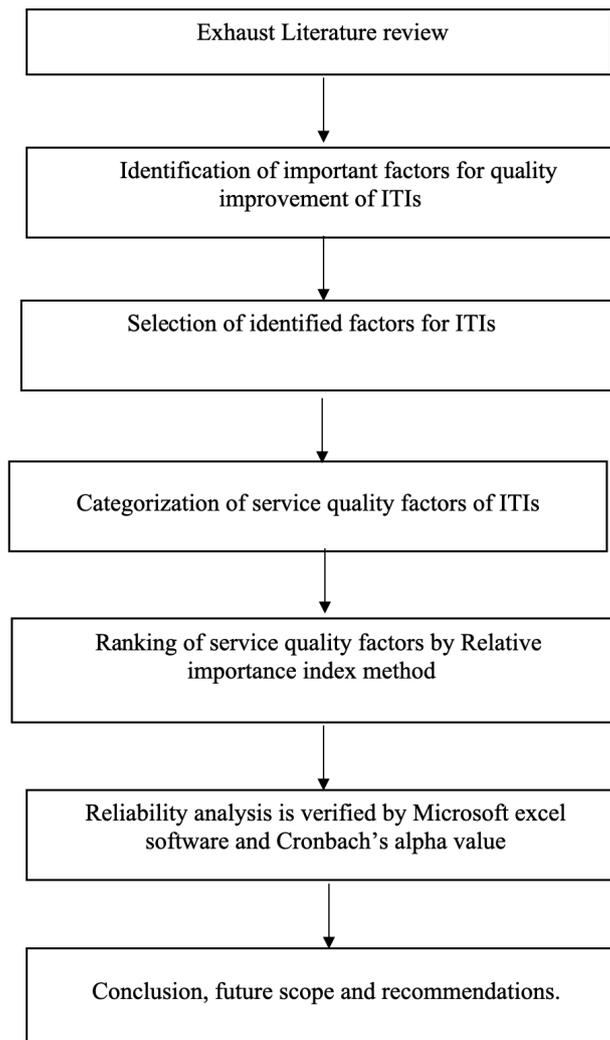
N - Total number of respondents.

For our case, we used a five points Likert scale as follows –

5- most important, **4-** important, **3-** neutral, **2-** not important, **1-** not at all important

5. Research Methodology

The proposed methodology has included identification, selection and prioritization of service quality parameters for quality improvement of industrial training institutes in the state of M. P., India. Six ITIs have been identified for this study. Relative importance index method is used for the prioritization of identified service quality factors. Reliability analysis is performed by excel software with the suitability of Cronbach's alpha value. In present work Cronbach alpha's is calculated as 90.8 % which shows excellent reliability of results. The detailed methodology is shown in figure1.

Figure 1. Research methodology flowchart

5.1 Objective of Research

It has been summarized from the literature review the potential of service quality enhancement exists in the area of education, particularly measurement and evaluation of service quality in industrial training institutes. The literature is focused on service quality enhancement of ITIs and skill imparting institutes of M.P. India are not much addressed. The objective of this study is-

- To discuss the importance of industrial training and skill imparting institutes of M.P. India.
- To identify service quality factors its sub factors and prioritize them to enhance the skill and knowledge of students to provide them better employment opportunities.
- To identify student's requirements.
- To identify gaps in service rendered by industrial training and skill imparting institutes in the state of M.P. India as per student's perspectives.

- Submit suggestions and recommendations for the improvement of service quality in ITIs.

These research objectives need to be fulfilled and recommended for improving service quality of industrial training and skill imparting institutes in the state of M.P. India.

5.2 Research gap

The literature is focused on service quality enhancement of ITIs and skill imparting institutes of M.P. India are not much addressed. A limited number of research papers are available for improvement of service quality of ITIs. In present research Relative Importance Index technique is used for prioritizing identified service quality factors as per student's perception for enhancement of ITIs in the state of M.P. India. Microsoft excel software is used for calculating the Cronbach's alpha value to assess the reliability of the data.

5.3 Data collection

The researcher collected the data for the study from students studying at six government and private ITIs in M.P. India. These students are the research participants; the questionnaire-based survey was utilized as the data collection method; the survey was structured and designed to address issues that were identified specifically for students at industrial training and skill imparting institutes (ITIs), and it was intended to compare and analyse the effects of identified service quality factors within these ITIs. Questionnaires is organized into two sections to capture the required information. The first part of the questionnaire focused on gathering demographic information about the students. This information typically included details such as their name, gender and the names of their respective institutes. The second part of the questionnaire involved questions that were rated by the students using a Likert scale ranging from 1 to 5. Likert scales are commonly used to assess the intensity of agreement or disagreement with statements or questions. The questionnaire was distributed to a total of 100 students. Response of boys' and girls' students are shown in table – 2

Table- 2. Distribution of Respondents Profile

Boys	87
Girls	13
Total	100

5.4 Reliability analysis

Reliability analysis is done to measure internal consistency of the data. Cronbach's alpha value is calculated to measure reliability of the data obtained from Likert scale surveys, particularly when the research involves multiple items to measure a concept or variable. Tavakol and Dennick (2011) have suggested that Cronbach alpha tests is used when the research being carried out has multiple item measures of concept. Its value tells you if the test you have

designed is accurately measuring the variable of interest and can be found out by the equation (2). In our study the value of Cronbach's alpha is calculated as 90.8 % which shows excellent results of the survey. Jugessur (2022) have applied an equation to find Cronbach's alpha value as given by equation 2.

$$\text{Cronbach's Alpha } \alpha = \frac{K}{K-1} \left[1 - \frac{\sum s^2 y}{s^2 x} \right] \quad (2)$$

where, K- is the number of test item,

$\sum s^2 y$ – is the sum of item variance,

$s^2 x$ – is the variance of total score,

α - Cronbach's alpha value

For our work, by Microsoft excel software and using the equation 2 the value of Cronbach alpha is calculated as 90.8 % which shows excellent feedback from the students.

Table-3 Calculation of Cronbach alpha value

S.N.	A	B	C
1	Description	EXCEL Functions Applied	Values
2	No. of test items (K)		10
3	Sum of item variance ($\sum s^2 y$)	= VAR.P(:) = SUM (:)	4.816194649
4	Variance of total score ($s^2 x$)	= SUM (:) = VAR.P(:)	26.4339
5	Cronbach Alpha (α)		90.86 %

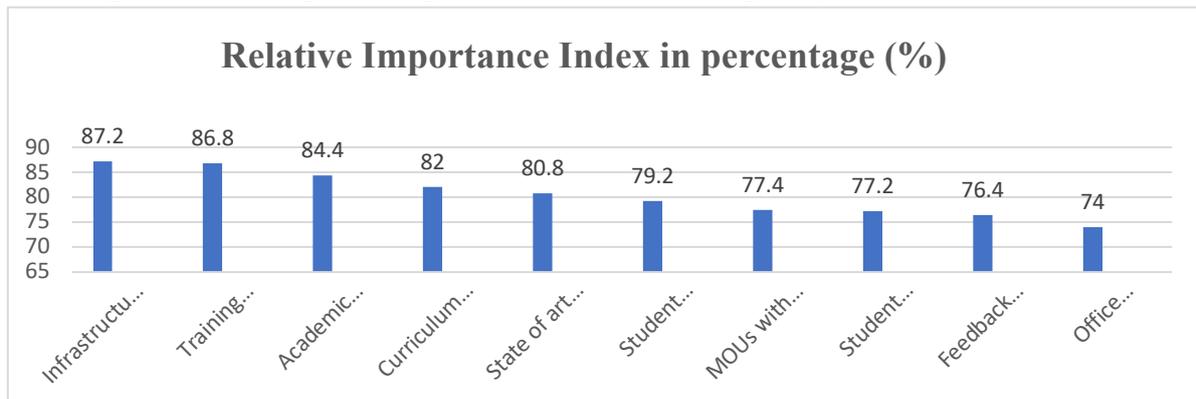
6. Results and Discussion

The data is calculated by RII method for identified service quality factors using equation 1 and Relative importance index (in %) is given in Table 3, also the graphical representation of the data in Figure 2, which together provide a comprehensive overview of the study's results. Invalid responses are separated in the analysis as outliers. The study revealed that students' perceptions of infrastructure, training, and academic performance are the three most important factors influencing service quality. These are followed by curriculum structure, state of art technology, student support services, and memorandums of understanding (MOUs) with industry. The last three factors influencing students' perceptions of service quality are student performance, student feedback, and office automation systems. This data can help management, educators, and policy makers to improve the quality of education in ITIs by helping them prioritize areas for improvement and focusing on aspects that matter most to their students.

Table -3. Relative Importance Index (RII) of service quality factors

Rank	Factors	Total Response	Valid Response	Invalid Response	Total Score	RII in %
1.	Infrastructure	100	92	8	436	87.2
2.	Training	100	95	5	434	86.8
3.	Academic performance	100	97	3	422	84.4
4.	Curriculum structure	100	96	4	410	82
5.	State of art technology	100	92	8	404	80.8
6.	Student support services	100	93	7	396	79.2
7.	MOUs with industry	100	93	7	387	77.4
8.	Student performance	100	85	15	386	77.2
9.	Feedback from students	100	93	7	382	76.4
10.	Office automation system	100	96	4	370	74

Figure-2. RII in percentage of identified service quality factors



7. Conclusion

This work reports the significance of ranking associated with the service quality factors in ITIs located in M.P., India. The research suggests that such ranking is essential for these institutions to ensure their sustainability and long-term viability. The research highlights the necessity for ITIs in M.P. to rank and assess service quality factors. By doing so, these institutions can enhance their services, attract quality students, and better prepare individuals for success in the workforce or as entrepreneurs. This research emphasis on service quality is vital for the continued development and effectiveness of ITIs in the region. The research employs the RII technique to prioritize the service quality factors identified for ITIs.

Data analysis is conducted using Microsoft Excel software. Data is accessed by means of Cronbach's alpha value to measure reliability. The value of Cronbach's alpha is 0.908 which shows an excellent result. The study revealed that students' perceptions of infrastructure, training, and academic performance are the three most important factors influencing service quality. A panel of educational specialists discusses the research findings and validates the results based on their vast experience and expertise in improving the quality of educational services. Together, these professionals have over 15 years of expertise in this field. The study is anticipated to have applications for ITIs in M.P., India, since it will assist decision-makers in identifying the best ways to improve the quality of services in ITIs by considering the perspectives of students.

8. Future scope

The finding of the study is useful for management, policymakers, educational practitioners and various stakeholders to enhance service quality by prioritizing identified service quality factors in the industrial training and skill imparting institutes of M.P. India. The implementation of factors would lead to the required skills and knowledge to the students to make them ready for the job as per industries requirements. Students are regarded as stakeholders in this study; however, in the future, a variety of other stakeholders, such as professors, staff, management, society, etc., may also be taken into consideration. Six ITIs in M.P., India, were surveyed by the authors. ITIs from other states in India or other countries may eventually be included. RII technique is employed in the work while other multicriteria decision making strategies can also be adopted by researchers in the future.

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