

# **Total Quality Management for Service Quality Enhancement of Municipal Corporations in Kerala**

*Thesis*

*Submitted to the University of Calicut  
for the award of the degree of*

**DOCTOR OF PHILOSOPHY IN COMMERCE**

*By*

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*Under the Supervision of*

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**May 2024**

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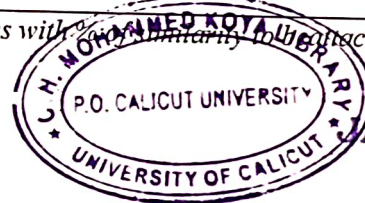
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**Dedicated to**

**My Mother**

**Who let me dream big and supported me every  
step of the way....**

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# **Total Quality Management for Service Quality Enhancement of Municipal Corporations in Kerala**

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## **Abstract**

Local government is a system constituted by the people in an area to administer the affairs of a locality. It deals with the matters concerning the inhabitation of a particular area. The local self-governments occupy a very significant place in the democratic set up. For successful functioning of democracy and efficient administration of government in a large country like India, local self-government has a unique role. It is a symbol of decentralization which is a great requisite of democracy. In a multi-level governmental system i.e. central government, state government and local self-government, the last layer plays an important role in the socio-economic development of the country. While all the layers of government are connected with the socio-economic and political life of the people, the local self-government is closer to the people. The function performed by Municipal government such as provision of roads, communications, drinking water, sanitation, education, and health etc affect the people directly. Municipal government therefore plays a pivotal role in the development of the economy. Citizen expectations about local bodies also increased with the development of information and communication technologies. Moreover, the rural local bodies like Panchayaths are implementing TQM, while Municipal Corporations are not yet implementing TQM. Moreover, the primary duty of the Municipal Corporations is to render quality services to its citizens. For assuring quality, collective involvement and efforts of elected representatives, officials, and citizens are essential.

This study is descriptive in nature based on primary data. The purposive sampling method is used in this study. A pilot study is conducted with 50 citizens residing under Kozhikode Municipal Corporation and 50 employees working under the same Municipal Corporation. Based on the data, the validity, reliability of the questionnaire was determined. In order to confirm the reliability and validity of the research instrument, a confirmatory factor analysis was also done. Primary data are collected from 1210 residents and 380 employees of Municipal Corporations in Kerala by using two sets of questionnaires. This study covers all six Municipal Corporations in Kerala i.e. Thiruvananthapuram, Kollam, Thrissur, Kochi, Kozhikode and Kannur Municipal Corporations.

This study assesses and compares the quality of service delivered by Municipal Corporations in Kerala. This study undertakes a comprehensive examination of seven distinct services provided by Municipal Corporations in Kerala, namely health & environment service, social services, reconstruction and urban development service, urban transportation, disaster management, community services, and education services. Service quality is measured by assessing the satisfaction level of citizens towards services provided by their Corporation. The analysis extends to a Corporation-wise comparison, aiming to discern potential variations in the delivery of these services across different municipalities. The findings of the analysis reveal discernible differences in the approaches adopted by various Municipal Corporations in providing each of these services. The result of the study revealed that the citizens of Kollam, Kozhikode and Kannur Corporations are satisfied with the services of their Corporation.

This study provides a comprehensive understanding of total quality management (TQM) and its components. It examines the extent to which Kerala Municipal Corporations implement

TQM components. There are mainly two components for TQM i.e. hard TQM and soft TQM. hard TQM were assessed using 17 perpetual variables contributing to it and soft TQM were assessed using 15 perpetual variables contributing to it using five-point Likert scale. EFA result elicit four components of hard TQM, namely community resource hub (CRH), accessible amenities hub (AAH), PIC (public information centre) and rest and relaxation zone (RRZ) and four soft TQM components, such as customer service attributes and elements (CSAE), public feedback program (PFP), front office expertise (FOE) and employee engagement and access control system (EE&ACS). Additionally, it examines whether these elements of TQM influence the performance of Corporation. The performance of Municipal Corporations is assessed by checking the level of satisfaction of citizen on various services offered by it. Here an examination of the mediating role of "hard TQM" elements as well as the impact of "soft TQM" elements on citizen satisfaction is also made. Citizen's satisfaction is measured by assessing their perception towards quality of various services offered by Municipal Corporations. The study revealed that Kollam Corporation outperforms in the case of hard TQM (Mean=3.42) when compared with other Municipal Corporations in Kerala. At the same time, Kannur Corporation (Mean=2.42) needs to pay more attention in its hard or touch and seen infrastructural facilities for employees to render services effectively. Kochi Corporation outperform in case of soft TQM (Mean=3.11) when compared with other Municipal Corporations in Kerala. At the same time Kannur Corporation (Mean=2.62) need to pay more attention in its soft aspect of TQM.

This study delves into the level of awareness and perceptions held by citizens and employees regarding quality initiatives (software solutions) implemented by Municipal Corporations in Kerala. The software programs have been developed by the Information Kerala Mission for the local bodies in Kerala. Working of five programs for citizen namely SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA, and SOOCHIKA and ten program for employees namely STHAPANA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SUBADRA, SAMOOHYA, SAPHALYA and SULEKHA programs were assessed under this study. Software programs introduced by government to smoothen the work of employees were ranked based on mean values. From the result, it is clear that Kochi Corporation is better in the working of these programs. At the same time, Thrissur Corporation need to pay more attention for the working of all these programs.

Employee perceptions of barriers to the implementation of quality-improvement initiatives within Municipal Corporations are also examined under this study. To identify the most influential factors that hinder the implementation of quality initiatives in local government bodies, with a particular emphasis on Municipal Corporations by using 13 statements, factor analysis is used. A welch test was used to evaluate and compare the barriers to quality among various Municipal Corporations. Workplace dynamics, management hurdles, organizational challenges, educational deficiency, and political challenges are the major barriers faced by Municipal Corporations when introducing quality initiatives. The study also developed a conceptual model covering all aspects of TQM that can be implemented in municipal Corporations in Kerala. The proposed model point out the shortfalls in services rendered, shortfalls in hard and soft particles of TQM, software or programs whose workings are unsatisfactory and major barriers in implementing quality initiatives by Municipal Corporations in Kerala. This Model will be highly useful for local government authorities to identify the components need to be implemented in each Municipal Corporations in Kerala to implement a full-fledged TQM model.

**കേരളത്തിലെ മുനിസിപ്പൽ കോർപ്പറേഷനുകളുടെ സേവന നിലവാരം  
മെച്ചപ്പെടുത്തുന്നതിനുള്ള സമ്പൂർണ്ണ ക്യാളിറ്റി മാനേജ്മെന്റ്**

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**സംഗ്രഹം**

ഒരു പ്രദേശത്തിന്റെ കാര്യങ്ങൾ കൈകാര്യം ചെയ്യുന്നതിനായി രൂപീകരിച്ച സർക്കാർ സംവിധാനമാണ് തദ്ദേശഭരണം. ഇന്ത്യയെപ്പോലുള്ള ഒരു വലിയ രാജ്യത്ത്, ജനാധിപത്യത്തിന്റെ വിജയകരമായ പ്രവർത്തനത്തിനും സർക്കാരിന്റെ കാര്യക്ഷമമായ ഭരണത്തിനും പ്രാദേശിക സ്വയം ഭരണ സ്ഥാപനങ്ങൾക്ക് സവിശേഷമായ പങ്കുണ്ട്. ഇത് അധികാര വികേന്ദ്രീകരണത്തിന്റെ പ്രതീകമാണ്. ഇത് ജനാധിപത്യത്തിന്റെ വലിയ ആവശ്യകതയുമാണ്. ഒരു മൾട്ടി-ലെവൽ ഗവൺമെന്റ് സിസ്റ്റത്തിൽ കേന്ദ്രസർക്കാർ, സംസ്ഥാന സർക്കാർ, പ്രാദേശിക സർക്കാർ എന്നിവ രാജ്യത്തിന്റെ സാമൂഹിക-സാമ്പത്തിക വികസനത്തിൽ പ്രധാന പങ്ക് വഹിക്കുന്നു. ഗവൺമെന്റിന്റെ എല്ലാ തലങ്ങളും ജനങ്ങളുടെ സാമൂഹിക, സാമ്പത്തിക രാഷ്ട്രീയ ജീവിതവുമായി ബന്ധപ്പെട്ടിരിക്കുന്നുവെങ്കിലും, പ്രദേശിക സ്വയംഭരണം ജനങ്ങളുമായി കൂടുതൽ അടുത്ത് നിൽക്കുന്നു. റോഡുകൾ, ആശയവിനിമയം, കുടിവെള്ളം, ശുചിത്വം, വിദ്യാഭ്യാസം, ആരോഗ്യം തുടങ്ങിയ മുൻസിപ്പൽ സർക്കാർ നൽകുന്ന സേവനങ്ങൾ ജനങ്ങളെ നേരിട്ട് ബാധിക്കുന്നു. ആയതിനാൽ സമ്പദ് വ്യവസ്ഥയുടെ വികസനത്തിൽ മുനിസിപ്പൽ സർക്കാർ നിർണ്ണായക പങ്ക് വഹിക്കുന്നു. ആശയ വിനിമയ, സാങ്കേതിക വിദ്യകളുടെ വികസനത്തോടെ തദ്ദേശ സ്വയംഭരണ സ്ഥാപനങ്ങൾ നൽകുന്ന സേവനങ്ങളെക്കുറിച്ചുള്ള പൗരന്മാരുടെ പ്രതീക്ഷകളും വർദ്ധിച്ചു. ഗുണനിലവാരമുള്ള സേവനങ്ങൾ നൽകുക എന്നത് മുനിസിപ്പൽ കോർപ്പറേഷനുകളുടെ പ്രാഥമിക കടമയാണ്. ഗുണനിലവാരം ഉറപ്പാക്കുന്നതിന്, ജനപ്രതിനിധികളുടെയും ഉദ്യോഗസ്ഥരുടെയും പൗരന്മാരുടെയും കൂട്ടായ പങ്കാളിത്തവും പരിശ്രമവും അനിവാര്യമാണ്. കൂടാതെ പഞ്ചായത്തുകൾ പോലുള്ള ഗ്രാമീണ തദ്ദേശ സ്വയം ഭരണ സ്ഥാപനങ്ങൾ ടി.കു. എം നടപ്പാക്കുന്നു, അതേ സമയം മുനിസിപ്പൽ കോർപ്പറേഷനുകളിൽ ഇതുവരെ ടി.കു.എം നടപ്പാക്കിയിട്ടില്ല.

പ്രാഥമിക ഡാറ്റയെ അടിസ്ഥാനമാക്കിയുള്ള ഈ പഠനം വിവരണാത്മകമാണ്. പർപ്പസിപ് സാമ്പിൾ രീതിയാണ് ഉപയോഗിച്ചിരിക്കുന്നത്. കോഴിക്കോട് മുനിസിപ്പൽ കോർപ്പറേഷൻ പരിധിയിൽ താമസിക്കുന്ന 50 പൗരന്മാരെയും അതേ കോർപ്പറേഷനിൽ ജോലി ചെയ്യുന്ന 50 ജീവനക്കാരെയും ഉൾപ്പെടുത്തി പൈലറ്റ് പഠനം നടത്തി. ഡാറ്റയുടെ

അടിസ്ഥാനത്തിൽ ചോദ്യാവലിയുടെ വിശ്വാസ്യത സ്ഥിരീകരിച്ചു. കേരളത്തിലെ കോർപ്പറേഷനുകൾക്ക് കീഴിൽ താമസിക്കുന്ന 1210 പൗരന്മാരിൽ നിന്നും മുനിസിപ്പൽ കോർപ്പറേറ്റിൽനിന്നെ 380 ജീവനക്കാരിൽ നിന്നും രണ്ട് വ്യത്യസ്ത ചോദ്യാവലികളെപ്പയോഗിച്ചാണ് പ്രാഥമിക വിവരങ്ങൾ ശേഖരിച്ചിട്ടുള്ളത് ഈ പഠനത്തിൽ കേരളത്തിലെ ആറ് മുനിസിപ്പൽ കോർപ്പറേഷനുകളെയും (തിരുവനന്തപുരം, കൊല്ലം, തൃശ്ശൂർ, കൊച്ചി, കോഴിക്കോട്, കണ്ണൂർ) ഉൾപ്പെടുത്തിയിട്ടുണ്ട്.

കേരളത്തിലെ മുനിസിപ്പൽ കോർപ്പറേഷനുകൾ നൽകുന്ന സേവനങ്ങളുടെ ഗുണനിലവാരം ഈ പഠനത്തിലൂടെ വിലയിരുത്തുകയും താരതമ്യം ചെയ്യുകയും ചെയ്യുന്നു. മുനിസിപ്പൽ കോർപ്പറേഷനുകൾ നൽകുന്ന ഏഴ് വ്യത്യസ്ത സേവനങ്ങളായ ആരോഗ്യം, പരിസ്ഥിതിസേവനം, സാമൂഹികസേവനങ്ങൾ, പുനർനിർമ്മാണം, നഗരവികസനം, നഗര ഗതാഗതം, ദുരന്തനിവാരണം, സാമൂഹികസേവനങ്ങൾ, വിദ്യാഭ്യാസസേവനങ്ങൾ, എന്നിവയുടെ സമഗ്രമായ പരിശോധനയാണ് ഈ പഠനം നടത്തുന്നത്. തങ്ങളുടെ കോർപ്പറേഷനുകൾ നൽകുന്ന സേവനങ്ങളോടുള്ള പൗരന്മാരുടെ സംതൃപ്തി വിലയിരുത്തിയാണ് സേവന നിലവാരം അളക്കുന്നത്. വിവിധ മുനിസിപ്പാലിറ്റികൾക്ക് ഈ സേവനങ്ങൾ നൽകുന്നതിലെ വ്യത്യാസങ്ങൾ തിരിച്ചറിയാൻ കോർപ്പറേഷൻ തിരിച്ചുള്ള വിശകലനം സഹായിക്കും. ഓരോ കോർപ്പറേഷനുകളും ഈ സേവനങ്ങൾ വ്യത്യസ്ത രീതിയിലാണ് നൽകുന്നതെന്ന് ഈ പഠനം വെളിപ്പെടുത്തുന്നു. കൊല്ലം,

കോഴിക്കോട്, കണ്ണൂർ കോർപ്പറേഷനുകളിലെ പൗരന്മാർ അവരുടെ കോർപ്പറേഷന്റെ സേവന നിലവാരത്തിൽ സംതൃപ്തരാണെന്ന് പഠനത്തിന്റെ ഫലം വെളിപ്പെടുത്തുന്നു.

ഈ പഠനം ടോട്ടൽ ക്വാളിറ്റി മാനേജ്മെന്റിനെക്കുറിച്ചും (ടി.ക്യൂ.എം) അതിന്റെ ഘടകങ്ങളെക്കുറിച്ചും സമഗ്രമായ ധാരണ നൽകുന്നു. കേരളത്തിലെ മുനിസിപ്പൽ കോർപ്പറേഷനുകൾ ടി.ക്യൂ.എം ഘടകങ്ങൾ എത്രത്തോളം നടപ്പാക്കുന്നുവെന്ന് ഈ പഠനത്തിലൂടെ പരിശോധിക്കുന്നു. ടി.ക്യൂ.എം. ന് പ്രധാനമായും രണ്ട് ഘടകങ്ങൾ ഉണ്ട്. ഹാർഡ് ടി.ക്യൂ.എം ഉം, സോഫ്റ്റ് ടി.ക്യൂ.എം ഉം, ഹാർഡ് ടി.ക്യൂ.എം നെ 17 പെർപച്ചാൽ വേരിയബിളിറ്റിയോടുകൂടി വിലയിരുത്തിയും സോഫ്റ്റ് ടി.ക്യൂ.എം നെ 15 പെർപച്ചാൽ വേരിയബിളിറ്റിയോടുകൂടി വിലയിരുത്തിയും ചെയ്തു. കമ്മ്യൂണിറ്റി റിസോഴ്സ് ഹബ് (CRH), ആക്സിബിൾ അമനറ്റീസ് ഹബ്, (AAH) പബ്ലിക് ഇൻഫർമേഷൻ സെന്റർ (PIC), റെസ്റ്റ് ആന്റ് റിലാക്സേഷൻ സോൺ (RRZ), കൺസ്യൂമർ സർവ്വീസ് ആടിബ്യൂട്ട്സ് ആന്റ് എലമെന്റ്സ് (CSAE), പബ്ലിക് ഫീഡ്ബാക്ക്, പോഗ്രാം (PFP), ഫ്രണ്ട് ഓഫീസ് എക്സ്പർട്ടൈസ് (FOE), എംപ്ലോയീസ് എൻകേയ്ജ്മെന്റ് ആന്റ് ആക്സസ് കൺട്രോൾ സിസ്റ്റം (EE&ACS), എന്നീ ടി.ക്യൂ.എം ഘടകങ്ങളാണ് ഇ.എഫ്.എ യുടെ ഫലം നൽകുന്നത്. കൂടാതെ ഈ ടി.ക്യൂ.എം ഘടകങ്ങൾ കോർപ്പറേഷനുകളുടെ പ്രകടനത്തെ സ്വാധീനിക്കുന്നുണ്ടോ എന്നും ഈ പഠനത്തിലൂടെ പരിശോധിക്കുന്നു. മുനിസിപ്പൽ കോർപ്പറേഷനുകൾ നൽകുന്ന വിവിധ സേവനങ്ങളോടുള്ള പൗരന്മാരുടെ സംതൃപ്തിയുടെ തോത് പരിശോധിച്ചാണ് കോർപ്പറേഷനുകളുടെ പ്രകടനം വിലയിരുത്തിയത്. കേരളത്തിലെ മറ്റ് മുനിസിപ്പൽ കോർപ്പറേഷനുകളുമായി താരതമ്യം ചെയ്യുമ്പോൾ ഹാർഡ് ടി.ക്യൂ.എം ന്റെ (ശരാശരി 3.42) കാര്യത്തിൽ കൊല്ലം കോർപ്പറേഷൻ മികച്ച പ്രകടനം കാഴ്ചവെക്കുന്നു. അതേ സമയം കണ്ണൂർ കോർപ്പറേഷൻ (ശരാശരി 2.62) ടി.ക്യൂ.എം ന്റെ സോഫ്റ്റ് ഘടകങ്ങളിൽ കൂടുതൽ ശ്രദ്ധ നൽകേണ്ടതുണ്ട്.

കേരളത്തിലെ മുനിസിപ്പൽ കോർപ്പറേഷൻ നടപ്പിലാക്കിയ സോഫ്റ്റ് വെറുക്കളെക്കുറിച്ചുള്ള പൗരന്മാരുടെയും ജീവനക്കാരുടെയും അവബോധം ഈ പഠനം വിലയിരുത്തുന്നു. ഈ സോഫ്റ്റ് വെയറുകൾ തദ്ദേശ സ്വയംഭരണ സ്ഥാപനങ്ങൾക്കായി വികസിപ്പിച്ചത് ഇൻഫോർമേഷൻ കേരള മിഷ്യൻ ആണ്. പൗരന്മാർക്കായി സേവന സിവിൽ രജിസ്ട്രേഷൻ, സേവന പെൻഷൻ, സങ്കേതം, സഞ്ചയ, സൂചിക എന്നീ അഞ്ച് സോഫ്റ്റ് വെയറുകളും ജീവനക്കാർക്കായി ഉപയോഗിക്കുന്ന 10 സോഫ്റ്റ് വെയറുകളുമാണ് ഈ പഠനത്തിന് കീഴിൽ വിലയിരുത്തുന്നത്. ഈ സോഫ്റ്റ് വെയറുകളുടെ പ്രവർത്തനം ശരാശരിയുടെ അടിസ്ഥാനത്തിൽ റാങ്ക് ചെയ്തു. അതിന്റെ അടിസ്ഥാനത്തിൽ കൊച്ചി കോർപ്പറേഷൻ മികച്ച പ്രകടനം കാഴ്ചവെക്കുന്നുവെന്നും തൃശ്ശൂർ കോർപ്പറേഷൻ കൂടുതൽ ശ്രദ്ധ ഈ പോഗ്രാമുകൾക്ക് നൽകേണ്ടതുണ്ടെന്നും കണ്ടെത്തി.

മുനിസിപ്പൽ കോർപ്പറേഷനുകളുടെ ഗുണനിലവാരം മെച്ചപ്പെടുത്തുന്നതിനായുള്ള പരിപാടികൾ നടപ്പിലാക്കുന്നതിലെ തടസ്സങ്ങളെക്കുറിച്ചുള്ള ജീവനക്കാരുടെ ധാരണയും ഈ പഠനത്തിന് കീഴിൽ പരിശോധിക്കുന്നു. 13 പ്രസ്താവനകൾ ഉപയോഗിച്ച് ഫാക്ടർ അനാലിസിസിലൂടെയാണ് തടസ്സങ്ങളെ വിശകലനം ചെയ്തത്. വിവിധ മുനിസിപ്പൽ കോർപ്പറേഷനുകൾക്കിടയിലെ ഗുണനിലവാരത്തിലേക്കുള്ള തടസ്സങ്ങൾ വിലയിരുത്തുന്നതിനും താരതമ്യം ചെയ്യുന്നതിനും വെൽഷ് ടെസ്റ്റ് ഉപയോഗിച്ചു. വർക്ക് പ്ലെയിസ് ഡൈനാമിക്സ്, മാനേജ്മെന്റ് ഹഡിൽസ്, ഓർഗനൈസേഷണൽ ചലഞ്ചേഴ്സ്, എഡ്യൂക്കേഷണൽ ഡെഫിഷ്യൻസി, പോളിറ്റിക്കൽ ചലഞ്ചേഴ്സ് എന്നിവയാണ് കോർപ്പറേഷൻ അഭിമുഖീകരിക്കുന്ന പ്രധാന തടസ്സങ്ങൾ. കേരളത്തിലെ ടി.ക്യൂ.എം ന്റെ എല്ലാ വശങ്ങളും ഉൾക്കൊള്ളുന്ന ഒരു ആശയ മാതൃകയും പഠനം വികസിപ്പിച്ചു. നൽകുന്ന സേവനങ്ങളിലെ പോരായ്മകൾ, ടി.ക്യൂ.എം ന്റെ ഹാർഡ് സോഫ്റ്റ്മായ കണികകൾ, സോഫ്റ്റ് വെയർ അല്ലെങ്കിൽ പ്രോഗ്രാമുകളുടെ ത്രിപ്ലികരമായ പ്രവർത്തനങ്ങൾ, ഗുണനിലവാരമുയർത്താൻ സഹായിക്കുന്ന സംരംഭങ്ങൾ നടപ്പിലാക്കുന്നതിലുള്ള തടസ്സങ്ങൾ എന്നിവയാണ് നിർദ്ദിഷ്ട മാതൃക ചൂണ്ടിക്കാണിക്കുന്നത്. സമ്പൂർണ്ണ ടി.ക്യൂ.എം മാതൃക നടപ്പാക്കുന്നതിന് കേരളത്തിലെ ഓരോ മുനിസിപ്പൽ കോർപ്പറേഷനുകളും നടപ്പാക്കേണ്ട ഘടകങ്ങൾ തിരിച്ചറിയാൻ പ്രാദേശിക സർക്കാർ അധികാരികൾക്ക് ഈ മാതൃക വളരെ ഉപയോഗപ്രദമാകും.



## LIST OF ABBREVIATIONS

AAH	:	Accessible Amenities Hub
AFTA	:	ASEAN Free Trade Agreement
AGFI	:	Adjusted Goodness of Fit
AI	:	Administrative Infrastructure
ANOVA	:	Analysis of Variance
ATT	:	Administrative Tools and Technology
AVE	:	Average Variance Extracted
BSD	:	Building Service Department
C&U	:	Collaboration and Upskilling
CEOs	:	Chief Executive Officers
CFA	:	Confirmatory Factor Analysis
CFI	:	Comparative Fit Index
CRH	:	Community Resource Hub
CS	:	Community Services
CSAE	:	'Customer Service Attributes and Elements
CSF	:	Critical Success Factors
DMS	:	Disaster Management and Security Services
ECP	:	Effective Communication Practices
EE&ACS	:	Employee Engagement and Access Control System
EE&EI	:	Employee Engagement and Empowerment Initiatives
EF	:	Essential Facilities
EFQM	:	European Foundation for Quality Management
FEMA	:	Failure Mode Effective Analysis
FO	:	Front Office
FOE	:	'Front Office Expertise

FOM	:	Front Office Management
GFI	:	Goodness of Fit Index
GO	:	Government Order
GP	:	Grama Panchayath
GPs	:	Grama Panchayats
HE	:	Health & Environment
HEIs	:	Higher Education Institutions
HRM	:	Human Resource Management
IKM	:	Information Kerala Mission
ISO	:	International Organization for Standardization
JBCC	:	Johor Bharu City Council
KILA	:	Kerala Institute of Local Administration
KM	:	Kerala Municipalities
KMBR	:	Kerala Municipal Building Rules
KMO	:	Kaiser-Meyer-Olkin
KPBR	:	Kerala Panchayath Building Rules
KPI	:	Key Performance Indicator
LA	:	Local Authorities
LG	:	Local Government
LSG	:	Local Self Government
LSGD	:	Local Self Government Department
LSGIs	:	Local Self Government Institutions
MANOVA	:	Multivariate Analysis of Variance
MSV	:	Maximum Shared Variance
NFI	:	Normed fit Index
NGOs	:	Non-Governmental Organizations
NRA	:	Non-Refundable Advance
PCA	:	principle Component Analysis
PEF	:	Performance Enhancement Factors

PF	:	Provident Fund
PFP	:	'Public Feedback Program
PIC	:	Public Information Centre
PMS	:	Performance Management Systems
PPC	:	'Peoples Plan Campaign'
QA	:	Quality Audits
QAM	:	Quality Assurance Matrix
QC	:	Quality Circle
QM	:	Quality Management
QMS	:	Quality Management System
RFI	:	Relative Fit Index
RMR	:	Root Mean Square Residual
RMSEA	:	Root Mean Square Error Of Approximation
RRZ	:	Rest and Relaxation Zone
RTI	:	Right To Information
RUD	:	Reconstruction & Urban Development
SD	:	Standard Deviation
SEM	:	Structural Equation Model
SFL	:	Standardized Factor Loadings
SMEs	:	Small Medium Enterprises
SOP	:	Standard Operating Procedure
SQ	:	Service Quality
SS	:	Social Service
SSP	:	Statement of Service of Performance
SWOT	:	Strength Weakness Opportunities & Threats
TA	:	Temporary Advance
TAV	:	Training Accessibility Variable
TLI	:	Tucker Lewis Index
TQC	:	Total Quality Control

TQI : Total Quality Index  
TQM : Total Quality Management  
ULB : Urban Local Body  
UT : Urban Transportation  
VS : Venue Set-up



# CHAPTER 1

## INTRODUCTION

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## **1.1 Background of the study**

Local government is a system constituted by the people in an area to administer the affairs of a locality. It deals with the matters concerning the inhabitation of a particular area. The local self-governments occupy a very significant place in the democratic set up. For successful functioning of democracy and efficient administration of government in a large country like India, local self-government has a unique role. It is a symbol of decentralization which is a great requisite of democracy. All local bodies perform two types of functions (a) Obligatory functions and (b) Discretionary functions. Obligatory functions performed by the local authorities include supply of water, electricity, cleaning of streets, construction and maintenance of drains etc. Discretionary functions are not compulsory. These are performed by the authority only on the basis of available funds. It includes construction and maintenance of libraries, reading rooms, rest house, clubs etc.

These functions will affect all walks of life of people, especially the services of Municipal Corporations that are at the cutting-edge level in the decentralized governance system. It is the duty of the Municipal Corporations to perform its functions in a people-friendly manner. Total Quality Management (TQM) is a practical management strategy, which will ensure better management of office and timely delivery of its services. The concept of TQM indicates assurance of quality in all functional domains and activities of an organization. For the assurance of quality, collective involvement and efforts of elected representatives, officials, and citizens are essential. TQM is a continuous process. It is people centered management that is capable of inculcating quality culture in the organization. TQM aims to enhance the



quality of services by making use of the existing physical and human resources. It is the process of organizational change, filling the gaps between the existing conditions of services and the expected quality parameters. For that, along with the arrangements of physical facilities, timely updation/maintenance of documents and records, information communication system etc. should also be enhanced. The slogan of TQM is the enhanced reality-based satisfaction of people. This methodology helps to develop a practicable mechanism to provide quality services by realizing the requirements of citizens.

## **1.2 Statement of the problem**

In a multi-level governmental system i.e. central government, state government and local self-government, the last layer plays an important role in the socio-economic development of the country. While all the layers of government are connected with the socio economic and political life of the people, the local self-government is closer to the people. The function performed by Municipal government such as provision of roads, communications, drinking water, sanitation, education, and health etc affect the people directly. Municipal government therefore plays pivotal role in the development of the economy. Citizen expectations about local bodies have also increased with the development of information and communication technologies. Moreover, the rural local bodies like Panchayaths are implementing TQM, Municipal Corporations are not yet implemented TQM. At the same time, it is the duty of Municipal Corporations to render quality services to its citizen. For assuring quality, collective involvement and efforts of elected representatives, officials, and citizens are essential. It is necessary to explore the reason why Municipal Corporations are not implementing TQM as itself as a complete quality management tool. This study will also attempt to understand the aspects of TQM which are presently covered by Municipal Corporations. More over an attempt will be made to identify and compare the working of initiatives taken by government to enhance the service quality of Municipal Corporations. In this context following research questions were identified which needs to be answered. The study has been undertaken to answer the following questions:

- What is the quality of services provided by Municipal Corporations in Kerala?
- Which aspects of Total Quality Management are presently covered by Municipal Corporations in Kerala?
- What are the reason behind Municipal Corporation is not implementing TQM as itself as a complete quality management solution?
- What are the initiatives taken by government for improving the quality of service provided by Municipal Corporations? And how they are working?
- Is there any barrier in implementing quality initiatives by the Municipal Corporations?

### **1.3 Objectives of the study**

1. To evaluate and compare the quality of service provided to citizen by Municipal Corporations in Kerala
2. To evaluate the perception of employees and citizen on quality initiatives taken by government to improve service quality of Municipal Corporations.
3. To analyse and compare the working of programs introduced for citizen and employees by the government to improve the quality of services of Municipal Corporations.
4. To analyse the barriers in implementing programs to improve total service quality of Municipal Corporations of Kerala.
5. To analyse factors to be implemented in Municipal Corporations of Kerala to build a full-fledged TQM.

### **1.4 Significance of the study**

Since the Municipal Corporation is close to the people, it plays a central role in the development of the economy. Hence it is the role of Municipal Corporations to give due attention on the quality of service provided to its citizen. Implementing TQM will help the organizations to improve the efficiency of service delivery mechanism and

thereby the attainment of good governance. This study attempts to identify the services, Hard particles of TQM, Soft particles of TQM and programs to be introduced or improved or maintained by each Municipal Corporations in Kerala to accomplish a full-fledged TQM for their over- all quality improvement.

### **1.5 Scope of the study**

Total Quality Management is a management framework which enable the organization to achieve long term success by having all its members, from lower-level workers to highest ranking executives. This study covers the quality management practices of urban local bodies namely the six Municipal Corporations of Kerala i.e. Thiruvananthapuram Municipal Corporation, Kollam Municipal Corporation, Kochi Municipal Corporation, Kozhikode Municipal Corporation, Thrissur Municipal Corporation and Kannur Municipal Corporation. Data is collected from employees and citizen of the Corporations for understanding, evaluating and comparing the quality of service provided by Municipal Corporations in Kerala. The study also focusses to develop a conceptual model covering all aspects of TQM that can be implemented in Municipal Corporations.

### **1.6 Period of the study**

The study is conducted during the period of 2019 to 2024. The study is purely based on primary data, and are collected for understanding the satisfaction of employees and citizens regarding the services provided by their Corporation. Data is collected for a period of 2 years from February 2021 to December 2022.

### **1.7 Variables used in the study**

The table 1.1 represents variables used in the study.

**Table 1.1***Variables Used for the Study*

Sl. No.	Variables	No. of attributes/statements	Attributes /statements
1	Health and environment	8	<ul style="list-style-type: none"> <li>➤ Water service</li> <li>➤ Sewer system service</li> <li>➤ Waste management like Haritha Karma Sena</li> <li>➤ Cleaning service of streets</li> <li>➤ Forestation</li> <li>➤ Prevention against infections</li> <li>➤ Pest control</li> <li>➤ Prevention of pollution</li> </ul>
2	Social service	4	<ul style="list-style-type: none"> <li>➤ Functions of women activity centre</li> <li>➤ Youth and sports activities</li> <li>➤ Women and child empowering programs</li> <li>➤ Vocational courses</li> </ul>
3	Reconstruction and urban development	7	<ul style="list-style-type: none"> <li>➤ City planning</li> <li>➤ Street lighting</li> <li>➤ Road building and maintenance</li> <li>➤ Green field and parks</li> <li>➤ Shopping centers</li> <li>➤ Cemeteries</li> <li>➤ Construction and maintenance of markets(regulation of markets, prevention of dangerous trade practices)</li> </ul>
4	Urban transportation	3	<ul style="list-style-type: none"> <li>➤ Bus transportation</li> <li>➤ Car parking</li> <li>➤ Traffic management and control</li> </ul>
5	Disaster management and security services	4	<ul style="list-style-type: none"> <li>➤ Camera facility(CCTV)</li> <li>➤ Control of beggary</li> <li>➤ Rehabilitation measures during the time of disaster</li> <li>➤ Reconstruction activities after Disaster</li> </ul>
6	Community services	2	<ul style="list-style-type: none"> <li>➤ Registration of birth, death, marriage etc.</li> <li>➤ Kiosk for checking service status</li> </ul>
7	Education services	2	<ul style="list-style-type: none"> <li>➤ Establishment of education institutions</li> <li>➤ Maintenance of educational institutions</li> </ul>

Sl. No.	Variables	No. of attributes/statements	Attributes /statements
8	Barriers	13	<ul style="list-style-type: none"> <li>➤ Human resource available in the organization is very limited</li> <li>➤ Activities of this Corporation are not based on the interest of employees</li> <li>➤ Financial resources available for the development of the Corporation is very limited</li> <li>➤ There is no clear &amp; open communication between staff</li> <li>➤ The top management doesn't support employees' suggestions to improve service quality.</li> <li>➤ The employees have no chance to be trained in improving the quality of services.</li> <li>➤ Increased workload leads to sacrificing quality</li> <li>➤ Union issues and political issues restrict the improvement of service quality</li> <li>➤ The top management doesn't take any initiative to create strong feelings in the employees about the Corporation being responsible for society.</li> <li>➤ Political uncertainty prevent organization from new quality initiatives</li> <li>➤ Employees have limited chance to participate in decision making</li> <li>➤ Citizens lack knowledge regarding their rights, duties, responsibilities etc. related with the Corporation</li> <li>➤ Employees are not willing to accept changes introduced by the authority</li> </ul>
9	Hard component for Public	17	<ul style="list-style-type: none"> <li>➤ Front Office Counter</li> <li>➤ Thapal Box</li> <li>➤ Seating Facility</li> <li>➤ Writing Desk</li> <li>➤ Application Forms and Stationary</li> <li>➤ Baby Feeding Room</li> <li>➤ Complaint Box</li> </ul>

Sl. No.	Variables	No. of attributes/statements	Attributes /statements
			<ul style="list-style-type: none"> <li>➤ Notice Board-RTI</li> <li>➤ Anti-Corruption Board</li> <li>➤ Touch Screen</li> <li>➤ Reading Corner and Materials</li> <li>➤ First Aid Kit</li> <li>➤ Drinking Water Facility</li> <li>➤ Toilets</li> <li>➤ Wash Basin</li> <li>➤ Ramp</li> <li>➤ Rehabilitation Centers</li> </ul>
10	Hard component for officials	13	<ul style="list-style-type: none"> <li>➤ Seating arrangement&amp;Name board</li> <li>➤ Availability of stationery</li> <li>➤ Telephone registry</li> <li>➤ Movement register</li> <li>➤ Drawer for cash</li> <li>➤ Receipt book</li> <li>➤ Computer &amp;Internet facility</li> <li>➤ Front office diary</li> <li>➤ Toilets</li> <li>➤ Govt orders &amp;rules for reference</li> <li>➤ First aid kit</li> <li>➤ Record management</li> <li>➤ Ramp</li> </ul>
11	Soft component for Public	15	<ul style="list-style-type: none"> <li>➤ Attitude of officials in FO</li> <li>➤ Knowledge of officials in FO</li> <li>➤ Availability of officials in FO</li> <li>➤ Helping mentality of officials</li> <li>➤ Attitude of Councilors</li> <li>➤ Staff appearance</li> <li>➤ Timely service</li> <li>➤ Formality for availing service</li> <li>➤ Complaint Redressel</li> <li>➤ Meeting of citizen</li> <li>➤ Participation in decision making</li> <li>➤ Timely acknowledgement of applications and complaints</li> <li>➤ Ward saba meeting</li> <li>➤ Citizen's feedback</li> <li>➤ Electronic token distribution system</li> </ul>

Sl. No.	Variables	No. of attributes/statements	Attributes /statements
12	Soft Component-Officials	18	<ul style="list-style-type: none"> <li>➤ Sharing of information &amp; future plans</li> <li>➤ Clear &amp; open communication between staff</li> <li>➤ Participation in decision making</li> <li>➤ Informal group of officials</li> <li>➤ Quality circle</li> <li>➤ Friendly relationship</li> <li>➤ Involvement in problem solving</li> <li>➤ Job rotation</li> <li>➤ Team work</li> <li>➤ Meetings</li> <li>➤ Record management</li> <li>➤ Equity in Training facilities</li> <li>➤ Technology oriented trainings</li> <li>➤ Job oriented training</li> <li>➤ Measurement and evaluation</li> <li>➤ Performance appraisal system</li> <li>➤ Quality audit</li> <li>➤ Management commitments</li> </ul>

Source: Literature review

**Table 1.2**

*Programs implemented by government and perception of users towards these programs*

Sl. No.	Programs	No. of attributes/statements	Attributes /statements
1	SEVANA - civil registration	5	<ul style="list-style-type: none"> <li>➤ Integration of Hospital Kiosk with the local body</li> <li>➤ Correction facility in birth and death certificates</li> <li>➤ Facility for search and name inclusion over the Internet</li> <li>➤ Birth Registration of Adopted Child &amp; Certificate issue</li> <li>➤ Informative</li> </ul>

Sl. No.	Programs	No. of attributes/ statements	Attributes /statements
2	SEVANA Pension	2	<ul style="list-style-type: none"> <li>➤ Computerizes pension payment</li> <li>➤ Covers National Old Age Pension, Widow Pension, Pension to Unmarried Women above 50 years, Pension to the Physically Challenged and Mentally Challenged Persons, Agriculture Laboure Pension and Unemployment wages</li> </ul>
3	SANKETHAM	3	<ul style="list-style-type: none"> <li>➤ Receiving building permits</li> <li>➤ Online verification &amp; validation of Application form</li> <li>➤ I visited this website</li> </ul>
4	SANCHAYA	4	<ul style="list-style-type: none"> <li>➤ It covers Utility payment services like Hall booking, ambulance, vehicles, crematorium, payment on water bill etc</li> <li>➤ I paid property tax here.</li> <li>➤ Acknowledgement</li> <li>➤ Informative</li> </ul>
5	SOOCHIKA	1	<ul style="list-style-type: none"> <li>➤ I have visited this website</li> </ul>
6	STHAPANA	5	<ul style="list-style-type: none"> <li>➤ It provides credit card for all employees</li> <li>➤ All monthly transactions linked with payroll</li> <li>➤ It useful for Temporary Advance (TA) request and their online sanctioning</li> <li>➤ It is useful for providing Non-Refundable Advance (NRA) request and its online sanctioning</li> <li>➤ Useful for providing TA to NRA conversion request and its online sanctioning</li> </ul>



Sl. No.	Programs	No. of attributes/ statements	Attributes /statements
7	SANCHITHA	2	<ul style="list-style-type: none"> <li>➤ It is an electronic legal advisor</li> <li>➤ It provides query facility on acts, rules, government orders, court Judgements based on titles, sub titles, year, reference numbers etc.</li> </ul>
8	SAANKHYA	5	<ul style="list-style-type: none"> <li>➤ It helps to overcome the problem of shortage of manpower in handling day to day operations resulting in timely closing of annual accounts.</li> <li>➤ It equips even the average employee to prepare the entire financial reports without depending upon accounting professionals</li> <li>➤ It is useful for Recording each financial transaction in real time</li> <li>➤ It makes accounting process more transparent and gives financial information to the decision makers.</li> <li>➤ It helps for executing Accounting with the participation of the entire employees dealing with financial transactions</li> </ul>
9	SAKARMA	3	<ul style="list-style-type: none"> <li>➤ It facilitates recording of decisions of the standing committees and the local body meetings</li> <li>➤ It provides provision for recording follow-up actions based on decisions It provides Provision for querying past decisions and facility for recording deviation</li> </ul>
10	SUGAMA	1	<ul style="list-style-type: none"> <li>➤ It is used for estimating cost of public work</li> </ul>
11	SAMVEDITHA	1	<ul style="list-style-type: none"> <li>➤ It helps for development of local government and departments</li> </ul>

Sl. No.	Programs	No. of attributes/statements	Attributes /statements
12	SUBHADRA	3	<ul style="list-style-type: none"> <li>➤ It helps for budget document creation</li> <li>➤ It facilitates cash flow management for long term, short term and medium term</li> <li>➤ It provides regular cash position reports, asset inventory, purchase orders, work orders, investment reports and budget summaries</li> </ul>
13	SAMOOHYA	2	<ul style="list-style-type: none"> <li>➤ It creates a community database with a citizen ID with the objective of finally linking them to a citizen portal</li> <li>➤ It integrates birth, death and marriage registration of citizen</li> </ul>
14	SAPHALYA	2	<ul style="list-style-type: none"> <li>➤ It connects job seekers and job providers</li> <li>➤ It publishes job vacancies at the local, state and national levels</li> </ul>
15	SULEKHA	2	<ul style="list-style-type: none"> <li>➤ It facilitates standard project accounting with provision for fixing financial targets, physical targets, schedules, financial and physical achievements, details of approvals, beneficiaries, assets created etc.</li> <li>➤ It helps to tracks the entire course of plan formulation process by incorporating reports of working group, grama sabha, development seminars and social and other audits into plan projects.</li> </ul>
16	Common variables for all programs		<ul style="list-style-type: none"> <li>➤ Processing time</li> <li>➤ Confidentiality</li> <li>➤ Problem solving system</li> <li>➤ Information updating</li> <li>➤ Ease of navigation</li> <li>➤ User friendly &amp; reduce paper works</li> <li>➤ Acknowledgement on receipt of application</li> </ul>

Source: Literature review

## **1.8. Operational definitions**

It is crucial to understand concepts like service quality, Total Quality Management, hard TQM, soft TQM, software, Municipal Corporations, LSG, Population etc. Hence the study aims to comprehend the service quality of Municipal Corporations as well as to gain a deeper understanding of Total Quality Management, its particles, i.e. hard TQM and soft TQM, software solutions introduced by government for improving service delivery mechanism.

### **Citizen/External customers**

Citizens serve as the recipients of services provided by local bodies, functioning as end users within a specific locality. In the context of a local body, residents of a particular area are the individuals who utilize the services offered by the local governing entity.

### **Service quality**

Service quality means quality of service provided by service rendering institutions like Municipal Corporations. It will vary from person to person.

### **Total Quality Management**

It is a management technique that includes continuous effort and collective involvement of every individual in the organization to achieve the target without compromising quality. TQM is the sum total of hard parts i.e. physical amenities or the tangible elements in an organization and soft parts or intangible elements i.e. human resource related components.

### **Hard TQM**

According to Wilkinson, Total Quality Management (TQM) comprises two parts: hard TQM and soft TQM. Hard TQM encompasses the tangible aspects of quality management, incorporating physical facilities and infrastructural amenities including software solutions within an organization. These elements aim to create a more comfortable work environment for employees, fostering satisfaction and well-being,

while also facilitating convenient services for customers.

### **Soft TQM**

The soft component of TQM addresses behavioral aspects in management, focusing on human elements like attitudes, knowledge, leadership, and other interpersonal factors.

### **Local-self-government (LSG)**

An institution responsible for governing at the local level in the state which is headed by a mayor. The Panchayats in rural areas, Municipalities in Urban areas and Corporations in large Urban areas.

### **Municipal Corporation**

An institution that is responsible for governing large urban areas. Usually, it comes above the level of Municipality.

According to the American Encyclopedia, “A Municipal Corporation is an official institution formed by the sovereign power generating a popular community of the given area and persists progression and for the reason and with the authority of subordinate self-government for development and administration of the associations of the area.”

As per W. B. Mumo "A Municipal Corporation is a subordinate political body established by the authority of law, its existence evidenced, by the general or special character with a corporate name, with defined limits and population and with delegated powers of local government. It is created by law and depends for its existence as well as its powers upon the state or nation.”

“According to the Encyclopedia of Social Sciences,” A Municipal Corporation is a purely political institution created by the legislative power without the compulsory approval of the people. As organs or agencies of the state, they are gifted with government powers, but these rights, privileges and powers are bestowed as trustees of the public welfare and are subject to the legislative powers of the state within the

limits of the constitutions, within the sphere guaranteed to them by their charters. However, they are self-governing corporate entities."

## **Population**

All citizens residing under Municipal Corporations of Kerala and all employees working in Municipal Corporations form the target population. On the basis of the objectives, following hypotheses are developed and classified

### **1.9 Hypotheses of the study**

The following hypotheses are formulated based on the above objectives

#### **Service quality-objective 1**

To determine how citizens perceive the quality of service of Municipal Corporations based on the objectives above, the following null hypotheses are developed:

H1: There is no significant difference in the quality of various services provided by Municipal Corporations in Kerala

H1.1: There is no significant difference in the quality of health& environmental services provided by Municipal Corporations in Kerala

H1.2: There is no significant difference in the quality of social service provided by Municipal Corporations in Kerala

H1.3: There is no significant difference in the quality of reconstruction & urban development services provided by Municipal Corporations in Kerala

H1.4: There is no significant difference in the quality of urban transportation service provided by Municipal Corporations in Kerala

H1.5: There is no significant difference in the quality of disaster management service provided by Municipal Corporations in Kerala

H1.6: There is no significant difference in the quality of community services provided by Municipal Corporations in Kerala

H1.7: There is no significant difference in the quality of education service provided by Municipal Corporations in Kerala

### **TQM Practices-Objective 2**

The following hypotheses were developed to evaluate citizen perceptions and experiences of quality initiatives (hard TQM components and soft TQM components) introduced by the government to improve local bodies' service delivery excellence.

To determine whether TQM components affect citizen satisfaction levels, the following hypotheses were developed.

H2: The perception on hard elements of TQM are positively related with citizen's satisfaction.

H3: The perception on soft elements of TQM are positively related with citizen's satisfaction.

According to James and Brett(1984), partial mediation would exist in addition to complete mediation. 'X' has a direct and indirect influence on 'Y' through 'M' in a partial mediation model. In other words, only part of X's influence on 'Y' is transmitted by 'M'. In this section, an attempt has been made to examine whether TQM factors partially or fully mediate. The following hypotheses are developed to test the mediation effect.

H4: The perception on hard TQM mediates the relationship between perception on soft TQM and citizen's satisfaction level.

H5: The perception on soft TQM mediates the relationship between perception on hard TQM and citizen's satisfaction level.

To understand and evaluate employee's perceptions and experience of quality initiatives such as hard parts and soft particles introduced by the government to improve local bodies' service delivery excellence, the following null hypotheses were developed.

- H6: There is no significant difference in the perception of employees regarding components of TQM among Municipal Corporations.
- H6.1: There is no significant difference in the perception of employees regarding Essential Facilities (EF) among Municipal Corporations in Kerala.
- H6.2: There is no significant difference in the perception of employees regarding Administrative Infrastructure (AI) among Municipal Corporations in Kerala.
- H6.3: There is no significant difference in the perception of employees regarding Venue Setup (VS) among Municipal Corporations in Kerala.
- H6.4: There is no significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) among Municipal Corporations in Kerala.
- H6.5: There is no significant difference in the perception of employees regarding Employee Engagement and Empowerment Initiatives (EE &EI) among Municipal Corporations in Kerala.
- H6.6: There is no significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) among Municipal Corporations in Kerala.
- H6.7: There is no significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) among Municipal Corporations in Kerala.
- H6.8: There is no significant difference in the perception of employees regarding Effective Communication Practices (ECP) among Municipal Corporations in Kerala.
- H6.9: There is no significant difference in the perception of employees regarding Training Accessibility Variable (TAV) among Municipal Corporations in Kerala.
- H6.10: There is no significant difference in the perception of employees regarding Collaboration and Upskilling (CU) among Municipal Corporations in Kerala.

### **Software Program-Objective 3**

LSGD has introduced programs aimed at smoothening the work of service providers and ensuring services are provided at a minimum cost, time, and effort. To understand and compare how programs for citizens work across Kerala's Municipal Corporations, the following null hypotheses were formulated.

H7: There is no significant difference in the working of programs introduced by the government for residents among the Municipal Corporations in Kerala

H7.1: There is no significant difference in the working of SEVANA civil registration programs introduced by the government for residents among the Municipal Corporations.

H7.2: There is no significant difference in the working of SEVANA Pension programs introduced by the government for residents among the Municipal Corporations.

H7.3: There is no significant difference in the working of SANKETHAM programs introduced by the government for residents among the Municipal Corporations.

H7.4: There is no significant difference in the working of SANCHAYA programs introduced by the government for residents among the Municipal Corporations.

H7.5: There is no significant difference in the working of SOOCHIKA programs introduced by the government for residents among the Municipal Corporations.

LSGD has introduced programs aimed at smoothening the work of service providers and ensuring services are provided at a minimum cost, time and effort. To understand and compare how programs for employees work across Kerala's Municipal Corporations, the following null hypotheses were formulated.



- H8: There is no significant difference in the working of programs introduced by the government to assist employees among the Municipal Corporations in Kerala
- H8.1: There is no significant difference in the working of STHAPANA programs introduced by the government among the Municipal Corporations.
- H8.2: There is no significant difference in the working of SANCHITHA programs introduced by the government among the Municipal Corporations.
- H8.3: There is no significant difference in the working of SAANKYA programs introduced by the government among the Municipal Corporations.
- H8.4: There is no significant difference in the working of SAKARMA programs introduced by the government among the Municipal Corporations.
- H8.5: There is no significant difference in the working of SUGAMA programs introduced by the government among the Municipal Corporations.
- H8.6: There is no significant difference in the working of SAMVEDITHA programs introduced by the government among the Municipal Corporations.
- H8.7: There is no significant difference in the working of SUBADRA programs introduced by the government among the Municipal Corporations.
- H8.8: There is no significant difference in the working of SAMOOHYA programs introduced by the government among the Municipal Corporations.
- H8.9: There is no significant difference in the working of SAPHALYA programs introduced by the government among the Municipal Corporations.
- H8.10: There is no significant difference in the working of SULEKHA programs introduced by the government among the Municipal Corporations.

#### **Barriers-Objective 4**

Following are the hypothesis developed to identify the barriers in implementing facilities, programs to improve total service quality.

H9: There is no significant difference in barriers faced among various Municipal Corporations.

H9.1: There is no significant difference in workplace dynamics among various Municipal Corporations.

H9.2: There is no significant difference in management hurdles among various Municipal Corporations.

H9.3: There is no significant difference in organizational challenges among various Municipal Corporations.

H9.4: There is no significant difference in educational deficiency among various Municipal Corporations.

H9.5: There is no significant difference in political challenges among various Municipal Corporations.

#### **1.10. Limitations of the study**

- As the study is based on a sample survey, there may be a chance for sampling errors.
- This study does not provide a detailed analysis of the effectiveness of specific components of Total Quality Management (TQM) which are already implemented by local bodies.

#### **1.11. Layout of the report**

There are ten chapters in the report of the study

##### **First chapter: Introduction**

This chapter encompasses various key elements including the background of the study, statement of the problem, research questions, significance of the study, scope of the study and objectives of the study.

## **Second Chapter: Review of Literature**

A review of the existing literature in the field of local self-government, Total Quality Management, and TQM in local governments are presented in this chapter.

## **Third Chapter: Municipal Corporations and TQM: An overview -Theoretical framework**

This chapter provides an overview of the concept and structure of local bodies. It also offers brief picture about Municipal Corporations in Kerala and the services they provide. Additionally, it delves into the concept of quality, Front Office Management (FOM), the concept of Total Quality Management (TQM), and the historical background of quality management in Local Self Government Institutions (LSGIs). Furthermore, it discusses the implementation of TQM in Municipal Corporations, outlining the principles of TQM and the steps for its implementation. The chapter also explores the importance of quality in office performance through the '5-S' Framework and highlights the software solutions developed by the Information Kerala Mission (IKM) for LSGIs to enhance service quality. Moreover, it addresses initiatives aimed at facilitating e-governance and web- based online services. The chapter acknowledges the barriers that may hinder implementation and presents various TQM models.

## **Fourth chapter-Research methodology**

This chapter explains the methodology followed through out the research. It gives an insight into the hypotheses of the study, research methodology, sampling design, determination of sample size, tools for data collection, tools for data analysis, pilot study, a brief description of the instruments for data collection, period of study, variables used for the study, operational definitions, limitations of the study, and the chapter scheme of the report.

**Fifth chapter: Service Quality**

Through out this chapter, the service quality of Municipal Corporations in Kerala has been assessed from the perspective of citizens.

**Sixth chapter: Total Quality Management**

An evaluation of employee and citizen perceptions of hard and soft components of TQM is presented in this chapter.

**Seventh chapter: An overview of functioning of software for improving total quality**

This chapter examined and compared the effectiveness of government programs designed to improve Municipal services.

**Eighth chapter: Quality Implementation Barriers**

This chapter presents an examination of the obstacles encountered when implementing initiatives aimed at enhancing service quality within the Municipal Corporation, as viewed from the perspective of its employees.

**Nineth chapter: Summary, Findings and conclusion**

This chapter includes a brief summary, significant findings, and a conclusive conclusion. The study's results are presented in five sections, systematically reporting findings related to service quality, Total Quality Management , software for enhancing quality for both citizens and employees, and barriers in quality improvement programs in each respective section of the report.

**Tenth chapter: Recommendations and scope for further research**

This chapter provides certain valid suggestions and recommendations based on findings of the study. In addition, an attempt has been made to examine the implications of the research work and it also offers a set of potential research areas for future exploration within the field.

## **1.12 Chapter Summary**

This chapter provides a concise overview of the comprehensive research conducted by the investigator. It explicitly outlines key elements, encompassing the background of the study, statement of the problem, research questions, significance of the study, scope of the study, and study objectives. Additionally, it offers a detailed insight into the variables used to achieve the stated objectives. In this chapter, various hypotheses are developed and presented based on these objectives. The chapter further exhibits operational definitions for the terms and concepts used in this study. Conclusively, it addresses the limitations of the study and outlines the structure of the research report.

## CHAPTER 2

# REVIEW OF LITERATURE

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## **2.1. INTRODUCTION**

This chapter delves into a thorough exploration of the established literature pertaining to the core tenets of Total Quality Management (TQM), local self-government, and the integration of TQM in local governing entities. The aim of this review is to meticulously assess and amalgamate the pertinent research, theories, and strategies connected to these concepts.

This chapter primarily focuses on a comprehensive exploration of Total Quality Management, aiming to clarify its fundamental principles, methods, and its significance in diverse sectors. Simultaneously, it seeks to illuminate the intricacies of local self-government, detailing its responsibilities, functions, and its importance in the wider context of public administration. Furthermore, this review will thoroughly analyze the intersection of these two realms: the implementation of TQM principles within local government entities, emphasizing the obstacles, advantages, and results stemming from this integration.

By undertaking a thorough exploration of the existing literature, this chapter seeks to provide a comprehensive understanding of the interplay between Total Quality Management, local self-government, and the potential transformative effects of implementing TQM approaches within the realm of local governance. Through this comprehensive analysis, the aim is to contribute to a more nuanced perspective on how TQM can be effectively harnessed to enhance the efficiency, transparency, and overall quality of services delivered by local governing bodies. Studies are broadly divided into three heads namely



1. Studies related to Local Self Government (LSG)
2. Studies related to Total Quality Management (TQM)
3. Studies related to TQM in Local Self Government (LSG)

## **2.2 STUDIES RELATED TO LOCAL SELF GOVERNMENT**

**Siti Mardinah Binti Abdul Hamid et al (2016)** has made a study on “Performance measurement for local authorities in Sarawak”. It aims to understand the performance management of local authority in Sarawak, Malaysia. Data were collected from 280 respondents from Sarawak local authority namely District Council, Municipal Council and City Council. Result reveals that the local authorities measure their performance and the performance management tools being used by the LA is ISO 9000 certification, balanced score card and Key Performance Indicator (KPI) System. Moreover, it reveals that lack of knowledge among the employees is considered as the major barrier in implementing performance management in local authorities of Sarawak.

**Ramly Hasanet.al (2016)** has made a study on “Roadside Tree Management in Selected Local Authorities for Public Safety”. This paper intends to investigate the user’s preferences on roadside tree management at selected local authorities in Malaysia. Data were collected from 200 general people from two local authorities of Malaysia i.e. Selayang Municipal Council and Shah Alam City Council. The study revealed that fallen trees were the main reason for the public to lodge complaints, followed by brittle branches, thick branches and leaning tree trunk. Moreover, it suggests that the selection of right tree species at the roadside is one of the factors that need to be considered for avoid the hazard occur.

**Wan Zahari Wan Yusoff et.al (2010)** has made a study on "Understanding the service provider perspective towards better service quality in local authorities". The purpose of this study is to identify the critical success and the hindering factors for service quality of providing service delivery in local authorities of Malaysia. Data for the study were collected from twenty senior officers of ten different departments of JBCC (Johor Bharu City Council) in the capital of Johor state, Malaysia by using interview method. The study exhibit that before measuring quality of service,

measures should be taken to ensure that the employee i.e. internal customer is good enough to provide better service in the delivery system. The study reveals that understanding the internal and external customer's satisfaction is relatively crucial in order to ensure that the employees are able to provide and nurture the quality service delivery system at all times.

**B. Ramesh babu (2018) has made a study on “Management of finances in urban local bodies of Andhra Pradesh”**, which seeks to examine the funding source, the way in which money are used, and the difficulties that Andhra Pradesh's urban local bodies experience. According to the research, the majority of urban local bodies are in extremely dire financial shape, with own resources not being practicable due to insufficient realisation mechanisms and inefficient enforcement machinery. Additionally, it discovered that numerous urban local bodies' asset records are currently out of date and that numerous property-related litigation are ongoing, both of which these agencies must get.

**Wan Zahari Wan Yusoff et.al (2008)** has made a study on "FM-SERVQUAL: a new approach of service quality measurement framework in local authorities". This paper aims to evaluate the quality of services provided by Malaysian local authorities (LA) to the public by developing FM-SERVQUAL (facility management -SERVQUAL) model. Data were collected from 191 respondents from JBCC (Johor Bharu City Council) community, Malaysia. The study was done on the basis of FM-SERVQUAL model which include an integrated FM framework that covers the management of human capital, premises, technology and working process. The study revealed that, five elements in technology and ICT (work speed, flexible time, solid waste management, toxic waste management and timely updating website) and six elements of property (maintenance of public premises, lay-out, and cleanliness of toilets, area management, Drainage system and parking lots) which were identified below the service quality (SQ) level. On the other hand, 29 elements of other services were achieved with minimum quality level.

**Yair Galily et.al (2012)** has made a study on "Municipal subsidiary policy toward professional sports teams: A democratic deficit in the local government". The main

purpose of this study is to investigate the financial assistance provided by the local authorities of Israel to privately owned professional sports teams that provide a public service. Data for the study were collected in two stages in the first stage they examined financial subsidies of ten cities in Israel, focusing in particular on Herzliya, an affluent community north of Tel Aviv. In the second stage, data were collected from 507 adult residents of Herzliya (18 years old and above) in order to know about city's current policy on sports and the policy they would like to see enacted. The study revealed that both public officials and professional sports officials place subsidizing popular sports rather than professional sports higher on their priorities.

**Prae Keerasuntonpong et.al (2015)** has made a study on "Factors influencing disclosures of statements of service performance of New Zealand local authorities". This study aims to identify the influential factors that may affect disclosures in the statements of service performance (SSPs) on waste water services by New Zealand local authorities. This study was done by collecting data from annual reports of New Zealand local authorities for the year 2007-08. Regression analysis was used in this study. The study shows that most local authorities were able to provide financial information, but struggled in non-financial performance measures in the SSP. It also depicts that Political competition, size of constituency, constituency sophistication, political visibility, staff availability, personal attributes of accounting staff and financial resource availability are identified as likely influential factors for the SSPs.

**Mohamed Branine (2004)** has made a study on "Job sharing and equal opportunities under the new public management in local authorities". The study aims to establish the extent to which local authorities, under the new public management, had introduced job sharing for equal opportunities or for business objectives. Data were collected from 40 managers in charge of employment policies in the 32 local authorities (19 in Scotland and 13 in England). The study revealed that there are no established policies for the implementation of job sharing as a means of providing equal opportunities in the local authorities of England.

**Kevin Baird et.al (2012)** has made a study on "Performance management system effectiveness in Australian local government". This study aims to investigate the

association between specific organizational factors (the use of multi-dimensional performance measures, link to rewards, and training) and cultural factors (innovation, outcome orientation, and teamwork) with the effectiveness of PMSs (performance management systems) in Australian local governments. Data for the study were collected from finance managers of 450 Australian local governments. Statistical test like ANOVA is used to achieve the objectives. The study revealed that PMSs of Australian local councils are only moderately effective in relation to performance related outcomes, and less effective in relation to the achievement of staff related outcomes. The effectiveness of PMSs was higher for larger sized councils. It also exhibit that organizational factors are significantly associate with organizational culture factors i.e. (team work and outcome orientation with the effectiveness of PMSs).

**Hina Zia and V. Devadas, (2007)** has made a study on "Municipal solid waste management in Kanpur, India: obstacles and prospects". This study aims to assess the present condition of Municipal solid waste management in Kanpur city. Data were collected through both primary and secondary sources. Primary data were collected from various heads of the Municipal Corporation, Municipal workers and residents of the city through interview methods. Secondary data were acquired from various reports, publications of various organizations to understand the state of Municipal solid waste management in the city. The study revealed that the existing solid waste management systems in Kanpur city were found to be to be highly inefficient.

**Daniela Salgado Carvalho and Teresa Fidélis (2009)** has made a study on "Confronting environmental perceptions of local populations and local authorities". This paper aims to study of environmental perceptions in the Municipality of Aveiro, Portugal. The study draws on complaints regarding environmental matters submitted to the City Council and on a critical analysis of the results in comparison with the opinions of local government authorities and non-governmental organisations, which have responsibilities for local environmental management, and experts. The study revealed that solid waste, water and sewerage, abandoned vehicles and objects, noise,

disease vectors and insects and abandoned residence and lots etc. were the main sources of irritation to Aveiro local government and which need to be resolved.

**Charles Amoatey and Mawuena Vincent Kodzo Hayibor, (2017)** has made a study on "Critical success factors for local government project stakeholder management". This study aims to investigate the critical success factors (CSFs) for effective project stakeholder management at the local government level in Ghana. Data were collected from 92 stakeholders (clients, development partners, consultants, contractors, non-governmental organizations (NGOs) and opinion leaders) of local government in Ghana. The study shows that communicating with and engaging stakeholders, identifying stakeholders properly, formulating a clear project mission statement, keeping and promoting good relationships, and analyzing stakeholder conflicts are the major critical success factors for stakeholder management at the local government level in Ghana.

**Hadyn Bennett (2002)** has conducted a study on "Employee commitment: the key to absence management in local government? This study aims to investigate relationship between organizational commitments, absents management policies and absenteeism in Ireland local government. Data for the study were collected from human resource managers, line managers and employees of 25 district councils of Ireland by semi-structured interviews. The study revealed that absence of internalized commitment, low morale, low motivation and low job satisfaction, poor communication, lack of autonomy etc. are the major contributor to absence rate of employees.

**Abeid Francis Gasparand Tausi Ally Mkasiwa (2015)** has made a study on "Managing performance or legitimacy? A case study of the Tanzanian Local Government Authorities". This paper aims to investigate the performance measurement practices followed by Tanzanian local government authorities. This study is based on both primary and secondary data. Primary data were collected from 30 respondents including council clerk, treasurers, internal auditors, and employees working in Tanzanian Local Government, Africa. This study revealed that dialogue and learning about the performance measurement exercise and the production and

manipulation of evidence were the two strategies employed by Tanzanian Local Government Authorities in the management of legitimacy.

**MohamadTayib(1999)** has conducted a study titled “Financial reporting by Malaysian local authorities: A study of the needs and requirements of the users of local authority financial accounts” This study investigates and explores the needs and demands of financial information published by Malaysian local authorities. Based on a sample of 305 local taxpayers in three local authorities studied, the results reveal that a significant percentage of taxpayers who expressed interest in reading the annual financial accounts of these authorities had a general desire for more financial information. The results also reveal that there are statistically significant differences in terms of taxpayers’ willingness to pay local tax demands between local authorities with high local tax arrears and local authorities with medium and low local tax arrears if such financial information were to be provided.

**Yadav Ishwar Chandra and N.Linthoingambi Devi(2009)** has made a “ study on Municipal Solid Waste Management in Mysore City- A case study”. It aims to find out the problems and prospects of Municipal solid waste in Mysore city. A detailed investigation was made regarding the methods of practices associated with sources, quantity generated, collection, transportation, storage, treatment and disposal of Municipal solid waste in Mysore city. The result of the study reveals that Non slum households are the major contributors to the solid waste of Municipal Corporations. The study also revealed that the present system of Municipal Solid Waste Management in Mysore city was not satisfactory based on Municipal Solid Waste (Management & Handling) Rules 2000.

**Joyce Kyengo (2011)** conducted a study on “factors affecting the quality of customer service in Movoko Municipality”. The study shown that the internal customer services at Municipal council of Mavoko is largely influenced by hygiene factors which, by their presence or absence, determine the level of worker dissatisfaction (supervision, interpersonal relations, work condition, salary and job security)

**DenizAkgual(2012)** conducted a study titled “Measuring the satisfaction of citizen for the services given by the Municipality: the case of Kirsehir Municipality” with the

aim of measuring satisfaction level of citizen regarding the services provided by Kirsehir Municipality(Turkey). He found out that the general attitude of citizens towards the Municipality was negative and its services do not meet their expectations.

**Hsiao et.al (2008)** has made a study on "A Study of Service Quality in Public Sector", Using a service system design and management approach, this research will explore how government institutions extended the customer-oriented idea throughout the entire organization. This study examined the customer-oriented service mindset and approach of public sector institutions and categorizes service strategies collected. The Taiwanese local government revenue service office was the subject of the study. Businesses, taxpayers, and other parties involved in revenue-related concerns who have used the GRSO's services were the source of data for the study. In order to improve service delivery and customer satisfaction, public sector organizations must emphasize customer orientation, service quality, innovation, feedback mechanisms, and transformation strategies.

### **2.3 LITERATURE RELATED TO TOTAL QUALITY MANAGEMENT (TQM)**

This chapter begins with a review of studies pertaining to LSG in general. Since the present study focuses on Total Quality Management , this section includes a close review of studies pertaining to Total Quality Management in general.

**Arawati Agus and Za faran Hassan(2011)** has conducted a study on “Enhancing production performance and customer performance through Total Quality Management ; strategies for competitive advantage”. This study aims to investigate the relationship between TQM, production performance and customer-relate performance of Malaysian manufacturing companies. Data were collected from 169 manufacturing companies by referring Federation of Malaysian manufacturer’s directory. Pearson correlation analysis was conducted to establish association between TQM, production performance and customer related performance. Production performance namely production effectiveness and production efficiency have highest and significant correlations with quality measurement and supplier relations. Similarly, customer related performance also demonstrates significant correlation

with all TQM dimensions (supplier relation, bench marking, quality measurement and continuous process improvement).

**Javier et.al (2003)** has made a study on “Factors affecting the relationship between Total Quality Management and organizational performance”, The study examines the factors influencing the relationship between Total Quality Management (TQM) and organizational performance. It proposes a framework for studying the relationship between Total Quality Management (TQM) and organizational performance. It emphasizes the importance of consistency with business orientation and environmental uncertainty for the effectiveness of TQM contents and elements. The study also emphasises how TQM components, via TQM-driven culture change adoption, influence behavioural and individual learning processes. The research highlights the necessity of taking into account both TQM components and contents in order to achieve the goal (Javier et al., 2003).

**Gonzalez (1997)** has made a study on "Improving the Quality of Service in an Emergency Room Using Simulation-Animation and Total Quality Management ", It seeks to improve the level of care provided in an emergency department by using simulation-animation and Total Quality Management (TQM) concepts as tools to produce viable alternatives. The goal of the study is to improve patient flow, pinpoint areas for development, and put new ideas into practice to deal with capacity constraints, shorten wait times, and boost overall operational efficiency in the healthcare sector. Through the application of TQM principles and industrial engineering approaches, the study aims to enhance patient care, optimise workflow, and produce better results in the emergency department.

**Paula.C.Morrow,James C McElroy and Kevin.P.Scheibe(2010)** has conducted a study on “work unit incivility, job satisfaction and Total Quality Management among transportation employees”. This paper aims to examine the work place incivility issues in US transportation organisations. Data for the study were collected from 1381 employees of midwestern transportation agency of USA. Correlation analysis was used to examine the relationship between perceived work unit incivility (like violence, sexual harassment, bullying, mobbing, sabotage etc) and dependent variable



associated with job satisfaction (i.e. satisfaction with work, satisfaction with coworkers, satisfaction with supervision) and three common dimensions of TQM program i.e. perception of team work, continuous improvement and customer focus. The result of the study reveals that perceived work unit incivility has significant negative relation with all job satisfaction related variables i.e. perception of work unit incivility is negatively related to satisfaction with work, satisfaction with coworkers and satisfaction with supervision and to the three dimensions of TQM program.

**Niyom Suwandej (2015)** conducted a study on “Factors influencing Total Quality Management”. Through this study he tried to explore the factors influencing Total Quality Management modeling for a sub district Municipality of Thailand. Data were collected from 30 leaders of sub district Municipality offices by using in-depth interview method. Leadership, training, organizational structure, communication, incentives, measurement and evaluation and team work were the major factors identified in from this study. This study reveals that successful public organisation requires professionally trained leaders having effective communication skill. The result of the study also shows that ‘reward system’ is essential for inducing staff towards better performance in rendering public services. Moreover, incentive program plays a dominant role in individual staff development and improvement. Above all the study insists that good measurement and evaluation should be done in appropriate time. The findings of the study also displayed that a strong team with participative management will contribute to the success of public organisation.

**Snezana Topalovic (2015)** has conducted a study titled” The implementation of Total Quality Management in order to improve production performance and enhancing the level of customer satisfaction”. This study aims to examine the practice of Total Quality Management (TQM) in the banking sector of Serbia and its relationship with customer satisfaction. Data were collected from managers of 124 SMEs that operate through banks in the republic of Serbia. In this study SME managers were instructed to rate the quality of service provided by banks. Correlation analysis was performed to establish the degree of correlation between the variables of TQM (commitment of top management, courtesy, responsibility and tangible elements) and customer

satisfaction. The result of correlation analysis shows that commitment of top management (0.602), and responsibility (0.623) shows high degree of correlation with customer satisfaction. Courtesy (0.387) shows moderate correlation. And tangible elements (0.243) show poor correlation with customer satisfaction. In short there is a positive correlation between the four variables of TQM and customer satisfaction. Multiple-regression was used to check the impact of quality of service offered by bank on the satisfaction of corporate clients. The result of regression analysis shows that “commitment of top management” has greater influence on satisfaction of clients. Courtesy and responsibility have statistically significant influence on customer satisfaction. Tangible elements did not show a significant impact on customer satisfaction.

**Carlos Gulliermo Benavides-Chicon and Bienvenido Ortega(2014)** has made a study on “The impact of quality management on productivity in the hospitality sector”. This study aims to determine the relationship between quality and productivity in the hospitality sector of hotel industries in Spain from 2006 to 2009. Sample of 232 hotels were used in this study. The quality variables included were collected using EFQM (European Foundation for Quality Management) Model. The study reveals that there is positive association between variable global quality and labour productivity. It confirms the validity of EFQM excellence model regarding its positive effect on labour productivity in hotel industry of Spain. This study also suggest that implementation of TQM principles have a positive impact on hotel labour productivity.

**Saumyaranjan sahuo and Sudhir Yadav (2018)** has conducted a study on “Total Quality Management in Indian manufacturing SMEs”. This paper mainly intents to study the relationship between quality management dimensions (Cross- functional product design, process quality management, quality empowerment, organisation-wide employee training, quality information usage) and firm performance (performance design, product quality, process quality, customer satisfaction). More over the study aims to identify the major barriers to adoption of quality management practices in Indian manufacturing SMEs. Data for the study were collected from 126

small and medium sized manufacturing firms in India by referring 2016 SME Business directory (manufacturing) of small and medium business development chamber of India. Data were collected by interviewing entrepreneurs and managers at different organizational level. Statistical technique namely correlation analysis was used to check the relationship between TQM and firms' performance. The result of correlation analysis clearly mentions that there is a positive correlation among TQM and firm performance constructs. More over there is a positive impact of TQM on firm performance. Mean score was used to identify the major barriers in adoption of TQM by Indian manufacturing SMEs. This study reveals that inadequate knowledge and know-how (3.86), lack of willingness from management (3.82), backsliding to old days of working (3.53), lack of budget ((3.36), risk of disruption in operation (3.23), employees' resistance (3.13) were the major barriers in implementation of TQM by Indian manufacturing SMEs.

**Lillian Y Fok, Wing M Fok and Sandra J Hartman(2000)** has conducted a study on “exploring the relationship between Total Quality Management and information system development”. This study aims to examine the interrelationship among three organizational factors: TQM program adoption, IS (Information System) development and culture. This study more specifically focused on whether organizations which have more fully adopted TQM (i.e. TQM mature organisation) will approach IS development differently from those with less TQM adoption and effects by and upon culture. Data for this study were collected from a sample of 221 managers of both manufacturing and service companies of southern United State. Correlation analysis was used to test the hypothesis. Findings suggest that those organizations who adopted TQM more fully will have a significant impact on four areas of IS development i.e. system goal, system design philosophy, assumptions made by IS professionals about system users and user involvement in system development. This study also states that both TQM and IS requires similar organizational culture i.e. more TQM mature organizations will have more proactive and collaborative culture.

**Shivakumar Burli et al (2012)** has made a study on “TQM dimensions and their interrelationship in ISO certified engineering institutes of India”. This study aims to investigate the dimensions of TQM, analyze interrelationship and their combined influence on results achieved in ISO certified engineering institutes in India. Data for the study were collected from 216 faculty members serving in various ISO 9001:2000 certified institutes of southern states namely Karnataka, Maharashtra and Andhra Pradesh of India. The study is based on EFQM business excellence model. Exploratory Factor Analysis and Confirmatory Factor Analysis were used to achieve the purpose of the study. Factor analysis confirmed ten dimensions of TQM such as leadership & commitment, people management, policy & strategy, infrastructure management, administrative service, education processes, people result, student result, society satisfaction and institute result guides ISO institutes in their quality journey. Moreover, this study reveals that leadership and top management is the major factor for establishing an effective quality management system (QMS) in engineering institutes.

**Majid Tavana et al (2003)** has made a study on “Total Quality Index: A benchmarking tool for Total Quality Management”. This study aims to investigate the usefulness of TQI in different health care settings of USA. Data for the study were collected from eight clinical and six non clinical departments of four selected hospitals that are geographically dispersed throughout the state of New Jersey, USA. Statistical test namely t-test were applied to test whether there is any difference in the means of clinical and non-clinical groups. The analysis of the study reveals that there is no significant difference between the clinical and non-clinical department on seven of eight critical factors used in this study. They are role of department management and quality policy, role of quality management personnel, training, service design, supplier quality management, process management and employee relations. This study reveals that there is a significant difference between the clinical and non-clinical department on critical factor called quality data and reporting.

**Ching-Chow Yang (2006)** conducted a study on “The impact of human resource management practices on the implementation of Total Quality Management: An

empirical study on high-tech firms”. This study intent to investigate the effect of the implementation of TQM on quality performance of high-tech companies of Taiwan. Data for the study were collected from HR Managers, chief executive officers (CEO)of 62 high tech companies located in industrial park called Silicon Valley of Taiwan. Statistical test called correlation analysis were used to examine the effect of various HRM practices on quality performance. The study reveals that HRM practices have a significant positive effect on implementation of TQM. It also exhibits that TQM practices have positive effect on customer satisfaction, it increases competitiveness, companies’ image & improved satisfaction and quality awareness of employees. Moreover, quality performance was also significantly affected by the implementation of TQM.

**Juan Jose’ Tari (2005)** has made a study on “Components of successful Total Quality Management”. This paper aims to identify various components of Total Quality Management, so that to help management for successful quality management implementation. Data were collected from 106 ISO 9000 certified firms in Spain. The factors were identified through literature reviews and EFQM model. Mean values are calculated to interpret the result. The study reveals that firm must help their people orientation land use techniques and tools to a higher extend in order to progress towards high quality.

**Phoom Praraksa et al(2015)** has made a study on “A Model of Factors Influencing Internal Quality Assurance Operational Effectiveness of the Small Sized Primary Schools in Northeast Thailand”. This study intends to develop and examine the Goodness of Fit of the model of factors Influencing internal quality assurance operational effectiveness of the small sized primary school in Northeast Thailand. Data were collected from 765 small sized primary schools under the Office of the Basic Education Commission of Thailand. mean, standard deviation and Pearson’s product moment correlation coefficient statistic, Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) were applied to test the Goodness of Fit of the hypothetical model and empirical data. The result of the study revealed that administrators’ instructional leadership, innovation culture of organization, opened

climate of organization and teachers' leadership where the factors having an effect on internal quality assurance operational effectiveness of the small sized primary schools in Northeast.

**Zahra Safari Kahreh et.al(2014)** has made a study on “Explanatory study towards analysis the relationship between Total Quality Management and Knowledge Management”. This research aimed to investigate the relationship between basic elements of knowledge management including: creating, sharing, storage and application with the Total Quality Management (TQM). Data were collected from one of the organizations that participated in the banking industry. Correlation test has been used to establish the intended relationship. The result reveals that elements of knowledge management are positively related with Total Quality Management i.e. supplier relation, benchmarking, quality measurement and continuous process improvement. Successful Total Quality Management implementation in throughout the organizations requires major changes in the main four aspects of knowledge management.

**Cemal Zehir (2012)** has made a study on “Total Quality Management Practices' Effects on Quality Performance and Innovative Performance”. This study aims to investigate whether TQM activities affect quality and/or innovative performance and also defining the effective components on these performance types. Data were collected from 261 mid- and upper-level managers of companies in the Marmara region, Turkey from various size manufacturing, information technology and service sector companies. Statistical test namely factor analysis, correlation analysis has been used in this study. The result of the study reveals that management leadership and process management dimensions are effective on quality management.

**Emad A. Al-Shdaifat (2015)** has made a study on “Implementation of Total Quality Management in hospitals”. This study aims to explore the extent of Total Quality Management (TQM) implementation in hospitals from nurse's perspective and its association with demographic variables. Data for the study were collected from 332 nurses of four Jordanian hospitals including private, government, military and university hospitals). Statistical techniques like ANOVA, correlation, factor analysis

etc. are used for testing hypotheses. Study shows that all identified Principles (Continuous improvement, Teamwork, Training, Top manager commitment and Customer focus), indicating poor implementation of TQM principles in Jordanian hospitals. Analysis of variance (ANOVA) showed a significant difference in all principles of TQM among different types of hospitals from the nurses' perspective. Moreover, it reveals that Continuous improvement was the most significant factor in explaining variance in implementing TQM principles.

**Mishra Patanjali and Pandey Asha (2013) in their study** “Barriers in implementing Total Quality Management in Higher Education” directed their attention towards the application of the Total Quality Management (TQM) concept within the Indian higher education system. The authors highlighted a series of significant obstacles, including subpar curriculum design, financial constraints, employee resistance to change, and resource limitations, which they identified as key impediments in the Indian higher education landscape. To successfully implement TQM in Indian higher education, it is essential to conduct a thorough investigation aimed at identifying an appropriate TQM model tailored to the unique needs of the region.

**Zabadi Abdulraheem M.A. (2013)** in article “Implementing Total Quality Management (TQM) on the Higher Education Institutions – A Conceptual Model” given that the influx of students from both Arab and foreign countries, Jordan recognized the pivotal role of higher education in the nation's comprehensive development. Consequently, the government and educational institutions have taken steps to enhance their performance, introducing new regulations and innovative initiatives aimed at improving both academic and educational standards. However, for Jordan's higher education system to truly meet its potential, it must undergo a comprehensive reshaping process, including a SWOT analysis. Here, the author attempts to elucidate these concepts from a theoretical standpoint. Ultimately, the conclusion drawn is that relying solely on TQM models is insufficient to fully elevate the standards of higher education. To truly advance the higher education system, it should transcend the conventional confines of TQM and move toward a more holistic approach focused on quality enhancement.

**Rezeanu Oana Maria (2011) in article**” The implementation of quality management in higher education” has discussed the significance of quality management within the realm of higher education. In higher education, the entire system's efficacy is contingent upon the level of quality it maintains. Without this quality, education loses its inherent meaning and purpose. To this end, the effective implementation of Total Quality Management (TQM) principles within higher educational institutions holds the potential to facilitate a more adaptive response to environmental changes. The author expounds on three essential policy approaches: entropic, simulative, and comprehension, all of which contribute to the assurance and administration of quality within higher education institutions. This quality management framework revolves around key elements such as accreditation, evaluation, and certification of these educational establishments.

**Raju R. & Sakthivel P.B. (2006)** in article “Conceptualizing Total Quality Management in engineering education and developing a TQM educational excellence model” proposed a new model for excellence in engineering education in India is "TQM 9-C EDEX," consisting of the following components: Commitment of Top Management, Customer Focus, Communication, Customer Value, Course Delivery, Continuous Improvement, Congenial Learning Environment, Customer Satisfaction, and Campus Facilities. This model aims to enhance the competitiveness of engineering institutions in the national and global markets while ensuring the delivery of high-quality educational services to students.

**Lomas L. (2004)** in article “Embedding quality: the challenges for higher education” stated that the article emphasizes that Total Quality Management (TQM) is an all-encompassing quality management methodology that encompasses both the administrative and academic aspects of an institution. It applies to all organizational functions, spanning research, teaching, administration, food services, and house-keeping. True to its name, TQM is a holistic approach that promotes a focus on the core activities of universities in their pursuit of embedding a culture of quality.

**Srikanthan G & Dalrymple J.J. (2002)** in their article “Developing a holistic model for quality in higher education” suggests that it is possible to create a unified model



for addressing educational processes by incorporating elements from various quality models found in recent research literature. It is proposed that an effort should be made to develop a composite model by integrating the Total Quality Management (TQM) approach with the educational model. In this merged model, the TQM approach to service areas should seamlessly align with the educational model's focus on academic areas. When implemented effectively, this amalgamation would evolve into a holistic quality management model for higher education.

**Kanji G.K., Malek K. & Tambi B.A. (1999)** in article “Total Quality Management in UK higher education institutions” explores how TQM standards and fundamental principles can serve as metrics for assessing the performance of Higher Educational Institutions across various aspects of their internal processes. The study revealed that these measurements of TQM standards and core principles, which are pivotal determinants of success, effectively mirror the performance of Higher Educational Institutions.

**Winn & Green (1998)** in article “Applying Total Quality Management to the educational process”, emphasized that Total Quality Management (TQM) is widely regarded as an essential and pivotal management philosophy. It is extensively employed not only in the US industry but also worldwide. TQM has been effectively utilized in the development and procurement of systems, including satellites and aircraft for preparing officer performance reports. The Air Force Academy has been a pioneer in implementing TQM in this context. Furthermore, Total Quality Management has found application in the education sector in recent years. While some schools have incorporated TQM principles into curriculum development, the majority of applications have focused on enhancing the organizational aspects of educational institutions. The research also underscores the fundamental tenets of TQM, with a particular emphasis on the significance of process analysis and customer identification.

**Koch & Fisher (1998)** in article “Higher education and Total Quality Management” frequently addressed significant challenges encountered by Higher Learning Institutions. These issues encompass curriculum quality, faculty time allocation, cost

containment strategies, distance learning and technology integration, beneficial partnerships with the business sector, and leadership and top management responsibilities. The author contends that although Total Quality Management (TQM) has proven highly effective for certain corporate entities, its applicability in the rapidly evolving and dynamically progressive environment that universities currently inhabit appears limited.

**Lakhe R.R. and Mohanty R.P. (1994)** in article “Total Quality Management: Concepts, Evolution and Acceptability in developing Economies” highlights the widespread recognition of Total Quality Management (TQM), with a particular emphasis on its adoption in developed economies. The authors delve into the concepts of global applicability, the process of implementation, and the role TQM plays in developing nations. The success of Japan's economy can be attributed to its commitment to TQM and quality control, which subsequently influenced American industries to shift their focus towards these principles and statistical methodologies. The authors have compiled a concise overview of TQM, underscoring its significance in the realm of research. TQM has become increasingly essential as it continues to gain momentum and extend its influence globally in recent years.

**Daniel I. Prajogo, Christopher M. McDermott, (2005)** has made a study on "The relationship between Total Quality Management practices and organizational culture". It focused on identifying the particular cultures that determine the successful implementation of TQM practices. Data were collected from 194 managers of both manufacturing and non-manufacturing organizations in Australia. Model used in this study is Malcolm Baldrige National Quality Award criteria as TQM framework and builds on the competing values model to frame organizational culture. The data was analysed using structural equation modeling technique. The study shows that different subsets of TQM practices are determined by different types of cultures. Findings indicate that although the cultural factors underpinning different elements of TQM are dissimilar, even antagonistic, organizations can implement them in harmony.

**Emmanuel Adjei and Monica Mensah, (2016)** has made a study titled "Adopting Total Quality Management to enhance service delivery in medical records: Exploring the case of the Korle-Bu Teaching Hospital in Ghana". This research focuses on TQM initiatives at the Korle Bu Teaching Hospital (KBTH) medical records department. The study seeks to determine what quality improvement initiatives govern records management practices and service delivery at KBTH, and the extent to which TQM initiatives could improve the quality of record service delivery of the hospital so that it would meet the expectations and aspirations of the patients and other customers. Data were collected from 114 employees of medical records department of KBTH through questionnaire method. The study reveals that the beneficiaries of the department were somehow satisfied with the services provided by the medical records unit. Moreover, it exhibits that existing values of TQM in KBTH is not satisfactory with the framework of good TQM.

**Andrea Chiarini, Claudio Baccarani, (2016)** has made a study on "TQM and lean strategy deployment in Italian hospitals: Benefits related to patient satisfaction and encountered pitfalls". This study intends to analyze the possibility of implementing TQM in public healthcare organizations, by considering the situation of three large Italian public hospitals where TQM Lean has been applied in the past few years. Data were collected from four managers each from three large Italian public hospitals located in Tuscany, Italy by semi-structured interview method. The study describe that all the respondents opined that through TQM, an interesting and measurable improvement in terms of process and service performances can be reached. TQM Lean also has a positive effect on organizational performances such as motivation, communication and team building. This study also shows that there are so many huddles in implementing TQM in public sector hospitals.

**Evangelos Psomas, Jiju Antony, (2017)** has made a study on "Total Quality Management elements and results in higher education institutions: The Greek case". This study aims to determine the main Total Quality Management (TQM) elements adopted and the respective results achieved by higher education institutions (HEIs) in Greece. The study made by collecting data from fifteen HEI in Greece through

interviews based on a structured questionnaire. Descriptive statistics were applied to achieve the purpose of this study. The study depicts that student focus, leadership and top management commitment, strategic quality planning, process management and teaching staff and employee involvement are the major elements of TQM which are adopted by the selected HEI in Greece. Moreover, student focus, leadership and top management commitment, strategic quality planning, process management and teaching staff and employee involvement.

**Veeraphat Krittanathip et al. (2012)** has made a study on “Implementation of Self-Assessment Evaluation for Total Quality Management: A Case Study of Retail Sectors”. This paper aims to identify those areas where the traditional retail sector needed to improve so that it can increase its competitiveness in the market. Data for this study were collected from five modern retail shops and 100 traditional retail ones (50 developed shops and 50 under-developed shops) in Thailand. The result revealed that technology, knowledge/knowhow transferring and operation factors etc. should be improved for increasing the competitiveness of traditional retail shops. More over the study suggest that TQM in four models of traditional retail sectors including Nong Nut (NN), Wall Super Center (WS), Mae Pu (MP) and Two Way Mart (TWM) were improved together with wholesale stockholder by workshop, on the job training, self-assessment evaluation, implementation and standardization.

**Ali Mohammad Mosadeghrad (2015)** has made a study on "Developing and validating a Total Quality Management model for healthcare organisations". This study aims to explore the impact of TQM as well as to identify critical success factors of TQM implementation in Iranian healthcare organizations. Data were collected from 55 quality mangers of both public and private sector healthcare organisations (e.g. hospitals and health centres) that implemented TQM initiatives in Isfahan province, Iran. Statistical techniques like mean, standard deviation, Independent-samples t-test, ANOVA, Regression analysis etc. were performed in this study. The findings suggest that TQM has not been fully successful in the healthcare organisations of Iran. It reveals that employee management, information management, customer management,

process management and leadership etc. were the most important contributing factors to successful TQM implementation in the Iranian health care sector.

**Pei-Lee Teh et.al (2009)** has made a study on "Does Total Quality Management reduce employees' role conflict?". This paper aims to investigate the relationship between TQM practices and role conflict of employees of both manufacturing and service firms of Malaysia. Data for the study were collected from 433 employees of 98 different firms from manufacturing and service industries in Malaysia. Statistical tests like correlation and multiple-regression has been employed to achieve the purpose of this study. The study result revealed that there is a negative correlation among all TQM practices (i.e. leadership, strategic planning, customer focus, human resource focus, process management and information analysis) and role conflict of employees.

**Jean Claude Ah-Teck and Karen E. Starr (2014)** has conducted a study titled "Total Quality Management in Mauritian education and principals' decision-making for school improvement: "Driven" or "informed" by data?". This study aims to explore Mauritian principals' views about the use of Total Quality Management (TQM) for school improvement. Data were collected from Principals of six Mauritian schools. All principals interviewed generally spoke of the difficulty in using quality tools and techniques to collect data formally, referring to time constraints and their inadequate knowledge of statistics and skills in analysing data.

**Moses Waithanji Ngware et.al (2006)** has made a study on "Total Quality Management in secondary schools in Kenya: extent of practice". This study aims to investigate the extent to which the aspects of Total Quality Management (TQM) were being practiced secondary schools in Kenya. Leadership, empowerment, strategic quality planning and human resource development are the aspects of TQM considered in this study. Data were collected from 300 teachers in a residential session during a school holiday about their perceptions on the practice of TQM in their schools. The study revealed that board of governors and chairpersons in secondary schools are not providing the necessary leadership that would promote TQM practices necessary for schools' continuous improvement.

**Magnus Svensson and Bengt Klefsjö, (2006)** has made a study on "TQM-based self-assessment in the education sector: Experiences from a Swedish upper secondary school project". In this paper a TQM based self-assessment project within four upper secondary schools in the Municipality of Lulea in Sweden is described and evaluated. Data were collected through interviews conducted with the Upper Secondary Education Officer and with ten school Principals and a questionnaire was administered to gather opinions among the other staff members. The study revealed that self-assessment is performed without preparing all those who are to participate in the project and without discussing the core values that constitute the work.

**Ali Saleh Ahmad Mohammed et.al (2012)** has made a study on "The principles of Total Quality Management System in World Islamic Call Society". This study aims to analyze the application of Total Quality Management principles in World Islamic Call Society, Libya. Data for the study were collected from 172 respondents including employees and managers of the World Islamic Call Society. Statistical test like correlation coefficients has used in this study. The study revealed that the senior management of world Islamic call society shows significant interest in improving its performance by actively participating various training programs. They are believed in continuous improvement and adapting technological changes from time to time. Overall, the study exhibit that the application of Total Quality Management principles in World Islamic Call Society is satisfactory.

**Ahmad, M.F. et al. (2014)** has made a study on "Moderating Effect of ASEAN Free Trade Agreement between Total Quality Management and Business Performance". This study aims to investigate the whether there is any relationship between TQM and business performance by considering the effect of AFTA (ASEAN Free Trade Agreement) as a moderator. This study was done based on previous literatures and a conceptual framework has been developed. The study result shows that The TQM practices has a direct, positive effect and leads to better business performance with moderator effects of AFTA. This paper indicates that those who want to survive in a global competitive environment, have to improve their business performance by applying TQM principles effectively.

**Biju S.K Hemam,TC(2015)** conducted a study titled “Total Quality Management for LSG in Kerala: Experiments to Institutionalisation Government Arts College”. The study focused on quality management problems and their causes in LSGI. And found out that the service quality of LSGI were not up to the expectations.

**Faisal Talib, Zilur Rahman & Quershi (2012)** in their article, “Impact of TQM and Service Quality in Banking Sector” highlights the vital role played by TQM and service quality within the banking industry. To effectively grasp TQM principles and strategies, it is essential to provide comprehensive training and education to employees. This study examines four key dimensions of service quality: customer service quality, banking service quality, online service quality, and automated service quality. The success of TQM integration within banking institutions depends on the unwavering commitment of top management and a motivated and engaged workforce. By actively gathering feedback and closely monitoring customer satisfaction levels, the bank can enhance its performance.

**Durgesh Pattanayak & Maddulety K. (2012)** in their article, “Effect of TQM on Customer Satisfaction in Indian Banking Industry”, attempted to fill a research gap regarding the relationship between Total Quality Management (TQM) and customer satisfaction. In order to gain a competitive edge, banking organizations need to understand how TQM and customer satisfaction are interconnected. Implementing TQM in the banking sector results in higher levels of customer satisfaction because it cuts costs, increases revenues, exceeds customer expectations, and empowers employees.

**Ebiringa & Oforegbunam Thaddeus, (2012)** in their article, “Total Quality Management for Service Delivery by Commercial Banks: Analysis of Critical Success Factors” examine the impact of TQM on banking operations in terms of how they affect customer satisfaction and the realization of quality services. Both employee and customer perspectives are examined in relation to factors affecting service quality in Nigerian banking. In order to collect primary data, the objective evaluation questionnaire was used. In designing, implementing, and enforcing TQM

programmes, banks should place a high priority on customer needs. Continuous training and motivation of employees ensures that TQM projects will be sustained.

**Sandeep Tandon & Anuradha Takkur (2012)** in their article, “Customer’s perception about TQM in banking sector: A comparative study in Punjab region” customers' perceptions of TQM in banks were examined. This study examines how TQM implementation is related to elements such as manager commitment, technical system, customer focus, social ability, service quality management, and continuous improvement that make up TQM. Banks can improve their performance by implementing TQM and retain customers. This study found that the customer perception of private banks is higher than that of public banks.

**Adnan M. Rawashdeh (2014)** in his article, ” TQM as a Source of Bank Performance and Competitive Advantage: Empirical Study in Jordanian Banking Sector highlight that the implementation of Total Quality Management (TQM) practices has a substantial influence on both the performance of banks and their ability to maintain a sustainable competitive advantage. The researcher gathered data from participants, focusing on TQM practices, dimensions of organizational performance, and competitive advantage within the Jordanian banking sector. It is widely acknowledged within the Jordanian banking sector that the adoption of TQM is imperative for the institution's long-term viability. Bank management is committed to ensuring that the integration of TQM practices leads to enhanced bank performance. TQM encompasses quality control, quality assurance, and quality management, with the study revealing a positive correlation between TQM practices and improved bank performance.

**Ameen Al-Basheer, George N.S Hawaqfeh, Belal A Mathani, & Muhammed Al Jabari (2015)** in their article “Impact of Total Quality Management on Financial Performance A field study in the Jordan Islamic Bank, Irbid Province-Jordan”, explores the implementation of the Total Quality Management (TQM) philosophy and its influence on enhancing financial performance within Islamic banks. Islamic banks have strategically prioritized TQM to elevate their operational efficiency and the quality of service they provide. Additionally, their focus extends to optimizing



financial performance to create a conducive banking environment while enhancing their capacity to tackle the challenges presented by technological advancements. The study underscores the importance of actively engaging employees in the TQM application process and offering them training programs to enhance financial performance.

**Mohammad Madi Bin Abdullah and Juan Jose Tari (2012)** in article “The Influence of Soft and Hard Quality Management Practices on Performance” examined how soft and hard quality management practices affect organizational performance, with particular emphasis on how these two elements interact. Overall performance was determined by examining the direct and indirect effects of soft and hard quality management practices. Moreover, the research found that soft-quality management practices impacted hard-quality management in a positive way, while hard-quality management practices influenced performance both directly and indirectly. A notable relationship exists between soft quality management factors and Malaysian electrical and electronic firms' performance and competitiveness.

#### **2.4. STUDIES RELATED TO TQM IN LOCAL SELF GOVERNMENT**

An elaborate review is presented in the second section of the review. The objective was to determine whether there have been specific studies on TQM in LSG, and if so, to what extent, as well as to answer related questions. This section presents the review relating to LSG and TQM in particular. The review in this section focuses specifically on LSG and TQM.

**Evangeles Psomas (2017)** conducted a study on “Effect of Total Quality Management in Local authorities”. The study mainly intends to determine the major TQM factors adopted and respective results achieved by local authorities – Municipal Corporations in Greek. Data were collected from Chief Executive Officers (CEO) of 127 municipalities in Greek by direct interview method. Descriptive statistics were applied to determine the TQM factors mostly adopted by Greek urban bodies. Linier regression analysis was applied to determine the impact of TQM on the performance of Greek local bodies. Mean score was used determine the degree to which TQM factors influences the results or performance of Municipal bodies. Through this study

he found out that TQM philosophy is not highly adopted by Greek local authorities participating in the present study. Moreover, Greek local authorities doesn't seem to derive significant TQM benefits. Finally adopting TQM strongly and positively influences the operational and quality performance of Greek local authorities. TQM also influence citizens satisfaction, social results and employee's satisfaction.

**Anan Abu Hummour et.al (2018)** made a study on "TQM practices and their effect on Jordanian municipalities". This study aims to investigate the impact of Total Quality Management principles of communication, employee involvement, continual improvement and leadership on performance speed, quality and quantity in the Greater Irbid Municipality in Jordan. It also tries to describe how TQM principles are effectively implemented in Greater Irbid Municipality. Data for the study were collected from 210 participants of municipalities in the north of Jordan, Great Irbid Municipality (GIM). Linear Simple and Multiple Linear Regression were also used to determine TQM principles and their influence on performance. Findings reveal that leadership is the most important component of TQM which have a positive influence on performance of GIM.

**Gerard Croal et.al (2003)** has made a study on "Building quality housing services: A case study of quality improvement in local authority building services". This study presents the Total Quality Management initiatives implemented in local authorities of Scotland. Moreover, it compares the perception of tenants and employees with key performance indicators of TQM. Data were collected from 98 recent customers, 21 employees to know their perception about the Building Service Department (BSD) of Scotland's local authorities. The employee survey suggests that the organizational culture is supportive of delivering further quality improvements, but more organizational communication is required to re-freeze the new culture and face ongoing management issues. This paper highlights the importance of managing the quality Chaina across organizational boundaries.

**Julian Teicher et al. (2002)** has made a study on "E-government: a new route to public sector quality". This study aims to investigate the application of Total Quality Management in Australian public sector. Data for the study were collected from 135

senior personnel of Australian local government. The study revealed that the impact of e-government on service delivery of Australian local government is modest and not well distributed.

**JB Rjan and S.K Biju (2022)** has made a study on “Total Quality Management in local government of Kerala, India: some insights for replication”. Using the author's observations and reflections on the implementation process, the study discussed the process of implementing TQM and the fourteen steps followed in local governments. In this study, key factors that facilitate TQM in local governments are identified.

**Dr. Biju S K and Dr. J B Rajan (2019)**, in a study titled “Modelling of Total Quality Management for local government institutions” To implement TQM in local government, the study proposed a model called FDPAs part of the FDP (Focus, Delivery Mechanism, and Procedure) model, citizens should be the focus, and delivery mechanisms include citizen charters, improved service delivery, and grievance redress mechanisms. To ensure continuous improvement, the procedure should be followed systematically from need assessment to feedback assessment. According to the study, TQM experimented in LGIs of Kerala will be more effective in Asian countries as well as for citizen-centric governance.

**Atif Javed Qazi (2019)** made a study titled “total quality and knowledge management practices in local government bodies: a comparative study on Jammu and Srinagar municipalities”. Among employees of the Jammu Municipal Corporation and Srinagar Municipal Corporation, the study examined the impact of Total Quality Management and knowledge management initiatives on various variables, such as organisation innovation performance, perceived benefits of Total Quality Management and implementation barriers.

**Evan et.al (1995)** has made a study on “Municipal Commitment to Total Quality Management: A Survey of Recent Progress”. This study examines how Municipal governments in the United States are committed to Total Quality Management (TQM). An analysis of the extent to which TQM has been implemented, the strategies used, and the impact of TQM efforts was conducted in various Municipal services. As a result of the study, efficiency gains, cost reductions, quality of service, and customer

satisfaction were reported as moderately positive impacts. Additionally, the recent implementation efforts were associated with higher commitment and impact of TQM.

**West (1993)** has made a study on "Implementing TQM in Local Government: The Leadership Challenge". The goal of the study was to investigate the leadership issues associated with implementing Total Quality Management (TQM) in local government settings. The study focuses on the role that top officials play in advancing TQM projects in US Municipal governments, as well as the significance of organisational transformation and leadership. The study highlights the need of determining customer needs, enhancing inter-unit collaboration, and keeping an eye on internal performance as critical procedures for accomplishing TQM goals. The study also discovered that effective TQM implementation in local government settings requires strong leadership from top appointed and elected officials.(West et al., 1993).

**Ranjana Singh (2022)** has made a study on “performance of urban local bodies: it's impact on quality of public services and urban infrastructure in Uttar Pradesh”. The objective of this research is to examine the financial and physical performance of urban local authorities located in Uttar Pradesh. Additionally, it examines how urban local bodies' operations affect the standard of public services and infrastructure in cities. It has been discovered that urban local bodies' own resources are insufficient to meet their needs; as a result, they heavily rely on inter-governmental fiscal transfers.

## **2.5 RESEARCH GAP**

There are plenty of research on TQM generally, but very few research are conducted on TQM in the context of LGs.(Rajan & Biju, 2022). As a result of the review of literature, it is evident that although a large number of studies on Total Quality Management are available in various sectors, a systematic and scientific research on the use of Total Quality Management for improving the quality of service in local government institutions in Kerala is very rare. Furthermore, the research to understand how the local body incorporates various aspects of TQM to improve the quality of its services is very rare. The researcher could find no specific quality improvement model for local-government institutions in Kerala, despite the fact that many researchers have created quality management models for product rendering organizations.

Additionally, the literature lacks research on the mediation effect of hard and soft TQM on the relationship between these components and satisfaction level of residents of Municipal Corporations in Kerala. Also, the researcher identified limited studies that examined the possibility of adopting TQM in local bodies to improve their service quality. There is lack of literature that measure and compare the effectiveness of software solutions implemented by local bodies in Kerala to streamline the service delivery and reduce the workload of employees. Hence the present study represents researcher's unique effort to bridge the gap.

## **2.6. CHAPTER SUMMARY**

This particular chapter delved into a comprehensive review of the existing literature conducted for the purpose of this research study. Within this review, various crucial topics were explored, including the concept of Total Quality Management (TQM), the dynamics of Local Self Government, and the intersection of TQM within the realm of Local Self Government (LSG). By thoroughly examining the existing literature, this review played a pivotal role in pinpointing certain gaps in the current body of knowledge. These gaps, in turn, served as valuable insights that facilitated the formulation of clear and precise research objectives. Furthermore, this exercise allowed for the development of hypotheses that would guide the research process effectively. In essence, this chapter's comprehensive review of the literature not only provided a solid foundation of understanding but also critically identified areas where further investigation and analysis were needed. This, in turn, laid the ground work for the research objectives and hypotheses to be established, ensuring a well-structured and purposeful study. The next chapter provides an in-depth examination of Municipal Corporations and their implementation of Total Quality Management (TQM). It delves into the specific services provided by the Municipal Government in the state of Kerala.

# CHAPTER 3

## **MUNICIPAL CORPORATIONS AND TQM: AN OVERVIEW OF THEORETICAL FRAMEWORK**

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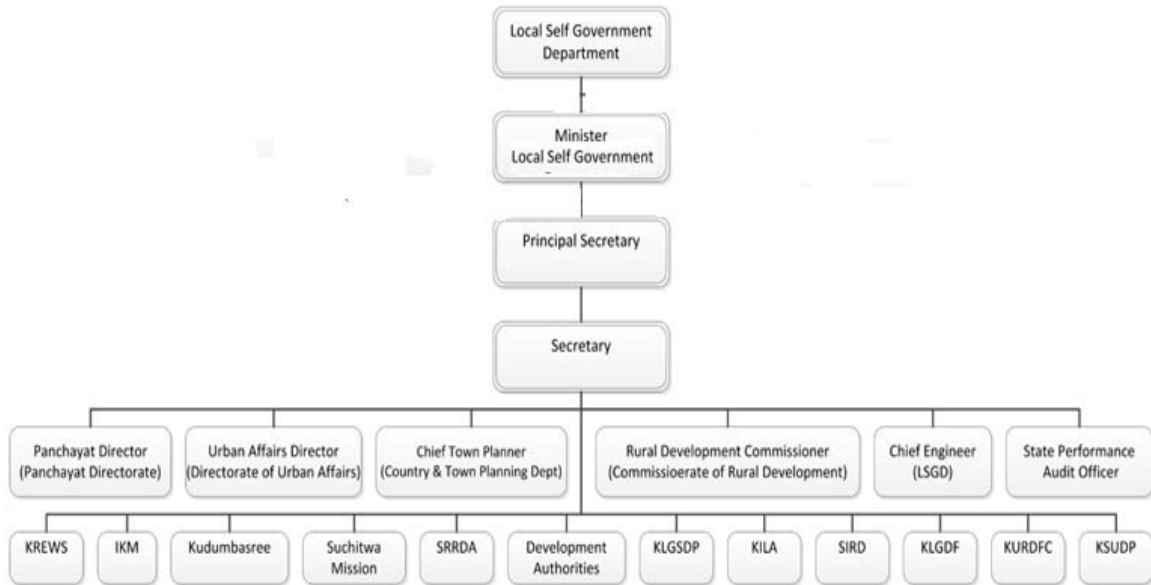


### **3.1 INTRODUCTION**

During the evolution of Indian democracy, decentralization of power has played an important role. Global discussions on parliamentary-representative democracy led to the idea of power decentralization. Democracy can only be maintained by decentralizing power at the top administrative level to the lower levels, ultimately, to the people. Local administrative bodies should have direct citizen involvement in their administrative systems. Participatory democracy was regarded as a fundamental principle of democratic governance. Decentralisation of authority entails transferring power to citizens. Dr. Satyabhratha Sen's 1998 report states that power should go to the people and should not be blocked at any level. Direct democracy is best achieved through Grama Sabha/Ward Sabha, which is the most effective and official venue for transferring power to the people. The federal and state governments employ their limited authority in matters of immediate importance and direct influence on people. However, it is the role of local governments to promote local growth and social fairness. It is the responsibility of local governments to address the basic needs of their residents, as they are stands in close proximity to them. The general public has high expectations on local governments. The elected representatives as well as officials of the LSGIs should be able to discharge their functions in accordance with the expectation of the people, effectively cater to their needs and ensure social justice (KILA; 2016). Good governance is the only way to achieve this. Governance at the local level is primarily concerned with fulfilling the needs of the people based on local conditions. It is the responsibility of the LSGIs to carry out their functions in a scientific and people-friendly manner. Total Quality Management (TQM) is an effective management method in this regard. TQM ensures more efficient office administration and effective service delivery.

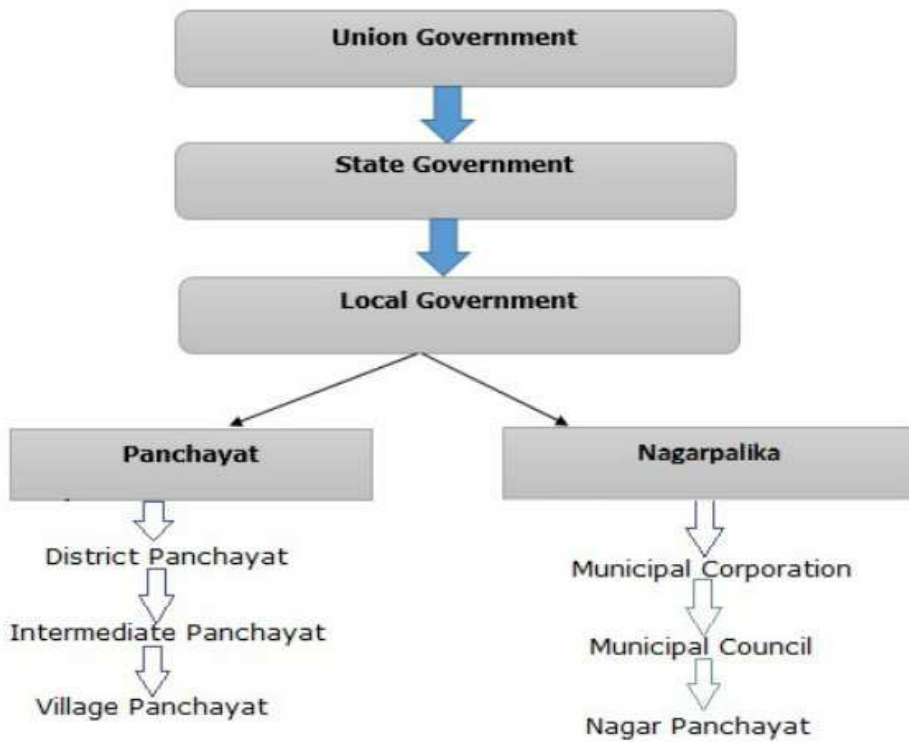


Diagrammatic representation of local body departments of Kerala



Source: [www.lsgkerala.gov.in](http://www.lsgkerala.gov.in)

3.2 STRUCTURE OF LOCAL BODIES



Source: [https://www.tutorialspoint.com/indian\\_polity/indian\\_polity\\_local\\_government.htm](https://www.tutorialspoint.com/indian_polity/indian_polity_local_government.htm)

As per the 73rd constitutional amendment act 1992, three-tier governmental system is working in India i.e. central government, state government and local self-government. LSG has been split once more. For simplicity of administration, they are divided into panchayats and Nagarpalikas. Panchayath or rural local bodies are of three i.e. district panchayat at district level, block panchayat at block level and village panchayat at grass root level. Urban local bodies are categorized by their population into Municipal Corporations (larger urban area), Municipal councils (smaller urban area), and Nagar panchayats (transitional urban area). The mayor presides over Municipal Corporations. He is an ex officio member of all standing committees of the council. Additionally, he doesn't enjoy voting power. His principal responsibility is to preside over council meetings, approve the council's budget, and make orders or directives for the implementation of council or committee resolutions. The Secretary is the guardian of all Municipal properties and records, including all papers and documents related to the council, standing committees, and other committees.

### **3.3 MUNICIPAL CORPORATIONS IN INDIA**

The Municipal Corporation is the highest tier of Municipal government in India, overseeing civic affairs in major cities. Its history dates back to 1687 with the Madras Municipal Corporation, followed by Calcutta and Bombay in 1726. The Towns Act of 1850 introduced councillors with managerial powers. Lord Mayo's 1870 resolution introduced elected presidents, while Lord Ripon's 1882 resolution outlined Municipal governance. The 1935 Government of India Act gave local government power. Municipal Corporations hold significant authority and autonomy in urban administration, unlike rural counterparts. They are esteemed and more sovereign than other local government forms

### **3.4 MUNICIPAL CORPORATIONS IN KERALA**

Municipal Corporations were first established in India during British rule, with the formation of the Madras Municipal Corporation in 1688. A Municipal Corporation for Mumbai and Calcutta was later established in 1972. Each Municipal Corporation will be led by a mayor, and the region will be divided into administrative wards to facilitate governance. The population will determine the number of divisions. The

population will determine the number of divisions. distinct departments and councils will be formed, each serving a distinct area of the city's development and wellbeing. This will ensure the provision of a wide range of services in a transparent manner. These councils will be run by elected members for a five-year term. Kerala has six Municipal Corporations at the moment. They are:

- Thiruvananthapuram Municipal Corporation
- Kochin Municipal Corporation
- Kollam Municipal Corporation
- Kozhikode Municipal Corporation
- Kannur Municipal Corporation
- Trissur Municipal Corporation

Detailed description about these urban local bodies is given here

### **Thiruvananthapuram Municipal Corporation**

The oldest among its counterparts, the city corporation was established in 1940. In terms of area, it holds the distinction of being the largest among the Municipal Corporations in Kerala. This civic administrative entity is responsible for governing the capital city of Kerala, Trivandrum. Encompassing a total of 100 administrative divisions, it includes the Thiruvananthapuram, Vattiyoorkavu, Nemom, and Kazhakoottam Legislative Assembly Constituencies, as well as five wards within the Kovalam Constituency.

### **Kochi Municipal Corporation**

In the year 1967, a civic administrative body was instituted to oversee the governance of Kochi, a prominent city in the state of Kerala. This administrative entity was created with the aim of ensuring effective management and organization within the city. To achieve this, the city was divided into a total of 74 administrative wards, each serving as a distinct unit for efficient administration. The main headquarters of this administrative body is situated in Eranamkulam. In addition to the headquarters, the Corporation has established zonal offices in several key areas of the city, namely Fort Kochi, Matan cherry, Palluruthy, Edappally, Vaduthala, and Vyttila. These zonal

offices serve as regional centers for managing various aspects of city governance and public services. Through the establishment of this civic administrative body and the division of the city into wards and zones, the goal was to enhance the overall governance structure of Kochi. This approach allows for a more targeted and localized management approach, catering to the unique needs and requirements of different areas within the city. As a result, the administration can effectively address challenges, allocate resources, and provide essential services to the residents of Kochi.

### **Kollam Municipal Corporation**

The inception of Kollam Corporation dates back to 1903, and it holds the distinction of being an ISO 9001:2015-certified civic administration body. Originally established as a Municipality in 1921, it gained further prominence when it was elevated to the status of a Municipal Corporation in 2000 under the directives of the Kerala government. The operational framework of the Corporation is governed by the Kerala Municipalities (KM) Act of 1994. The organizational structure encompasses a 55-member council presided over by a mayor. To ensure efficient governance within the city, the Corporation has established eight standing committees, each with a specific focus area. These committees encompass finance, development, welfare, health and education, public works, town planning, tax appeal, and education and sports. This comprehensive setup allows for the effective management and advancement of the city's affairs while adhering to established regulations and protocols.

### **Kozhikode Municipal Corporation**

The Kozhikode Municipal Corporation, established in 1962, stands as one of the oldest Urban Local Bodies (ULBs) in the region. Comprising four constituencies - Kozhikode North, Kozhikode South, Beypore, and Elathur - it has been an integral part of the city's governance landscape. The Municipal area is divided into 75 administrative wards, each playing a crucial role in the city's administration. Every five years, council members are democratically elected from these wards, ensuring a representative and accountable governance structure for the city.

### **Kannur Municipal Corporation**

The Kannur Municipal Corporation, officially known as the Corporation of Cannanore, was established in the year 2015 with the purpose of effectively managing and governing the city of Kannur, located in the state of Kerala, India. This administrative body holds the responsibility for overseeing various aspects of urban development and public services within the city. Situated in the state of Kerala, the Kannur Municipal Corporation encompasses two significant State Assembly constituencies, namely Kannur and Azhikode. These constituencies, together forming part of the Kannur parliamentary constituency, play a pivotal role in the region's political representation. To ensure efficient governance and administration, the city of Kannur has been sub divided into a total of 55 administrative divisions. This divisional structure allows for better management of public services, infrastructure development, and local governance initiatives. It's worth noting that Kannur Corporation, often referred to as the Corporation of Cannanore, represents a relatively recent establishment, having been formed in 2015. Since its inception, it has been dedicated to enhancing the quality of life for the residents of Kannur by implementing various developmental projects, fostering civic engagement, and addressing the needs of the city's growing population.

### **Thrissur Municipal Corporation**

The civic administrative entity responsible for the governance of Thrissur city in the vibrant state of Kerala, India, is known as the Thrissur Municipal Corporation. This body exercises administrative control over a geographical area that is strategically divided into 55 distinct wards, efficiently organized within five zones, namely Ayyanthole, Vilvattom, Ollukkara, Ollur, and Koorkanchery. This meticulous division allows for streamlined governance and targeted development initiatives across the entire city. The roots of the Thrissur Municipality trace back to its inception on the 1st of July, 1942. Over the years, this administrative unit has evolved and matured, eventually achieving a higher status. In the year 2000, the government of Kerala recognized the city's growth and importance, leading to its transformation into the Thrissur Municipal Corporation. This upgrade marked a significant milestone in

the city's journey, elevating its administrative capacities and granting it a broader spectrum of responsibilities and resources to cater to the needs of its burgeoning population and diverse sectors. The city's division into five zones and the further segmentation into 55 wards exemplifies the Corporation's commitment to efficient governance. Each zone, including Ayyanthole, Vilvattom, Ollukkara, Ollur, and Koorkanchery, is meticulously planned to ensure that local governance is not only effective but also responsive to the unique requirements of the residents living within those areas. This approach facilitates targeted development projects, localized issue resolution, and an overall enhancement of the quality of life for the citizens of Thrissur.

### **3.5 SERVICES OFFERED BY MUNICIPAL CORPORATIONS IN KERALA**

A brief explanation on the different services identified is given below.

#### ***Services on health and environment:***

According to Mahatma Gandhi, “it is health that is real wealth, and not pieces of gold and silver”. Health services stand prominently among the crucial offerings within the spectrum of Municipal Corporation services, encompassing a diverse range of activities and programs dedicated to both the well-being of the community and the preservation of the environment. This comprehensive domain includes essential components such as water services, the establishment and maintenance of sewer systems, efficient waste management exemplified by initiatives like the Haritha Karma Sena, meticulous cleaning services for streets, strategic forestation endeavours, robust infection prevention measures, vigilant pest control programs, and steadfast initiatives for the prevention of pollution. Each of these facets plays a pivotal role in fostering a healthy and sustainable urban environment, addressing the intricate interplay between public health and the broader ecological equilibrium. A health standing committee has been instituted in every Municipal Corporation to safeguard the well-being of its residents and the environment.

#### ***Service quality on social service:***

Municipal Corporations extend a range of social services to their residents, encompassing initiatives such as women's activity centre, youth and sports programs,

empowerment programs for women and children, and vocational courses. These multifaceted services aim to foster community engagement and development by providing spaces and opportunities for diverse groups within the population. Women's activity centres serve as hubs for various programs tailored to enhance the well-being of women, while youth and sports activities encourage active participation and a healthy lifestyle among the younger demographic. Additionally, women and child empowering programs are designed to uplift vulnerable segments of society, promoting education, skill development, and overall empowerment. The inclusion of vocational courses further contributes to community development by equipping individuals with practical skills that enhance employability and contribute to the socio-economic growth of the community. Overall, these social services underscore the Municipal Corporation's commitment to enhancing the quality of life for its citizens through targeted and inclusive programs.

***Service on reconstruction and urban development:***

This service category encompasses a diverse range of urban development and infrastructure management activities aimed at enhancing the overall quality of a city. It involves strategic planning for urban areas, installation and maintenance of street lighting, construction and upkeep of roads, development and preservation of green spaces and parks, establishment of shopping centres, management of cemeteries, and the regulation, construction, and maintenance of markets with a focus on preventing hazardous trade practices. In essence, these services are dedicated to fostering a well-organized, safe, and sustainable urban environment.

***Service on urban transportation:***

Comprehensive urban transportation services encompass a multifaceted approach, seamlessly integrating various elements such as bus transportation, efficient car parking solutions, and robust traffic management and control systems. This holistic framework aims to enhance the overall mobility experience within urban environments, offering a diverse range of services to cater to the dynamic needs of a bustling cityscape. From the seamless operation of bus networks to the strategic optimization of parking facilities and the implementation of sophisticated traffic

management strategies, this integrated system endeavours to create a sustainable, accessible, and well-coordinated urban transportation ecosystem. Through the careful orchestration of these components, the goal is to not only alleviate congestion but also to foster a more efficient, eco-friendly, and user-centric urban mobility infrastructure.

***Service on disaster management and security services:***

Disaster management and security services encompass a range of crucial functions aimed at ensuring public safety. These services involve the implementation of camera facilities such as CCTV to enhance surveillance capabilities. The use of advanced technology, like CCTV, allows for effective monitoring and response to potential threats. Moreover, these services extend to the control of beggary, addressing social issues that may arise during challenging times. By managing and mitigating such situations, authorities contribute to maintaining order and security in the community. Furthermore, during disasters, there is a focus on rehabilitation measures. This includes providing support and assistance to those affected, such as temporary shelter, medical aid, and essential supplies. The goal is to help individuals and communities recover from the immediate impact of the disaster and regain a sense of normalcy. Post-disaster, the emphasis shifts to reconstruction activities. This involves rebuilding infrastructure, homes, and facilities that may have been damaged or destroyed. The aim is to restore the community to its pre-disaster state, promoting resilience and ensuring that the affected areas can thrive once again. In brief, disaster management and security services encompass the use of surveillance technologies, addressing social challenges, providing rehabilitation during disasters, and engaging in reconstruction efforts afterward. These measures collectively contribute to the overall safety and well-being of communities.

***Service on community services:***

The range of community services encompasses vital functions such as facilitating the registration of significant life events, including births, deaths, and marriages. Additionally, the provision includes a convenient Kiosk system designed to enable individuals to easily check the status of various services. This comprehensive approach ensures that essential life events are accurately documented, and community



members have accessible means to track the progress of their service requests through user-friendly Kiosk interfaces.

***Service quality on education services:***

Enhancing and upkeep of educational institution involves not only establishing educational facilities but also ensuring their continual maintenance. By focusing on the establishment, we refer to the process of founding and setting up educational institutions, while maintenance pertains to the ongoing efforts to sustain and improve the quality of these institutions. In essence, service quality in education involves a comprehensive approach that spans the inception and continual care of educational establishments.

**SERVICES OF MUNICIPAL CORPORATION: AN OVER VIEW**

Municipal Corporations provide variety of services to its citizens to effectively and efficiently satisfy their needs. They are listed below (KILA, 2016)

1. Implement waste management system construct sewages, drainage systems for storm water drainage.
3. Registration of various institutions, issuing various licenses, permits and issuing certificates.
4. Installation and Management of street lights.
5. Protection of public assets like public places, buildings, roads, canals, ponds, wells, etc.
6. Arrange public amenities like urinals, toilets, waiting sheds, burial grounds, crematorium, etc
7. Registration of Birth – Death – Marriage related services.
8. Provide services through planning process
9. Sanctioning and distribution of social security

10. Provide basic amenities at slum areas

Institutions and Services Institutions and Services

11. Construct footpaths for pedestrians

12. Provide road-crossing facility for pedestrians

13. Prepare urban planning project (DTP scheme)

14. Constitute disaster relief fund, distribute financial assistance

15. Provide jobs as per Ayyankali Employment Assurance Programme

16. Construct playgrounds and stadiums

17. Issue permission to start liquor shops

18. Supervise Ration shops, maveli stores and Neethi stores, inculcate awareness regarding weighing and measuring crimes, examine and solve complains regarding public distribution system

(ii) Krishibhavan

1. Ensure the production of bio-fertilizers

2. Conduct soil conservation activities

3. Organizing agricultural self-help groups

4. Farm Mechanization

5. Ensure optimum utilization of land

6. Preparation and implementation of agricultural development activities through plan.

(iii) Veterinary Hospital/Dispensary/Sub centre

1. Provide assistance to issue license to dogs and pigs.

2. Running of veterinary hospitals.
3. Running of integrated cattle development programme sub centre.
4. Increase the production of milk.
5. Prepare and implement veterinary – dairy development programmes.

Institutions and Services Institutions and Services

(iv) Anganwadis, Day Care Centres

1. Implement Nutrition programmes through Anganwadis.
2. Pre-school education through Anganwadis.
3. Conduct welfare programmes for teenagers.
4. Provide nutritious food to pregnant women and lactating mothers.
5. Conduct awareness programmes to pregnant women and lactating mothers.

(v) Balavadis, Feeding Centre, Seasonal Day Care Centre, Dormitory

1. Implement assistance programme for Scheduled Caste.
2. Provide assistance from Scheduled Caste department.

(vi) Balavadis, Nursery schools, Midwifery centres

1. Provide assistance through scheduled tribe development department.
2. Find the problems related to health and education of Scheduled Tribe and take remedial steps to solve the same
3. Run pre-metric, post-metric hostels

(vii) Public Health Centre – Ayurvedic Dispensary/Homeo Dispensary

1. Medical assistance and other preventive measures provided through the health institutions

2. Prepare and implement projects for health sector
3. Palliative Care activities
4. Provide health assistance to all people in the Municipal area
5. Controlling of communicable diseases
6. Controlling of eateries
7. Immunization and other preventive measures
8. Take steps to keep the environment healthy & clean
9. Management of Child Welfare Centres and Maternity Homes along with family welfare activities
10. Issue certificates (Sanitary fitness certificate, medical certificate, etc.)

Institutions and Services Institutions and Services

(viii) L.P Schools, U.P Schools etc. attached to High Schools, Higher secondary school and Vocational Higher Secondary School

1. Provide primary school education.
2. Provide high school education
3. Provide higher secondary/vocational higher secondary school education
4. Provide noon meal to students up to 8th standard
5. Provide various scholarships and allowances
6. Distribution of lump sum grant
7. School health programme
8. Counselling to children
9. Physical development of children

(ix) Matsya Bhavan

It provides a single window through which various services from fisheries department, fishermen welfare board and matsyafed. The following services are available from matsya bhavan.

1. Provide appropriate benefits to the students of fishermen family.
2. Provide emergency assistance on accidents.
3. Provide group insurance.
4. Provide urgent financial assistance to the hospitalized fisherman due to accidents.
5. Provide financial assistance for marriages
6. Provide financial assistance to the deceased while fishing.
7. Provide financial assistance to purchase fishing implements.
8. Providing welfare pensions.
9. Organize matsya sabhas.
10. Provide assistance to fisheries sector.
11. Implements projects for the protection and care of fishermen

(x) Office of the Industrial Extension Officer

1. Design and implement small scale industrial development programmes
2. Prepare and implement projects in industries sector
3. Promote and assist self-employed entrepreneurs

(xi) Office of the Municipal/Corporation Engineer

Planning, implementation and supervision of public works in Municipal/Corporation area and issue of building permit and connected activities

(xii) Scheduled Caste Development Office

1. Prepare and implement project for Scheduled Caste
2. Implement welfare – development schemes of Scheduled Caste development department

(xiii) Urban Poverty Alleviation Unit

1. Plan and implement welfare – development schemes for the poor and avail services to them
2. Implement Central – State Sponsored Poverty Alleviation Schemes

### **3.6 DEFINING QUALITY**

According to Garvin “quality is an unusually slippery concept, easy to visualise and yet exasperatingly difficult to define”. Quality is a low-cost, market-appropriate level of consistency and dependability that is predictable (Deming, 1982).

There are many distinct approaches to defining quality: One way to define quality is as being about value (Feigenbaum,1983); suitability for usage (Juran, 1989);quality as excellence (Peters & Waterman, 1982) and fulfilling or surpassing the expectations of the client (Parasuraman et al., 1985).

A product or service is said to be of high quality if it meets or exceeds the expectations of all parties involved. According to ISO 9000:2015, “The quality of an organization’s products and services is determined by the ability to satisfy customers and the intended and unintended impact on relevant interested parties. The quality of products and services includes not only their intended function and performance but also their perceived value and benefit to customer.” As per ISO 9000: 2000 quality is defined as the degree to which a set of inherent characteristics fulfil requirements. Degree means that quality can be used with adjectives such as poor, good, and excellent. Inherent is defined as existing in something, especially as a permanent characteristic. Qualitative or quantitative characteristics can exist. A requirement is a declared need

or expectation; generally, it is inferred by the organisation, its customers, and other interested parties.

### **Front Office Management (FOM)**

Taking clues from the success story of TQM implemented by the Cheruvannur-Nallalom GP, KILA initiated Jana Sevana Kendram in the name of 'Front Office Management' (FOM) and piloted the GP of Wayanad District (KILA, 2016). KILA recommended the State Government to issue an Order to establish Front Office Management (FOM) at all the GPs in the State after this pilot project proved successful. Accordingly, the Government issued Orders to this effect. (GO. (MS) No. 123/2009/LSGD dated 02.07. 2009) (KILA, 2016).

In Kerala, the GPs adopted the FOM in 2009, and they were well-received. However, it lost some of its initial brilliance with time. There are several inherent limitations, as demonstrated by KILA study on FOM in 2013. The government implemented FOM with the broader vision of change management initiative to achieve good governance through TQM in all GPs. The TQM involves two components viz. hard TQM and soft TQM (KILA, 2016). Hard TQM includes arranging physical facilities, establishing service benchmarks, developing checklists, and so on. In addition to the hard components of TQM, the soft components include continuous citizen surveying to measure satisfaction and needs, continuous training, continuous monitoring, employee involvement, team building, and quality circles, etc. Unfortunately, the FOM failed to give due importance to these soft components of TQM, it is clear from the Cheruvannur- Nallalam model that they implemented the TQM through continuous and enthusiastic efforts (KILA, 2016). For solving work-related problems of office employees, continuous training of employees and elected representatives for their capacity building, as well as encouraging and empowering the committees through continuous monitoring, a quality circle was formed. A major part of the change management initiative at Cheruvannur-Nallalam GP is the arrangement of physical facilities. FOM has implemented only the hard components of TQM from the Cheruvannur-Nallalam initiative, ignoring the soft components (KILA, 2016). In FOM, there is a serious lack of soft components of TQM, such as continuous

improvement of facilities and services, continuous monitoring to increase quality, and continuous training for capacity building. As a result of this realisation, the government has begun to implement TQM in lieu of FOM in LSGIs.

### **Implementation of TQM in LSGIs**

Training for LSGIs on TQM and ISO certification was launched by KILA as a means of eliminating the drawbacks of FOM. The Government of Kerala issued guidelines in this regard. (GO. (MS). No. 373/2013/LSGD Dated 02.12.2013) (KILA, 2016). 44 GPs were certified ISO 9001:2008 through the implementation of TQM, by July 2015. (KILA, 2016) The morals obtained from these certified GPs government renewed the guideline during 2015. GO. (MS).No 18/2015/LSGD Dated 29.1.2015 (KILA, 2016).

### **Why TQM?**

Quality service delivery is one of the priorities of the central government's and state government's 12<sup>th</sup> plan (2012-2017) guidelines. There are so many tools for attaining good governance, and among that most important and comprehensive tool is TQM (KILA, 2016). As a result, LSGIs are able to achieve efficiency and effectiveness in delivering services and maintaining a human working environment.

The process of quality culture helps in improvement of quality of life, employee's satisfaction and customer satisfaction (Arora, 2006)

### **The Objectives of Total Quality Culture**

- (a) How to achieve quality?
- (b) How to maintain quality?
- (c) How to improve quality on a continuous basis?

### **3.7 Quality Management in LSGIs- A Brief History**

In order to ensure better office management, the Secretary (B.N. Suresh,2006) of Enmakaje Grama Panchayat (GP) in Kasargod district has issued ISO 9001:2008 certificate. Karakulam and Nellanad GPs in Thiruvananthapuram had formulated guidelines to ensure better performance of Panchayat office and their Institutions.



Kumbala GP of Kasargod district in 2010 awarded ISO 9001:2008 certificate is a unique example for standardisation in service delivery in the GP level. The 'One Minute Certificate' system implemented by Velookkara GP in Thrissur district is yet another model of e-governance for timely service delivery (KILA, 2016)

The concept of TQM as itself implemented in the Cheruvannur-Nallalam GP was a great initiative in the local self-government sector, which proved that is applicable and relevant in the service sectors too. Cheruvannur-Nallalam GP planned for continuous training, continuous monitoring, and recognition for quality performance of officials. Quality circle was formed to build up teamwork in the GP. By ensuring adequate infrastructure facilities, installing information boards and re-structuring the office environment systematically, Cheruvannoor-Nallalam GP implemented TQM. This ensured quality service with all required facilities, by the Grama Panchayat, as and when approached by the public. As per the guidelines of government of Kerala ((GO. (MS). No. 373/2013/LSGD Dated 02.12.2013), (GO. (MS)). No 18/2015/LSGD Dated 29.1.2015)) 44 GPs were certified ISO 9001:2008 through the implementation of TQM (KILA, 2016).

The ISO 9001: 2008 quality management system (QMS) guideline specifies eight quality management principles. The following is an overview of these principles:

- 1) A people-cantered Municipal government can provide services by addressing citizens' aspirations.
- 2) The leaders' dedication, sincerity, and ability will undoubtedly contribute to excellent service delivery systems.
- 3) The total participation of individuals at various levels (elected representatives, officers, and the general public) is an efficiency factor.
- 4) All functions in an organization is concerned with the process of converting inputs into the desired result.
- 5) Organisation is system comprises of individuals, sections, mechanism that are interrelated and interconnected

- 6) Improvement of quality of service should be ensured continuously. Which will be the base for success of TQM.
- 7) Decisions based on accurate and reliable data will contribute to TQM.
- 8) Mutually beneficial relationship is essential for the success of people centered good governance.

### **3.8 TOTAL QUALITY MANAGEMENT**

According to Dean and Bowen TQM 'has come to function as a sort of Rorschach test, to which people's reactions vary as a function of their own belief and experiences'.

Local self-government has great chance to deal with local public as compared with other government. At the same time people will expect more from local government. Hence it is the duty of employees, officials and elected representatives to discharge their duties in such way as it meets the expectations of citizens and ensure social justice. This is possible only through good-governance.

Good governance means leading towards the right direction, it should be change oriented, result oriented, commitment oriented and ensure total participation. TQM is the tool for attaining good governance, and helps the LSGIs to implement a management mechanism to attain efficiency and effectiveness in attaining service delivery and maintaining people friendly office environment. TQM ensures better office management and timely service delivery (KILA, 2016).

### **3.9 TQM IN MUNICIPAL CORPORATIONS**

In 2009, FOM (Front Office Management) was implemented in the grama panchayat of Kerala, which was successful and they received much appreciation (KILA, 2016). It is TQM that motivated the government to implement FOM in all GPs with the vision of attaining good governance. The TQM involves two components viz. hard part of TQM and soft part of TQM (Rajan & Biju, People-friendly Panchayat: ISO 9001:2008 through TQM., 2015). Arranging physical facilities, fixing benchmarks for services, developing checklists etc are parts of hard TQM. Continuous citizen survey for

measuring satisfaction and needs of citizen, continuous improvement, continuous training, continuous monitoring, involvement of all employees and elected representatives, team building, quality circle etc are the soft components of TQM. Unfortunately, the FOM failed to give due importance to these soft components of TQM. For successful implementation of TQM, arrangements like suitable building, work place and related facilities, special arrangements for differently abled people, people who need special attention, the aged, women and children etc, facilities for public, hardware and software facilities for efficient working, transportation, communication and database etc are needed

According to ISO 9001:2008, quality is defined as “the degree to which a set of inherent characteristics fulfils the requirements”. TQM is a management technique that necessitates continual effort and the collective participation of the entire organisation in order to reach the intended goal effectively and efficiently without sacrificing quality. Quality is defined differently by each individual, but it is essentially the ability of a product or service to match the expectations of its beneficiary.

### **Total Quality Management (TQM): Application**

There are numerous approaches to implementing quality management concepts. A review of existing components of good governance has been undertaken to demonstrate how QMS principles can be applied to local governance

#### **People centered**

According to the Kerala Panchayat Raj Act's Preamble, the Local Self Government Institution (LSGI), as the government visible to the local people, should be people-centered. decentralisation of power was accomplished in Kerala through the 'Peoples Plan Campaign' (PPC). It is now time to secure people's participation in government as well, using a people-centered approach. TQM contributes to greater service quality by making LSGIs truly people-centered. Every Panchayat action should be centred on providing specific services that meet the requirements of the people. Citizen’s surveys can reveal this information.

### **Team work**

When compared to an individual, a team or group will be more strong, hence collective efforts and involvement should be encouraged in all organisations for the effective and efficient fulfilment of organisational goals by fulfilling consumer expectations. The team must provide enough training to make them aware of their functions and duties. They must be given work-related practical sessions to become experts in their fields. Team members will be able to provide recommendations and address problems in a timely and cost-effective manner.

### **Leadership**

Active leadership is an unavoidable aspect in an organization's efficient and effective operation. Especially for implementing TQM, in its visioning process and for specification of quality objectives for the attainment of vision and mission, strong leadership is indispensable (KILA, 2016). Thus, leadership is essential for continual improvement and improving service quality through continuous monitoring. The Panchayat Raj System emphasises democratic team leadership rather than individual leadership. TQM success is dependent on leaders' ability and dedication. regular leadership direction based on regular review meetings and monitoring is required for effective efforts to achieve objectives. It is the ability of leadership that motivates all employees and elected representatives to work for the attainment of objective and creates work environment (KILA, 2016). Creative leadership will inspire all employees and elected officials to work towards common goals, and will progressively establish a favourable working atmosphere. As compared with individual leadership, team leadership will be required for good service delivery in local governments. TQM implementation includes developing quality policies, a quality vision (broad dream), a purpose (a way of doing things) and formulation of quality policy. fixing quality objectives (should be simple, specific, measurable, attainable, realistic, time bound)

### **Formulation of Quality Policy**

The creation of a quality policy is the first stage in the implementation of TQM. It will be based on the outcomes of the citizen survey to ensure greater service quality and development activities in local governments. It will be developed in several stages.

### **Quality Vision**

Vision is a broad dream that includes and justifies the institution's entire existence. E.g. The vision of 'transforming the Panchayat/Municipality as people friendly'.

### **Mission**

The mission is the strategy for carrying out the vision. The completion of time-bound mission leads to the realisation of the vision. E.g. To transform the Panchayat/Municipality into a people friendly within a period of one year, through the implementation of TQM and by achieving ISO Certification.

### **Quality Policy**

Once the Panchayat's vision and purpose have been established, the next stage is to develop a quality policy that is consistent with them.

### **Quality Objectives – Features**

- i. Even though their nature differs, the objectives of different sections/officials should be complementary to one another. Each specific goal should contribute to the achievement of the overall goal.
- ii. Fixed objectives should be straight forward and defined, referring to various divisions or authorities in the Panchayat/Municipality.
- iii. Measurable objectives should be set.
- iv. Objectives should be reachable.
- v. Realistic goals should be set.
- vi. Time limits should be set for objectives.

## **Quality Manual**

The quality manual is a legally binding document that details the Panchayat's responsibilities, quality policy, objectives, and quality procedure.

## **LSGI Committee Review Meeting**

The achievement of quality targets is dependent on a constant process of monitoring and evaluation. The outcome of any combination of actions is less effective than continuous monitoring and assessment efforts at each phase. Hence, a review meeting should be held by the LSGIs.

## **Participation**

The participation principle emphasises the inclusion of everyone (people, elected representatives, and officials) in the planning and administrative processes. The essence of TQM emphasises participatory planning, execution, and assessment. Internal and external democratic forums can be awakened and empowered for this purpose. It is the participation of all stakeholders that makes TQM successful, citizen must be given chance to participate in decision making as well as implementation of various projects. Local governance should follow the slogan “janakeeyasoothranam” which means “power to people”. TQM cannot be implemented in any organisation by a single individual or even by a single department. TQM implementation is a time-consuming procedure that requires the genuine and committed participation of everyone from the top to the bottom. Full participation of elected representatives, officials and the public should be ensured for effective implementation of TQM. Decisions should be made and implemented with public oversight and engagement. and the public deserves the opportunity to critically examine initiatives and their implementations.

## **Platforms for participation**

The LSGI council shall organize a meeting and take action to strengthen and empower the platforms of participation, such (KILA, 2016);

- LSGI Council
- Steering Committee,

- Standing Committees,
- Meeting of Officials,
- Quality Circle
- Grama/Ward Sabha Meeting
- Ayal Sabha Meetings
- Ward Development Samithi Meeting
- Other Committees prescribed by Act or Rules (e.g. Institutional Management Committees)

### **Capacity Building**

The capacity/ability of officials in various sectors of the organisation determines the effectiveness of participation. Therefore, creating capability is a key aspect in implementing TQM.

### **Process Oriented**

Each and every function in the organization can be viewed as the series of processes of converting organisational inputs into desired outputs. (KILA, 2016). Employee mindset must be changed to ensure process improvement. Achieving TQM is a process that consists of a succession of related activities. It is essential to educate staff on each stage in the overall operation, their interdependence, and the order of duties to be completed, i.e. what comes first, then what, and so on. Process-oriented analysis, evaluation, and monitoring are required for TQM implementation. An institution's operation comprises a set of interconnected operations. Working in a process-oriented manner refers to the most appropriate and coordinated implementation of actions or groups of activities with available resources. This requires identifying the activities and deciding which sections/officials/institutions of LSGI will be interrelated, as well as performing constant monitoring and control to ensure the organization's effective operation. Hence, process maps shall be created.

### **Process Map**

It is stated that process mapping is required for process-oriented operation. The process map illustrates the stage-by-stage progression of activities connected to a service delivery process. Consider the time it takes each section/officer to finish the procedure and how to reduce the time for each step at beginning. This reduction decision shall be made for all applications received in the office for the purpose, not just one. Each year, the shortened time for each service shall be specified during the renewal of the citizen charter. Each section/official's roles and responsibilities for all of the institution's services and processes must be clearly defined. It would be accomplished by creating a process map for the same.

### **Training and empowerment**

Workers' confidence will be boosted by online and offline work-related classes and practical training sessions. and, as a result, enhance their performance, productivity, and services. This will lead to quality and, ultimately, TQM. Empowering employees means motivating and teaching them to make quick judgements about quality, productivity, and customer service. This will result in higher work quality.

### **System Oriented**

From the TQM point of view, an organization is a collection of several individuals, sections, departments, divisions and mechanisms (KILA, 2016). All of these factors must work together to provide better services to its citizens. Failure of any of these parts will have a negative impact on the entire organisation. LSGI is a system consisting of different activities like planning, financial management, project implementation, grievance redressal, delivery of services, and monitoring and evaluation etc. and are the sub systems of a local body, efficient functioning of these are complementary to each other. That is, the performance of one system affects the performance of another. Similarly, if we look at the LSGI in terms of resources, we may observe systems such as human resources, infrastructure facilities such as office automation, and a work-friendly environment. The availability and efficient inter-relationship of these resources ensures the quality of operations.



### **Infrastructure Facility**

The Panchayat/Municipality's infrastructure needs to be planned systematically.

### **Continuous evaluation**

To enable effective TQM implementation, quality objectives and policies must be evaluated on a continuous basis. Institutional review meetings and quality audits may be held to assure this. If required, take corrective action. The review meeting will also discuss preventative steps to avoid future shortfalls. There are two types of activities/measures required: corrective actions and preventive actions. To address the concerns/issues raised, steps will be taken to address them and prevent them from recurring in the future.

### **Continuous Improvement**

Consistency of efforts for continuous improvement is the base for success of TQM (KILA, 2016). Continuous assessment and evaluation of performance of stakeholders especially those internals should be done to ensure that the organization is strictly following policies and thereby attainment of objectives. Only by consistent effort and review can the efficiency and effectiveness of an organization's actions be improved. Gradual development is more realistic and will persist longer than rapid improvements. Continuous effort should be taken to improve the quality vision/mission, quality policy, and quality objectives. For this continues meeting, trainings etc should be ensured. The success of TQM is founded on the emphasis given to continual improvement efforts to increase quality. As a result, by adhering to the quality vision/mission, quality policy, and quality objectives, the Panchayat/Municipality must constantly improve the effectiveness of the quality management system. Institutional review meetings and quality audits may be held to assure this. If required, take corrective action. The review meeting will also discuss preventive actions to avert future flaws. Two kinds of actions/measures are required;

#### **i. Corrective actions**

Corrective action is a reactive technique used to resolve problems or issues that have arisen. To address the concerns/issues raised, steps will be taken to address them and avoid repeating the same mistakes in the future.

**ii. Preventive actions**

Preventive action is a proactive activity that is undertaken to prevent a possible problem from arising or from becoming too severe. Preventive action focuses on spotting unfavourable tendencies and addressing them before they become major.

**Factual decision-making**

Success of every organisation is depending upon effective and efficient decision at the right time. (KILA, 2016) The effectiveness will be determined by the facts and information on which the decision is based. Hence, it is critical to guarantee that data is sufficiently precise and reliable. Data can be used to make intelligent and timely judgements. Proper statistics, information about the availability of resources, records and documents, and so on all help to sound decisions.

**Record Management**

The efficiency of TQM is based on proper management of records. As a result, the necessary paper work and records must be kept appropriately and consistently. LSGI records are separated into two categories: Documents and Records.

**A. Documents**

Documents are instructions, forms, descriptions of processes, proceedings, and so on that are used to carry out a task. E g. quality manual, quality policy, plan guidelines, orders, guidelines for monitoring and implementation stock file of standing instruction & orders etc.

**B. Records**

The term "Record" refers to the files and reports retained as proof of previously implemented or accomplished projects or activities. As part of TQM, LSGIs must keep records to demonstrate that residents' needs and desires are being met. Some of the results are listed below.

1. Records demonstrating authorities' and elected representatives' qualifications, skills, experience, and training, among other things.

2. Monitored continuously, viz.

- Ward Sabha/Grama Sabha, Ayal Sabha minutes
- Quality Circle meeting minutes
- Standing Committee meeting minutes
- Steering Committee meeting minutes
- LSGIs Council meeting minutes
- Action Taken Report (ATR) on Audits, complaints etc
- Personal register, Attendance register and Movement register
- Records of administrative and development activities
- Records of service delivery and service delivery review report
- Actions taken on different audit queries and progress of rectification
- Complaints of citizens and proposals
- Public grievances and actions taken on proposed remedial measures

A comprehensive set of records stipulated in the rules, including stock records for software, its maintenance, grievances of employees, redress measures, proposed actions, and the progress of those actions.

### **Database**

A database is required for assessing the development sector and for efficient planning and monitoring. A database can be constructed by gathering information from primary or secondary sources. The economic and statistics department of Kerala also issues five-year reports of panchayat level statistics that can also be used to create databases.

### **Mutually Beneficial Relationship**

Elected representatives, officials, and the grama sabha make up the local government. Local governance includes many organizations and committees besides the local government, such as community groups, ward committees, institutional committees, NGOs, volunteers, CBOs, etc. The idea of local self-governance is rooted in a

mutually complementary relationship between the citizens, officials, and elected representatives. Development standing committees are responsible for project planning and finance standing committees are responsible for budget formulation, but both committees complement each other. For successful implementation of a project, it is essential to prepare a budget based on the planned projects. The complimentary operation of many standing committees ensures their mutual convergence.

### **Benchmarking**

To ensure continual improvement, benchmarks must be established first, and then organisations' current performance must be compared to the benchmarks in order to successfully and efficiently achieve quality. Benchmarking can be of various forms namely

Internal benchmarking

Competitive benchmarking

Generic (world class benchmarking)

### **Long ranged rethinking**

Advanced rethinking is required for quality improvement since it allows service providers to provide services as needed (without sacrificing quality) by embracing modifications.

### **Reduce rework**

Rework requires additional time, money, and other resources; avoiding or decreasing this would improve quality through attaining quality targets. By implementing TQM effectively, the local body can deliver better quality service as well as improve office management efficiency.

### **Steps for TQM**

The following are the sequential steps of TQM (Rajan & Biju, 2022).

**Step 1: Induction training**— The purpose of induction training is to familiarise elected members and officials of LGs with the concept, importance, and steps of

TQM. Everyone would attend this training. An action plan would be developed by participants at the end of the training programme. As a result, the participants would feel a sense of shared responsibility for pursuing the TQM process.

**Step 2: Status analysis**—Here the current status of the LGs, its service delivery mechanism and deliverables are examined. Checklist is used for this analysis. Then a report is prepared and circulated among the parties involved. This would enable the LGs to assess their current position and determine their next course of action. Additionally, once TQM is implemented, status analysis reports aid in evaluating how well the service delivery mechanism has improved.

**Step 3: QC**—QCs were originated from Japanese management and manufacturing techniques. QC is a forum where a group of LG officials can discuss and resolve issues related to their jobs.

**Step 4: Sub-team formation**—In order to implement TQM in LGs, Sub-teams may be formed. The sub-teams may be on (a) capacity building, (b) FO, (c) record room, (d) infrastructure and (e) documentation. The formation of sub-teams is not compulsory, but desirable. More over depending on the tasks to be completed, there is flexibility with regard to sub-teams. Each sub-team must be equipped by the consultant to create and carry out action plans on the relevant areas so that the tasks can be completed in a timely manner.

**Step 5: Citizen survey:** LG should provide services in a manner that which will satisfies the needs of people. Needs and aspirations of people can be identified with the help of citizen survey using pre-tested questionnaire. Based on this a consolidated report called citizen survey report can be prepared

**Step 6: Visioning:** It includes setting up of quality vision, quality mission, quality policy and quality objectives of the LG. This is achieved through a participatory workshop of all elected officials and representatives. The citizen survey report can be presented in the workshop to ensure the visioning is in line with the people's needs and expectations. The quality vision, mission, policy and objectives should be displayed in the important office premises of the LG.

**Step 7: Record management:** It is the systematic process to maintain documents and records in an organized manner to trace and make use of them with minimum time. It need setting up of record room, maintain documents and records with user-friendly retrieval system, entrust a custodian with responsibilities, maintain an updated record register and conduct continuous assessment of record management. For effective record management, 5 ‘S’ framework can be applied. The term 5 ‘S’ represents five words in Japanese: *Seiri, Seiton, Seiso, Seiketsu* and *Shitsuke*. The English equivalents for these words are Sort, Set in Order, Shine, Standardisation and Sustain

**Step 8: Quality manual:** It is a document of the LG, containing its responsibilities, quality vision, quality mission, quality policy, quality objectives and mechanism for quality management. It provides guidelines to the LG on TQM. It shall be the responsibility of documentation team to prepare this with the hand holding support of the consultant.

**Step 9: Standard Operating Procedure (SOP):** It is a process map that depicts the stage-by-stage sequence of actions associated with service delivery. Every LG service goes through a variety of interconnected processes. The improvements of these processes can be measured only if their inter connections are properly identified and mapped.

**Step 10: Infrastructure:** Hardware and software facilities for officials and the general public should be planned. The LG is responsible for providing the work environment required to meet service standards. A suitable atmosphere is to be created and maintained for smooth and efficient functioning of organization. To ensure better work environment, 5 ‘S’ framework can be applied.

**Step 11: E-governance:** By the use of computers and other Information communication technologies the functions and services of LSGIs can be delivered at the door steps without delay in an effective and transparent manner (KILA;, 2016) . Before implementing any e-governance programme a favourable atmosphere should be created in the institution. All functionaries must be trained on e-governance and software.

**Step 12: Competency mapping:**

Since human resources in an LG are a crucial part of service delivery process, their capacities should be strengthened to attain quality objectives. Based on competency mapping, the expected and actual competency of functionaries can be assessed.

**Step 13: Quality audits (QAs):**

Various systems of audit are in place to assess, in the light of relevant records, whether an LSGI has discharged its functions in an effective, efficient and legal manner and rule of law, accountability and efficiency are achieved (KILA, 2016). The successful sustenance of TQM depends on the continuous efforts for improving quality. To confirm successful implementation of TQM, QAs must be conducted. There are different types of QAs such as first-party audit, internal audit, pre-assessment audit, third-party audit and surveillance audit.

1. *First-party audit (management review)*

It is the continuous evaluation by the LG on quality improvement to measure the performance of each section and suggests preventive and corrective actions. As per ISO terminology, it is known as management review.

2. *Internal audit*

It is done by two or three selected from among the employees (inside the organisation). This audit ensures that each and every section of the LG is working properly, quality of inter-related activities, and suggests corrective actions. At least two internal audits may be conducted before the third-party audit.

3. *Pre-assessment audit*

It is conducted to confirm the quality mechanism in order to smoothen the third-party audit. This is carried out by the selected officials of the LG, just prior to the third-party audit.

#### *4. Third-party audit (certification audit)*

Third-party audit is done by a certified lead auditor on quality management. Third-party audit is conducted only if the first party audit and internal audits are over. Once the lead auditor certifies the satisfactory fulfilment of the certification audit, the accredited organisation releases the ISO 9001:2015 certificate.

#### *5. Surveillance audit*

The surveillance audit is conducted for ISO-certified organizations by the lead auditor on a yearly basis. The ISO certificate has to be renewed once in 3 years. The lead auditor conducts this audit after the completion of 1 year and after the completion of the second year of initial certification. This is mandatory for the renewal of the ISO certification.

**Step 14: Continuous improvement:** TQM aims to ensure citizen satisfaction. For this, continuous effort is needed to ensure that service quality is improved. The cycle of continuous improvement is achieved through feedback assessment (citizen satisfaction surveys), ongoing training (facilitated by QC), and ongoing monitoring (internal audits and surveillance audits).

#### **Quality in Office Performance: ‘5 - S’ Framework**

For LSGIs to be proactive and creative in dealing with citizens, they must be equipped with innovative technology. Unsystematic workplace environments, such as the dumping of unnecessary data, materials, and parts, may destroy the company's work-friendly environment and diminish staff efficiency. This will also result in a loss of resources such as space, time, money, and energy, and of course lead to poor and inefficient government. The “5-S” practice is a well-recognized methodology used to improve the work environment of office (KILA, 2016).

#### **What is “5- S”?**

The term “5-S” represents five words in Japanese: Seiri, Seiton, Seiso, Seiketsu, and Shitsuke (KILA, 2016). Sort, Set in Order, Shine, Standardisation, and Sustain are the English equivalents.



### Sort (Seiri)

Sort refers to separating items that are not required for the present functioning of office and dispose them off or keeping them away from the work area and kept recorded (KILA, 2016). It assists in the efficient use of precious resources such as space, time, money, and energy.

---

#### Sorting of articles

---

Always needed	Not at all needed
Useful In certain occasions	Not needed but may be useful
Very rarely used	Should be thrown out

---

(Source: (Rajan J. B., Local governance -Book 3-Total Quality Management, 2016))

Benefits from implementation of sorting:

- Avoids workplace problems caused by overflowing undesired objects and records.
- Saves time by avoiding the wasteful search for documents, records, and materials.
- Avoids work inefficiencies caused by an abundance of records and files.
- Prevents shelves and almirahs from becoming inaccessible due to excessive material storage.
- Employees can work in a healthy environment.

### Set in Order (Seiton)

Systematically arrange the necessary files and materials so that they may be accessed quickly and simply. The slogan of set-in order is "everything has a place; everything, including people, has a place." It will save time and energy by eliminating the need to hunt for files and resources. The time it takes to find or store goods is reduced when they are neat. Those files and materials that are constantly used must be kept close to the officer so that they may be accessed quickly. Others shall be organised based on frequency of use. With this approach, unnecessary movements will be reduced, lost time due to searching for lost files and materials will be reduced, and services will be delivered more quickly.

### **Shine / Cleaning (Seiso)**

In addition to being nice or ordered, the physical surroundings should be clean. The shine refers to the most efficient cleanliness across the office. There shall be no dirty areas in the office. Moreover, clean those areas that remain unnoticed by the general public. Cleaning projects in the office should emphasise not only the gleaming appearance of the office and its arrangements, but also their utility.

### **Implementation Process**

- Cleaning will be the responsibility of all personnel in the organisation. Employees are assigned specialised tasks such as cleaning specific areas, computers, tools, parts, supplies, racks, and so on.
- Everyone should tidy the table and chair where he works.
- Ensure that dust is cleared from the office's floor, corners of walls, pillars, walls, windows, and doors.
- Ensure that all cobwebs and other unwanted/unused materials are removed completely.
- Cleaning should be done on a frequent and comprehensive basis as part of the job.

### **Standardize (Seiketsu)**

As soon as these three 'S' have been implemented, a system will be developed to standardize activities to ensure sustainability. Ensure that the three 'S' work together to prevent the office from returning to its previous position.

### **Implementation Process**

- Assign responsibility for various activities to officials in order to implement the first three 'S'.
- To avoid threats, assign three 'S' responsibilities as part of your task.
- Keep track of the effectiveness of actions related to the first three 'S'.

- Every day, all officials should set aside 5 minutes to apply the first three 'S'.

### **Sustain (Shitsuke)**

It refers to self-discipline, or incorporating the '5S' activities into the job and behaviour of all employees. We may create a suitable environment for '5S' by providing continuous instructions, an ongoing awareness campaign, and ongoing training.

---

#### **Five Phases of Implementation of five 'S'**

---

First Phase	Clean the inside, outside and floors
Second Phase	Cleaning wall, pillars, ceiling etc...
Third Phase	Cleaning and organising the interiors of racks, boxes, almirahs, tables, and other necessary items.
Fourth Phase	All materials in files and records must be cleansed, labelled, and tagged with standardisation symbols.
Fifth Phase	Ensure that all actions and functions are carried out correctly.

---

**Source:** (Rajan J. B., Local governance -Book 3-Total Quality Management , 2016)

### **Key elements to be given more attention during the implementation of Five 'S'**

- ❖ Ensure the collaboration and participation of all officials and elected representatives.
- ❖ The first and most important step towards implementation is LSGI is commitment.
- ❖ Secretary will be given authority to apply the five 'S'
- ❖ Ensure the program's self-sufficiency and long-term viability.

### **Responsibilities**

#### a) Responsibilities of Secretary of LSGI:

- Provide training to all workers on the Five 'S' implementation procedure.
- Delegate power and duty to each and every office employee.
- Give authorities enough time and resources, and create an action plan for implementing the five 'S'.

- Accept employee proposals and ensure their innovative and active engagement.
- Recognise staff for their outstanding efforts in implementing the '5S' system.
- b) Responsibilities of employees:
  - Provide ongoing training to employees.
  - Create interest in the '5S' and provide positive support for its implementation.
  - Take active actions to complete the routine five 'S' activities.
  - Provide continuous support to superiors.

### **Benefits**

- The execution of the 5S principles encourages a sense of cleanliness and makes them more systematic.
- The active participation builds teams and boosts innovation.
- It ensures that instruments and available space are used to their full potential.
- Creates a pleasant working environment.
- Improves service quality while reducing pitfalls and delays in service delivery.
- Reduces complaints and red-tapism.

It is considered the first step towards the implementation of ISO 9001:2015 as '5-S' improves health, discipline among employees, and quality of service. A quality circle in the office can be entrusted with the responsibility of continuous monitoring and evaluation for smooth implementation and sustainability. As a result of implementing 5-S, a quality culture is created by impressing citizens and establishing effective quality processes for good services and reduced delivery times. A quality for LBs can be attained through the five Ss, which forms the basis for good governance.

### **3.10 INITIATIVES TO FACILITATE E-GOVERNANCE**

- Hospital KIOSK
- Facility to register for birth and death certificate instantly through hospitals.
- Akshaya centres
- Modern computerized counter for public services and its payments.
- Enterprise resource plan solution

- IKM has designed different software for different purposes, ERP Solution will help to integrate all these applications and integrate variety of activities of local self-government through a single login.
- E-Ticketing
- It's a software which helps LSG to collect entertainment tax from cinema theatre. It aims to implement "e-Cine Ticketing Platform" program in all theatres of Kerala.
- Revised LSGD Portal

Web site of local self govt were modernized by utilizing the technique of content management, and thereby make the website more creative, attractive, informative and transparent.

- Rebuild Kerala Application

An application designed to collect statistics of citizen who lost their land/house due the flood and soil erosions of Kerala (<http://rebuild.lsgkerala>).

- Audit application

Web based software helps for collecting, preparing and monitoring of annual reports of all LSGs in Kerala through e-governance facility.

- ULB Transfer

Web based application designed by IKM for speedy and transparent transfer of Municipal employees.

### **3.11 BARRIERS IN IMPLEMENTATION**

Local governments in many states becomes weak and inefficient for a variety of reasons, including the failure to hold regular elections, long-term supersessions, and insufficient devolution of powers and functions. As a result, ULBs are unable to function effectively as lively democratic self-government institutions. The Kerala Municipality Act mandated the formation of ward committees for every Corporation

with a population greater than 3 lakh. The Ward Committee/Sabha will be led by the ward councillor, who is elected by the registered voters of that ward for a five-year term. The committees are in charge of formulating development plans and submitting them to the Corporation for implementation. They must hold a meeting at least once every three months to discuss ward development issues.

The mayor is elected by the councillors from among themselves, and the council, in accordance with the requirements of the Act, can organise several standing committees to handle the operations of the Municipality. The number of councillors in a Municipality is decided by its population, which is restricted to fifty if it does not exceed four lakhs. If it reaches four lakhs, fifty councillors will be appointed for the first four lakhs and one for each subsequent ten thousand (Kerala Municipalities Act 1994). The mayor's principal functions are to preside over council meetings, approve the council's budget, and issue order or directions for the implementation of council or committee resolutions. The mayor is an ex officio member of all standing committees of the council, but he does not enjoy the power to vote (Kerala Municipalities Act 1994). His additional roles, powers, and obligations under the act are clerical in nature, such as authorising payment and repayment of Municipal funds, guaranteeing the completion of relevant reports, and so on. The secretary is the custodian of all Municipal properties and records including all papers and documents connected with the council, the standing committees and other committees (Kerala Municipalities Act 1994). His main responsibilities include providing his opinion on all matters concerned, submitting reports on the progress made on the implementation of council resolutions, maintaining and keeping the Municipality's accounts for receipts and expenditures, and taking action on audit reports.

### **3.12 TQM MODELS**

TQM necessitates a collaborative effort on the part of management and employees to design successful strategies and procedures for delivering high-quality products and services that not only meet but also exceed customer expectations. TQM encourages people to focus on quality and hence flourish in their work. While introducing new products and services, collection of customers feedback and expectations are more

important than competitors. Many thinkers and their theories are to be credited for Total Quality Management . Drucker, Juran, Deming, Ishikawa, Crosby, Feigenbaum, and many other persons who have studied and contributed significantly to the practise of Total Quality Management .

There are many models of Total Quality Management and it is not compulsory for every organisation to adopt the same model. Following are the various models of Total Quality Management (Management Study Guide, n.d.):

1. Deming Application Prize
2. Failure Mode Effective Analysis (FMEA)
3. Malcolm Baldrige Criteria for Performance Excellence (MBNQA)
4. European Foundation for Quality Management (EFQM), and

#### **Deming Application Prize**

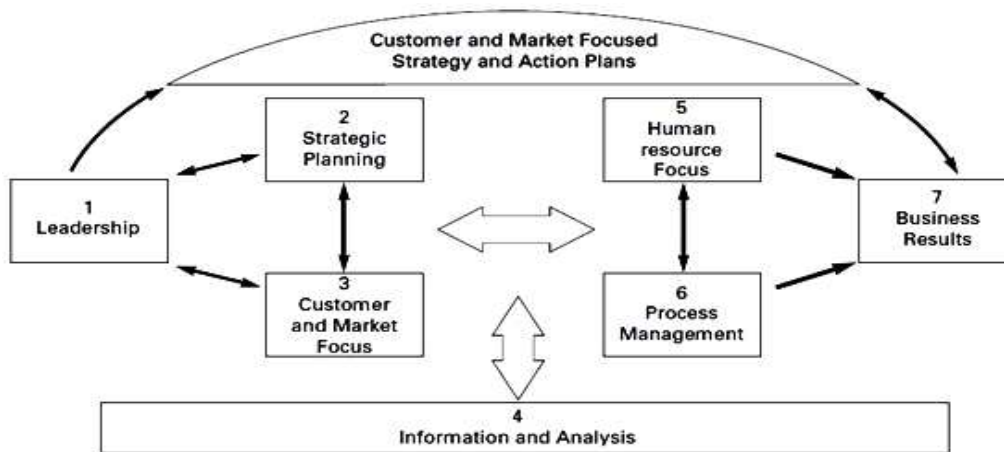
The Deming Prize is the longest-running and one of the highest awards on TQM in the world (India free note, 2021). It recognizes both individuals for their contributions to the field of TQM and businesses that have successfully implemented TQM (India free note, 2021).

#### **Failure Mode Effective Analysis (FMEA)**

It is a method of analysis used in the field of quality management. Many businesses now see it as standard. It assists in detecting potential problems in manufacturing and services before they occur. It involves tracking where and how processes fail, as well as assessing the relative impact of different failures, in order to determine the parts of the process that are most in need of improvement. It entails locating answers to various questions such as What could go wrong? Why would the failure happen?. What would be the consequences of each failure? etc. FMEA is particularly useful when evaluating a new process prior to implementation and assessing the impact of proposed changes to existing processes. In the health care system, FMEA is used to identify the most important areas for process improvement and assess the risk of failure and harm. It is a "before-the-event" action not an "after-the-fact" exercise.

### **Malcolm Baldrige Criteria for Performance Excellence (MBNQA)**

In order to improve the performance of an organization, it is one of the methods used. In 1987, the U.S government implemented MBNQA as a quality management tool for non-profit organizations, firms, and universities. The model has since gained strong support from many organizations interested in creating an efficient, strong environment for outstanding performance. According to Malcolm Baldrige Model, organizational performance (results) is improved through leadership, strategic management, customer focus, data collection, human resources focus, and work processes. The model is summarized in the diagram below.



Source: (Madanat & Nuseir, 2017)

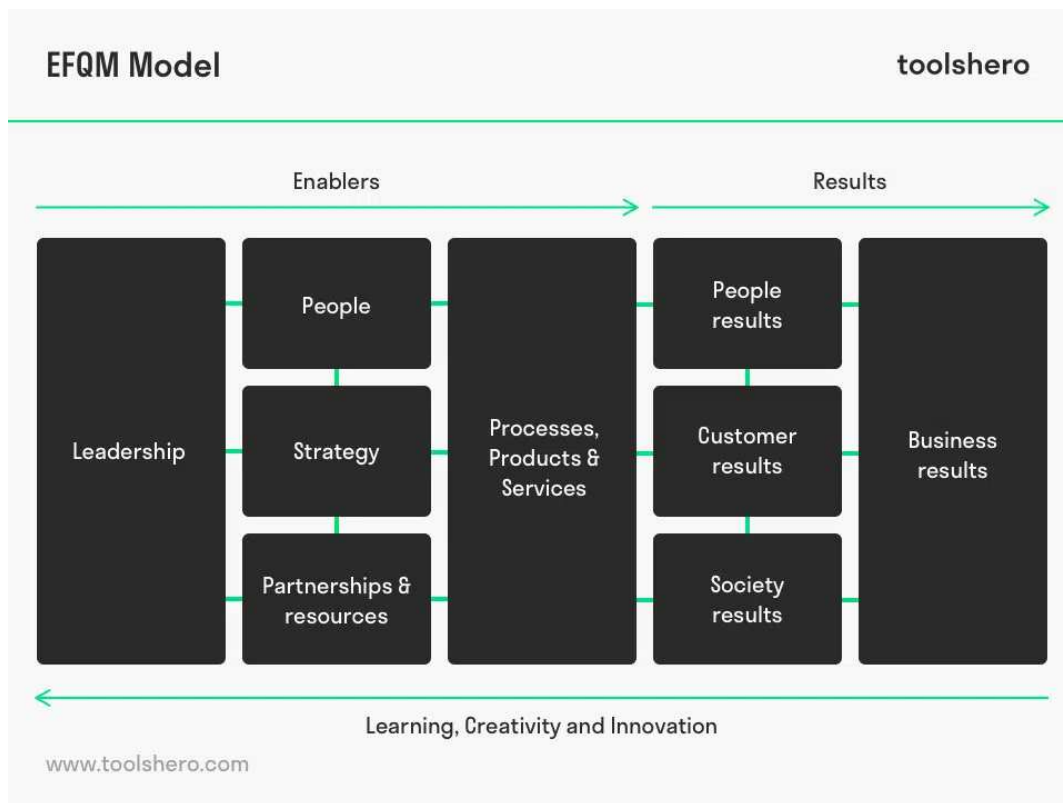
### **EFQM MODEL**

It is a widely recognised management framework that helps organisations manage change and improve their performance. EFQM is a self-assessment system for measuring an organization's strengths and areas for growth across all of its activities. The EQFM approach enables self-assessment, which establishes an organization's current status in relation to the key notions of excellence. EFQM was developed in 1988 with an aim to create a platform where organizations can learn from each other to continuously improve their performance (toolshero, 2012).

#### **Levels of Excellence recognize excellence at three levels, namely:**

- I. European Excellence Award - EEA. ...
- II. Recognized for Excellence – R4E. ...
- III. Committed to Excellence – C2E





The EFQM consists of nine criteria that are subdivided into five Enablers and four Results: The five organisational areas indicate how these objectives are achieved (toolshero, 2012)

Leadership

People

Policy & Strategy

Partnerships & Resources

Processes

the four results indicate what the intended objectives are (toolshero, 2012)

People Result

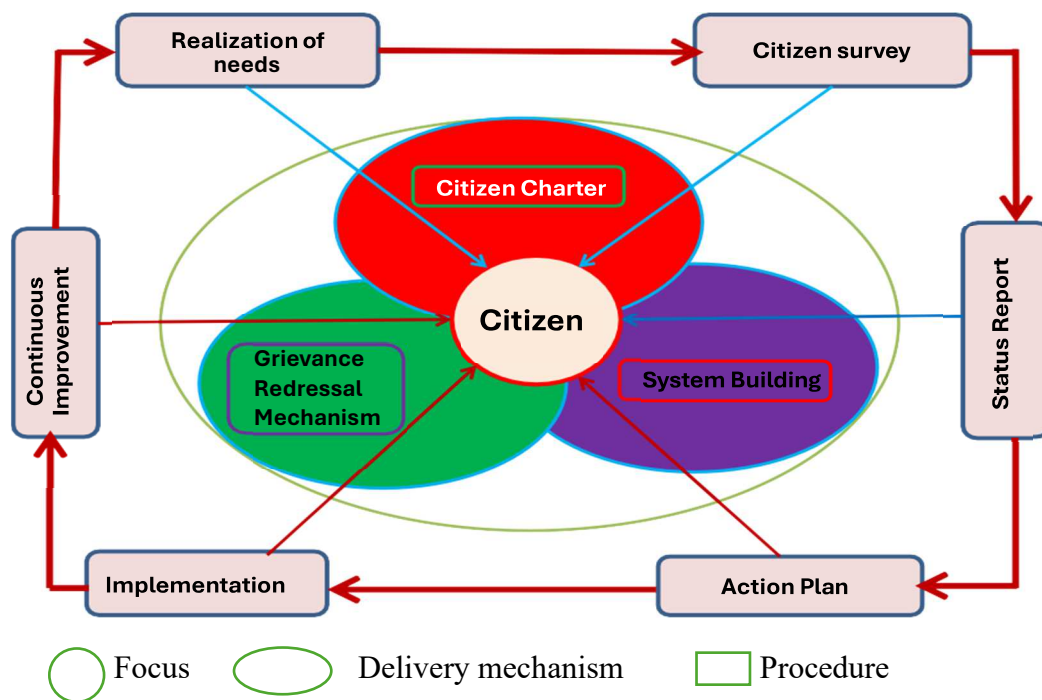
Customer Result

Society Result

Key Performance Results

### FDP MODEL

For implementing TQM, the FDP Model is designed so as to suit local governance system. The FDP is a mix of three major components such as Focus, Delivery Mechanism, and Procedures. The FDP Model's components and interrelationships are clearly shown in the graphic that follows.



The central focus of FDP Model is citizen (Biju & Rajan, 2019). Citizen charter, system building, and grievance redressal mechanism comprise the delivery mechanism. By listening to citizens and attending to their needs, we can focus citizens. Service delivery mechanisms such as the citizens' charter; system building for better service delivery; and grievances redressal mechanism shall be in place. Procedures should be followed systematically in order to ensure efficient service delivery mechanisms with citizen-centric focus (Biju & Rajan, 2019).

### 3.13 ACTS RELATED TO LOCAL GOVERNMENT IN KERALA

Kerala has a number of local government-related legislation that set the legal foundation for its operations. The following are significant local government-related laws in Kerala.

### **Kerala panchayath raj act 1994**

The Kerala state legislative assembly passed the Kerala panchayath raj act, 1994, which sets the roles, responsibilities, and constitutions of panchayats in the state of Kerala. The act was passed with the goals of strengthening Kerala's panchayat raj structure and promoting community involvement in decision-making. Three tiers of panchayati raj institutions are established in the state by the Kerala panchayath raj act of 1994. These institutions include

**Grama Panchayats:** These panchayats, which operate at the village level, are entrusted with giving rural citizens access to essential services and facilities.

**Block Panchayats:** The block level panchayats, which coordinate the duties of the grama panchayats and provide services and amenities that require a larger area of population.

**District Panchayats:** These are the panchayats at the district level that offer amenities and services that necessitate working at the district level.

The act outlines the roles and responsibilities of elected officials as well as the authority and duties of these panchayats. Additionally, it provides for the creation of panchayat funds, which are meant to be utilised for both the betterment of the people and the advancement of panchayats. Women, scheduled castes, and scheduled tribes are also granted reserved seats in panchayats under the Kerala panchayath raj act of 1994. In order to train panchayat elected members and officials, it also requests information from panchayat raj training institutes. The Kerala panchayath raj act of 1994, in general, encourages local self-government and efficient grassroots governance.

### **Kerala Municipalities Act 1994**

A law known as the Kerala Municipalities act of 1994 was enacted by the Kerala state legislative assembly and governs the establishment, powers, and duties of municipalities within the state of Kerala. The act was passed with the goals of improving Kerala's urban local government structure and promoting community involvement in decision-making. The state's Municipalities are established under the

Kerala Municipality act of 1994 and are entrusted with offering services and amenities to those who live in urban areas. The legislation outlines the roles and responsibilities of elected officials as well as the authorities and duties of Municipalities. The act creates the following three categories of Municipalities in the state:

**Municipal Corporations:** These are constituted in urban areas where the population exceeds one lakh.

**Municipalities:** These exist in towns with between 20,000 to a lakh resident. Women, scheduled castes, and scheduled tribes are also granted reserved seats in Municipalities under the Kerala Municipality act of 1994. It leads to the establishment of Municipal training institutes, which will be in charge of training elected members and officials of Municipalities.

### **Kerala Local Authorities (Prohibition of Defection) Act ,1999**

The Kerala state legislative assembly passed the Kerala local authorities (Prohibition of Defection) act, 1999 in order to keep elected officials in the state's local government institutions from defecting. Kerala enacted the act to discourage defections and promote stable, responsible local governments. According to this law, local government institution's elected members are ineligible if they defect from the party or group on whose ticket they were elected. A member who voluntarily resigns from the political party or organization on whose ticket they were elected is also disqualified. According to the act, a defection occurs when an elected member leaves a political party or group, or disregards instructions without prior approval. There are also exceptions to the disqualification, such as a split in the political party or group, or a merger with another party. This act was passed to promote political stability and discourage political horse trading in Kerala's local government institutions. The law ensures that elected members of local government institutions remain loyal to the political party or group on whose platform they were elected, and are accountable to their constituents.

### **3.14 CHAPTER SUMMARY**

The previous chapter presented a comprehensive overview of the literature currently identified. This chapter provides a detailed idea about the concept of Total Quality Management , major quality management models in the service sector, structure of local bodies, background of local bodies in Kerala, services provided by urban local bodies, brief description about various acts related to the establishment, functioning and management of local bodies, quality management in LSGIs and barriers to quality enhancement initiatives.

# CHAPTER 4

## RESEARCH METHODOLOGY

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## **4.1 INTRODUCTION**

The last chapter provided a theoretical over view of Total Quality Management and local bodies in Kerala especially Municipal Corporations in Kerala. Design and methodology of this research is presented in this chapter. Another goal of this chapter is to validate the measurement models that were utilised in the research. It explains the scale validation procedures, data sources, sampling design, instrument development, pilot study, data gathering techniques, and data analysis techniques.

## **4.2 RESEARCH DESIGN AND METHODOLOGY**

The research is descriptive in nature. For achieving the research objectives, different methods are employed. These include literature review, questionnaire survey and observation technique to develop a richer perspective on the research area.

### **4.2.1 Source of data**

In order to collect primary data, information is collected from employees (internal customers) and residents (external customers) of Municipal Corporations in Kerala. A sampling design is developed for selecting the respondents.

### **4.2.2 Types of data**

This study purely depends on primary data. Through self-completion questionnaires, primary data is collected from a sample of residents and employees of Municipal Corporations in Kerala.



The primary data were used to understand, evaluate and compare the application of Total Quality Management in improving quality of Municipal Corporations in Kerala. From February 2021 to December 2022, data were collected from 1290 citizens and 380 Municipal employees in Kerala.

### **4.2.3 Sampling Design-citizen**

Purposive sampling method is followed for selection of respondents. A three-stage sampling procedure has been adopted for selection of sample members

In the first stage, census survey is used for selection of Municipal Corporations in Kerala.

In the second stage, 10% of divisions of each Corporation are selected by applying simple random sampling method (lottery method).

In the third stage, from selected divisions, 30 households are selected as respondents by applying purposive sampling method. Citizens who availed Corporation's services are chosen for the study based on a screening question.

The details of sample design adopted are shown below

#### *4.2.3.1 Stage 1-Selection of Sample Municipal Corporations*

Firstly, all six Municipal Corporations in the state of Kerala i.e Thiruvananthapuram Municipal Corporations, Kollam Municipal Corporations, Kochi Municipal Corporations, Thrissur Municipal Corporations, Kozhikode Municipal Corporations and Kannur Municipal Corporations are selected.

#### *4.2.3.2 Stage 2-Selection of Divisions/Wards*

Corporations are divided into wards or divisions for administrative efficiency. A minimum 10% of the total number of divisions in each Municipal Corporation is selected in the second stage by following simple random sampling method. Table 4.1 provides information about Municipal Corporations and the selected divisions.

**Table 4.1**

*Selection of Municipal Corporations and divisions*

Sl. No.	Corporation	No of divisions	Selected no of divisions	Selected Divisions
1	Thiruvananthapuram	100	10	Pattom Owdiar Ulloor Palayam Attukal Thampanoor Pettah Kulathoor Manikavilakam Ponnumangalam
2	Thrissur	55	6	Laloor Punkunnam Viyyur Ollukara Mannuthy Chiyaram South
3	Kochi	74	7	Cheralayi Thoppumpady Manasserry Amaravathy Kacheripady Thazhuppu Thammanam
4	Kozhikode	75	8	Vengeri Paroppadi Kottooli Chelavoor Arakkinar Areekad Nallalam Beypur

Sl. No.	Corporation	No of divisions	Selected no of divisions	Selected Divisions
5	Kannur	55	6	Kakkadu Chelora Podikundu Arakkal Vetilappalli Kuruva
6	Kollam	55	6	Koikal Ammannada Ayathil Kachery Alattukavu Uliyakovil

Source: Official websites of various Municipal Corporations in Kerala

#### 4.2.3.3 Stage 3-Selection of residents

From each of the selected divisions/wards, 30 number of households are selected as respondents for the study by applying purposive sampling method. Details of selection is presented in table 4.2

**Table 4.2**

#### *Selection of sample citizens*

Corporation	Number of Citizen	Households	Total No of divisions	Selected no of divisions	Sample size
Trivandrum	966856	242149	100	10	10*30=300
Kollam	387942	93933	55	6	6*30=180
Kochi	602046	150758	74	7	7*30=210
Thrissur	315957	78336	55	6	6*30=180
Kozhikode	6,09,224	131193	75	8	8*30=240
Kannur	232486	48673	55	6	6*30=180
Total		745042			1290

Source: lsgkerala.gov.in

#### **4.2.4 Sampling Design-employee**

Purposive sampling method is followed for selection of respondents. From employee's side, A three-stage sampling procedure has been adopted for selection of sample members.

In the first stage, census survey is used for the selection of Municipal Corporations in Kerala.

In the second stage, employees are classified as groups or strata based on departments.

In the third stage, from each stratum or department, purposive sampling method is adopted to select employees.

The details of the sample design adopted are shown below

##### *4.2.4.1 Stage 1-Selection of Sample Municipal Corporations*

Firstly, all six Municipal Corporations in the state of Kerala i.e Thiruvananthapuram Municipal Corporation, Kollam Municipal Corporation, Kochi Municipal Corporation, Thrissur Municipal Corporation, Kozhikode Municipal Corporation and Kannur Municipal Corporation are selected.

##### *4.2.4.2 Stage 2-Selection of Departments*

Corporations are divided into departments for administrative efficiency. The details of departments, total number of employees, selected number of employees from various Municipal Corporations are presented in table 4.3

**Table 4.3***Selection of sample employee*

Corporation	Departments	Selected No of employees per depts	Total Number of employees	Sample size
Trivandrum	General administration	16	1963	87
	Accounts	13		
	Engineering	14		
	Revenue	13		
	Health	12		
	Town planning	11		
	Council	8		
Kollam	General Section	14	837	67
	Engineering department	12		
	Revenue Department	11		
	Health Department	11		
	Accounts Department	13		
	Council Section	6		
Kochi	General administration	11	1774	74
	Council	8		
	Engineering	9		
	Health	8		
	Revenue	10		
	Town planning	10		
	Accounts	11		
	KSUDP	7		
Thrissur	General Section	2	939	51
	Revenue Section	4		
	Engineering Section	5		
	Education Section	3		
	Water Supply Division	4		
	Relief Settlement Section	2		
	MCH Centre	2		
	Health Section	4		
	Sanitation Establishment	3		
	Birth and Death Section	7		
	Anti-Mosquito Establishment	2		
	Market and Slaughter House	3		
	Town Planning Section	5		
	Electrical Department	5		

Corporation	Departments	Selected No of employees per depts	Total Number of employees	Sample size
Kozhikode	Accounts	9	1087	50
	General administration	8		
	Health	12		
	Revenue	8		
	Town Planning	6		
	Engineering	7		
Kannur	Accounts	10	700	51
	General administration	11		
	Health	8		
	Revenue	8		
	Town Planning	6		
	Engineering	8		
Total		380	7300	380

Source: Official websites of various Municipal Corporations in Kerala, lsgkerala.gov.in

#### 4.2.4.3 Stage 3-Selection of Employees

In third stage of sample selection, from each stratum or department, purposive sampling method is adopted for selection of employees. Those employees who are dealing with different software solutions are purposefully included under this study.

#### 4.2.5 Target population

Target population consists of all elements selected for analysis based on the study's objectives. All citizens residing under Municipal Corporations of Kerala and all employees working in Municipal Corporations form the target population.

#### 4.2.6 Sampling frame

The complete list of households who reside under various divisions of all Municipal Corporation and all the employees, who works under Municipal Corporations in Kerala form sampling frame of this study.

#### 4.2.7 Sampling unit

Employees of Corporations and households reside under all six Municipal Corporations in Kerala is the sampling unit of this study.

### 4.3 Sampling technique

The study's population is quite large and spread throughout the state of Kerala. Hence, a sample study will be conducted instead of a census survey. Citizens and internal customers of Municipal Corporations in Kerala are selected using a purposive sampling method. In this study, both citizens and employees of Kerala's Municipal Corporations were asked to complete a well-structured questionnaire.

#### 4.3.1 Population

It is estimated that there are 745042 households living under Municipal Corporations in Kerala. A detailed breakdown of the population is provided in table 4.2 by Municipal Corporation.

#### 4.4 Determination of sample size of Citizen

The size of the sample is finalized by applying Krejcie and Morgan's formula

$$n = \frac{x^2 NP(1-P)}{e^2 (N-1) + x^2 P(1-P)}$$

Where,

n=Sample size to be determined

N=Population Size (**745042**)

$\chi^2$  =Chi-square value (At 95% confidence level with 1 degree of freedom, the table value is **3.841**)

e=Margin of error (at 95% confidence level is 0.05)

P=Population Propotion (50% of the population i.e.,0.5)

$$\begin{aligned} \frac{3.841 \times 745042 \times 0.5(1-0.5)}{0.05^2 (745042-1) + (3.841 \times 0.5(1-0.5))} &= \frac{3.841 \times 745042 \times 0.25}{(0.0025 \times 745041) + 3.841(0.5 \times 0.5)} \\ &= \frac{715426.5805}{1862.6025 + 0.96025} = \frac{715426.5805}{1863.56275} = 383.9 \end{aligned}$$

By following Krejcie and Morgan’s formula for determining sample size ‘n’ was derived as 384 which is the minimum sample size to represent the population. By supporting the principle of large sample, a total of 1290 citizen were selected for investigation. During data editing, 80 sample was found to be incomplete, the remaining 1210 respondents were deemed to be acceptable and appropriate for the study. Hence 1210 were finally accommodated.

#### **4.5 Determination of sample size of Employees**

Size of the sample is finalized by applying Krejcie and Morgan’s formula

$$n = \frac{x^2 NP(1-P)}{e^2 (N-1) + x^2 P(1-P)}$$

Where,

n=Sample size to be determined

N=Population Size (7300)

$\chi^2$  =Chi-square value (At 95% confidence level with 1 degree of freedom, the Table value is **3.841**)

e=Margin of error (at 95% confidence level is 0.05)

P=Population Proportion (50% of the population i.e.,0.5)

$$\frac{(3.841 \times 7300 \times (1-0.5))}{0.05^2 (7300-1) + 3.841 \times 0.5 (1-0.5)} = \frac{28039.3 \times 0.25}{0.0025 \times 7299 + 3.841 \times 0.25}$$

$$\frac{7009.825}{18.2475 + 0.96025} = \frac{7009.825}{19.20775} = 364.95$$

By following Krejcie and Morgan’s formula for determining sample size ‘n’ was derived as 365 which is the minimum sample size to represent the population. By supporting the principle of large sample, a total of 380 employees were selected for investigation.



## **4.6 Tools for data collection**

In order to ensure accurate data, questionnaire is used to collect data from the citizen and employees of urban local bodies in Kerala.

All Municipal Corporations in Kerala were visited to collect primary data. Data were collected from both the internal customers (employees) as well as the external customers (citizens) of Municipal Corporations. Two sets of questionnaires were used; one for employees who are working in a Municipal Corporation and the other one for citizens who are residing under the Municipal Corporation. Well-structured questionnaires were used to collect information from the respondents. Five-point Likert scale was used in the questionnaire. Some questionnaires were excluded due to the incompleteness of data. Observation technique is also employed to understand the facilities provided by the Municipal Corporations.

### **4.6.1 Questionnaire design-Citizen**

Four sections make up the format of the questionnaire.

1. Demography - names of Municipal Corporation
2. Satisfaction towards Services of Municipal Corporation
3. Perception towards components of TQM
4. Awareness level about software solutions by IKM for ease of service

After reviewing the literature, a set of questions related to services of Corporations and components of Total Quality Management is developed. Likert scales are commonly used to assess respondents' opinions and attitudes (Fisher, 2010). Residents are asked to evaluate their agreement and satisfaction with statements related to quality of services, components of TQM, and software solutions for ease of accessing services by using five-point Likert scale. The five points in the scale are respectively from 1 to 5: strongly disagree, disagree, neutral, agree and strongly agree. Table 4.4 present the types of measurements used in the scales.

**Table 4.4**

*Measurement scales used in the questionnaire-citizen*

Part	Purpose of measurement	Question numbers	types of measurements
1	Name of Corporation	1	Nominal
2	Service satisfaction	2	5-Point Likert Scale
3	Perception towards components of TQM	3	5-Point Likert Scale
4	Awareness-software solutions	4-6	5-Point Likert Scale

Source: Primary data

#### 4.6.2 Questionnaire design-Employees

Four sections make up the format of the questionnaire.

1. Demography-name of Municipal Corporation and departments
2. Perception towards components of TQM
3. Barriers in introducing quality initiative programs.
4. Awareness level about software solutions by IKM for doing task with minimum cost, effort and time

After reviewing literature, a set of questions related to components of Total Quality Management and software solutions is developed. Likert scales are commonly used to assess respondents' opinions and attitudes (Fisher, 2010). Residents are asked to evaluate their agreement and satisfaction with statements related to quality of services, components of TQM, and software solutions for ease of accessing services by using five-point Likert scale. The five points in the scale are respectively from 1 to 5: strongly disagree, disagree, neutral, agree and strongly agree. Table 4.5 present the types of measurements used in the scales.

**Table 4.5***Measurement scales used in the questionnaire-employees*

Part	Purpose of measurement	Question number	types of measurements
1	Name of Corporation and departments	1-2	Nominal
2	Perception towards components of TQM	3	5-Point Likert Scale
3	Barriers in introducing quality initiative programs	4	5-Point Likert Scale
4	Awareness-software solutions	5-7	5-Point Likert Scale

Source: Primary data

**4.7 Data processing and analysis**

To draw conclusions from the primary data, statistical tools mainly Mean, S.D., one way-ANOVA, MANOVA, Correlation, and SEM modelling are used. For analysing the data, IBM SPSS Statistics 26 and AMOS 21 were used.

**Mean**

An average of a collection of values is the mean of a group of numbers. In statistics, mean is commonly used as a measure of central tendency (Kothari, 2004).

**SD**

A standard deviation (SD) is a measure of variability or dispersion of a set of values. When a set of values has a low standard deviation, the values tend to be closer to the mean, and when a set of values has a high standard deviation, the values are spread out over a wide range.

**Percentages**

In descriptive statistics, percentages represent a ratio in the form of a fraction out of 100. Percentages are a valuable tool in descriptive statistics. As a relative frequency, they provide a way to understand and summarize the distribution of data.

**One way-ANOVA**

The one-way analysis of variance (ANOVA) is a statistical approach used to examine variations in the means of three or more groups. This technique is used in situations where we want to compare more than two populations (Kothari, 2004).

### **Welch test**

When there is no assumption of homogeneity of variance across different categories, the welch test is recommended as an alternative to one-way ANOVA. It serves the same purpose as one-way ANOVA for testing differences in the means of three or more groups.

### **MANOVA**

ANOVA examines the difference between the means of various groups for a single response variable. Multivariate analysis of variance (MANOVA) is an extension of common analysis of variance (ANOVA). The number of response variables is increased to two or more in MANOVA. When there is more than one dependent variable influenced by independent groups, a one-way MANOVA is used to determine whether there are any differences between them. “Multivariate analysis of variance (MANOVA) is simply an ANOVA with several dependent variables” (French et al., 2008).

### **Correlation**

The degree of association between two variables is measured by using correlation and is represented in terms of coefficient known as correlation coefficient.

### **Tukey’s HSD Test**

To assess the significance of differences between two groups, tukey's honest significant difference (HSD) test is commonly used. When the F test has indicated a significant difference between some of the groups, tukey's HSD is often used as a follow-up to one-way ANOVA. It helps in identifying which all groups are different.

### **Thamnhe test**

When homogeneity of variance is not assumed, the Thamnhe test can be used to determine the significance of differences between pairs of group means.

### **EFA (Exploratory Factor Analysis)**

Within multivariate statistics, Exploratory Factor Analysis (EFA) is a statistical technique employed to reveal the inherent structure within a relatively extensive set

of variables. EFA aids in minimizing the number of variables based on their factor loadings.

### **CFA**

A multivariate statistical method called Confirmatory Factor Analysis (CFA) is used to check the relationship between measured variables and its constructs. This type of factor analysis is used to specify the pattern of factor loadings based on theoretical and empirical data. This illustrates how latent variables are influenced by measured variables in the sample data. In order to construct the proposed model and measurement model to define factor structure of observed variables, the Structural Equation Modelling (SEM) is used.

### **SEM**

A multivariate statistical technique called Structural Equation Modelling (SEM) is used to analyse the casual relationship between the dependent and independent variables with the help of structural equation models. It provides a mixed result of Confirmatory Factor Analysis and multiple regression between the variables of the study. Additionally, it demonstrates the hypothesized path of directional linkage among set of latent constructs by computing the values of regression coefficient to illustrate the explanatory power of the independent variables to the dependent variables. Hence, it has been used to solve set of questions formed between the constructs of the model before analysing the validity through specified values of model fit indices.

## **4.8 Pilot study**

To avoid overlooking errors and to finalize the questionnaire and measurement scale, a pilot study was conducted. The questionnaire developed by the researcher is finalized after carrying a pilot survey to ensure reliability and validity. The study was conducted among 50 citizens who are residing under Kozhikode Municipal Corporation. 50 people who are working in Kozhikode Municipal Corporation were selected from the employee side to carry out a pilot study. Based on the result,

necessary alterations were made to the questionnaire to improve the quality of the study.

After the study, the reliability and validity of the scale were tested by appropriate methods. On the basis of the pilot study, reliability and validity test, suitable modifications were incorporated into the questionnaire and measurement scales.

#### 4.8.1 Determination of Reliability Testing

Reliability is the degree to which an instrument consistently measures a construct. Reliability testing is important to measure accuracy and consistency of the questionnaire.

Reliability of the scale is measure by using Cronbach’s alpha. Since the Cronbach’s alpha coefficient for variables in both citizen and employee questionnaires are satisfactory, overall reliability is assumed. The table 4.6 shows item-by-item reliability statistics

**Table 4.6**

*Reliability Statistics-Questionnaire for Citizen*

Sl. No.	Variable	No of items	Alpha value
1	Health and environment	8	0.744
2	Social service	4	0.708
3	Reconstruction and urban development	7	0.699
4	Urban transportation	3	0.700
5	Disaster management and security services	4	0.709
6	Community services	2	0.711
7	Education services	2	0.711
8	Hard components for public	17	0.825
9	Soft components for public	15	0.816
10	SEVANA - Civil Registration	12	0.675
11	SEVANA –PENSION	9	0.689
12	SANKETHAM	10	0.800
13	SANCHAYA	11	0.705
14	SOOCHIKA	8	0.724

(Source: Primary data)

The table 4.6 shows that all alpha values are above or near 0.7 and hence it is proved that the measurement scale has internal consistency.

#### 4.8.1.1 Reliability Statistics-Questionnaire for employees

**Table 4.7**

*Results of Reliability analysis - Questionnaire for Employees*

Sl. No.	Variables	No. of items	Alpha values
1	Hard TQM	13	.738
2	Soft TQM	18	.699
3	Barriers	13	.781
4	STHAPANA	12	.720
5	SANCHITHA	10	.766
6	SAANKHYA	12	.800
7	SAKARMA	10	.708
8	SUGAMA	8	.761
9	SAMVEDHITHA	8	.721
10	SUBHADRA	9	.723
11	SAMOOHYA	9	.711
12	SAPHALYA	9	.701
13	SULEKHA	8	.677

Source: Primary data

#### 4.8.1.2 Development of measurement scales

Three phases were involved in the development of the measurement scales in this study

1. During the first stage, items are generated through literature reviews, and their validity is tested by experts
2. The scale is constructed in the second stage. Pre-testing the questions, administering the survey, reducing the number of items through Exploratory Factor Analysis (EFA), and understanding how many factors the scale captures are all parts of it.

3. During the third stage, scale evaluation, the number of dimensions is tested, reliability is tested and validity is assessed through confirmatory factor analysis.

#### **4.8.2 Determination of validity of the measurement scale**

Validity refers to the extent to which the collected data covers the actual field of inquiry (Ghuri & Gronhaug, 2010). "Measure what is intended to be measured" is the basic definition of validity (Field, 2005). Validity is of two types: Content validity and construct validity.

##### **4.8.2.1 Content Validity Test**

Both questionnaires' content validity was ensured by taking into account the suggestions and opinions of experts in the field. The questionnaire has been reviewed by the panel of experts to check whether the instrument is able to measure what it is supposed to measure and based on their opinion; necessary modifications were made in the questionnaire.

##### **4.8.2.2 Construct validity**

Construct measures how successfully a thought or idea was translated or altered. Discriminant validity, convergent validity are the components of construct validity (Taherdoost, 2016).

##### **4.8.2.3 Discriminant validity**

The discriminant validity of a latent variable is the extent to which it differs from other latent variables (for example, A, B, C, D). According to discriminant validity tests that constructs that should have no relationship do, in fact, not have any relationship.

##### **4.8.2.4 Convergent validity**

Using principle component analysis (PCA) with varimax rotation method, a factor analysis was performed on a sample of 50 respondents included in the pilot study to verify construct validity (discriminant and convergent validity) (Koh & Nam, 2005). For further analysis, the items loaded above 0.40, minimum recommended value in research are considered, and delete the items with cross loadings greater than 0.40. Therefore, the result of factor analysis will satisfy the criteria of construct validity including both the discriminant validity (loading of at least 0.40, no cross



loading of items above 0.40) and convergent validity (eigen values of 1, loadings of at least 0.40, items that load on posited constructs) (Straub & Gefen, 2004).

After data collection, in order to evaluate the scale, the number of dimensions is tested, reliability is tested and validity is assessed through Confirmatory Factor Analysis (CFA). The following sections of this chapter is bifurcated into PART-A & PART-B, where PART-A will explain the result of Exploratory Factor Analysis and Confirmatory Factor Analysis based on citizen's response and PART-B will explain the result of Exploratory Factor Analysis and Confirmatory Factor Analysis based on employee's response.

#### **4.9 PART-A: Validation of measurement Scales - Hard components of TQM – Citizen's Perspective**

Two steps are followed in validating the scale used to measure the "hard TQM" component of Total Quality Management. The Exploratory Factor Analysis (EFA) is performed on a sample of 50 citizens living in Kozhikode Municipal Corporation. Finally, a Confirmatory Factor Analysis is applied to assess factor structure quality by statistically testing the significance of the model and the relationship between items and scales using 1210 data.

#### **4.10 Exploratory Factor Analysis-Hard TQM**

The evaluation of citizens perceptions regarding TQM was conducted by utilizing 17 perceptual variables contributing to hard components of TQM. The factor analysis aimed to discern the major components of hard TQM. Notably, the analysis was based on citizens' responses. The results of the factor analysis, elucidating the major components of hard TQM, are presented in Table 4.10. This rigorous examination allowed for a nuanced understanding of how citizens perceive the various facets of TQM, shedding light on the key elements that contribute significantly to hard components within the Municipal Corporation. The adequacy of sample size for conducting factor analysis is tested by Kaiser-Meyer-Olkin (KMO) test (George & Mallery, 1999). The only technique for grouping items under one construct is Exploratory Factor Analysis (EFA). In order to consider a factor reliable, its Cronbach's alpha value should be greater than or equal to 0.7. (Hair et al., 2010).

Table 4.8 shows the results of KMO and Bartlett's Test

**Table 4.8**

*KMO and Bartlett's Test-Hard TQM*

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.883
Bartlett's Test of Sphericity	Approx. Chi-Square	84.942
	Df	136
	Sig.	0.000

Source: Primary data

Table 4.8 indicates KMO value for variables measuring components of hard TQM is 0.883 that is greater than the threshold limit which justifies the appropriateness of factor analysis. For measuring the presence of correlation among variables bartlett's test of sphericity is computed. The test statistics shows a chi-square value of 84.942 significant at 1% level of significance.

**Table 4.9**

*Total Variance Explained- Hard TQM*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.649	33.227	33.227	5.649	33.227	33.227	3.754	22.081	22.081
2	2.975	17.498	50.725	2.975	17.498	50.725	3.345	19.679	41.76
3	1.4	8.235	58.96	1.4	8.235	58.96	2.764	16.258	58.018
4	1.086	6.386	65.345	1.086	6.386	65.345	1.246	7.327	65.345
5	0.795	4.674	70.019						
6	0.69	4.061	74.08						
7	0.612	3.6	77.68						
8	0.552	3.244	80.924						
9	0.498	2.928	83.852						
10	0.439	2.585	86.437						
11	0.41	2.411	88.848						
12	0.402	2.363	91.211						
13	0.382	2.244	93.456						
14	0.351	2.067	95.523						
15	0.301	1.771	97.294						
16	0.272	1.598	98.892						
17	0.188	1.108	100						

Extraction Method: Principal Component Analysis.

Exploratory Factor Analysis was conducted to list the essential components by following principal component analysis, resulting in the identification of four distinct factors. The table 4.10 provides a summary of the results of a factor analysis, identifying four major components of "hard Total Quality Management (TQM)": the 'Community Resource Hub (CRH),' 'Accessible Amenities Hub (AAH),' 'Public Information Centre (PIC) ,' and 'Rest Zone (RRZ).' These components encompass various elements that define hard TQM explained by 65.35% of variance. The outcome of the EFA is displayed below.

**Table 4.10***Hard Components of TQM (Citizen's Perspective)*

Factors	Variables	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
Community Resource Hub (CRH)	HTQM4- Writing desk	2.9099	1.06107	0.587	<b>5.649</b>	33.227	0.732
	HTQM5- Availability of Application forms, Stationary for public	3.3223	1.07775	0.65			
	HTQM11- Drinking water facility	3.0653	0.90757	0.755			
	HTQM12- Toilets	2.9025	1.02269	0.744			
	HTQM13- Wash basin	3.154	0.75819	0.74			
	HTQM17- Rehabilitation centres and programs for differently-abled citizens	3.4372	0.78432	0.635			

Factors	Variables	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
Accessible Amenities Hub (AAH)	HTQM16- Facilities for physically challenged people like ramp	2.6008	1.23574	0.513	2.975	17.498	0.799
	HTQM15- Touch screen for understanding service status	1.8636	1.14409	0.864			
	HTQM14- Baby Feeding room	1.8694	1.15734	0.872			
	HTQM10- First aid kit	2.3769	1.10273	0.689			
	HTQM9- Reading corner and materials	2.2967	1.04113	0.746			
Public Information Centre (PIC)	HTQM1- Front office counter	3.2975	1.06407	0.624	1.4	8.235	0.732
	HTQM6- Complaint box	3.4322	0.86803	0.735			
	HTQM7- Notice board- RTI	3.6231	0.84739	0.76			
	HTQM8- Anti- corruption board	3.8678	0.92069	0.759			
Rest and Relaxation Zone (RRZ)	HTQM2- Thapal box	3.4579	0.87817	0.869	1.086	6.386	0.701
	HTQM3- Seating facility	2.952	0.91312	0.526			
<b>Total variance explained 65.345%</b>							

Source: Primary data

The first component, '**Community Resource Hub (CRH)**,' encompasses six key elements: writing desk, availability of application forms, stationery for public use, drinking water facilities, toilets, wash basins, and rehabilitation centres and programs

for differently-abled citizens. It is represented by variables 4th, 5th, 11th, 12th, 13th, and 17th, displayed substantial loadings with an eigen value of 5.649, accounting for 33.227% of the total variance. This factor plays a pivotal role in the concept of hard Total Quality Management (TQM). The second factor is denoted as the "**Accessible Amenities Hub**" and the second component, 'Accessible Amenities Hub (AAH),' includes five essential components: facilities for physically challenged individuals such as ramps, touch screens for service status information, baby feeding rooms, first aid kits, and reading corners with relevant materials. It possesses an eigen value of 2.975, explaining 17.498% of the variance. The third factor, termed the '**Public Information Centre (PIC)** ,' consisting of four elements: Front office counters, complaint boxes, notice boards for right to information (RTI), and anti-corruption boards. It exhibits an eigen value of 1.4, elucidating 8.235% of the total variance. The fourth component, '**Rest and Relaxation Zone (RRZ)**,' comprises two elements: Thapal boxes and seating facilities, which account for 6.386% of the variance. In nutshell, these components and their associated elements collectively define the concept of "hard TQM" within the context of the table's results.

#### 4.10.1 Construct validity

Table 4.10 demonstrates that all of the items have factor loadings of 0.40 and that no item has a cross loading greater than 0.40. As a result, the factor results meet the criteria of construct validity in both discriminant (loading of at least 0.40, no cross loading of items above .40) and convergent (eigen values of 1, loading of at least 0.40, items that load on posited constructs) terms (Straub & Gefen, 2004). A good level of validity is established as shown the result of EFA for the selected factors. According to table 4.10, Cronbach's alpha values for all factors are higher than 0.70, indicating that they are reliable (Hair et al., 2010). There are also four factors in table 4.10, along with items, factor loadings, percentage of variance explained by each factor, and item by item mean and standard deviation.

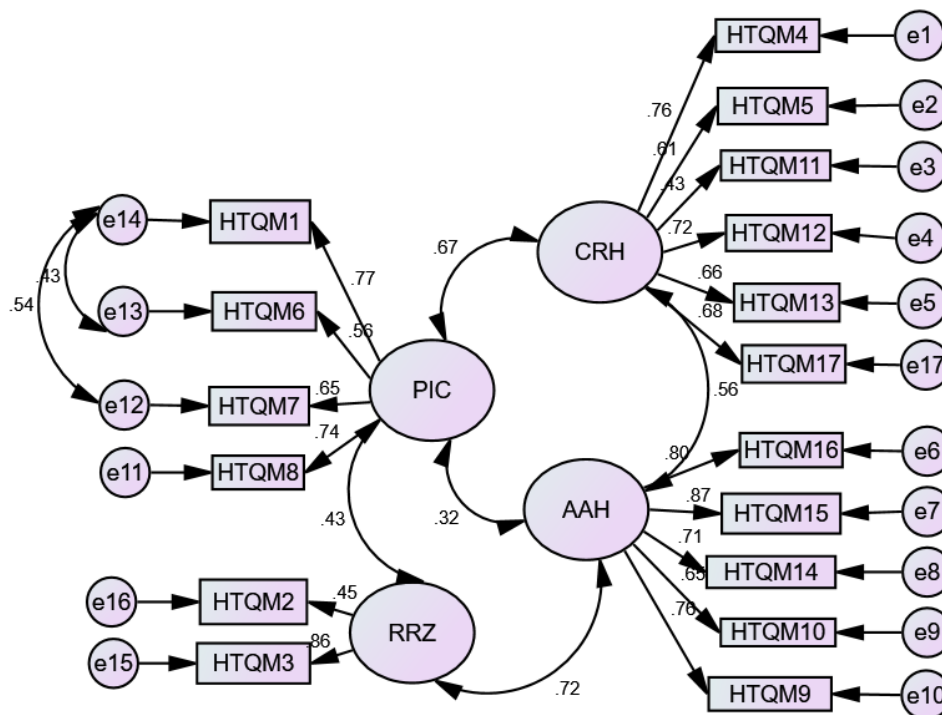
#### 4.11 Confirmatory Factor Analysis-Hard TQM

Through Exploratory Factor Analysis, four factors were identified. The next step was to confirm the factor structure using data collected from the total sample.

Confirmatory Factor Analysis was performed using Structural Equation Modelling (SEM) using AMOS 26. The Confirmatory Factor Analysis confirmed the pattern revealed by the exploratory factor analysis. To understand the factor structure of hard TQM components, the hypothesis that *there is relationship between observed variables and their underlying latent constructs* was formulated. CFA mainly aims to test whether the sample data fit for the hypothesized measurement model regarding hard TQM. This study tested the fit of first order model via maximum likelihood by using a sample size of 1210. Four factors, namely Community Resource Hub (CRH), Accessible Amenities Hub (AAH), Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ) are included in the proposed model of hard TQM. Exploratory Factor Analysis was used to identify these factors.

**Figure 4.1**

*CFA Measurement model-hard TQM*



Four sub-factors of hard TQM namely Community Resource Hub, Accessible Amenities Hub, Public Information Centre and Rest and Relaxation Zone are included in the measurement model. The table 4.11 illustrate the path estimates between constructs and items.

**Table 4.11***Hard TQM- Path estimates and regression weights of CFA measurement model*

Sl. No.	Path	Estimates	S.E	C.R	P	Standardised loadings
1	HTQM4 ← CRH	1				<b>0.761</b>
2	HTQM5 ← CRH	1.543	0.12	9.876	<.01***	0.605
3	HTQM11 ← CRH	1.345	0.143	11.873	<.01***	0.427
4	HTQM12 ← CRH	1.765	0.123	10.852	<.01***	0.721
5	HTQM13 ← CRH	1.654	0.154	12.321	<.01***	0.664
6	HTQM17 ← CRH	1.564	0.169	10.408	<.01***	0.676
7	HTQM16 ← AAH	1				0.804
8	HTQM15 ← AAH	1.876	0.131	11.643	<.01***	<b>0.866</b>
9	HTQM14 ← AAH	1.453	0.165	13.987	<.01***	0.707
10	HTQM10 ← AAH	1.671	0.175	15.876	<.01***	0.653
11	HTQM9 ← AAH	1.555	0.129	10.675	<.01***	0.755
12	HTQM1 ← PIC	1				<b>0.771</b>
13	HTQM6 ← PIC	1.65	0.151	16.534	<.01***	0.557
14	HTQM7 ← PIC	1.432	0.173	14.143	<.01***	0.649
15	HTQM8 ← PIC	1.441	0.146	12.165	<.01***	0.736
16	HTQM2 ← RRZ	1				0.449
17	HTQM3 ← RRZ	0.938	0.087	17.134	<.01***	<b>0.855</b>

\*\*\* Significant at 1% level

Source: Primary data

The regression weights of each path included in the measurement model of hard TQM is presented in table 4.11 Standardised regression weights of all the statements are satisfactory and the standardised loadings of all the statements are above 0.5, which indicates that all the variables are satisfactorily contributes to the variance of the constructs. All variables included in the constructs have highly significant p values, indicating their desirability. An item with highest loading in the construct contributes more to the variance of the construct. Variable “writing desk” (HTQM4) is the highest loading item (0.761) which contributes more to the factor ‘Community Resource Hub (CRH)’. The “touch screen for understanding service status”(HTQM 15) contributes more to the factor “Accessible Amenities Hub (AAH)”(with loading of 0.866), front office counter(HTQM1) contributes more to ‘Public Information Centre (PIC)’, and seating facility(HTQM3) contributes more to ‘Rest and Relaxation Zone (RRZ)’.

The following section analyses and discusses model validity estimates for convergent and discriminant validity. The model validity estimation result is shown in the following table.

**Table 4.12**

*Validity and Reliability of CFA Measurement Model-Hard TQM*

Factors	Items	Variables	Factor Loadings	CR	AVE	MSV
Community Resource Hub (CRH)	HTQM4	Writing desk	0.623	0.876	0.567	0.476
	HTQM5	Availability of Application forms, Stationary for public	0.711			
	HTQM11	Drinking water facility	0.799			
	HTQM12	Toilets	0.8			
	HTQM13	Wash basin	0.845			
Accessible Amenities Hub (AAH)	HTQM17	Rehabilitation centres and programs for differently-abled citizens	0.678	0.801	0.678	0.654
	HTQM16	Facilities for physically challenged people like ramp	0.654			
	HTQM15	Touch screen for understanding service status	0.898			
	HTQM14	Baby Feeding room	0.881			
	HTQM10	First aid kit	0.701			
Public Information Centre (PIC)	HTQM9	Reading corner and materials	0.769	0.761	0.573	0.476
	HTQM1	Front office counter	0.689			
	HTQM6	Complaint box	0.798			
	HTQM7	Notice board-RTI	0.765			
Rest and Relaxation Zone (RRZ)	HTQM8	Anti-corruption board	0.789	0.765	0.765	0.543
	HTQM2	Thapal box	0.899			
	HTQM3	Seating facility	0.675			

Source: Primary data



The Standardised Factor Loadings (SFL) of each item included in the measurement model of hard TQM is presented in table 4.12. All statements have standardised loadings above 0.5, indicating that they all contribute satisfactorily to the construct's variance. As all constructs have Composite Reliability (CR) values and average variance extracted (AVE) values higher than 0.5, hence it can confirm the convergent validity of the scales and it also established that each of the variable used for the measurement correlate strongly with its construct “hard TQM”.

In order to determine the discriminant validity of the scale, the maximum shared variance (MSV) is compared with the average variance extracted (AVE) for each construct. The AVE values for all factors are greater than MSV(AVE>MSV), which empirically proves the discriminant validity of the scale used to measure the construct ‘hard TQM’.

The next step is to assess the model fitness because the estimates of the model validity for discriminant and convergent validity are favourable. Many indices of fit, including measures of goodness of fit, badness of fit, incremental fit, comparative fit, and parsimony fit, are produced using the structural equation model using Amos. The model fit analysis is illustrated in table 4.13

**Table 4.13**

*Model fit indices-Hard TQM*

<b>Indices</b>	<b>Obtained</b>	<b>Recommended</b>
CMIN/DF	4.33	<5.00(Hair et al., 2010)
Root Mean square Residual (RMR)	0.032	<0.05(Diamantopoulos & SiguaawJ.A., 2000)
Comparative Fit Index (CFI)	0.9	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.872	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.8	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.899	>.90
Normed Fit Index (NFI)	0.901	>.90(Bentler & Bonett, 1980)
Relative Fit Index (RFI)	0.794	> .90
RMSEA	0.07	<0.08(Hair et al., 2010)

Source: Primary data

Fit indices, including CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR, and RMSEA, show a good degree of fit. A slightly above-acceptable CMIN/DF ratio suggests that it is acceptable as a measure of goodness of fit.

0.90 is recommended for an acceptable fit, but it is important to note that the reference value may vary based on the complexity of the model and the size of the sample (Kline, 2011). According to the model, the Goodness of Fit (GFI) value is 0.872, which is lower than the recommended value of more than 0.90. Moreover, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.800, attaining the acceptable threshold of 0.80. A GFI or AGFI score of .80 to .89 is considered a reasonable fit; scores of .90 or higher are regarded as indicative of a good fit (Baumgartner & Homburg, 1996; Bentler, 1990; Doll et al., 1994).

The Normed Fit Index (NFI), Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) are .901, .900, .899 respectively which satisfy the acceptable limit of 0.90, and are considered as acceptable fit (Kim et al., 2016). The Relative Fit Index (RFI) registers at 0.794 against the recommended value of 0.90 and is considered as reasonable fit (Kline, 2016).

For RMR, values less than 0.08 or 0.05 are considered acceptable (Hu & Bentler, 1999; Kline, 2016). In addition, the Root Mean square Residual (RMR) of 0.032 is well below the recommended limit of 0.05.

Additionally, the Root Mean Square Error of Approximation (RMSEA) registers at 0.070, a level slightly above the acceptable limit of 0.08 (Hu & Bentler, 1999). The outcome of the analysis shows that there is adequate fit for the measurement model, therefore we can confirm the result of Exploratory Factor Analysis of the construct 'hard TQM'.

#### **4.12 Validation of measurement Scales-Soft component of TQM – Citizen's Perspective**

Two steps are followed in validating the scale used to measure the "Soft TQM" component of Total Quality Management. The Exploratory Factor Analysis (EFA) is performed on a sample of 50 citizens living in Kozhikode Municipal Corporation.

Finally, a Confirmatory Factor Analysis is applied to assess factor structure quality by statistically testing the significance of the model and the relationship between items and scales using 1210 data.

#### 4.13 Exploratory Factor Analysis-Soft TQM

The evaluation of citizens perceptions regarding TQM was conducted by utilizing 15 perceptual variables contributing to soft components of TQM. The factor analysis aimed to discern the major components of soft TQM. Notably, the analysis was based on citizens' responses. The results of the factor analysis, elucidating the major components of soft TQM, are presented in table 4.1. This rigorous examination allowed for a nuanced understanding of how citizens perceive the various facets of TQM, shedding light on the key elements that contribute significantly to soft components within the Municipal Corporation. The adequacy of sample size for conducting factor analysis is tested by Kaiser-Meyer-Olkin (KMO) test (George & Mallery, 1999). The only technique for grouping items under one construct is Exploratory Factor Analysis (EFA). In order to consider a factor reliable, its Cronbach's Alpha value should be greater than or equal to 0.7 (Hair et al., 2010).

Table 4.14 shows the results of KMO and Bartlett's test

**Table 4.14**

*KMO and Bartlett's Test-Soft TQM*

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.828
	Approx. Chi-Square	577.666
Bartlett's Test of Sphericity	Df	105
	Sig.	0

Table 4.14 indicates KMO value for variables measuring components of soft TQM is 0.828 that is greater than the threshold limit which justifies the appropriateness of factor analysis. For measuring the presence of correlation among variables Bartlett's test of sphericity is computed. The test statistics shows a chi-square value of 577.666

significant at 1% level of significance. Table 4.15 shows the result of EFA (Exploratory Factor Analysis), the result revealed that there are four factors (Soft TQM) having eigen values of more than one.

**Table 4.15**

*Total Variance Explained-Soft TQM*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.484	29.891	29.891	4.484	29.891	29.891	2.967	19.779	19.779
2	2.155	14.369	44.259	2.155	14.369	44.259	2.478	16.521	36.299
3	1.431	9.539	53.798	1.431	9.539	53.798	2.006	13.373	49.672
4	1.012	6.748	60.546	1.012	6.748	60.546	1.631	10.874	60.546
5	0.920	6.136	66.683						
6	0.763	5.084	71.766						
7	0.642	4.283	76.049						
8	0.617	4.116	80.164						
9	0.551	3.673	83.838						
10	0.526	3.504	87.341						
11	0.437	2.912	90.254						
12	0.402	2.677	92.931						
13	0.389	2.595	95.526						
14	0.342	2.279	97.805						
15	0.329	2.195	100.000						

Extraction Method: Principal Component Analysis.

The table 4.16 summarizes the results of a factor analysis, which identified four major components of "soft TQM" (Total Quality Management ). These components are labelled as 'Customer Service Attributes and Elements (CSAE)', 'Public Feedback Program (PFP)', 'Front Office Expertise (FOE)', and 'Employee Engagement and Access Control System (EE&ACS)'. These components encompass various elements that define soft TQM. The table 4.16 provides an organized representation of the key components and elements that make up "soft TQM" and the respective groups they fall into.

**Table 4.16***Soft components of TQM (citizens)*

Factors	Variables	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
CSAE	STQM3- Availability of officials in Front office	3.0529	1.09311	0.441	4.484	29.891	0.701
	STQM4-Helping mentality of officials	3.2132	1.15434	0.766			
	STQM5-Attitude of Councillors	3.2521	0.89393	0.663			
	STQM7-Timely service	2.9893	0.97735	0.487			
	STQM8- Procedures for availing service	2.7496	1.0017	0.72			
PFP	STQM9- Complaint Redressal system	2.5504	0.95447	0.654	2.155	14.369	0.732
	STQM10- Meeting of citizen	2.624	1.0393	0.592			
	STQM12-Timely acknowledgement of applications and complaints	3.2124	0.89868	0.76			
	STQM13-Ward sabha meeting	2.9587	0.97696	0.714			
FOE	STQM14- Citizen's feedback system	2.4773	1.10897	0.782	1.431	9.539	0.765
	STQM1-Attitude of officials in Front office	3.2653	0.88262	0.798			
EE&ACS	STQM2- Knowledge of officials in Front office	3.414	0.84123	0.848	1.012	6.748	0.754
	STQM6-Staff appearance	3.6074	0.8076	0.609			
	STQM11- Participation in decision making	2.9165	0.87165	0.481			
	STQM15- Electronic token distribution	1.9347	0.58507	0.794			
Total variance explained <b>60.546</b>							

(Source: Primary data)

The analysis revealed that the 3rd, 4th, 5th, 7th, 8th, and 9th variables exhibit significant loadings with an eigen value of 4.484, explaining 29.891% of the variance named as '**Customer Service Attributes and Elements (CSAE)**'. It comprises six elements, including: availability of officials in front office, helping mentality of officials, attitude of councillors, timely service, procedures for availing service and complaint redressal system. This factor is a pivotal component of soft Total Quality Management (TQM). The second factor, denoted as "**Public Feedback Program (PFP)**", "encompasses four components: meetings with citizens, timely acknowledgment of applications and complaints, ward saba meetings and citizen's feedback system. It possesses an eigen value of 2.155, elucidating 14.369% of the variance. The variables "attitude of officials in the front office" and "knowledge of officials in the front office" have been amalgamated under the label "**Front Office Expertise(FOE)**." This factor is associated with an eigen value of 1.431, signifying 9.539% of the variance. **Employee Engagement and Access Control System (EE&ACS)**: The fourth component of TQM is designated as "Employee Engagement and Access Control System." It comprises variables such as staff appearance, participation in decision-making, and electronic token distribution, possessing an eigen value of 1.012, explaining 6.748% of the variance. In nutshell, these components and their associated elements collectively define the concept of "soft TQM" within the context of the table's results.

### **Construct validity**

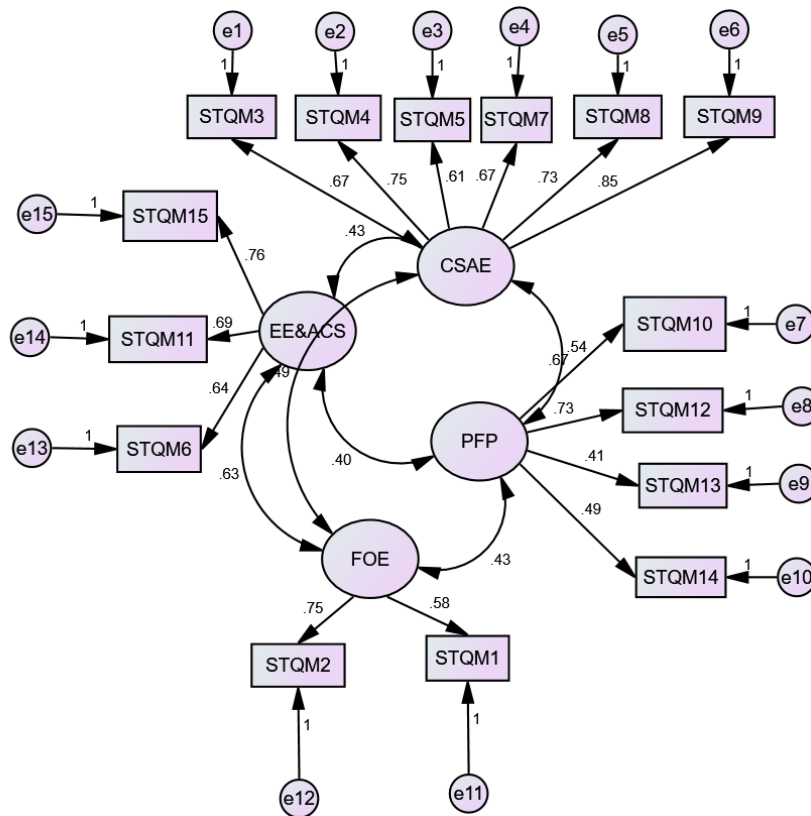
Table 4.16 demonstrates that all of the items have factor loadings of 0.40 and that no item has a cross loading greater than 0.40. As a result, the factor results meet the criteria of construct validity in both discriminant (loading of at least 0.40, no cross loading of items above .40) and convergent (eigen values of 1, loading of at least 0.40, items that load on posited constructs) terms. (Straub & Gefen, 2004). A good level of validity is established as shown the result of EFA for the selected factors. According to table 4.16, Cronbach's alpha values for all factors are higher than 0.70, indicating that they are reliable (Hair et al., 2010). There are also four factors in table 1.11, along with items, factor loadings, percentage of variance explained by each factor, and item by item mean and standard deviation.

### 4.14 Confirmatory Factor Analysis-Soft TQM

Through Exploratory Factor Analysis, four factors were identified. The next step was to confirm the factor structure using data collected from the total sample. Confirmatory Factor Analysis was performed using Structural Equation Modelling (SEM) using AMOS 26. The Confirmatory Factor Analysis confirmed the pattern revealed by the exploratory factor analysis. To know the factor structure of soft TQM components, the hypothesis that *there is relationship between observed variables and their underlying latent constructs* was formulated. CFA mainly aims to test whether the sample data fit for the hypothesized measurement model regarding soft TQM. This study tested the fit of first order model via maximum likelihood by using a sample size of 1210. Four factors, namely, 'Customer Service Attributes and Elements, Public Feedback Program, Front Office Expertise and Employee Engagement and Access Control System are included in the proposed model of soft TQM. Exploratory Factor Analysis was used to identify these factors.

**Figure 4.2**

*CFA Measurement model-Soft TQM*



Four sub-factors of soft TQM (Customer Service Attributes and Elements, 'Public Feedback Program, Front Office Expertise, and 'Employee Engagement and Access Control System) are included in the measurement model. The table 4.17 illustrate the path estimates between constructs and items.

**Table 4.17**

*Soft TQM – Path estimates and regression weights of CFA Measurement Model*

Sl. No.	Path	Estimates	S.E	C.R	P	Standardised loadings
1	STQM3 ← CSAE	1				0.671
2	STQM4 ← CSAE	1.443	0.176	11.98	<.01***	0.746
3	STQM5 ← CSAE	1.745	0.134	9.165	<.01***	0.609
4	STQM7 ← CSAE	1.321	0.165	10.115	<.01***	0.668
5	STQM8 ← CSAE	1.054	0.198	11.65	<.01***	0.725
6	STQM9 ← CSAE	1.564	0.166	12.76	<.01***	<b>0.846</b>
7	STQM10 ← PFP	1				0.544
8	STQM12 ← PFP	1.176	0.154	13.345	<.01***	<b>0.725</b>
9	STQM13 ← PFP	1.453	0.198	10.981	<.01***	0.414
10	STQM14 ← PFP	1.577	0.181	12.123	<.01***	0.493
11	STQM1 ← FOE	1				0.577
12	STQM2 ← FOE	1.655	0.173	15.678	<.01***	<b>0.754</b>
13	STQM6 ← EE &ACS	1				0.635
14	STQM11 ← EE &ACS	1.563	0.179	14.387	<.01***	0.687
15	STQM15 ← EE &ACS	1.652	0.115	12.342	<.01***	<b>0.756</b>

\*\*\* Significant at 1% level

Source: Primary data

The regression weights of each path included in the measurement model of soft TQM is presented in table 4.17. Standardised regression weights of all the statements are satisfactory and the standardised loadings of all the statements are above 0.5, which indicates that all the variables are satisfactorily contributes to the variance of the constructs. All variables included in the constructs have highly significant p values, indicating their desirability. An item with highest loading in the construct contributes more to the variance of the construct. Variable “complaint redressal system” (STQM9) is the highest loading item(0.846) which contributes more to the factor



‘Customer Service Attributes and Elements (CSAE)’. The item “timely acknowledgement of applications and complaints”( STQM12) contributes more to the factor “Public Feedback Program (PFP)” (with loading of 0.725), knowledge of officials in front office (STQM2) contributes more to ‘Front Office Expertise(FOE)’ and electronic token distribution (STQM15) contributes more to ‘Engagement and Access Control System (EE&ACS)’.

The following section analyses and discusses model validity estimates for convergent and discriminant validity. The model validity estimation result is shown in the following table 4.18.

**Table 4.18**

*Validity and Reliability of CFA Measurement Model-Soft TQM*

Factors	Items	Variables	Factor Loadings	CR	AVE	MSV
CSAE	STQM3	Availability of officials in Front office	0.645	0.813	0.598	0.575
	STQM4	Helping mentality of officials	0.787			
	STQM5	Attitude of Councillors	0.713			
	STQM7	Timely service	0.768			
	STQM8	Procedures for availing service	0.687			
	STQM9	Complaint Redressal system	0.781			
PFP	STQM10	Meeting of citizen	0.657	0.897	0.678	0.654
	STQM12	Timely acknowledgement of applications and complaints	0.876			
	STQM13	Ward sabha meeting	0.871			
	STQM14	Citizen’s feedback system	0.765			

Factors	Items	Variables	Factor Loadings	CR	AVE	MSV
FOE	STQM1	Attitude of officials in Front office	0.719	0.786	0.791	0.654
	STQM2	Knowledge of officials in Front office	0.764			
EE&ACS	STQM6	Staff appearance	0.781	0.761	0.675	0.534
	STQM11	Participation in decision making	0.783			
	STQM15	Electronic token distribution	0.771			

Source: Primary data

The Standardised Factor Loadings (SFL) of each item included in the measurement model of soft TQM is presented in table 4.18. All statements have standardised loadings above 0.5, indicating that they all contribute satisfactorily to the construct's variance. As all constructs have Composite Reliability (CR) values and average variance extracted (AVE) values higher than 0.5, hence we can confirm the convergent validity of the scales and it also established that each of the variable used for the measurement correlate strongly with its construct “soft TQM”.

In order to determine the discriminant validity of the scale, the maximum shared variance (MSV) is compared with the average variance extracted (AVE) for each construct. The AVE values for all factors are greater than MSV(AVE>MSV), which empirically proves the discriminant validity of the scale used to measure the construct ‘soft TQM’.

The next step is to assess the model fitness because the estimates of the model validity for discriminant and convergent validity are favourable. Many indices of fit, including measures of goodness of fit, badness of fit, incremental fit, comparative fit, and parsimony fit, are produced using the structural equation model using Amos. The model fit analysis is illustrated in table 4.19

**Table 4.19***Model fit indices-Soft TQM*

<b>Indices</b>	<b>Obtained</b>	<b>Recommended</b>
CMIN/DF	3.99	<5.00(Hair et al., 2010)
Root Mean square Residual (RMR)	0.0421	<0.05(Diamantopoulos & SiguaWJ.A., 2000)
Comparative Fit Index (CFI)	0.961	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.913	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.822	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.993	>.90
Normed Fit Index (NFI)	0.901	>.90(Bentler & Bonett, 1980)
Relative Fit Index (RFI)	0.986	> .90
RMSEA	0.0756	<0.08(Hair et al., 2010)

Source: Primary data

Fit indices, including CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR, and RMSEA, show a good degree of fit. CMIN/DF ratio suggests that it is acceptable as a measure of goodness of fit.

0.90 is recommended for an acceptable fit, but it is important to note that the reference value may vary based on the complexity of the model and the size of the sample (Kline, 2011). According to the model, the Goodness of Fit (GFI) value is 0.913, which is greater than the recommended value of more than 0.90. Moreover, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.822, attaining the acceptable threshold of 0.80.

The Normed Fit Index (NFI), Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) are .901,.961,.993 respectively which satisfy the acceptable limit of 0.90,and are considered as acceptable fit (Kim et al., 2016).The Relative Fit Index (RFI)registers at 0.986 against the recommended value of 0.90 and is considered as reasonable fit(Kline, 2016).

For RMR, values less than 0.08 or 0.05 are considered acceptable (Hu & Bentler, 1999; Kline, 2016). In addition, the Root Mean square Residual (RMR) of 0.0421 is well below the recommended limit of 0.05.

Additionally, the Root Mean Square Error of Approximation (RMSEA) registers at 0.0756, a level below the acceptable limit of 0.08(Hu & Bentler, 1999). The study result indicates that the measurement model fits the data well, thus we can confirm the results of the Exploratory Factor Analysis of the "soft TQM" construct.

#### **4.15 Validation of measurement Scales-Satisfaction towards a component of Total Quality Management**

Based on the literature review, citizen satisfaction level is suggested as the criteria for measuring the performance of Municipal Corporations. Citizen's perceptions towards services were assessed to measure their satisfaction. Two steps are followed in validating the scale used to measure the "satisfaction". The Exploratory Factor Analysis (EFA) is performed on a sample of 50 citizens living in Kozhikode Municipal Corporation. Finally, a Confirmatory Factor Analysis is applied to assess factor structure quality by statistically testing the significance of the model and the relationship between items and scales using 1210 data.

#### **4.16 Exploratory Factor Analysis-Satisfaction**

The evaluation of citizens satisfaction towards various services is assessed by utilizing 30 services offered by Municipal Corporations in Kerala. The factor analysis aimed to discern the major services of Corporations. Notably, the analysis was based on citizens' responses. The results of the factor analysis, elucidating the major services of Corporations, are presented in table 4.22. The adequacy of sample size for conducting factor analysis is tested by Kaiser-Meyer-Olkin (KMO) test (George & Mallery, 1999). The only technique for grouping items under one construct is Exploratory Factor Analysis (EFA). In order to consider a factor reliable, its Cronbach's Alpha value should be greater than or equal to 0.7. (Hair et al., 2010).

**Table 4.20***KMO and Bartlett's Test - Satisfaction*

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.929
	Approx. Chi-Square	5047.45
Bartlett's Test of Sphericity	Df	21
	Sig.	0.000

Table 4.20 indicates KMO value for variables measuring 'satisfaction' is 0.929 that is greater than the threshold limit which justifies the appropriateness of factor analysis. For measuring the presence of correlation among variables bartlett's test of sphericity is computed. The test statistics shows a chi-square value of 5047.45 significant at 1% level of significance. EFA (Exploratory Factor Analysis) result revealed that there are seven factors (Services) having eigen values of more than one.

**Table 4.21***Rotated Component Matrix-Satisfaction towards services of Municipal Corporations*

	<b>Rotated Component Matrix<sup>a</sup></b>						
	Component						
	1	2	3	4	5	6	7
Water service	0.675						
Sewer system service	0.508						
Waste management system like Haritha Karma Sena	0.675						
Cleaning service of streets	0.897						
Forestation	0.765						
Prevention against infections	0.98						
Pest control	0.764						
Prevention of pollution	0.721						
Functions of women activity centre		0.679					
Youth and sports activities		0.501					

<b>Rotated Component Matrix<sup>a</sup></b>							
	Component						
	1	2	3	4	5	6	7
Women and child empowering programs		0.543					
Vocational courses		0.555					
City planning			0.518				
Street lighting			0.511				
Road building and maintenance			0.599				
Green field and parks			0.641				
Shopping centres			0.533				
Cemeteries			0.752				
Construction and maintenance of markets (regulation of markets, prevention of dangerous trade practices)			0.609				
Bus transportation				0.549			
Car parking				0.566			
Traffic management and control				0.607			
Rehabilitation measures during the time of disaster					0.7		
Reconstruction activities after Disaster					0.555		
Camera facility (CCTV)					0.599		
Control of beggary					0.511		
Registration of birth, death, marriage etc						0.773	
KIOSK for checking service status						0.669	
Establishment of education institutions							0.521
Maintenance of educational institutions							0.577

Extraction Method: Principal Component Analysis.  
 Rotation method: Varimax with Kaiser Normalization  
 Source: Primary data

The table 4.22 summarizes the results of a factor analysis, which identified seven major services of Municipal Corporations. These services are labelled as health & environment services, social services, reconstruction & urban development services, urban transportation, disaster management, community services, and education services. The table 4.22 provides an organized representation of the key components and elements that make up “services” and the respective groups they fall into.

**Table 4.22***Satisfaction level towards services of Municipal Corporations*

Factors	Services	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
Health & environment (HE)	Water service (HE1)	3.8711	0.89751	0.675	8.906	20.123	0.700
	Sewer system service (HE2)	2.9934	1.22016	0.508			
	Waste management like HARITHA KARMA SENA (HE3)	3.0380	0.96088	0.675			
	Cleaning service of streets (HE4)	3.5112	1.11139	0.897			
	Forestation (HE5)	3.1504	1.07787	0.765			
	Prevention against infections (HE6)	3.5306	1.07046	0.98			
	Pest control (HE7)	3.1678	0.98833	0.764			
	Prevention of pollution (HE8)	3.0818	1.21301	0.721			
Social service (SS)	Functions of Women activity centre (SS1)	3.3050	1.14408	0.679	6.567	16.432	0.761
	Youth and sports activities (SS2)	3.2190	0.92433	0.501			
	Women and child empowering programs (SS3)	3.2719	1.12110	0.543			
	Vocational courses (SS4)	3.1603	0.91078	0.555			
Reconstruction & urban development (RUD)	City planning (RUD 1)	3.3405	0.86649	0.518	4.567	12.334	0.711
	Street lighting (RUD 2)	3.5612	0.79597	0.511			
	Road building and maintenance (RUD 3)	3.2165	1.03106	0.599			
	Green field and parks (RUD 4)	2.7537	0.96189	0.641			
	Shopping centres (RUD 5)	3.2165	0.77239	0.533			
	Cemeteries (RUD 6)	3.4347	0.77989	0.752			
	construction and maintenance of markets (regulation of markets, prevention of dangerous trade practices) (RUD 7)	3.5769	0.76598	0.609			



Factors	Services	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
Urban transportation (UT)	Bus transportation (UT1)	3.6926	0.86931	0.549	3.876	10.776	0.792
	Car parking (UT 2)	3.3149	0.78501	0.566			
	Traffic management and control (UT3)	3.0240	0.84159	0.607			
Disaster management and security services (DMS)	Camera facility (CCTV) (DMS 1)	3.2149	1.03621	0.7	2.810	7.876	0.732
	Control of beggary (DMS 2)	2.8314	1.11891	0.555			
	Rehabilitation measures during the time of disaster (DMS 3)	3.5983	0.93494	0.599			
	Reconstruction activities after Disaster (DMS 4)	3.4091	1.04668	0.511			
Community services (CS)	Registration of birth, death, marriage etc (CS 1)	3.7273	0.93281	0.773	1.523	5.776	0.771
	KIOSK for checking service status (CS 2)	2.4926	1.28953	0.669			
Education services (ES)	Establishment of education institutions (ES 1)	3.5669	0.80171	0.521	1.403	5.299	0.702
	Maintenance of educational institutions (ES 2)	3.4430	0.82785	0.577			
<b>Total variance explained 78.616%</b>							

Source: Primary data

The analysis revealed that variables namely water service, sewer system service, waste management like haritha karma sena, cleaning service of streets, forestation, prevention against infections, pest control and prevention of pollution exhibit significant loadings with an eigen value of 8.906, explaining 20.123 % of the variance named as '**health and environment service**'. The second factor, denoted as '**social service**' encompasses four components: functions of women activity centre, youth and sports activities, women and child empowering programs and vocational courses. It possesses an eigen value of 6.567, elucidating 16.432 % of the variance. Variables namely city planning, street lighting, road building and maintenance, green field and parks, shopping centres, cemeteries and construction and maintenance of markets (regulation of markets, prevention of dangerous trade practices) exhibit significant loadings with an eigen value of 4.567, explaining 12.334 % of the variance named as '**reconstruction & urban development**'. The variables bus transportation, car parking and traffic management and control have been amalgamated under the label "**urban transportation**". This factor is associated with an eigen value of 3.876, signifying 10.776% of the variance. Variables say camera facility (CCTV), control of beggary, rehabilitation measures during the time of disaster and reconstruction activities after disaster together makes a new factor named as "**disaster management and security services**" with an eigen value of 2.810, explaining 7.876% of variances. Two services i.e. registration of birth, death, marriage etc and Kiosk for checking service status together make up factor labelled as "**community services**" with an eigen value of 1.523, explaining 5.776% of variances. The seventh service labelled as "education service" which comprises of variables establishment and maintenance of education institutions with an eigen value of 1.403, explaining 5.299% of variances.

### **Construct validity**

Table 4.22 demonstrates that all of the items have factor loadings of 0.40 and that no item has a cross loading greater than 0.40. As a result, the factor results meet the criteria of construct validity in both discriminant (loading of at least 0.40, no cross loading of items above .40) and convergent (eigen values of 1, loading of at least 0.40, items that load on posited constructs) terms (Straub & Gefen, 2004). A good

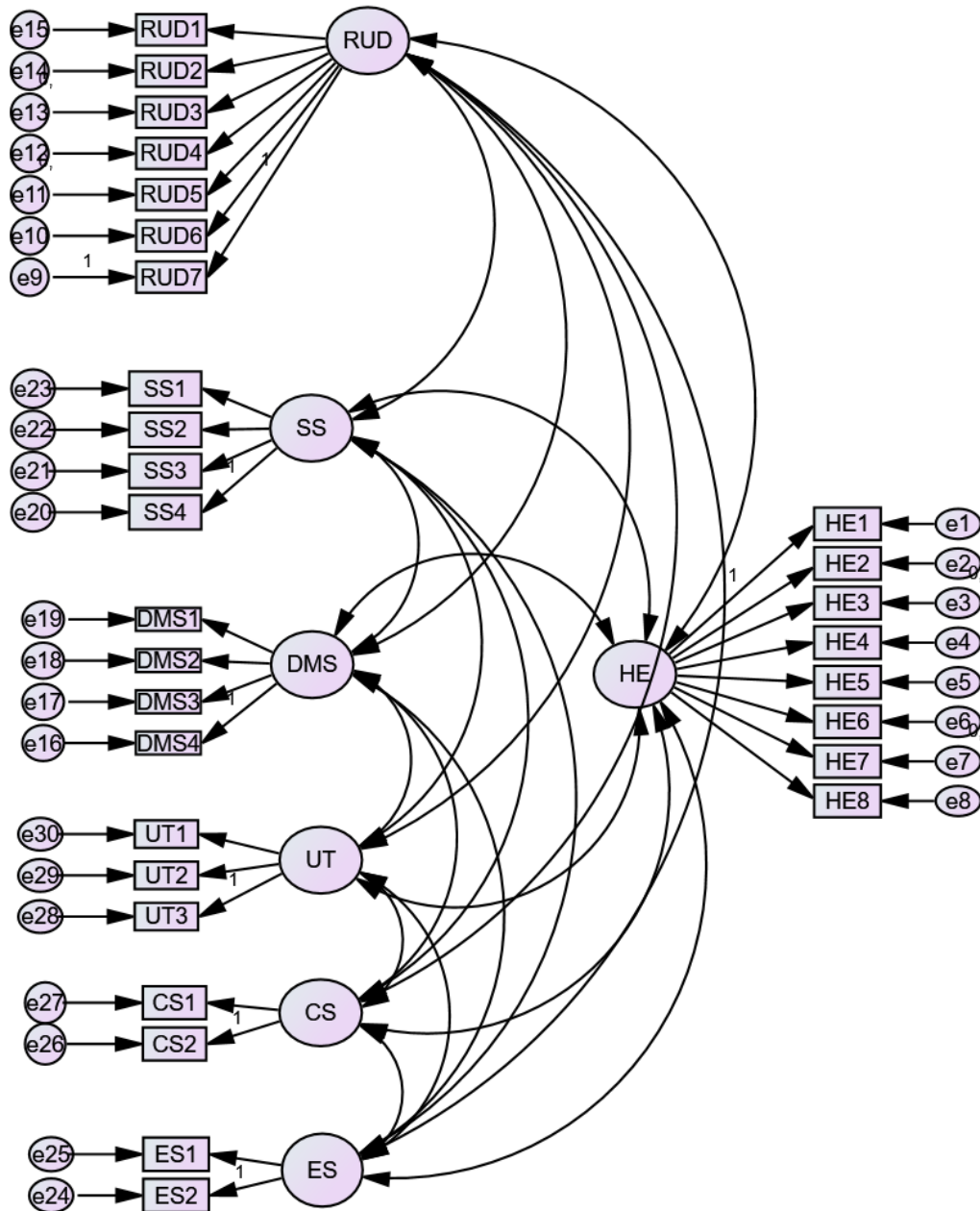
level of validity is established as shown the result of EFA for the selected factors. According to table 4.22 , Cronbach's alpha values for all factors are higher than 0.70, indicating that they are reliable(Hair et al., 2010). There are also seven factors in table 4.22, along with items, factor loadings, percentage of variance explained by each factor, and item by item mean and standard deviation.

#### **4.17 Confirmatory Factor Analysis-Satisfaction**

Through Exploratory Factor Analysis, seven factors were identified. The next step was to confirm the factor structure using data collected from the total sample. Confirmatory Factor Analysis was performed using Structural Equation Modelling (SEM) using AMOS 26. The Confirmatory Factor Analysis confirmed the pattern revealed by the exploratory factor analysis. In order to know the factor structure of satisfaction, the hypothesis that *there is relationship between observed variables and their underlying latent constructs* was formulated. CFA mainly aims to test whether the sample data fit for the hypothesized measurement model regarding soft TQM. This study tested the fit of first order model via maximum likelihood by using a sample size of 1210. Seven factors, namely. health & environment services, social services, reconstruction & urban development services, urban transportation, disaster management, community services, and education services are included in the proposed model of satisfaction. Exploratory Factor Analysis was used to identify these factors.

**Figure 4.3**

*Measurement Model-Satisfaction*



Seven sub-factors for measuring satisfaction towards service (health & environment services, social services, reconstruction & urban development services, urban transportation, disaster management, community services, and education services) are included in the measurement model. The table 4.23 illustrate the path estimates between constructs and items.

**Table 4.23***Satisfaction – Path estimates and regression weights of CFA Measurement Model*

Sl. No.	Path	Estimates	S.E	C.R	P	Standardised loadings
1	HE 1 ← HE	1				1.63
2	HE 2 ← HE	1.023	0.176	10.112	<.01***	0.987
3	HE 3 ← HE	1.615	0.134	8.432	<.01***	0.657
4	HE 4 ← HE	1.213	0.165	11.128	<.01***	1.09
5	HE 5 ← HE	1.082	0.198	12.36	<.01***	<b>1.665</b>
6	HE 6 ← HE	1.464	0.166	10.981	<.01***	0.699
7	HE 7 ← HE	1.113	0.198	11.65	<.01***	0.913
8	HE 8 ← HE	1.317	0.154	13.345	<.01***	0.789
9	RUD 1 ← RUD	1				1.04
10	RUD 2 ← RUD	1.077	0.591	12.123	<.01***	0.78
11	RUD 3 ← RUD	1.234	0.432	10.121	<.01***	1.47
12	RUD 4 ← RUD	1.225	0.073	15.678	<.01***	<b>1.69</b>
13	RUD 5 ← RUD	1.324	0.731	10.651	<.01***	0.82
14	RUD 6 ← RUD	1.632	0.872	14.387	<.01***	1.46
15	RUD 7 ← RUD	1.512	0.235	12.342	<.01***	1.00
16	SS1 ← SS	1				<b>1.91</b>
17	SS2 ← SS	1.432	0.882	9.116	<.01***	1.19
18	SS3 ← SS	1.421	0.324	9.091	<.01***	0.87
19	SS4 ← SS	1.213	0.117	10.872	<.01***	1.01
20	DMS1 ← DMS	1				0.74
21	DMS2 ← DMS	1.702	0.181	10.376	<.01***	1.00
22	DMS3 ← DMS	1.321	0.152	13.221	<.01***	<b>1.08</b>
23	DMS4 ← DMS	1.009	0.192	10.652	<.01***	1.00
24	UT1 ← UT	1				0.49
25	UT2 ← UT	1.281	0.177	10.234	<.01***	0.98
26	UT3 ← UT	1.341	0.123	12.114	<.01***	<b>1.00</b>
27	CS1 ← CS	1				0.38
28	CS2 ← CS	1.543	0.333	17.231	<.01***	<b>0.99</b>
29	ES1 ← ES	1				<b>0.87</b>
30	ES2 ← ES	1.226	0.541	15.431	<.01***	0.754

\*\*\* Significant at 1% level

Source: Primary data

The regression weights of each path included in the measurement model of satisfaction is presented in table 4.23. Standardised regression weights of all the statements are satisfactory and the standardised loadings of all the statements are above 0.5, which indicates that all the variables are satisfactorily contributes to the variance of the constructs. All variables included in the constructs have highly significant p values, indicating their desirability. An item with highest loading in the construct contributes more to the variance of the construct. Variable “forestation” (HE 5) is the highest loading item (1.665) which contributes more to the factor ‘health and environment’ (HE). The item “green field and parks (RUD 4)” contributes more to the factor “reconstruction and urban development (RUD)”. Functions of women activity centre (SS1) contributes more to ‘social Service (SS)’. Variable rehabilitation measures during the time of disaster (DMS 3) contributes more to ‘disaster management and security services (DMS)’. Variable traffic management and control (UT3) is the highest loading item (1.00) which contributes more to the factor ‘urban transportation (UT)’. Variable KIOSK for checking service status (CS 2) is the highest loading item (0.99) which contributes more to the factor ‘community services (SS)’. And the item ‘establishment of education institutions (ES 1)’ is the highest loading item (0.87) which contributes more to the factor “education services(ES)”. The following section analyses and discusses model validity estimates for convergent and discriminant validity. The model validity estimation result is shown in the following table.

**Table 4.24***Validity and Reliability of CFA Measurement model-Satisfaction*

Factors	Items	Variables	Factor Loadings	CR	AVE	MSV
Health & environment (HE)	HE1	Water service	0.675	0.713	0.682	0.513
	HE2	Sewer system service	0.508			
	HE3	Waste management	0.675			
	HE 4	Cleaning service of streets	0.897			
	HE 5	Forestation	0.765			
	HE 6	Prevention against infections	0.98			
	HE 7	Pest control	0.764			
	HE 8	Prevention of pollution	0.721			
Social service (SS)	SS1	Functions of Women activity centre	0.679	0.807	0.516	0.509
	SS2	Youth and sports activities	0.501			
	SS3	Women and child empowering programs	0.543			
	SS4	Vocational courses	0.555			
Reconstruction & urban development(RUD)	RUD 1	City planning	0.518	0.687	0.788	0.634
	RUD2	Street lighting	0.511			
	RUD 3	Road building and maintenance	0.599			
	RUD 4	Green field and parks	0.641			
	RUD 5	Shopping centers	0.533			
	RUD 6	Cemeteries	0.752			
	RUD 7	construction and maintenance of markets	0.609			

Factors	Items	Variables	Factor Loadings	CR	AVE	MSV
Urban transportation (UT)	UT1	Bus transportation	0.549	0.796	0.598	0.520
	UT 2	Car parking	0.566			
	UT 3	Traffic management and control	0.607			
Disaster management and security services (DMS)	DMS 1	Camera facility (CCTV) (DMS 1)	0.7	0.666	0.619	0.568
	DMS 2	Control of beggary	0.555			
	DMS 3	Rehabilitation measures during the time of disaster (DMS 3)	0.599			
	DMS 4	Reconstruction activities after Disaster (DMS 4)	0.511			
Community services (CS)	CS 1	Registration of birth, death, marriage etc	0.773	0.599	0.590	0.572
	CS 2	KIOSK for checking service status	0.669			
Education services (ES)	ES 1	Establishment of education institutions	0.521	0.681	0.684	0.592
	ES 2	Maintenance of educational institutions	0.577			

Source: Primary data



The Standardised Factor Loadings (SFL) of each item included in the measurement model of Satisfaction is presented in table 4.24. All statements have standardised loadings above 0.5, indicating that they all contribute satisfactorily to the construct's variance. As all constructs have Composite Reliability (CR) values and average variance extracted (AVE) values higher than 0.5, hence we can confirm the convergent validity of the scales and it also established that each of the variable used for the measurement correlate strongly with its construct “satisfaction”.

In order to determine the discriminant validity of the scale, the maximum shared variance (MSV) is compared with the average variance extracted (AVE) for each construct. The AVE values for all factors are greater than MSV(AVE>MSV), which empirically proves the discriminant validity of the scale used to measure the construct ‘satisfaction.

The next step is to assess the model fitness because the estimates of the model validity for discriminant and convergent validity are favourable. Many indices of fit, including measures of goodness of fit, badness of fit, incremental fit, comparative fit, and parsimony fit, are produced using the structural equation model using Amos. The model fit analysis is illustrated in table 4.25

**Table 4.25**

*Model fit indices-Satisfaction*

<b>Indices</b>	<b>Obtained</b>	<b>Recommended</b>
CMIN/DF	4.12	<5.00(Hair et al., 2010)
Root Mean square Residual (RMR)	0.023	<0.05(Diamantopoulos & SiguawJ.A., 2000)
Comparative Fit Index (CFI)	0.9	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.907	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.803	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.981	>.90
Normed Fit Index (NFI)	0.899	>.90(Bentler & Bonett, 1980)
Relative Fit Index (RFI)	0.875	> .90
RMSEA	0.057	<0.08(Hair et al., 2010)

Source: Primary data

Fit indices, including CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR, and RMSEA, show a good degree of fit. CMIN/DF ratio suggests that it is acceptable as a measure of goodness of fit. 0.90 is recommended for an acceptable fit, but it is important to note that the reference value may vary based on the complexity of the model and the size of the sample (Kline, 2011). According to the model, the Goodness of Fit (GFI) value is 0.907, which is greater than the recommended value of more than 0.90. Moreover, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.803, attaining the acceptable threshold of 0.80. The Normed Fit Index (NFI), Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) are .899, .900, .981 respectively which satisfy the acceptable limit of 0.90, and are considered as acceptable fit (Kim et al., 2016).

The Relative Fit Index (RFI) registers at 0.875 against the recommended value of 0.90, which is slightly below the recommended value and is considered as reasonable fit (Kline, 2016).

For RMR, values less than 0.08 or 0.05 are considered acceptable (Hu & Bentler, 1999; Kline, 2016). In addition, the Root Mean square Residual (RMR) of 0.023 is well below the recommended limit of 0.05.

Additionally, the Root Mean Square Error of Approximation (RMSEA) registers at 0.057, a level below the acceptable limit of 0.08 (Hu & Bentler, 1999). The study result indicates that the measurement model fits the data well, thus we can confirm the results of the Exploratory Factor Analysis of the "satisfaction" construct.

#### **4.18 PART-B: Validation of measurement Scales-Hard component of Total Quality Management – Employee’s Perspective**

Two steps are followed in validating the scale used to measure the "Hard TQM" component of Total Quality Management. The Exploratory Factor Analysis (EFA) is performed on a sample of 50 employees working in Kozhikode Municipal Corporation. Finally, a Confirmatory Factor Analysis is applied to assess factor structure quality by statistically testing the significance of the model and the relationship between items and scales using 380 data.

#### 4.19 Exploratory Factor Analysis-Hard TQM

The evaluation of employee's perceptions regarding TQM was conducted by utilizing 11 perceptual variables contributing to hard components of TQM. The factor analysis aimed to discern the major components of hard TQM. Notably, the analysis was based on employees' responses. The results of the factor analysis, elucidating the major components of hard TQM, are presented in table 4.28. This rigorous examination allowed for a nuanced understanding of how employees perceive the various facets of TQM, shedding light on the key elements that contribute significantly to hard components within the Municipal Corporation. The adequacy of sample size for conducting factor analysis is tested by Kaiser-Meyer-Olkin (KMO) test (George & Mallery, 1999). The only technique for grouping items under one construct Exploratory Factor Analysis (EFA). In order to consider a factor reliable, its Cronbach's Alpha value should be greater than or equal to 0.7. (Hair et al., 2010).

Table 4.26 shows the results of KMO and Bartlett's Test

**Table 4.26**

*KMO and Bartlett's Test-Hard TQM*

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.673
Bartlett's Test of Sphericity	Approx. Chi-Square	1005.626
	Df	78
	Sig.	0.000

Source: Primary data

Table 4.26 indicates KMO value for variables measuring components of hard TQM is 0.673 that is greater than the threshold limit which justifies the appropriateness of factor analysis. For measuring the presence of correlation among variables Bartlett's test of sphericity is computed. The test statistics shows a chi-square value of 1005.626 significant at 1% level of significance.

**Table 4.27**

*Total Variance Explained-hard TQM*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.010	23.155	23.155	3.010	23.155	23.155	2.401	18.468	18.468
2	2.044	15.726	38.881	2.044	15.726	38.881	2.350	18.073	36.541
3	1.168	8.983	47.864	1.168	8.983	47.864	1.298	9.981	46.522
4	1.080	8.304	56.169	1.080	8.304	56.169	1.254	9.647	56.169
5	0.988	7.603	63.772						
6	0.870	6.693	70.465						
7	0.775	5.963	76.429						
8	0.696	5.353	81.782						
9	0.674	5.181	86.963						
10	0.605	4.653	91.616						
11	0.415	3.195	94.810						
12	0.386	2.968	97.778						
13	0.289	2.222	100.000						

Extraction Method: Principal Component Analysis.

Factor analysis was conducted to distil the essential components resulting in the identification of four distinct factors. The table 4.28 provides a summary of the results of a factor analysis, identifying four major components of "hard Total Quality Management (TQM)": the Essential Facilities ” (EF), Administrative Infrastructure (AI), Venue Setup (VS) and Administrative Tools and Technology (ATT). These components encompass various elements that define hard TQM. The table 4.28 provides an organized representation of the key components and elements that make up "soft TQM" and the respective groups they fall into.

**Table 4.28***Hard components of TQM (Employees)*

Factors	Variables	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
Essential Facilities (EF)	HTQM-2 Availability of stationery	3.2868	0.91849	0.642	3.01	23.155	0.765
	HTQM-5 Drawer for cash	3.5763	0.95656	0.718			
	HTQM-13 Ramp for physically challenged people	2.5684	1.35048	0.798			
	HTQM-10 Record management	2.7789	0.84939	0.662			
Administrative Infrastructure (AI)	HTQM-3 Telephone registry	2.8632	1.07611	0.795	2.044	15.726	0.711
	HTQM-8 Toilets	3.0263	0.95787	0.632			
	HTQM-9 Govt orders & rules for reference	2.5789	0.84814	0.442			
	HTQM-11 Front office diary	2.4632	0.86942	0.798			
Venue set-up (VS)	HTQM-1 Seating arrangement & Name board	3.5158	0.98123	0.785	1.168	8.983	0.706
	HTQM-12 First aid kit	2.2553	0.82864	0.626			
Administrative tools and technology (ATT)	HTQM-4 Movement register	3.6895	0.75381	0.441	1.08	8.304	0.776
	HTQM-6 Receipt book	3.8658	0.72671	0.606			
	HTQM-7 Computer & Internet facility	3.5895	0.80885	0.763			
<b>Total variance explained 56.169%</b>							

(Source: Primary data)

The analysis revealed that the 2<sup>nd</sup>, 5<sup>th</sup>, 10<sup>th</sup>, and 13<sup>th</sup> variables exhibit significant loadings with an eigen value of 3.010, explaining 23.155% of the variance and is named as “**Essential Facilities (EF)**”. It comprises four elements, including availability of stationary, drawer for cash, ramp for physically challenged people and record management. This factor is a pivotal component of hard Total Quality Management (TQM). The second factor, denoted as “**Administrative Infrastructure (AI)**” comprises of four components say telephone registry, toilets, govt. orders & rules for references and front office diary. It possesses an eigen value of 2.044, elucidating 15.726% of the variance. The variables "seating arrangement & name board" and "first aid kit" have been amalgamated under the label " **Venue Setup (VS)**". This factor is associated with an eigen value of 1.168, signifying 8.983% of the variance. The fourth component of TQM is labelled as “**Administrative Tools and Technology (ATT)**”. It comprises variables such as movement register, receipt book and computer & internet facility possessing an eigen value of 1.080, explaining 8.304 % of the variance. In nutshell, these components and their associated elements collectively define the concept of "hard TQM" within the context of the table's results.

### **Construct validity**

Table 4.28 demonstrates that all of the items have factor loadings of 0.40 and that no item has a cross loading greater than 0.40. As a result, the factor results meet the criteria of construct validity in both discriminant (loading of at least 0.40, no cross loading of items above .40) and convergent (eigen values of 1, loading of at least 0.40, items that load on posited constructs) terms (Straub & Gefen, 2004). A good level of validity is established as shown the result of EFA for the selected factors. According to table 4.28, Cronbach's alpha values for all factors are higher than 0.70, indicating that they are reliable (Hair et al., 2010). There are also four factors in table 4.28, along with items, factor loadings, percentage of variance explained by each factor, and item by item mean and standard deviation.

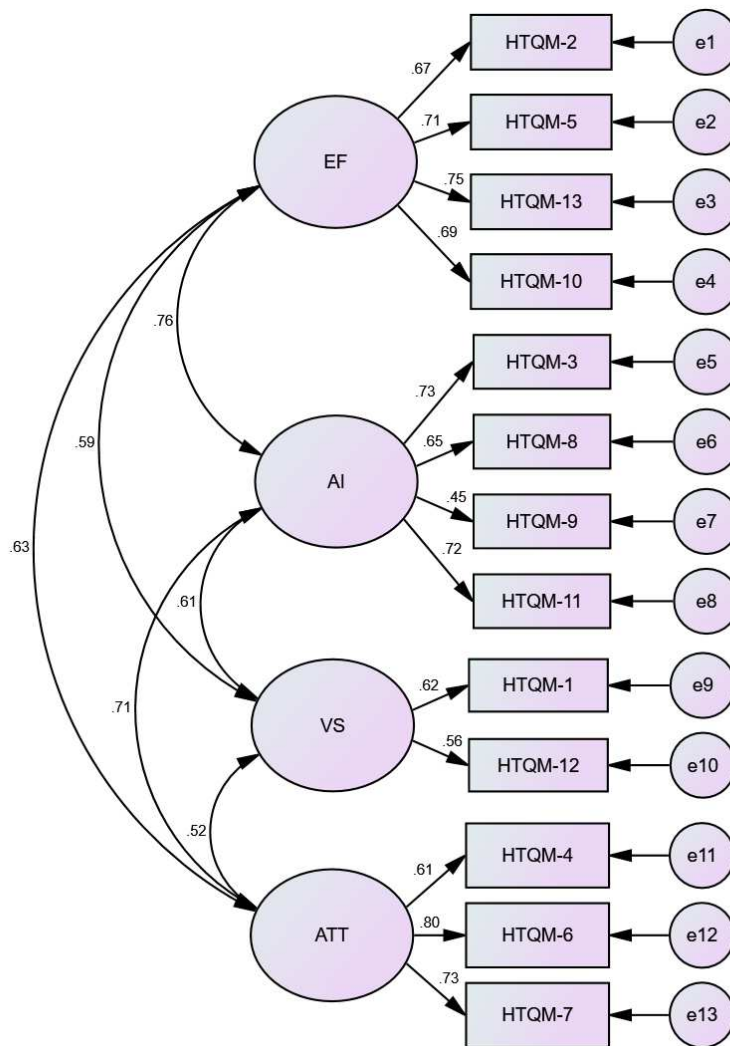
### **4.20 Confirmatory Factor Analysis-Hard TQM**

Through Exploratory Factor Analysis, four factors were identified. The next step was to confirm the factor structure using data collected from the total sample. Confirmatory Factor Analysis was performed using Structural Equation Modelling

(SEM) using AMOS 26. The Confirmatory Factor Analysis confirmed the pattern revealed by the exploratory factor analysis. To understand the factor structure of hard TQM components, the hypothesis that *there is relationship between observed variables and their underlying latent constructs* was formulated. CFA mainly aims to test whether the sample data fit for the hypothesized measurement model regarding hard TQM. This study tested the fit of first order model via maximum likelihood by using a sample size of 380. Four factors, namely Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS) and Administrative Tools and Technology (ATT) are included in the proposed model of hard TQM. Exploratory Factor Analysis was used to identify these factors.

**Figure 4.4**

*CFA Measurement model-hard TQM*



Four sub-factors of hard TQM namely Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS) and Administrative Tools and Technology (ATT) are included in the measurement model. The table 4.29 illustrate the path estimates between constructs and items.

**Table 4.29**

*Hard TQM- Path estimates and regression weights of CFA measurement model*

Sl. No.	Path	Estimates	S.E	C.R	P	Standardised loadings
1	HTQM-2 ← EF	1				0.672
2	HTQM-5 ← EF	1.432	0.166	10.21	<.01***	0.713
3	HTQM-13 ← EF	1.530	0.123	12.11	<.01***	<b>0.746</b>
4	HTQM-10 ← EF	1.321	0.221	11.01	<.01***	0.685
5	HTQM-3 ← AI	1				<b>0.732</b>
6	HTQM-8 ← AI	1.091	0.131	11.25	<.01***	0.652
7	HTQM-9 ← AI	1.007	0.199	10.99	<.01***	0.454
8	HTQM-11 ← AI	1.234	0.154	12.91	<.01***	0.716
9	HTQM-1 ← VS	1				<b>0.616</b>
10	HTQM-12 ← VS	1.223	0.166	12.14	<.01***	0.558
11	HTQM-4 ← ATT	1				0.611
12	HTQM-6 ← ATT	1.672	0.179	10.22	<.01***	<b>0.804</b>
13	HTQM-7 ← ATT	1.345	0.188	9.87	<.01***	0.729

\*\*\* Significant at 1% level

Source: Primary data

The regression weights of each path included in the measurement model of hard TQM is presented in table 4.29. Standardised regression weights of all the statements are satisfactory and the standardised loadings of all the statements are above 0.5, which indicates that all the variables are satisfactorily contributes to the variance of the constructs. All variables included in the constructs have highly significant p values, indicating their desirability. An item with highest loading in the construct contributes more to the variance of the construct. Variable “Ramp for physically challenged people (HTQM-13)” is the highest loading item (0.746) which contributes more to the factor ‘Essential Facilities (EF)’. The item “Telephone registry (HTQM-3)”



contributes more to the factor “Administrative Infrastructure (AI)” (with loading of 0.732). “Seating arrangement and name board (HTQM-1)” contributes more to ‘Venue Setup (VS)’ and receipt book (HTQM-6) contributes more to ‘Administrative Tools and Technology (ATT)’.

The following section analyses and discusses model validity estimates for convergent and discriminant validity. The model validity estimation result is shown in the following table.

**Table 4.30***Validity and Reliability of CFA Measurement Model-Hard TQM*

Factors	Items	Variables	Loadings	CR	AVE	MSV
Essential Facilities (EF)	HTQM-2	Availability of stationery	0.642	0.765	0.651	0.599
	HTQM-5	Drawer for cash	0.718			
	HTQM-13	Ramp for physically challenged people	0.798			
	HTQM-10	Record management	0.662			
Administrative Infrastructure (AI)	HTQM-3	Telephone registry	0.795	0.790	0.765	0.569
	HTQM-8	Toilets	0.632			
	HTQM-9	Govt orders & rules for reference	0.442			
	HTQM-11	Front office diary	0.798			
Venue set-up (VS)	HTQM-1	Seating arrangement & Name board	0.785	0.882	0.812	0.665
	HTQM-12	First aid kit	0.626			
Administrative Tools and Technology (ATT)	HTQM-4	Movement register	0.441	0.761	0.720	0.659
	HTQM-6	Receipt book	0.606			
	HTQM-7	Computer & Internet facility	0.763			
<b>Total variance explained 56.169%</b>						

Source: Primary data

The Standardised Factor Loadings (SFL) of each item included in the measurement model of hard TQM is presented in table 4.30. All statements have standardised loadings above 0.5, indicating that they all contribute satisfactorily to the construct's variance. As all constructs have Composite Reliability (CR) values and average variance extracted (AVE) values higher than 0.5, hence we can confirm the convergent validity of the scales and it also established that each of the variable used for the measurement correlate strongly with its construct “hard TQM”.

In order to determine the discriminant validity of the scale, the maximum shared variance (MSV) is compared with the average variance extracted (AVE) for each construct. The AVE values for all factors are greater than MSV(AVE>MSV), which empirically proves the discriminant validity of the scale used to measure the construct ‘hard TQM’.

The next step is to assess the model fitness because the estimates of the model validity for discriminant and convergent validity are favourable. Many indices of fit, including measures of goodness of fit, badness of fit, incremental fit, comparative fit, and parsimony fit, are produced using the structural equation model using Amos. The model fit analysis is illustrated in table 4.31.

**Table 4.31**

*Model fit indices-Hard TQM*

<b>Indices</b>	<b>Obtained</b>	<b>Recommended</b>
CMIN/DF	4.83	<5.00(Hair et al., 2010)
Root Mean square Residual (RMR)	0.0221	<0.05(Diamantopoulos & SiguawJ.A., 2000)
Comparative Fit Index (CFI)	0.94	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.901	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.895	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.911	>.90
Normed Fit Index (NFI)	0.931	>.90(Bentler & Bonett, 1980)
Relative Fit Index (RFI)	0.966	> .90
RMSEA	0.0801	<0.08(Hair et al., 2010)

Source: Primary data

Fit indices, including CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR, and RMSEA, show a good degree of fit. CMIN/DF ratio suggests that it is acceptable as a measure of goodness of fit.

0.90 is recommended for an acceptable fit, but it is important to note that the reference value may vary based on the complexity of the model and the size of the sample (Kline, 2011). According to the model, the Goodness of Fit (GFI) value is 0.901, which is greater than the recommended value of more than 0.90. Moreover, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.895, attaining the acceptable threshold of 0.80.

The Normed Fit Index (NFI), Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) are .931, .940 and .911 respectively which satisfy the acceptable limit of 0.90, and are considered as acceptable fit (Kim et al., 2016). The Relative Fit Index (RFI) registers at 0.966 against the recommended value of 0.90 and is considered as reasonable fit (Kline, 2016).

For RMR, values less than 0.08 or 0.05 are considered acceptable (Hu & Bentler, 1999; Kline, 2016). In addition, the Root Mean square Residual (RMR) of 0.0221 is well below the recommended limit of 0.05.

Additionally, the Root Mean Square Error of Approximation (RMSEA) registers at 0.0801, a level below the acceptable limit of 0.08 (Hu & Bentler, 1999). The study result indicates that the measurement model fits the data well, thus we can confirm the results of the Exploratory Factor Analysis of the "hard TQM" construct.

#### **4.21 Validation of measurement Scales-Soft component of Total Quality Management – Employee's Perspective**

Two steps are followed in validating the scale used to measure the "soft TQM" component of Total Quality Management. The Exploratory Factor Analysis (EFA) is performed on a sample of 50 employees working in Kozhikode Municipal Corporation. Finally, a Confirmatory Factor Analysis is applied to assess factor structure quality by statistically testing the significance of the model and the relationship between items and scales using 380 data.

**4.22 Exploratory Factor Analysis-Soft TQM**

The evaluation of citizens perceptions regarding TQM was conducted by utilizing 15 perceptual variables contributing to soft components of TQM. The factor analysis aimed to discern the major components of soft TQM. Notably, the analysis was based on employees' responses. The results of the factor analysis, elucidating the major components of soft TQM, are presented in table 4.34. This rigorous examination allowed for a nuanced understanding of how employees perceive the various facets of TQM, shedding light on the key elements that contribute significantly to soft components within the Municipal Corporation. The adequacy of sample size for conducting factor analysis is tested by Kaiser-Meyer-Olkin (KMO) test (George & Mallery, 1999). The only technique for grouping items under one construct is Exploratory Factor Analysis (EFA). In order to consider a factor reliable, its Cronbach's Alpha value should be greater than or equal to 0.7. (Hair et al., 2010).

Table 4.32 shows the results of KMO and Bartlett's Test

**Table 4.32**

*KMO and Bartlett's Test-Soft TQM*

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.667
Bartlett's Test of Sphericity	Approx. Chi-Square	1154.424
	Df	153
	Sig.	0.000

Source: Primary data

Table 4.32 indicates KMO value for variables measuring components of soft TQM is 0.667 that is greater than the threshold limit which justifies the appropriateness of factor analysis. For measuring the presence of correlation among variables Bartlett's test of sphericity is computed. The test statistics shows a chi-square value of 1154.424 significant at 1% level of significance.

**Table 4.33***Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.264	18.133	18.133	3.264	18.133	18.133	2.587	14.375	14.375
2	1.986	11.033	29.165	1.986	11.033	29.165	1.946	10.810	25.185
3	1.432	7.953	37.118	1.432	7.953	37.118	1.591	8.841	34.026
4	1.399	7.771	44.889	1.399	7.771	44.889	1.487	8.261	42.287
5	1.130	6.277	51.166	1.130	6.277	51.166	1.343	7.461	49.748
6	1.056	5.869	57.034	1.056	5.869	57.034	1.312	7.286	57.034
7	0.933	5.181	62.215						
8	0.916	5.090	67.305						
9	0.830	4.612	71.917						
10	0.788	4.376	76.293						
11	0.698	3.879	80.172						
12	0.677	3.761	83.933						
13	0.630	3.500	87.433						
14	0.570	3.166	90.599						
15	0.523	2.908	93.507						
16	0.424	2.357	95.864						
17	0.398	2.213	98.077						
18	0.346	1.923	100.000						

Extraction Method: Principal Component Analysis.

Factor analysis was conducted to distil the essential components as presented in table, resulting in the identification of six distinct factors. The table 4.34 provides a summary of the results of a factor analysis, identifying six major components of "soft Total Quality Management (TQM)": the Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variable (TAV) and Collaboration and Upskilling (CU) These components encompass various elements that define soft TQM.

**Table 4.34***Soft components of TQM (employees)*

Factors	Variables	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
Employee Engagement and Empowerment Initiatives (EE&EI)	STQM-1 Sharing of information & future plans among employees by Top management	2.7947	1.02475	0.726	3.264	18.133	0.712
	STQM-3 Chance for Participation in decision making	2.5605	0.84655	0.726			
	STQM-7 Quality circle of staff to solve work problem	1.9368	0.65878	0.551			
	STQM-9 Job rotation	2.2974	0.89766	0.429			
	STQM-17 Support of top management for long term quality improvement process	2.8895	0.97645	0.522			
Performance Enhancement Factors (PEF)	STQM-4 Involvement in problem solving	2.7158	0.79793	-0.708	1.986	11.033	0.792
	STQM-11 Training programs fit the job of employees.	2.8158	0.98686	0.611			
	STQM-16 Performance appraisal system	2.8526	0.85914	0.642			

Factors	Variables	Mean	Sd	Loadings	Eigen values	% of Variance	Cronbach's Alpha
Quality Assurance Matrix (QAM)	STQM-6 Informal group of officials	3.0684	1.09233	0.755	1.432	7.953	0.711
	STQM-14 Quality audit	2.4289	0.77746	0.702			
	STQM-15 Proper measurement and evaluation of work performed	2.5711	0.81717	0.413			
Effective Communication Practices (ECP)	STQM-2 Clear and open communication between staff	3.6474	0.73141	0.713	1.399	7.771	0.782
	STQM-18 Clear and open communication between superior and subordinate	3.2632	0.82776	0.64			
	STQM-5 Meetings are properly conducted by ensuring participation of all members	3.4342	0.66847	0.541			
Training Accessibility Variable (TAV)	STQM-10 Team work	2.6263	0.94288	0.822	1.13	6.277	0.778
	STQM-13 Equal opportunity for training and development	3.1737	0.90226	0.45			
Collaboration and Upskilling(CU)	STQM-8 Friendly relationship	3.8158	0.66401	0.621	1.056	5.869	0.793
	STQM-12 Training to equip with new technologies	2.4158	0.84763	0.708			

Source: Primary data

The analysis revealed that the 1<sup>st</sup>, 3<sup>rd</sup>, 7<sup>th</sup>, 9<sup>th</sup> and 17<sup>th</sup> variables exhibit significant loadings with an eigen value of 3.264, explaining 18.133% of the variance. It comprises five elements, including sharing of information and future plans among employees by the top management, chance for participation in decision making, quality circle of staff to solve work problem, job rotation and Support of top management for long term quality improvement process. This factor is a pivotal component of soft Total Quality Management (TQM) and is named as “**Employee Engagement and Empowerment Initiatives (EE&EI)**”.

The second factor, denoted as “**Performance Enhancement Factors (PEF)**” and comprises of three elements say involvement in problem solving, training programs fit the job of employees and performance appraisal system. It possesses an eigen value of 1.986, elucidating 11.033% of the variance.

Informal group of officials, quality audit and proper measurement and evaluation of work performed are the three variable which make up the third factor called “**Quality Assurance Matrix (QAM)**”. It carries an eigen value of 1.432 with a variance of 7.953.

Clear and open communication between staff, clear and open communication between superior and subordinate and meetings are properly conducted by ensuring participation of all members have been amalgamated under the label “**Effective Communication Practices (ECP)**”. This factor is associated with an eigen value of 1.399, signifying 7.771% of the variance. Two variables say team work and equal opportunity for training and development together creates the fifth factor with an eigen value of 1.130 and a variance of 6.277% and is named as “**(TAV)**”. The 9<sup>th</sup> variable friendly relationship and the 13<sup>th</sup> variable training to equip with new technologies together create a common variable called as “**Collaboration and Upskilling (CU)**” which explain an eigen value of 1.056, explaining 5.869% of the variance. In brief, these components and their associated elements collectively define the concept of "soft TQM" within the context of the table's results



### **Construct validity**

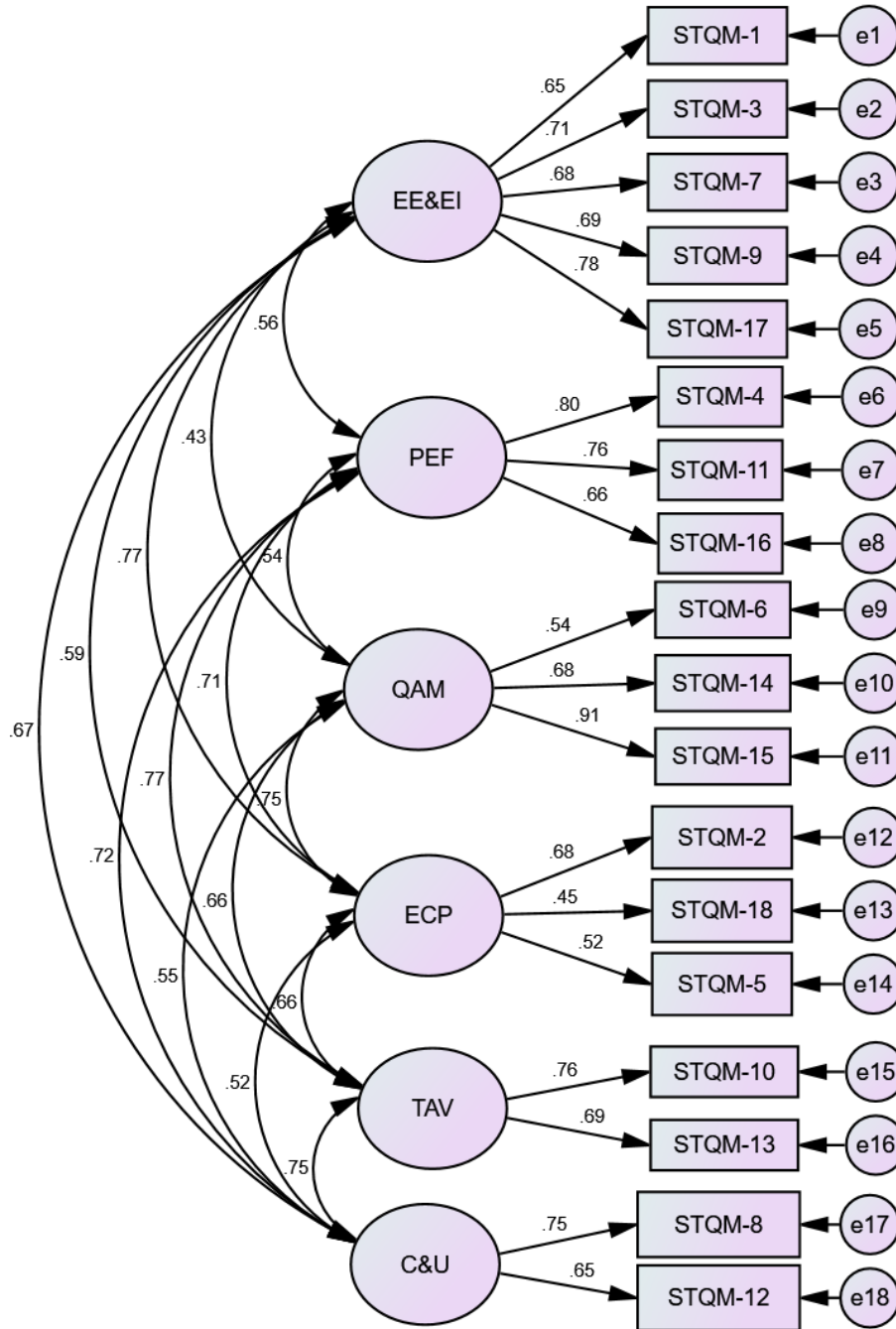
Table 4.34 demonstrates that all of the items have factor loadings of 0.40 and that no item has a cross loading greater than 0.40. As a result, the factor results meet the criteria of construct validity in both discriminant (loading of at least 0.40, no cross loading of items above .40) and convergent (eigen values of 1, loading of at least 0.40, items that load on posited constructs) terms. (Straub & Gefen, 2004). A good level of validity is established as shown the result of EFA for the selected factors. According to table 4.34, Cronbach's alpha values for all factors are higher than 0.70, indicating that they are reliable (Hair et al., 2010). There are also six factors in table 4.34, along with items, factor loadings, percentage of variance explained by each factor, and item by item mean and standard deviation.

### **4.23 Confirmatory Factor Analysis-Soft TQM**

Through Exploratory Factor Analysis, six factors were identified. The next step was to confirm the factor structure using data collected from the total sample. Confirmatory Factor Analysis was performed using Structural Equation Modelling (SEM) using AMOS 26. The Confirmatory Factor Analysis confirmed the pattern revealed by the exploratory factor analysis. To know the factor structure of Soft TQM components, the hypothesis that *there is relationship between observed variables and their underlying latent constructs* was formulated. CFA mainly aims to test whether the sample data fit for the hypothesized measurement model regarding soft TQM. This study tested the fit of first order model via maximum likelihood by using a sample size of 380. Six factors, namely, Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variable (TAV) and Collaboration and Upskilling (CU) are included in the proposed model of soft TQM. Exploratory Factor Analysis was used to identify these factors.

**Figure 4.5**

*CFA Measurement model-Soft TQM*



Six sub-factors of soft TQM (Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors(PEF), Quality Assurance Matrix(QAM), Effective Communication Practices(ECP), Training Accessibility

Variable(TAV) and Collaboration and Upskilling(CU)) are included in the measurement model. The table 4.35 illustrate the path estimates between constructs and items.

**Table 4.35**

*Soft TQM- Path estimates and regression weights of CFA measurement model*

Sl. No.	Path	Estimates	S. E	C.R	P	Standardised loadings
1	STQM-1 ← EE&EI	1				0.652
2	STQM-3 ← EE&EI	1.764	0.145	12.432	<.01***	0.709
3	STQM-7 ← EE&EI	1.664	0.165	11.542	<.01***	0.675
4	STQM-9 ← EE&EI	1.223	0.186	10.631	<.01***	0.690
5	STQM-17 ← EE&EI	1.542	0.157	13.541	<.01***	<b>0.781</b>
6	STQM-4 ← PEF	1				<b>0.800</b>
7	STQM-11 ← PEF	1.652	0.173	12.432	<.01***	0.756
8	STQM-16 ← PEF	1.335	0.167	11.521	<.01***	0.656
9	STQM-6 ← QAM	1				0.541
10	STQM-14 ← QAM	1.774	0.167	13.321	<.01***	0.682
11	STQM-15 ← QAM	1.339	0.173	10.213	<.01**	<b>0.911</b>
12	STQM-2 ← ECP	1				<b>0.682</b>
13	STQM-18 ← ECP	1.832	0.164	13.223	<.01***	0.453
14	STQM-5 ← ECP	1.324	0.173	10.432	<.01***	0.522
15	STQM-10 ← TAV	1				<b>0.756</b>
16	STQM-13 ← TAV	1.543	0.184	12.432	<.01***	0.688
17	STQM-8 ← C&U	1				<b>0.746</b>
18	STQM-12 ← C&U	1.652	0.169	14.221	<.01***	0.651

\*\*\* Significant at 1% level

Source: Primary data

The regression weights of each path included in the measurement model of Soft TQM is presented in table 4.35. Standardised regression weights of all the statements are satisfactory and the standardised loadings of all the statements are above 0.5, which indicates that all the variables are satisfactorily contributes to the variance of the constructs. All variables included in the constructs have highly significant p values, indicating their desirability. An item with highest loading in the construct contributes

more to the variance of the construct. Variable “support of top management for long term quality improvement process (STQM-17)” is the highest loading item (0.781) which contributes more to the factor “ Employee Engagement and Empowerment Initiatives (EE&EI). The item “involvement in problem solving,”( STQM-4) contributes more to the factor “Performance Enhancement Factors(PEF) (with loading of 0.800), proper measurement and evaluation of work performed (STQM-15) contributes more to ‘Quality Assurance Matrix(QAM)’. clear and open communication between staff (STQM-2) contributes more to the factor ‘Effective Communication Practices (ECP)’ (with a loading of 0.682). The variable ‘team work (STQM-10) contributes more to the factor ‘Training Accessibility Variable (TAV) (with a loading of 0.756)’ and friendly relationship (STQM-8) contributes more to ‘Collaboration and Upskilling(CU).

The following section analyses and discusses model validity estimates for convergent and discriminant validity. The model validity estimation result is shown in the following table.

**Table 4.36***Validity and Reliability of CFA Measurement Model-Soft TQM*

Factors	Items	Variables	Factor Loadings	CR	AVE	MSV
Employee Engagement and Empowerment Initiatives (EE&EI)	STQM-1	Sharing of information & future plans among employees by Top management	0.726	0.842	0.654	0.566
	STQM-3	Chance for Participation in decision making	0.726			
	STQM-7	Quality circle of staff to solve work problem	0.551			
	STQM-9	Job rotation	0.429			
	STQM-17	Support of top management for long term quality improvement process	0.522			
Performance Enhancement Factors (PEF)	STQM-4	Involvement in problem solving	-0.708	0.765	0.665	0.562
	STQM-11	Training programs fit the job of employees.	0.611			
	STQM-16	Performance appraisal system	0.642			

Factors	Items	Variables	Factor Loadings	CR	AVE	MSV
Quality Assurance Matrix (QAM)	STQM-6	Informal group of officials	0.755	0.782	0.631	0.548
	STQM-14	Quality audit	0.702			
	STQM-15	Proper measurement and evaluation of work performed	0.413			
Effective Communication Practices (ECP)	STQM-2	Clear and open communication between staff	0.713	0.763	0.699	0.561
	STQM-18	Clear and open communication between superior and subordinate	0.64			
	STQM-5	Meetings are properly conducted by ensuring participation of all members	0.541			
Training Accessibility Variable (TAV)	STQM-10	Team work	0.822	0.709	0.701	0.672
	STQM-13	Equal opportunity for training and development	0.45			
Collaboration and Upskilling(CU)	STQM-8	Friendly relationship	0.621	0.778	0.669	0.592
	STQM-12	Training to equip with new technologies	0.708			

Source: Primary data

The Standardised Factor Loadings (SFL) of each item included in the measurement model of soft TQM is presented in table 4.36. All statements have standardised loadings above 0.5, indicating that they all contribute satisfactorily to the construct's variance. As all constructs have Composite Reliability (CR) values and average variance extracted (AVE) values higher than 0.5, hence we can confirm the convergent validity of the scales and it also established that each of the variable used for the measurement correlate strongly with its construct “soft TQM”.

In order to determine the discriminant validity of the scale, the maximum shared variance (MSV) is compared with the average variance extracted (AVE) for each construct. The AVE values for all factors are greater than MSV(AVE>MSV), which empirically proves the discriminant validity of the scale used to measure the construct ‘soft TQM’.

The next step is to assess the model fitness because the estimates of the model validity for discriminant and convergent validity are favourable. Many indices of fit, including measures of goodness of fit, badness of fit, incremental fit, comparative fit, and parsimony fit, are produced using the structural equation model using Amos. The model fit analysis is illustrated in table 4.37

**Table 4.37**

*Model fit indices-Soft TQM*

Indices	Obtained	Recommended
CMIN/DF	4.33	<5.00(Hair et al., 2010)
Root Mean square Residual (RMR)	0.0121	<0.05 (Diamantopoulos & SiguawJ.A., 2000)
Comparative Fit Index (CFI)	0.915	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.9	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.801	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.944	>.90
Normed Fit Index (NFI)	0.911	>.90(Bentler & Bonett, 1980)
Relative Fit Index (RFI)	0.932	> .90
RMSEA	0.0788	<0.08(Hair et al., 2010)

Source: Primary data

Fit indices, including CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR, and RMSEA, show a good degree of fit. CMIN/DF ratio suggests that it is acceptable as a measure of goodness of fit.

0.90 is recommended for an acceptable fit, but it is important to note that the reference value may vary based on the complexity of the model and the size of the sample (Kline, 2011). According to the model, the Goodness of Fit (GFI) value is 0.900, which satisfy the recommended value of more than 0.90. Moreover, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.801, attaining the acceptable threshold of 0.80.

The Normed Fit Index (NFI), Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) are .911, .915, .944 respectively which satisfy the acceptable limit of 0.90, and are considered as acceptable fit (Kim et al., 2016). The Relative Fit Index (RFI) registers at 0.932 against the recommended value of 0.90 and is considered as reasonable fit (Kline, 2016).

For RMR, values less than 0.08 or 0.05 are considered acceptable (Hu & Bentler, 1999; Kline, 2016). In addition, the Root Mean square Residual (RMR) of 0.0121 is well below the recommended limit of 0.05.

Additionally, the Root Mean Square Error of Approximation (RMSEA) registers at 0.0788, a level below the acceptable limit of 0.08 (Hu & Bentler, 1999). The study result indicates that the measurement model fits the data well, thus we can confirm the results of the Exploratory Factor Analysis of the "soft TQM" construct.

#### **4.24 Normality of the data**

Normality of data were measured by using Kolmogorov-Smirnov test and found that the p values are less than .05. It can be concluded that the data is non-normal data. Skewness and kurtosis were also checked to test the normality of data. Values of skewness and kurtosis should be in the range of plus or minuse 2.58 and plus or minuse 1.96 (Hair, Black, Babin, Anderson and Tatham, 2006). The test results showed that the values of skewness and kurtosis were within the acceptable limit. Hence it is assumed that the data are normal. Based on this, Parametric test is carried out.



**Table 4.38***Normality for citizen questionnaire*

Sl. No.	Variable	Skewness	Kurtosis
1	Health and environment	0.568	-0.421
2	Social service	0.337	-0.913
3	Reconstruction and urban development	0.21	-0.522
4	Urban transportation	-0.043	-0.352
5	Disaster management and security services	-0.018	-0.469
6	Community services	-0.074	-1.121
7	Education services	-0.158	-0.116
8	Hard components for public	-0.462	-0.729
9	Soft components for public	0.515	0.033
10	SEVANA - Civil Registration	0.369	0.703
11	SEVANA –PENSION	0.14	-0.586
12	SANKETHAM	-0.405	-0.421
13	SANCHAYA	-0.316	-0.425
14	SOOCHIKA	0.095	-0.650

Source: Primary data

**Table 4.39***Normality for employee questionnaire*

Sl. No.	Variable	Skewness	Kurtosis
1	Hard TQM	0.495	0.795
2	Soft TQM	0.421	0.009
3	Barriers	0.116	0.773
4	STHAPANA	-0.956	1.134
5	SANCHITHA	-0.264	-0.141
6	SAANKHYA	-0.197	-0.795
7	SAKARMA	-0.021	-1.081
8	SUGAMA	-1.566	1.33
9	SAMVEDHITHA	0.203	-0.38
10	SUBHADRA	0.01	-0.361
11	SAMOOHYA	-0.536	-0.947
12	SAPHALYA	-1.009	1.34
13	SULEKHA	-0.954	1.032

Source: Primary data

#### **4.25 PROPOSED STRUCTURE SHOWING FACTORS NEEDS TO BE IMPROVED FOR FULL-FLEDGED TQM IN VARIOUS MUNICIPAL CORPORATIONS OF KERALA**

This study “TQM for service quality enhancement of Municipal Corporations in Kerala” mainly focuses on assessing the present service delivery status of urban local bodies namely Municipal Corporations of Kerala. Citizen’s satisfaction towards seven services namely health and environment services (HE), social services(SS), reconstruction and urban development services(RUD), urban transportation services(UT), disaster management services(DM), community services (CS), and education services (ES) accessed under this study. Additionally, it aids in determining which services inside each Corporation are lacking. Additionally, it tries to identify what all aspects of Total Quality Management are presently covered by Municipal Corporations. And what all aspects need to be added to each Municipal Corporation to improve their service delivery mechanism.

A comprehensive analysis is conducted to gain insights into the status of hard TQM components namely Community Resource Hub (CRH), Accessible Amenities Hub (AAH), Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ) that are essential for improving satisfaction of citizens. It is possible to improve quality through effective use of soft TQM practices (e.g. executive commitment, employee empowerment, customer focus). (Adam et al., 1997; Douglas et al., 1999; Powell et al., 1995; Samson & Terziovski, 1999) such as Customer Service Attributes and Elements (CSAE), Public Feedback Program (PFP), Front Office Expertise (FOE)and Employee Engagement and Access Control System (EE&ACS) are examined in detail across Kerala Municipal Corporations.

An organization's quality management should not only focus on its external customers, but also on its internal ones (Wilkinson et al., 1998). To gain insights into the status of hard TQM components for employees, namely Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT) and soft TQM components for employees, such as Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement

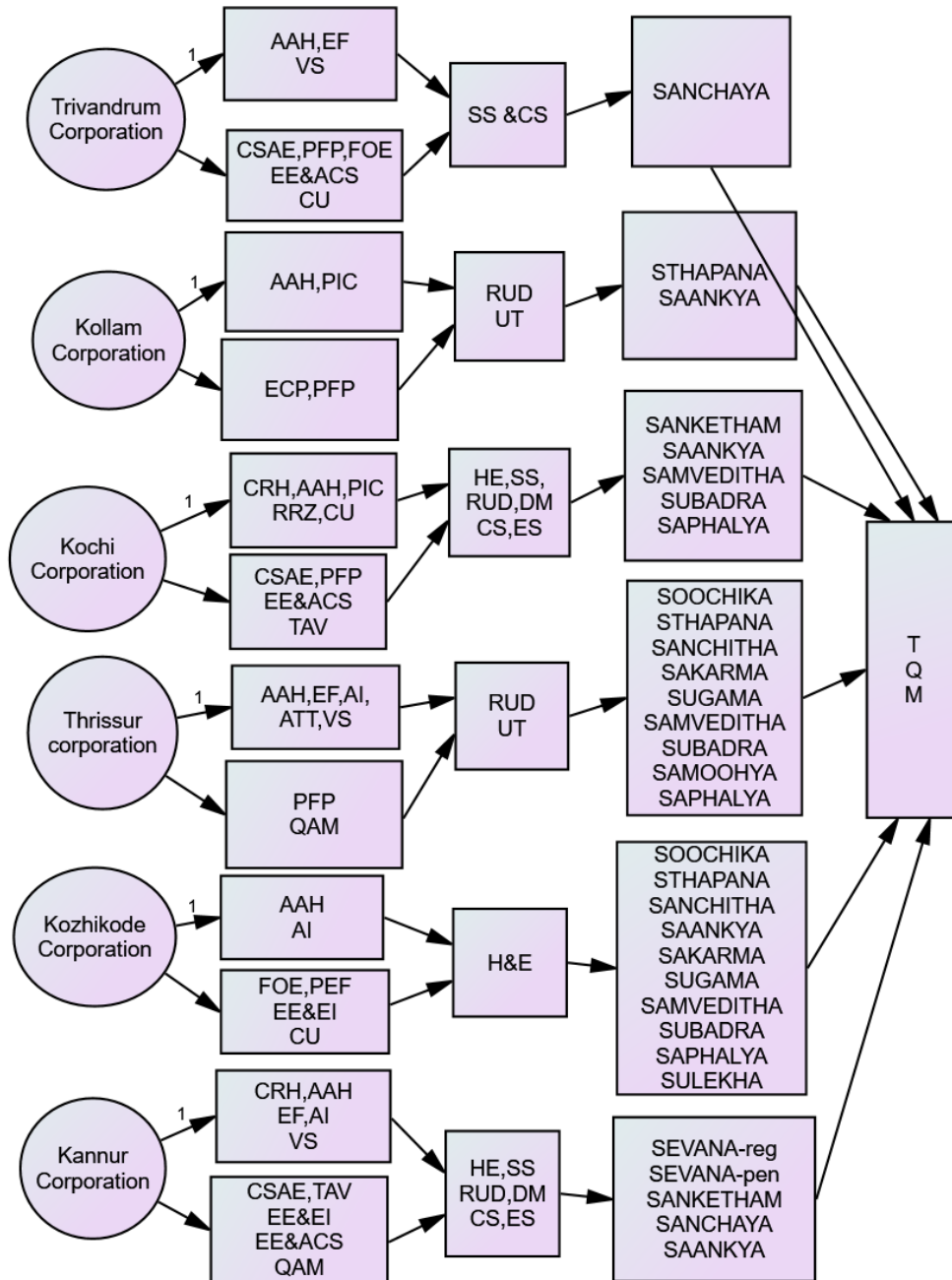
Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variables (TAV) and Collaboration and Upskilling (CU), are examined in detail across Municipal Corporations in Kerala.

Services of Corporation can be improved by ensuring the availability of services through online platform. One significant part of this study is to get insight into various software programs introduced as part of improving infrastructural facility i.e. hard particle of Total Quality Management . Working of this software introduced by government to serve both the residents and employees of Municipal Corporation are assessed under this study. Working of some programs namely SEVANA Civil registration, SEVANA Pension, SANKETHAM, SANCHAYA, and SOOCHIKA are examined in detail under this study, all of which are designed to enhance citizens' ability to obtain services from Municipal Corporations with greater ease.

This study also accesses the working of ten distinct programs, namely STHAPANA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SUBADRA, SAMOOHYA, SAPHALYA and SULEKHA that are designed to assist employees in simplifying their tasks and enhancing their efficiency, ultimately contributing to the pursuit of excellence in service quality. This study is descriptive in nature based on primary data collected from 1210 residents and 380 employees of Municipal Corporations in Kerala. This study covers all six Municipal Corporations in Kerala i.e. Thiruvananthapuram, Kollam, Thrissur, Kochi, Kozhikode and Kannur Municipal Corporations. To draw conclusions from the primary data, statistical tools like Mean, S.D., One way-ANOVA, MANOVA, correlation, and SEM modeling are used to examine the data. For analysing the data, IBM SPSS Statistics 26 and AMOS 21 were used. The study begins by assessing and comparing the performance of Municipal Corporations, performance is measured in terms of satisfaction level citizen regarding various services offered by Municipal Corporations in Kerala.

**Figure 4.6**

*Proposed structure showing factors needs to be improved for full-fledged TQM in various Municipal Corporations of Kerala*



**Abbreviations used in the proposed model are:**

- TQM - Total Quality Management
- HE - Health and environment services
- SS - Social services

RUD	- Reconstruction and urban development services
UT	- Urban transportation services
DM	- Disaster management services
CS	- Community services
ES	- Education services
EF	- Essential Facilities
AI	- Administrative Infrastructure
VS	- Venue Setup
ATT	- Administrative Tools and Technology (ATT)
EE&EI	- Employee Engagement and Empowerment Initiatives (EE&EI)
PEF	- Performance Enhancement Factors
QAM	- Quality Assurance Matrix
ECP	- Effective Communication Practices
TAV	- Training Accessibility Variables
CU	- Collaboration and Upskilling
CRH	- Community Resource Hub
AAH	- Accessible Amenities Hub
PIC	- Public Information Centre
RRZ	- Rest and Relaxation Zone
CSAE	- Customer Service Attributes and Elements
PFP	- Public Feedback Program
FOE	- Front Office Expertise
EE & ACS	- Employee Engagement and Access Control System

A theoretical framework (fig. 4.6) is recommended for Municipal Corporations in Kerala to ensure full-fledged Total Quality Management (TQM) in order to enhance the overall quality of their services, based on the study's findings. Fig 4.6 mention services to be improved by each Corporation to enhance their service quality and to reach TQM in their organisation. It also points out the hard particles and soft particles of TQM to be improved by various Corporation to enhance the satisfaction level of its internal customers (employees) and external customers (residents). The theoretical structure also suggests some software solution to be focused and improved by various Corporation to reach a full-fledged TQM program in improving their overall quality.

Physical facilities like AAH, EF, and VS need to be improved by Thiruvananthapuram Corporation. Additionally, in order to enhance the human components of overall quality management, it must concentrate on CSAE, PFP, FOE, CU, and EE&ACS. It should provide adequate attention to improve their social and community services. In order to achieve quality in their service delivery, they should introduce, maintain, or upgrade the SANCHAYA programme to improve the way software works. By doing all of these, Thiruvananthapuram Corporation will be able to improve overall service quality and reach TQM.

Kollam Corporation has to improve physical facilities such as AAH and PIC. It also has to focus on ECP and, PFP to improve the human aspects of Total Quality Management . It should provide adequate attention to improve their urban transportation service and reconstruction and urban development services. To enhance the working of software program, they should introduce or improve or maintain STHAPANA and SAANKYA program to reach quality in their service delivery. All these will lead Kollam Corporation to reach TQM and improve overall service quality.

Kochi Corporation has to improve physical facilities such as CRH, AAH, RRZ, CU and PIC. It also has to focus on CSAE, EE&ACS, TAV and PFP to improve the human aspects of Total Quality Management . Reconstruction and urban development services (RUD), community services (CS), health and environment services (HE), social services (SS), disaster management services (DM), and education services (ES) should all receive enough attention to be improved. To enhance the working of software program, they should introduce or improve or maintain SANKETHAM, SAANKYA, SAMVEDITHA, SUBADRA and SAPHALYA program to reach quality in their service delivery. Ultimately, these will lead Kochi Corporation to reach TQM and improve overall service quality.

The Thrissur Corporation must upgrade its physical infrastructure, including AAH, EF, AI, ATT, and VS. It also has to focus on QAM and PFP to improve the human aspects of Total Quality Management , enough focus should be on enhancing their urban transportation, reconstruction, and urban development services. To enhance the working of software program, they should introduce or improve or maintain STHAPANA, SOOCHIKA, SANCHITHA, SAKARMA, SUGAMA, SAMVEDITHA, SUBADRA, SAMOOHYA and SAPHALYA program to reach

quality in their service delivery. Finally, Thrissur Corporation to will reach TQM and improve its overall service quality.

Kozhikode Corporation has to improve physical facilities such as AAH and AI. It also has to focus on FOE, EE&EI, CU and PEF to improve the human aspects of Total Quality Management . It should provide adequate attention to improve their health and environment services (HE). To enhance the working of software program, they should introduce or improve or maintain STHAPANA, SOOCHIKA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SUBADRA, SULEKHA and SAPHALYA program to reach quality in their service delivery. All these will lead Kozhikode Corporation to reach TQM and improve overall service quality.

Kannur Corporation has to improve physical facilities such as CRH, AAH, EF, AI and VS. It also has to focus on CSAE, TAV, EE&EI, EE&ACS and QAM to improve the human aspects of total quality. In order to strengthen their disaster management services (DM), community services (CS), education services (ES), reconstruction and urban development services (RUD), social services (SS), and health and environment services (HE), sufficient attention should be given. To enhance the working of software program, they should introduce or improve or maintain SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA and SAANKYA program to reach quality in their service delivery. All these will lead Kannur Corporation to reach TQM and improve overall service quality.

#### **4.26 Chapter summary**

Throughout this chapter, the research design and methodology of this study are discussed. This chapter explains the result of the pilot study, reliability and validity analysis of the questionnaire, test of normality of data. This study is descriptive in nature based on primary data. The purposive sampling method is used in this study. A trial study is conducted with 50 citizens residing under Kozhikode Municipal Corporation and 50 employees working under same Municipal Corporation. Based on the data, the validity, reliability of the questionnaire was determined. In order to confirm the reliability and validity of the research instrument, a Confirmatory Factor Analysis was also done. The next chapter deals with data analysis relating to service quality of Municipal Corporations in Kerala.

# CHAPTER 5

## SERVICE QUALITY

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## **5.1. INTRODUCTION**

It is possible to define quality as ‘fitness for use’, including both quality of design (how a customer’s requirements are translated into a set of specifications) and conformance to the design (how an operation conforms to the specifications of the design standards). This chapter is dedicated to assess and compare the quality of service delivered by Municipal Corporations in Kerala. The focus is on conducting a comprehensive analysis, both on Corporation-specific and service-specific basis, to evaluate various services provided by these Municipal entities. The chapter commences by establishing a theoretical foundation for the concept of service quality. Subsequently, it delves into the analytical aspect, using the statistical tool ANOVA to substantiate the study objectives. Seven specific services offered by Municipal Corporations in Kerala are considered for this analysis. The chapter concludes by presenting the outcomes derived from the analysis.

## **5.2. SERVICE QUALITY - CONCEPT**

Organizations that provide services must prioritize customer satisfaction, as customers are the focal point determining the existence and survival of any organization. To achieve customer satisfaction, companies should actively seek and value customer suggestions and feedback. Furthermore, they need to be open to incorporating necessary changes based on this input.

The word quality usually represents “excellence”. Quality is usually assessed from beneficiary’s point of view. The meaning and definition will differ from person to person and organisation to organisation. Therefore, a single definition will not be enough to represent the concept of quality.

The term "quality" commonly signifies "excellence," with assessments typically made from the perspective of the beneficiary. The interpretation and definition of quality vary among individuals and organizations. Hence, a sole definition is insufficient to encapsulate the concept of quality. According to Oxford Dictionary (2006), quality is defined as “the standard of how good something is as measured against other similar things” or “general excellence” or “distinctive features.”

Some define quality as “performance to standards.” While others view it as “meeting the customer’s needs” or satisfying the customer. Some definitions of quality are as follows:

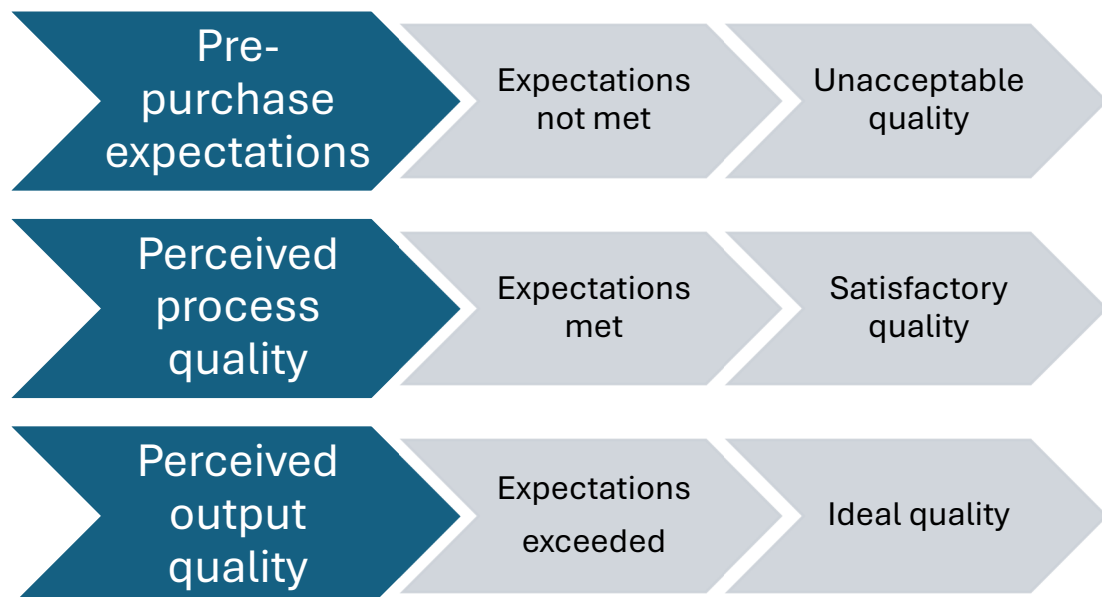
“Conformance to Requirements” - Philip B. Crosby.

“Fitness for Use”- Joseph Juran.

“Quality should be aimed at the needs of the customer, present and future”- Edwards Deming.

**Figure 5.1**

*Continuum of perceived Service Quality (Azeez, 2016)*



### 5.3. Defining Service Quality in the Public Sector

Many countries rely increasingly on the service industry for their economic growth (Ramseook et al., 2010). Delivering quality service is considered crucial to success and survival in today's global competitive environment (Parasuraman et al., 1985). In order to define quality from the beneficiary's point of view, a service is said to be of quality when it meets customer's expectations. By focusing on meeting customer demand, Total Quality Management can assist organizations in reforming, or in responding to external stress, and meeting and exceeding current and future customer expectations. (Sallis, 1996).

### 5.4. Variables used for the analysis of service quality

This objective was achieved by identifying and analysing the following variables:

**Table 5.1**

*List of Variables Used for Service Quality Analysis*

Sl. No.	Variables	No. of attributes /statements	Attributes /statements
1	Service quality on health and environment	8	<ul style="list-style-type: none"> <li>➤ Water service</li> <li>➤ Sewer system service</li> <li>➤ waste management like Haritha karma sena</li> <li>➤ Cleaning service of streets</li> <li>➤ Forestation</li> <li>➤ Prevention against infections</li> <li>➤ Pest control</li> <li>➤ Prevention of pollution</li> <li>➤ Functions of women activity centre</li> </ul>
2	Service quality on social service	4	<ul style="list-style-type: none"> <li>➤ Youth and sports activities</li> <li>➤ Women and child empowering programs</li> <li>➤ Vocational courses</li> </ul>

Sl. No.	Variables	No. of attributes /statements	Attributes /statements
3	Service quality on reconstruction and urban development	7	<ul style="list-style-type: none"> <li>➤ City planning</li> <li>➤ Street lighting</li> <li>➤ Road building and maintenance</li> <li>➤ Green field and parks</li> <li>➤ Shopping centres</li> <li>➤ cemeteries</li> <li>➤ construction and maintenance of markets (regulation of markets, prevention of dangerous trade practices)</li> </ul>
4	Service quality on urban transportation	3	<ul style="list-style-type: none"> <li>➤ Bus transportation</li> <li>➤ Car parking</li> <li>➤ Traffic management and control</li> </ul>
5	Service quality on disaster management and security services	4	<ul style="list-style-type: none"> <li>➤ Camera facility (CCTV)</li> <li>➤ Control of beggary</li> <li>➤ Rehabilitation measures during the time of disaster</li> <li>➤ Reconstruction activities after disaster</li> </ul>
6	Service quality on community services	2	<ul style="list-style-type: none"> <li>➤ Registration of birth, death, marriage etc</li> <li>➤ KIOSK for checking service status</li> </ul>
7	Service quality on education services	2	<ul style="list-style-type: none"> <li>➤ Establishment of education institutions</li> <li>➤ Maintenance of educational institutions</li> </ul>

(Source: Primary data)

## **5.5. A COMPARATIVE ANALYSIS OF SERVICE QUALITY ACROSS MUNICIPAL CORPORATIONS IN KERALA**

Municipal Corporations in Kerala offer services classified under seven categories: health and environment, social services, reconstruction and urban development, urban transportation, disaster management, community services, and education. While these Corporations provide similar services, the quality may differ. To assess these variations, a one-way analysis of variance (ANOVA) is conducted. The formulated hypothesis for this analysis is as follows.

H0: There is no significant difference in the quality of various service provided by Municipal Corporations in Kerala

H1: There is a significant difference in the quality of various service provided by Municipal Corporations in Kerala

**Table 5.2***Anova test -Municipal Corporations and quality of services*

Services	Trivandrum		Kollam		Kochi		Kozhikode		Thrissur		Kannur		ANOVA	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	F value	P value
Health & Environment	3.2	.28	4.2	.37	2.6	.27	3.13	.38	4.1	.42	2.9	.26	683.5	0.0**
Social service	2.9	0.48	4.2	0.43	2.8	0.27	3.4	0.5	4.1	0.53	2.4	0.27	509.2	0.0**
Reconstruction & urban Development services	3.2	.32	3.8	0.23	2.9	0.3	3.4	0.39	3.8	0.25	2.9	0.2	347.8	0.0**
Urban transportation	3.3	0.44	3.8	0.33	3.04	0.46	3.42	0.6	3.7	0.4	2.9	0.34	123.5	0.0**
Disaster management	3.1	.5	3.9	.37	2.6	0.4	3.45	0.55	3.9	0.42	2.99	0.26	268.8	0.0**
Community Services	2.9	0.5	4.12	0.24	2.2	0.45	3.55	0.6	4.1	0.29	2.3	0.5	692.1	0.0**
Education Services	3.3	0.6	4.13	0.32	2.96	0.42	3.78	0.65	4.12	0.36	3.1	0.47	200.9	0.0**

(Source: Primary data) \*\*1% significance level\*5% significance level

**Table 5.3***Ranking of services in various Municipal Corporations in Kerala*

Services	Trivandrum	Kollam	Kochi	Kozhikode	Thrissur	Kannur
Health& Environmental service	3	<b>1</b>	6	4	2	5
Social service	4	<b>1</b>	5	3	2	6
Reconstruction and urban development services	3	<b>1</b>	4	2	<b>1</b>	4
Urban transportation	4	<b>1</b>	5	3	2	6
Disaster management	3	<b>1</b>	5	2	<b>1</b>	4
Community Services	4	<b>1</b>	6	3	2	5
Education Services	4	<b>1</b>	6	3	2	5

(Source: Primary data)

From the above table, it is clear that Kollam Municipal Corporation outperform other Corporations in rendering all these services. At the same time, Kochi and Kannur Corporation need improvements in these services.

In the case of health& environmental service, Kollam, Thrissur, Thiruvananthapuram, Kozhikode, Kannur and Kochi Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively. In case of social service, Kollam is ranked a 1<sup>st</sup>, Thrissur as 2<sup>nd</sup>, Kozhikode as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Kochi as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values. In case of ‘reconstruction and urban development services’, 1<sup>st</sup> rank is secured by both Kollam and Thrissur Municipal Corporation with a mean value of 3.8 each. 2<sup>nd</sup> rank is secured by Kozhikode, 3<sup>rd</sup> rank by Thiruvananthapuram Municipal Corporations. The Kochi and Kannur Corporation secure 4<sup>th</sup> rank in providing “reconstruction and urban development services”. When it comes to ‘urban transportations service’, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Thrissur, Kozhikode, Thiruvananthapuram Kochi and Kannur Municipal



Corporations. When it comes to ‘disaster management service’, Kollam and Thrissur Corporation secure 1<sup>st</sup> rank. Kozhikode, Thiruvananthapuram, Kannur and Kochi Corporation secure the subsequent ranks. In the case of ‘community services and education services, Kollam, Thrissur, Kozhikode, Thiruvananthapuram, Kannur and Kochi Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively.

**Table 5.4**

*Hypothesis test -variations in service quality among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the quality of health& environment service provided by Municipal Corporations in Kerala	ANOVA	Supported
2	There is a significant difference in the quality of social service provided by Municipal Corporations in Kerala	ANOVA	Supported
3	There is a significant difference in the quality of reconstruction & urban development service provided by Municipal Corporations in Kerala	ANOVA	Supported
4	There is a significant difference in the quality of urban transportation service provided by Municipal Corporations in Kerala	ANOVA	Supported
5	There is a significant difference in the quality of disaster management service provided by Municipal Corporations in Kerala	ANOVA	Supported
6	There is a significant difference in the quality of community services provided by Municipal Corporations in Kerala	ANOVA	Supported
7	There is a significant difference in the quality of education service provided by Municipal Corporations in Kerala	ANOVA	Supported

(Source: Primary data)

The table 5.2 shows result of one-way ANOVA, p value for all services provided by Municipal Corporations is below 0.05, hence it can be concluded that there is significance difference between various Corporations in Kerala regarding the quality

of services provided. In order to check the difference, a post-hoc test (Tucky) is conducted. The result of post hoc test for each service are presented in table 5.5, table 5.7, table 5.9, table 5.11, table 5.13, table 5.15 and table 5.17

**Table 5.5**

*Post-hoc test -Municipal Corporations and health & environment service*

	Municipal Corporations	Mean difference	P value
Health & environment service	Trivandrum* Kollam	-0.98	0.000
	Trivandrum*Kochi	0.531	0.000
	Trivandrum*Thrissur	-0.931	0.000
	Trivandrum*Kannur	0.307	0.000
	Kollam*Kochi	1.5	0.000
	Kollam*Kozhikode	1.02	0.000
	Kollam*Kannur	1.3	0.000
	Kochi* Kozhikode	-0.49	0.000
	Kochi*Thrissur	-1.46	0.000
	Kochi*Kannur	-0.23	0.000
	Kozhikode *Thrissur	-0.97	0.000
	Kozhikode *Kannur	0.266	0.000
Kannur*Thrissur	1.2	0.000	

(Source: Primary data)

Thiruvananthapuram is better than the Kochi and Kannur Municipal Corporations in delivering health and environmental services. Contrary, Kollam and Thrissur Corporations outperform in providing health and environmental services to their citizens when compared to Thiruvananthapuram. Kollam Corporation provide better health and environment services as compared with Kochi, Kozhikode and Kannur Municipal Corporations. Kozhikode, Thrissur and Kannur are better than Kochi Municipal Corporation in terms of health and environment services. Kozhikode is better than Kannur. But Thrissur is better than Kozhikode. Kannur in providing health and environment services than Thrissur.

**Table 5.6**

*Post hoc test - variations in quality of health & environment service among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Service	Tools used	Result
1	There is a significant difference between Trivandrum and Kollam Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
2	There is a significant difference between Trivandrum and Kochi Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
3	There is a significant difference between Trivandrum and Kozhikode Municipal Corporations.	Health & Environment service	Tukey's post hoc test	<b>Rejected</b>
4	There is a significant difference between Trivandrum and Thrissur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
5	There is a significant difference between Trivandrum and Kannur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
6	There is a significant difference between Kollam and Kochi Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
7	There is a significant difference between Kollam and Kozhikode Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
8	There is a significant difference between Kollam and Thrissur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	<b>Rejected</b>

Sl. No.	Hypotheses	Service	Tools used	Result
9	There is a significant difference between Kollam and Kannur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
10	There is a significant difference between Kochi and Kozhikode Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
11	There is a significant difference between Kochi and Thrissur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
12	There is a significant difference between Kochi and Kannur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
13	There is a significant difference between Kozhikode and Thrissur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
14	There is a significant difference between Kozhikode and Kannur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported
15	There is a significant difference between Thrissur and Kannur Municipal Corporations.	Health & Environment service	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Corporations in Kerala, Kollam Corporation is better in health and environment services (mean=4.2). In providing health and environment services, Kochi (mean=2.6) Corporation is far behind other Corporations in Kerala. Table 5.6 present the outcomes of the working hypotheses regarding health & environment service when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses reject the null hypothesis, indicating a significant difference between the compared entities.

**Table 5.7***Post-hoc test -Municipal Corporations and social service*

	Municipal Corporations	Mean difference	P value
Social service	Trivandrum* Kollam	-1.15	0.000
	Trivandrum*Kochi	0.2	0.000
	Trivandrum* Kozhikode	-0.42	0.000
	Trivandrum*Thrissur	-1.08	0.000
	Trivandrum*Kannur	0.64	0.000
	Kollam*Kochi	1.4	0.000
	Kollam*Kozhikode	.73	0.000
	Kollam*Kannur	1.8	0.000
	Kochi*Kozhikode	-.62	0.000
	Kochi*Thrissur	-1.3	0.000
	Kochi*Kannur	.44	0.000
	Kozhikode*Thrissur	-.66	0.000
	Kozhikode*Kannur	1.06	0.000
	Thrissur*Kannur	1.7	0.000

(Source: Primary data)

In providing social service, Trivandrum Corporation is far behind Kollam, Kozhikode and Thrissur Corporations. Trivandrum is better in social service as compared with Kochi and Kannur Municipal Corporations. Among Municipal Corporations in Kerala, Kollam Corporation is better in providing social service. Social service provided by Kozhikode Corporation is better than Kochi and Kannur Municipal Corporations. Thrissur is better in social service than Kochi, Kozhikode and Kannur Municipal Corporations.

**Table 5.8**

*Post hoc test - variations in quality of social service among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Service	Tools used	Result
1	There is a significant difference between Trivandrum and Kollam Municipal Corporations.	Social service	Tukey's post hoc test	Supported
2	There is a significant difference between Trivandrum and Kochi Municipal Corporations.	Social service	Tukey's post hoc test	Supported
3	There is a significant difference between Trivandrum and Kozhikode Municipal Corporations.	Social service	Tukey's post hoc test	Supported
4	There is a significant difference between Trivandrum and Thrissur Municipal Corporations.	Social service	Tukey's post hoc test	Supported
5	There is a significant difference between Trivandrum and Kannur Municipal Corporations.	Social service	Tukey's post hoc test	Supported
6	There is a significant difference between Kollam and Kochi Municipal Corporations.	Social service	Tukey's post hoc test	Supported
7	There is a significant difference between Kollam and Kozhikode Municipal Corporations.	Social service	Tukey's post hoc test	Supported
8	There is a significant difference between Kollam and Thrissur Municipal Corporations.	Social service	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference between Kollam and Kannur Municipal Corporations.	Social service	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Service	Tools used	Result
10	There is a significant difference between Kochi and Kozhikode Municipal Corporations.	Social service	Tukey's post hoc test	Supported
11	There is a significant difference between Kochi and Thrissur Municipal Corporations.	Social service	Tukey's post hoc test	Supported
12	There is a significant difference between Kochi and Kannur Municipal Corporations.	Social service	Tukey's post hoc test	Supported
13	There is a significant difference between Kozhikode and Thrissur Municipal Corporations.	Social service	Tukey's post hoc test	Supported
14	There is a significant difference between Kozhikode and Kannur Municipal Corporations.	Social service	Tukey's post hoc test	Supported
15	There is a significant difference between Thrissur and Kannur Municipal Corporations.	Social service	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Corporations in Kerala, Kollam Corporation is better in social services (mean=4.15). In providing social services, Kannur (mean=2.35) Corporation is far behind other Corporations in Kerala. Table 5.8 present the outcomes of the working hypotheses regarding social service when making pairwise comparison among each Municipal Corporation. It provides insights into situations where statistical analyses reject the null hypothesis, indicating a significant difference between the compared entities.

**Table 5.9**

*Post-hoc test - Municipal Corporations and reconstruction & urban development service*

Services	Municipal Corporations	Mean difference	P value
Reconstruction & urban development service	Trivandrum* Kollam	-.61	0.000
	Trivandrum*Kochi	.24	0.000
	Trivandrum* Kozhikode	-.21	0.000
	Trivandrum*Thrissur	-.61	0.000
	Trivandrum*Kannur	.31	0.000
	Kollam*Kochi	.86	0.000
	Kollam*Kozhikode	.41	0.000
	Kollam*Kannur	.92	0.000
	Kochi*Kozhikode	-.45	0.000
	Kochi*Thrissur	-.85	0.000
	Kozhikode*Thrissur	-.396	0.000
	Kozhikode*Kannur	.52	0.000
Thrissur*Kannur	.914	0.000	

(Source: Primary data)

Kollam Corporation provide better reconstruction and urban development service as compared with Trivandrum, Kochi, Kozhikode and Kannur Municipal Corporations. In providing reconstruction and urban development service, Kozhikode is better than Trivandrum, Kochi and Kannur Municipal Corporations. Trivandrum is better than Kochi and Kannur Corporations in case of rendering reconstruction and urban development service. Reconstruction and urban development service provided by Thrissur Corporation is better than Kannur, Kozhikode, Kochi and Trivandrum Municipal Corporations.



**Table 5.10**

*Post hoc test - variations in quality of reconstruction & urban development service among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Service	Tools used	Result
1	There is a significant difference between Trivandrum and Kollam Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
2	There is a significant difference between Trivandrum and Kochi Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
3	There is a significant difference between Trivandrum and Kozhikode Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
4	There is a significant difference between Trivandrum and Thrissur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
5	There is a significant difference between Trivandrum and Kannur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
6	There is a significant difference between Kollam and Kochi Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
7	There is a significant difference between Kollam and Kozhikode Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
8	There is a significant difference between Kollam and Thrissur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	<b>Rejected</b>

Sl. No.	Hypotheses	Service	Tools used	Result
9	There is a significant difference between Kollam and Kannur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
10	There is a significant difference between Kochi and Kozhikode Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
11	There is a significant difference between Kochi and Thrissur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
12	There is a significant difference between Kochi and Kannur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	<b>Rejected</b>
13	There is a significant difference between Kozhikode and Thrissur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
14	There is a significant difference between Kozhikode and Kannur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported
15	There is a significant difference between Thrissur and Kannur Municipal Corporations.	Reconstruction & urban development service	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Corporations in Kerala, Kollam Corporation is better in providing reconstruction and urban development service (mean=3.8). In providing reconstruction and urban development service, Kannur (mean=2.8) Corporation is far behind than other Corporations in Kerala. Table 5.10 present the outcomes of the working hypotheses regarding reconstruction & urban development service when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses reject the null hypothesis, indicating a significant difference between the compared entities.

**Table 5.11***Post-hoc test -Municipal Corporations and urban transportation services*

Services	Municipal Corporations	Mean difference	P value
Urban transportation	Trivandrum* Kollam	-.46	0.000
	Trivandrum*Kochi	.26	0.000
	Trivandrum*Thrissur	-.43	0.000
	Trivandrum*Kannur	.42	0.000
	Kollam*Kochi	.73	0.000
	Kollam*Kozhikode	.35	0.000
	Kollam*Kannur	.9	0.000
	Kochi*Kozhikode	-.37	0.000
	Kochi*Thrissur	-.69	0.000
	Kochi*Kannur	.16	0.000
	Kozhikode*Thrissur	-.32	0.000
	Kozhikode*Kannur	.53	0.000
	Thrissur*Kannur	.85	0.000

(Source: Primary data)

Like other services, urban transportation service provided by Kollam Municipal Corporation is better than Trivandrum, Kochi, Kozhikode and Kannur Corporation. Trivandrum Corporation is better in urban transportation service compared to Kochi and Kannur Municipal Corporations. Thrissur is better than Trivandrum, Kochi, Kozhikode and Kannur Corporations in providing urban transportation service. Compared to Kochi, Kozhikode is better, and compared to Kannur Municipal Corporation, Kochi is better.

**Table 5.12**

*Post hoc test - variations in the quality of urban transportation service among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Service	Tools used	Result
1	There is a significant difference between Trivandrum and Kollam Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
2	There is a significant difference between Trivandrum and Kochi Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
3	There is a significant difference between Trivandrum and Kozhikode Municipal Corporations.	Urban transportation	Tukey's post hoc test	<b>Rejected</b>
4	There is a significant difference between Trivandrum and Thrissur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
5	There is a significant difference between Trivandrum and Kannur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
6	There is a significant difference between Kollam and Kochi Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
7	There is a significant difference between Kollam and Kozhikode Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
8	There is a significant difference between Kollam and Thrissur Municipal Corporations.	Urban transportation	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference between Kollam and Kannur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Service	Tools used	Result
10	There is a significant difference between Kochi and Kozhikode Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
11	There is a significant difference between Kochi and Thrissur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
12	There is a significant difference between Kochi and Kannur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
13	There is a significant difference between Kozhikode and Thrissur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
14	There is a significant difference between Kozhikode and Kannur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported
15	There is a significant difference between Thrissur and Kannur Municipal Corporations.	Urban transportation	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Corporations in Kerala, Kollam Corporation is better in providing urban transportation service (mean=3.77). In providing urban transportation service, Kannur (mean=2.88) Corporation is far behind other Corporations in Kerala. Table 5.12 present the outcomes of the working hypothesis regarding urban transportation service when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses reject the null hypothesis, indicating a significant difference between the compared entities.

**Table 5.13***Post-hoc test -Municipal Corporations and disaster services*

Services	Municipal Corporations	Mean difference	P value
Disaster management	Trivandrum* Kollam	-.85	0.000
	Trivandrum*Kochi	.44	0.000
	Trivandrum*Kozhikode	-.395	0.000
	Trivandrum*Thrissur	-.82	0.000
	Kollam*Kochi	1.3	0.000
	Kollam*Kozhikode	.45	0.000
	Kollam*Kannur	.92	0.000
	Kochi*Kozhikode	-.84	0.000
	Kochi*Thrissur	-1.3	0.000
	Kochi*Kannur	-.37	0.000
	Kozhikode*Thrissur	-.422	0.000
	Kozhikode*Kannur	.46*	0.000
	Thrissur*Kannur	.89	0.000

(Source: Primary data)

In providing disaster management service, Trivandrum (mean=2.88) Corporation is far behind Kollam, Kozhikode and Thrissur Corporations in Kerala. At the same time, disaster management service in Trivandrum Municipal Corporation is better than Kochi Corporation. Disaster management service provided by Kollam Municipal Corporation is better than Trivandrum, Kochi, Kozhikode and Kannur Corporation. Kozhikode is better than Kochi and Kannur Corporations in case of disaster management service. Thrissur is better in disaster management service than Kochi, Kozhikode and Kannur Corporation. Kannur is better than Kochi Corporation in disaster management service.

**Table 5.14**

*Post hoc test - variations in the quality of disaster management service among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Service	Tools used	Result
1	There is a significant difference between Trivandrum and Kollam Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
2	There is a significant difference between Trivandrum and Kochi Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
3	There is a significant difference between Trivandrum and Kozhikode Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
4	There is a significant difference between Trivandrum and Thrissur Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
5	There is a significant difference between Trivandrum and Kannur Municipal Corporations.	Disaster management	Tukey's post hoc test	<b>Rejected</b>
6	There is a significant difference between Kollam and Kochi Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
7	There is a significant difference between Kollam and Kozhikode Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
8	There is a significant difference between Kollam and Thrissur Municipal Corporations.	Disaster management	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference between Kollam and Kannur Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
10	There is a significant difference between Kochi and Kozhikode Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Service	Tools used	Result
11	There is a significant difference between Kochi and Thrissur Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
12	There is a significant difference between Kochi and Kannur Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
13	There is a significant difference between Kozhikode and Thrissur Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
14	There is a significant difference between Kozhikode and Kannur Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported
15	There is a significant difference between Thrissur and Kannur Municipal Corporations.	Disaster management	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Corporations in Kerala, Kollam Corporation is better in providing disaster management service (mean=3.9). In providing disaster management service, Kochi (mean=2.61) Corporation is far behind other Corporations in Kerala. Table 5.14 present the outcomes of the working hypotheses regarding disaster management service when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses reject the null hypothesis, indicating a significant difference between the compared entities.



**Table 5.15***Post-hoc test -Municipal Corporations and community services*

Services	Municipal Corporations	Mean difference	P value
Community services	Trivandrum* Kollam	-1.2	0.000
	Trivandrum*Kochi	.72	0.000
	Trivandrum*Kozhikode	-.66	0.000
	Trivandrum*Thrissur	-1.22	0.000
	Trivandrum*Kannur	.62	0.000
	Kollam*Kochi	1.96	0.000
	Kollam*Kozhikode	.58	0.000
	Kollam*Kannur	1.9	0.000
	Kochi*Kozhikode	-1.4	0.000
	Kochi*Thrissur	-1.9	0.000
	Kozhikode*Thrissur	-.6	0.000
	Kozhikode*Kannur	1.3	0.000
	Thrissur*Kannur	1.84	0.000

(Source: Primary data)

Community services provided by Kollam Municipal Corporation is better than Trivandrum, Kochi, Kozhikode and Kannur Corporation. Kozhikode is better than Trivandrum, Kochi and Kannur Corporations in case of community services. Community services in Trivandrum is better than Kochi and Kannur Municipal Corporations. Thrissur is better in community service than Trivandrum, Kochi, Kozhikode and Kannur Corporation. Kochi is better than Kannur in case of community services.

**Table 5.16**

*Post hoc test - variations in quality of community service among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Service	Tools used	Result
1	There is a significant difference between Trivandrum and Kollam Municipal Corporations.	Community services	Tukey's post hoc test	Supported
2	There is a significant difference between Trivandrum and Kochi Municipal Corporations.	Community services	Tukey's post hoc test	Supported
3	There is a significant difference between Trivandrum and Kozhikode Municipal Corporations.	Community services	Tukey's post hoc test	Supported
4	There is a significant difference between Trivandrum and Thrissur Municipal Corporations.	Community services	Tukey's post hoc test	Supported
5	There is a significant difference between Trivandrum and Kannur Municipal Corporations.	Community services	Tukey's post hoc test	Supported
6	There is a significant difference between Kollam and Kochi Municipal Corporations.	Community services	Tukey's post hoc test	Supported
7	There is a significant difference between Kollam and Kozhikode Municipal Corporations.	Community services	Tukey's post hoc test	Supported
8	There is a significant difference between Kollam and Thrissur Municipal Corporations.	Community services	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference between Kollam and Kannur Municipal Corporations.	Community services	Tukey's post hoc test	Supported
10	There is a significant difference between Kochi and Kozhikode Municipal Corporations.	Community services	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Service	Tools used	Result
11	There is a significant difference between Kochi and Thrissur Municipal Corporations.	Community services	Tukey's post hoc test	Supported
12	There is a significant difference between Kochi and Kannur Municipal Corporations.	Community services	Tukey's post hoc test	<b>Rejected</b>
13	There is a significant difference between Kozhikode and Thrissur Municipal Corporations.	Community services	Tukey's post hoc test	Supported
14	There is a significant difference between Kozhikode and Kannur Municipal Corporations.	Community services	Tukey's post hoc test	Supported
15	There is a significant difference between Thrissur and Kannur Municipal Corporations.	Community services	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Corporations in Kerala, Kollam Corporation is better in providing community service (mean=4.12). In providing community service, Kochi (mean=2.15) Corporation is far behind other Corporations in Kerala. Table 5.16 present the outcomes of the working hypotheses regarding community service when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses reject the null hypothesis, indicating a significant difference between the compared entities.

**Table 5.17***Post-hoc test -Municipal Corporations and education services*

Services	Municipal Corporations	Mean difference	P value
Education services	Trivandrum* Kollam	-.84	0.000
	Trivandrum*Kochi	.33	0.000
	Trivandrum*Kozhikode	-.49	0.000
	Trivandrum*Thrissur	-.83	0.000
	Trivandrum*Kannur	.19	0.000
	Kollam*Kochi	1.2	0.000
	Kollam*Kozhikode	.35	0.000
	Kollam*Kannur	1.03	0.000
	Kochi*Kozhikode	-.82	0.000
	Kochi*Thrissur	-1.2	0.000
	Kochi*Kannur	-.14	0.000
	Kozhikode*Thrissur	-.34	0.000
	Kozhikode*Kannur	.68*	0.000
	Thrissur*Kannur	1.0 2	0.000

(Source: Primary data)

Education services provided by Kollam Municipal Corporation is better than Trivandrum, Kochi, Kozhikode and Kannur Corporation. Education services in Trivandrum is better than Kochi and Kannur Municipal Corporations. Kozhikode is better than Trivandrum, Kochi and Kannur Corporations in case of education services. Thrissur is better in education service than Trivandrum, Kochi, Kozhikode and Kannur Corporation. Kannur is better than Kochi in case of education services.

**Table 5.18**

*Post hoc test - variations in quality of education service among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Service	Tools used	Result
1	There is a significant difference between Trivandrum and Kollam Municipal Corporations.	Education services	Tukey's post hoc test	Supported
2	There is a significant difference between Trivandrum and Kochi Municipal Corporations.	Education services	Tukey's post hoc test	Supported
3	There is a significant difference between Trivandrum and Kozhikode Municipal Corporations.	Education services	Tukey's post hoc test	Supported
4	There is a significant difference between Trivandrum and Thrissur Municipal Corporations.	Education services	Tukey's post hoc test	Supported
5	There is a significant difference between Trivandrum and Kannur Municipal Corporations.	Education services	Tukey's post hoc test	Supported
6	There is a significant difference between Kollam and Kochi Municipal Corporations.	Education services	Tukey's post hoc test	Supported
7	There is a significant difference between Kollam and Kozhikode Municipal Corporations.	Education services	Tukey's post hoc test	Supported
8	There is a significant difference between Kollam and Thrissur Municipal Corporations.	Education services	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference between Kollam and Kannur Municipal Corporations.	Education services	Tukey's post hoc test	Supported
10	There is a significant difference between Kochi and Kozhikode Municipal Corporations.	Education services	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Service	Tools used	Result
11	There is a significant difference between Kochi and Thrissur Municipal Corporations.	Education services	Tukey's post hoc test	Supported
12	There is a significant difference between Kochi and Kannur Municipal Corporations.	Education services	Tukey's post hoc test	Supported
13	There is a significant difference between Kozhikode and Thrissur Municipal Corporations.	Education services	Tukey's post hoc test	Supported
14	There is a significant difference between Kozhikode and Kannur Municipal Corporations.	Education services	Tukey's post hoc test	Supported
15	There is a significant difference between Thrissur and Kannur Municipal Corporations.	Education services	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Corporations in Kerala, Kollam Corporation is better in providing education services (mean=4.13). In providing education services, Kochi (mean=2.96) Corporation is far behind other Corporations in Kerala. Table 5.18 presents the outcomes of the working hypotheses regarding education service when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses reject the null hypothesis, indicating a significant difference between the compared entities.

## 5.6. CHAPTER SUMMARY

This chapter undertakes a comprehensive examination of seven distinct services provided by Municipal Corporations in Kerala, namely health & environment service, social services, reconstruction and urban development service, urban transportation, disaster management, community services, and education services. The analysis extends to a Corporation-wise comparison, aiming to discern potential variations in the delivery of these services across different municipalities. The findings of the analysis reveal discernible differences in the approaches adopted by various

Municipal Corporations in providing each of these services. From the mean values, it is evident that Kollam, Kozhikode, and Thrissur Corporations exhibit superior performance in the provision of these services. This conclusion suggests that these specific municipalities have implemented more effective and comprehensive strategies in delivering health & environment services, social services, reconstruction & urban development services, urban transportation, disaster management, community services, and education services compared to their counterparts.

# CHAPTER 6

## TOTAL QUALITY MANAGEMENT

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## **6.1. INTRODUCTION**

The preceding chapter provides a comprehensive overview of the extensive range of services offered by Municipal Corporations in Kerala. Furthermore, it endeavours to delve into a comparative analysis of service quality among these Municipal Corporations, shedding light on the unique attributes and strengths of each Corporation.

This chapter, examines to what extent Kerala Municipal Corporations implement the principles of Total Quality Management (TQM). Additionally, it aims to identify areas where additional elements can be incorporated to establish a comprehensive TQM framework within these Municipal Corporations. This chapter also investigates how different elements of TQM affect performance of Municipal Corporations. Performance of Municipal Corporations are evaluated based on citizen's satisfaction level towards various services offered by it. Furthermore, this study attempts to develop a structural model for the effective implementation of TQM in local bodies, using Structural Equation Modelling (SEM). This chapter examines both the mediating role of "hard TQM" elements as well as the impact of "soft TQM" on citizen satisfaction.

In addition to analysing the individual effect of these TQM elements on citizen satisfaction, this chapter also examines the total effect of both soft and hard TQM components on overall satisfaction levels.

The concluding section of this chapter offers valuable insights into how employees within Municipal Corporations perceive various components of TQM. The analysis includes a comprehensive comparison both across different Corporations and on a

component-by-component basis, providing a nuanced understanding of employee perspectives.

## **6.2. CONCEPT OF TOTAL QUALITY MANAGEMENT**

A variety of technical as well as behavioural topics are mentioned in the literature regarding TQM as a management approach for improving organization performance. In 1986, Deming outlined 14 principles (of transformation) for staying competitive in providing goods and services based on TQM. These principles were studied by Anderson and a conceptual framework for TQM was developed using seven concepts, including visionary leadership, cooperation between internal and external organizations, learning, process management, continuous improvement, employee satisfaction, and continuous improvement. 'quality planning', 'quality control', and 'quality improvement' are the three management processes outlined by Juran (1992). Juran's TQM approach has been adopted by many companies; however, the quality control programme has received the most attention (Evan & Lindsay, 1999). In 1979, Crosby prescribed a 14-step quality programme that focused on the use of management and organizational processes to change organizations, not statistical tools and techniques. Therefore, his program is primarily behavioural, and its target audience is primarily top management.

The term Total Quality Management refers to both a philosophy and a set of guiding principles that can be applied to organizations in order to continuously improve their performance (Besterfield et al., 2012). It utilizes the quantitative methods and human resources to improve all the processes within an organization and exceed customer needs now and in the future (Besterfield et al., 2012).

## **6.3 UNDERSTANDING HARD AND SOFT TQM: DEFINITIONS AND DIFFERENCES**

Management commitment is the driving force behind TQM, but specific strategies need to be developed to ensure success. By designing quality into products and services, assuring in-process quality by using defect prevention and control techniques, as well as by judiciously using quality information, such as customer

feedback, benchmarking, and charts, companies can achieve superior organisational performance. (Ahire et al., 1991). In order to implement these strategies successfully, organizations must focus on their customers, maintain competent, reliable, and flexible suppliers, and encourage employee participation in decision-making processes through training and empowerment. (Ahire et al., 1991). Technology upgrades and hard TQM practices may not necessarily increase competitive advantage. A focus on process, product, and information technology may lead to quality improvements, but quality is ultimately determined by individuals (Bowen & Lawler III, 1992). Despite uncertainty over how quality improvements based on human resources can be implemented in practice, executives seem to recognize the importance of employee motivation, education, and corporate culture (Bowen & Lawler III, 1992; Hart & Schlesinger, 1991).

Practices of quality management (QM) can be classified into the management system – leadership, planning, human resources, etc, and the technical system (Evans & Lindsay, 2005), or into the “soft” and “hard” parts (Wilkinson et al., 1998). According to Evans & Lindsay, the technical system, consists of a set of tools and techniques (run charts, control charts, Pareto diagrams, brainstorming, stratification, tree diagrams, histograms, scatter diagrams, force-field analysis, flow charts, etc.). The hard components includes production and work process control techniques which ensure the correct functioning of such processes, including, amongst other things, process design, just-in-time philosophy, the ISO 9000 standard and the seven basic quality control tools (Wilkinson et al., 1998). In management, the soft part refers to the human factors or the behavioural aspects, such as leadership and people management. In order to successfully implement quality management, managers must take into account these two dimensions.

Generally, the soft quality management factors are related to people aspects, while the hard quality management factors represent the quality tools and techniques, design activities, process control and management, and process measurement (Abdullah & Tari, 2012).

In order to fulfil the objective, the following variables have been identified and analysed.

**Table 6.1**

*Variables Used for the Analysis*

Sl. No.	Variables	No. of attributes/ Statements	Attributes /statements
1	Hard component for public	17	<ul style="list-style-type: none"> <li>➤ Front office counter</li> <li>➤ Thapal box</li> <li>➤ Seating facility</li> <li>➤ Writing desk</li> <li>➤ Application forms and stationery</li> <li>➤ Baby feeding room</li> <li>➤ Complaint box</li> <li>➤ Notice board-RTI</li> <li>➤ Anti-corruption board</li> <li>➤ Touch screen</li> <li>➤ Reading corner and materials</li> <li>➤ First aid kit</li> <li>➤ Drinking water facility</li> <li>➤ Toilets</li> <li>➤ Wash basin</li> <li>➤ Ramp</li> <li>➤ Rehabilitation centres</li> </ul>
2	Hard component for officials	13	<ul style="list-style-type: none"> <li>➤ Seating arrangement &amp; Name board</li> <li>➤ Availability of stationery</li> <li>➤ Telephone registry</li> <li>➤ Movement register</li> <li>➤ Drawer for cash</li> <li>➤ Receipt book</li> <li>➤ Computer &amp; internet facility</li> <li>➤ Front office diary</li> <li>➤ Toilets</li> <li>➤ Govt orders &amp; rules for reference</li> <li>➤ First aid kit</li> <li>➤ Record management</li> <li>➤ ramp</li> </ul>

Sl. No.	Variables	No. of attributes/ Statements	Attributes /statements
3	Soft component for Public	15	<ul style="list-style-type: none"> <li>• Attitude of officials in FO</li> <li>• Knowledge of officials in FO</li> <li>• Availability of officials in FO</li> <li>• Helping mentality of officials</li> <li>• Attitude of Councillors</li> <li>• Staff appearance</li> <li>• Timely service</li> <li>• Formality for availing service</li> <li>• Complaint redressal</li> <li>• Meeting of citizen</li> <li>• Participation in decision making</li> <li>• Timely acknowledgement of applications and complaints</li> <li>• Ward sabha meeting</li> <li>• Citizen's feedback</li> <li>• Electronic token distribution system</li> </ul>
4	Soft component for officials	18	<ul style="list-style-type: none"> <li>• Sharing of information &amp; future plans</li> <li>• Clear &amp; open communication</li> <li>• Interaction between staff</li> <li>• Participation in decision making</li> <li>• Involvement in problem solving</li> <li>• Meetings</li> <li>• Informal groups</li> <li>• Quality circle</li> <li>• Friendly relationship</li> <li>• Job rotation</li> <li>• Teamwork</li> <li>• Suitable training facilities</li> <li>• Technology related training</li> <li>• Training opportunities</li> <li>• Quality audit</li> <li>• Measurement of work</li> <li>• Performance appraisal</li> <li>• Management commitment</li> </ul>

Source: Literature Review

#### **6.4. Analysis of citizen's perception towards hard and soft components of TQM**

According to quality experts, performance can be improved with quality management (Deming, 1982; Juran, 1988). Quality management and performance have been found to be positively correlated in several empirical studies conducted in both developed and developing countries (Powell et al., 1995)(Kaynak, 2003). Some research investigations concentrate on TQM as an undivided entity, while others opt to categorize TQM practices into distinct components, namely hard and soft elements(Z. Rahman, 2004). Details of this classification are listed in Table 6.1. Broadly speaking, hard quality management practices encompass technical tools and techniques employed in quality management, whereas soft quality management practices revolve around the oversight of people, relationships, and leadership. It is generally believed that the soft quality management factors deal with the human side of the organization, whereas the hard quality management factors deal with the tools and techniques, the design activities, processes, and measurements that are involved in the organization's quality management system. Descriptive statistics of these particles in detail are evaluated in this section to get a richer idea about coverage of components of TQM in Municipal Corporation of Kerala.

##### ***Corporation wise comparison of Hard TQM:***

According to Motwani et al. (1994) and Forza & Filippini (1998), hard TQM is suggested to be a key component for quality success. To gain insights into the status of hard TQM components, namely Community Resource Hub (CRH), Accessible Amenities Hub (AAH), Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ) a comprehensive analysis is conducted. This involves a detailed examination across Municipal Corporations in Kerala, assessing their mean and standard deviation (SD). The descriptive statistics for hard TQM are summarized and presented in table 6.2.

**Table 6.2***Descriptive Statistics-Components of Hard TQM*

Hard Component	Municipal Corporations	N	Mean	SD
CRH	Thiruvananthapuram	300	3.5989	0.35209
	Kollam	165	3.5000	0.38255
	Kochi	210	2.7307	0.07353
	Kozhikode	180	3.4991	0.40730
	Thrissur	175	3.4705	0.41743
	Kannur	180	2.2407	0.27419
	Total	1210	3.1993	0.60261
AAH	Thiruvananthapuram	300	1.6993	0.32694
	Kollam	165	2.3139	0.51096
	Kochi	210	1.2124	0.17835
	Kozhikode	180	2.8289	0.39388
	Thrissur	175	2.3109	0.50724
	Kannur	180	0.8500	0.08684
	Total	1210	1.8288	0.74561
PIC	Thiruvananthapuram	300	3.9208	0.34424
	Kollam	165	3.4167	0.43942
	Kochi	210	2.9750	0.43229
	Kozhikode	180	3.6653	0.43435
	Thrissur	175	3.4043	0.44663
	Kannur	180	3.7819	0.27211
	Total	1210	3.5545	0.51228
RRZ	Thiruvananthapuram	300	3.4233	0.45623
	Kollam	165	3.5606	0.58118
	Kochi	210	2.0405	0.43969
	Kozhikode	180	3.5227	0.65764
	Thrissur	175	3.5429	0.57948
	Kannur	180	3.2250	0.46158
	Total	1210	3.2046	0.75556

Source: Primary data



The perception of citizen towards hard TQM component ‘CRH (Community Resource Hub)’ is better in Thiruvananthapuram Municipal Corporation (mean=3.6), but in Kannur (mean=2.24) Municipal Corporation it is poor. As far as AAH (Accessible Amenities Hub) is concerned, Kozhikode Corporation (mean=2.83) outperforms all other Municipal Corporations in Kerala but Kannur(mean=0.85) Corporation needs to improve its performance. Thiruvananthapuram Corporation (mean=3.92) is excellent when it comes to Public Information Centre (PIC) but Kochi (mean=2.98) needs improvement. Among Municipal Corporations in Kerala, Kollam (mean=3.56) has excellent RRZ (Rest and Relaxation Zone), Kochi (mean=2.04) needs to improve.

In brief, in order to improve service status of Kochi Municipal Corporation, it should focus on hard elements of Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ). At the same time, Kannur Corporation have to take measures to improve their Community Resource Hub (CRH) and Accessible Amenities Hub (AAH).

**Table 6.3**

*Ranking of Hard TQM Components for citizens in Municipal Corporations*

Components	Thiruvananthapuram	Kollam	Kochi	Kozhikode	Thrissur	Kannur
CRH	1	2	5	3	4	6
AAH	4	2	5	1	3	6
PIC	1	5	6	3	4	2
RRZ	4	1	6	3	2	5

Source: Primary data

Particles of hard TQM namely Community Resource Hub (CRH), Accessible Amenities Hub (AAH), Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ) are ranked across Municipal Corporations in Kerala based on its mean values as mentioned in table 6.3. From ranking, it is clear that, Kochi Corporation have to focus on all these hard components to improve their service quality. In the case of Community Resource Hub (CRH), Thiruvananthapuram, Kollam, Kozhikode, Thrissur, Kochi and Kannur Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively. In case of AAH (Accessible Amenities Hub), Kozhikode is ranked a 1<sup>st</sup>, Kollam as 2<sup>n</sup>, Thrissur as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Kochi as 5<sup>th</sup> and Kannur as

6<sup>th</sup> based on their mean values. In case of PIC (Public Information Centre), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Thiruvananthapuram, Kannur, Kozhikode, Thrissur, Kollam, and Kochi Municipal Corporations. When it comes to ‘RRZ (Rest and Relaxation Zone)’, Kollam Corporation secure 1<sup>st</sup> rank. Thrissur, Kozhikode, Thiruvananthapuram, Kannur and Kochi Corporation secure the subsequent ranks.

**Corporation wise comparison of Soft TQM**

Human resources are at the core of soft TQM. There is a high level of coverage of soft TQM elements in management literature, and both management and TQM literature offer similar prescriptions. It is possible to improve quality through effective use of soft TQM practices (e.g. executive commitment, employee empowerment, customer focus). (Adam et al., 1997; Douglas et al., 1999; Powell et al., 1995; Samson & Terziovski, 1999)

Soft TQM components, such as Customer Service Attributes and Elements (CSAE), Public Feedback Program (PFP), Front Office Expertise (FOE) and Employee Engagement and Access Control System (EE&ACS) are examined in detail across Kerala Municipal Corporations by assessing their mean and standard deviation. Table 6.4 provides descriptive statistics about these elements.

**Table 6.4**

*Descriptive statistics-components of soft TQM*

Soft Component	Municipal Corporations	N	Mean	SD
CSAE	Thiruvananthapuram	300	2.2589	0.47417
	Kollam	165	3.5515	0.50055
	Kochi	210	2.5794	0.29849
	Kozhikode	180	3.7083	0.35317
	Thrissur	175	3.5429	0.51687
	Kannur	180	2.7694	0.29388
	Total	1210	2.9680	0.71238

Soft Component	Municipal Corporations	N	Mean	SD
PFP	Thiruvananthapuram	300	2.5061	0.47489
	Kollam	165	2.4348	0.91602
	Kochi	210	2.7262	0.38283
	Kozhikode	180	3.7236	0.45118
	Thrissur	175	2.4886	0.92918
	Kannur	180	3.2111	0.22081
	Total	1210	2.8180	0.75034
FOE	Thiruvananthapuram	300	2.6783	0.84146
	Kollam	165	4.0212	0.29400
	Kochi	210	3.0452	0.39928
	Kozhikode	180	3.3583	0.68560
	Thrissur	175	3.9971	0.34113
	Kannur	180	3.5083	0.44369
	Total	1210	3.3405	0.76401
EE&ACS	Thiruvananthapuram	300	2.9978	0.41969
	Kollam	165	3.0101	0.39030
	Kochi	210	2.1222	0.35777
	Kozhikode	180	3.0759	0.49932
	Thrissur	175	3.0057	0.39225
	Kannur	180	2.7241	0.28370
	Total	1210	2.8196	0.52037

Source: Primary data

A pair wise comparison between Municipal Corporations shows citizen's perception towards three out of four soft particles of soft TQM i.e. CSAE, PFP, EE&ACS are better in Kozhikode Municipal Corporation. At the same time, Trivandrum Corporation needs to pay more attention to FOE (Front Office Expertise), PFP and CSAE to improve their service status. Kollam Corporation (Mean=4.02) is excellent in terms of soft components of FOE, while Thiruvananthapuram Corporation (mean=2.68) should pay more attention to improve FOE. Citizens of Kollam Corporations are satisfied toward all these soft particles of TQM except 'Public

Feedback Program (PFP)’. Among Municipal Corporations in Kerala, Kochi Corporation is poor in maintaining ‘Employee Engagement and Access Control System’.

**Table 6.5**

*Ranking of soft TQM components for citizens in Municipal Corporations*

Programs	Thiruvananthapuram	Kollam	Kochi	Kozhikode	Thrissur	Kannur
CSAE	6	2	5	1	3	4
PFP	4	6	3	1	5	2
FOE	6	1	5	4	2	3
EE&ACS	4	2	6	1	3	5

Source: Primary data

Particles of soft TQM namely Customer Service Attributes and Elements (CSAE), Front Office Expertise (FOE), Public Feedback Program (PFP), and Employee Engagement and Access Control System (EE&ACS) are ranked across Municipal Corporations in Kerala based on its mean values as mentioned in table 6.5. From the result, it is clear that Kozhikode Corporation is better in maintaining three out of four soft particle of TQM (CSAE, PFP and EE&ACS) when compared with other Corporations in Kerala. From ranking, it is clear that, Kochi Corporation and Thiruvananthapuram Corporations have to focus on all these soft components to improve their service quality. In the case of CSAE, Kozhikode, Kollam, Thrissur, Kannur, Kochi and Thiruvananthapuram Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively. In case of Public Feedback Program (PFP), Kozhikode is ranked a 1<sup>st</sup>, Kannur as 2<sup>nd</sup>, Kochi as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Thrissur as 5<sup>th</sup> and Kollam as 6<sup>th</sup> based on their mean values. In case of FOE, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Thrissur, Kannur, Kozhikode, Kochi and Thiruvananthapuram Municipal Corporations. When it comes to ‘Employee Engagement and Access Control System (EE&ACS)’, Kozhikode Corporation secure 1<sup>st</sup> rank. Kollam, Thrissur, Thiruvananthapuram, Kannur and Kochi Corporation secure the subsequent ranks.

**Table 6.6**

*Comparison of components of TQM among various Municipal Corporations in Kerala-Citizen's perspective*

Corporation	Hard TQM Public			Soft TQM Public		
	Grand mean	SD	Rank	Grand mean	SD	Rank
Thiruvananthapuram	3.16	0.9	4	2.6	0.41	6
Kollam	3.2	0.27	2	3.25	0.28	3
Kochi	2.24	0.48	6	2.62	0.11	5
Kozhikode	3.38	0.11	1	3.5	0.07	1
Thrissur	3.18	0.25	3	3.26	0.32	2
Kannur	2.52	1.2	5	3.05	0.104	4

Source: Primary data

In case of hard particles of TQM, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kozhikode, Kollam, Thrissur, Thiruvananthapuram Kannur and Kochi Municipal Corporations. In case of soft particles of TQM, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kozhikode, Thrissur, Kollam, Kannur, Kochi and Thiruvananthapuram Municipal Corporations in Kerala. Kozhikode Corporation is secured first rank in maintaining hard and soft particles of TQM as shown in table 6.6. At the same time, Thiruvananthapuram Corporation secured only 6<sup>th</sup> rank in maintaining soft particles of TQM and Kochi secured 6<sup>th</sup> rank in maintaining hard particles of TQM.

### ***ANALYSIS OF RELATIONSHIP***

To check the relationship between hard/soft particle of TQM with performance of Municipal Corporation, correlation analysis is performed. Performance of Municipal Corporations are evaluated based on citizen's satisfaction level towards various services offered by it. Both the hard TQM elements and the soft TQM elements are evaluated as part of the correlation analysis. The following null hypothesis were tested in this section.

H2: There is no significant relationship between perception on soft TQM elements and citizen’s satisfaction

H3: There is no significant relationship between perception on hard TQM elements and citizen’s satisfaction

**Hard components of TQM and customer satisfaction**

Table 6.7 clarifies the relationship between hard TQM components (CRH, AAH, PIC and RRZ) and citizen satisfaction. Citizen’s satisfaction is measured by assessing their perception towards quality of various services offered by Municipal Corporations such as health and environment service, social service, reconstruction and urban development service, urban transportation service, disaster management and security services, community services and education services .The result shows that there exist a positive relationship between hard components of TQM and citizen’s satisfaction towards services provided by Municipal Corporations in Kerala. The correlation matrix shows that three elements of hard TQM are significantly related to the satisfaction of citizen. Three out of the four elements of hard TQM i.e. Community Resource Hub (CRH), Accessible Amenities Hub (AAH) and Rest and Relaxation Zone (RRZ) shows a moderate positive correlation with satisfaction of citizen. The hard component Public Information Centre (PIC) shows a very low positive relationship with level of satisfaction of citizens. In general, hard TQM and citizen satisfaction show a moderately positive correlation.

**Table 6.7**

*Correlation between hard components of TQM and citizen satisfaction*

Components		CRH	AAH	PIC	RRZ	Over all Hard TQM
Satisfaction	Pearson Correlation	.554**	.663**	0.023	.465**	.504**
	Sig. (2-tailed)	0	0	0.428	0	0.000
	N	1210	1210	1210	1210	1210

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

**Soft components of TQM and customer satisfaction**

Table 6.8. depicts the correlation between four elements of soft TQM and citizen's satisfaction. The correlation matrix shows that all four elements of soft TQM are significantly related to the satisfaction of citizen. Three out of the four elements of soft TQM i.e. CSAE, FOE and EE&ACS shows a moderate positive correlation with satisfaction of citizen. One among the four elements of soft TQM, Public Feedback Program (PFP) shows a very low negative correlation with satisfaction of citizen. It is generally agreed that soft TQM and citizen satisfaction have a moderately positive relationship. These result support the proposition that soft TQM elements have direct effect on satisfaction and are broadly similar to the findings of (Powell et al., 1995).

**Table 6.8***Correlation between soft components of TQM and customer satisfaction*

Components	CSAE	PFP	FOE	EE_ACS	Over all Soft TQM
Pearson Correlation	.563**	-.081**	.480**	.427**	.473**
Satisfaction Sig. (2-tailed)	0	0.005	0	0	0.000
N	1210	1210	1210	1210	1210

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

**Table 6.9***Correlation between elements of TQM and citizen satisfaction*

Variables	Test	Pearson correlation	Sig. (2 tailed)	Result
Relationship between soft TQM elements and citizen satisfaction level	Satisfaction*CSAE Correlation	.563	.000	<b>Positive</b>
	Satisfaction *PFP Correlation	-.082	.005	Negative
	Satisfaction *FOE Correlation	.480	.000	<b>Positive</b>
	Satisfaction *EE&ACS Correlation	.427	.000	<b>Positive</b>

	Variables	Test	Pearson correlation	Sig. (2 tailed)	Result
Relationship between hard TQM elements and citizen satisfaction level	Satisfaction*CRH	Correlation	.572	.000	<b>Positive</b>
	Satisfaction*AAH	Correlation	.693	.000	<b>Positive</b>
	Satisfaction*PIC	Correlation	.033	.246	<b>Positive</b>
	Satisfaction*RRZ	Correlation	.474	.000	<b>Positive</b>

\*\*, Correlation is significant at the 0.01 level (2-tailed).  
(Source: Primary data)

The table 6.9 shows a brief idea about the result of correlation analysis under this study.

### ***ANALYSIS OF THE EFFECT***

This section looks at how citizens' satisfaction is affected by the hard and soft components of TQM. For this, the Amos software package's structural equation modelling, was used. Data for the study is collected from people who are residing under various Municipal Corporations in Kerala. A theory of linear relationships between variables is represented, estimated and tested using SEM (Rigdon, 1998). A model's fit can be understood using a variety of Goodness of Fit Indexes and statistical functions. The most widely used one are RMSEA (Root Mean Square Error Approximation) and GFI (Goodness of Fit Index). L.A.Hayduk, (1987) proposed that a RMSEA equal to or less than 0.05 suggests a perfect fit. If the RMSEA falls between 0.08 and 0.10, it indicates an acceptable fit, but if it exceeds 0.10, it suggests a poor fit. In this study two models were developed based on theoretical relationship among study variables hard TQM, soft TQM and citizen's satisfaction. An empirical test of these models was conducted by collecting data from residents of Municipal Corporations in Kerala. Fig. 6.1 depicts a first theoretical model for assessing the effect of hard TQM on citizen satisfaction



**Figure 6.1**

*Proposed theoretical model for testing effect of hard TQM on citizen's satisfaction*

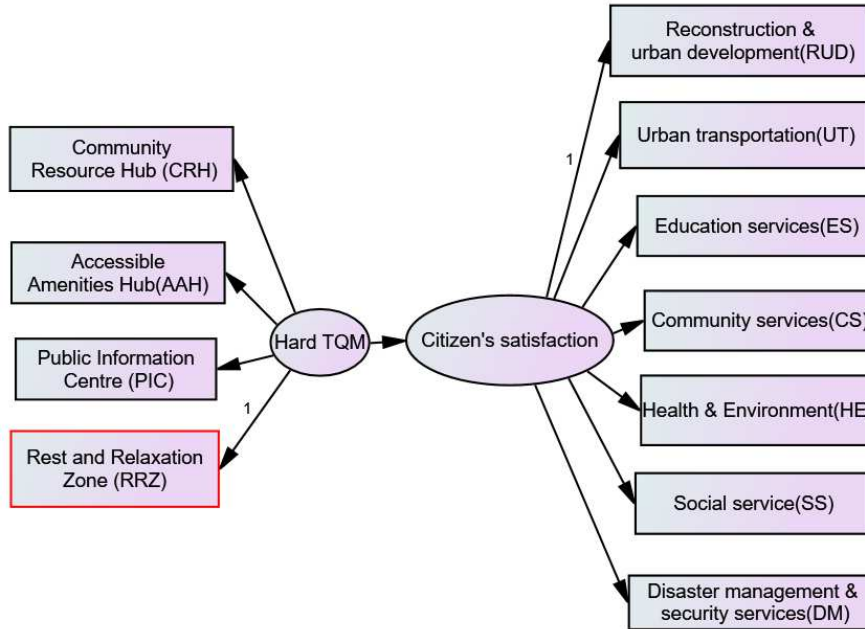
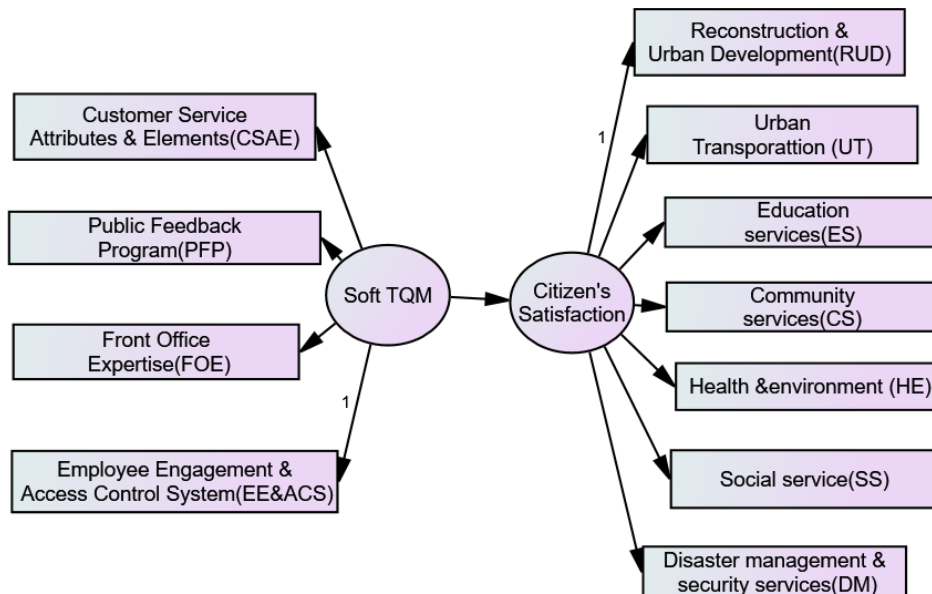


Figure 6.2 illustrates the second theoretical model developed to examine the effect of soft TQM on citizen satisfaction levels.

**Figure 6.2**

*Proposed theoretical model for testing effect of soft TQM on citizen's satisfaction*



Path diagrams illustrate the relationship between variables visually. The following hypothesis are tested using a structural equation model.

*Perception on Hard elements of TQM are positively related with citizen's satisfaction.*

*Perception on Soft elements of TQM are positively related with citizen's satisfaction.*

### **EFFECT OF HARD TQM ON CITIZEN'S SATISFACTION**

This study measures a Municipal Corporation's performance by the level of satisfaction of its citizens with its various services. Numerous studies have indicated a lack of significant or only a weak association between hard quality management practices and performance. (Douglas et al., 1999; Powell et al., 1995), at the same time, there are contrasting findings from other studies that suggest a discernible impact of hard quality management on performance.(Forza & Filippini, 1998; Tarí & Sabater, 2004). Hard TQM and performance are generally found to be positively correlated (S. U. Rahman & Bullock, 2005) .

As shown in figure 6.1, the hypothesised model was tested using AMOS graphic to determine the regression effect of hard TQM on residents' satisfaction with Municipal Corporations in Kerala. Using empirical data collected from residents of Municipal Corporations, the model was analysed and validated.

Figure 6.1 presents the structural model designed to investigate the impact of hard TQM and on levels of citizen satisfaction. The diagram illustrates the proposed relationships between the dependent variable, citizen satisfaction, and the independent variables, hard TQM. This model exclusively examines the direct relationships between the dependent and independent variables, offering a graphical representation of simultaneous regression equations within the Structural Equation Modelling framework for the citizen's Satisfaction.

Following are the latent constructs and variables involved in the model:

**Hard TQM:** In this model, hard TQM is the first formative construct. It is formed by four factors i.e. Community Resource Hub (CRH), Accessible Amenities Hub (AAH), Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ).

**Citizen’s satisfaction:** This model sets citizen satisfaction as the second formative construct. citizen’s satisfaction is considered as the measure of performance of quality of services of Municipal Corporations in Kerala. Satisfaction level of citizen is assessed based on their perception towards seven services offered by Municipal Corporations namely health and environment, social service, reconstruction and urban development, urban transportation, disaster management and security services, community services and education services

**Figure 6.3**

*Structural equation model showing effect of hard TQM on citizen’s satisfaction*

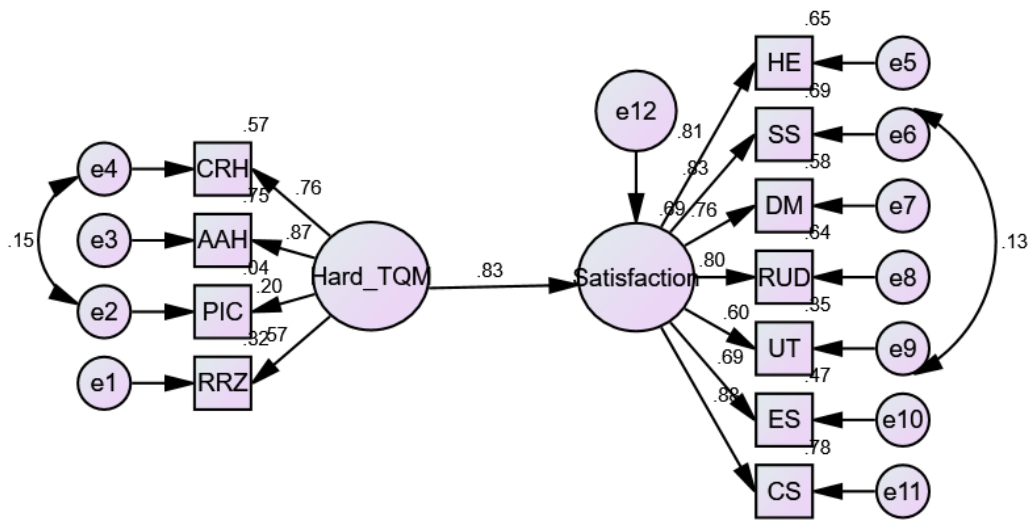


Figure 6.3 represents the results and output of the SEM analysis using AMOS graphics to determine the impact of hard TQM on levels of satisfaction. By using Amos software, structural equation models are able to produce several indices of fit such as goodness of fit, badness of fit, incremental fit, comparative fit, and parsimony fit. An overview of the model's fit indices and results can be found in figure 6.3 and table 6.10.

**Table 6.10***Model fit indices for the relationship between hard TQM and satisfaction*

<b>Indices</b>	<b>Obtained</b>	<b>Recommended</b>
CMIN/DF	4.836	<5.00(Hair et al., 2010)
Root Mean square Residual (RMR)	0.016	<0.05
Comparative Fit Index (CFI)	0.945	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.94	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.898	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.923	>.90
Normed Fit Index (NFI)	0.941	>.90
Relative Fit Index (RFI)	0.916	>.90
RMSEA	0.078	<0.08(Hair et al., 2010)

Source: Primary data and Literature review

The TQM model fit summary is illustrated in table 6.10. A satisfactory level of fit can be observed in the fit indices such as CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR and RMSEA. Model fit indices are considered to be the absolute indicators of how well sample data fits a model. CMIN/DF ratio is within the acceptable threshold, suggesting that it is considered acceptable as a measure of goodness of fit. The obtained Goodness of Fit Index (GFI) for the model is 0.940, exceeds the recommended threshold of 0.90. Additionally, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.898, surpassing the acceptable threshold of 0.80. As compared to the recommended level of above 0.90, the Normed Fit Index (NFI), Relative Fit Index (RFI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI) are 0.941, 0.916, 0.945, 0.923 respectively. At 0.016, the Root Mean square Residual (RMR) is also well below the suggested threshold of 0.05.

Moreover, the RMSEA registers at 0.078, a level within the acceptable limit of 0.8. These results collectively suggest a fit of the sample data to the model, supporting the conclusion that the model is well-suited to the observed data.

Figure 6.3 depicts the path diagram illustrating the finalized SEM model. This visual representation elucidates the interplay among various variables. Rectangular boxes

symbolize measured variables, while oval shapes represent latent variables (factors). The one-sided arrows originating from the factors denote factor loadings (estimates), and two-sided arrows signify error covariances, with small circles representing residuals or errors. In this model, hard TQM serve as independent variables, whereas citizen satisfaction is the dependent variable. The one-sided arrows extending from the exogenous variables to the endogenous variable delineate the hypothesized relationships, which are empirically tested using the structural equation model. Standardized regression coefficient values are also incorporated into the path diagram for each of these relationships.

It was found that the standardised path coefficient, or regression effect, of hard TQM on the citizen's level of satisfaction, was 0.83. The data clearly demonstrates that for every unit increase in the hard components of TQM, the satisfaction level of Kerala's Municipal Corporation residents rises by 0.83 units. More importantly, the effects of hard TQM on citizen's satisfaction is found to be positive and significant ( $p = 0.000$ ). The hypothesis, *perception on hard elements of TQM is positively related with citizen's satisfaction* was accepted and hard TQM was found to have a favourable and significant impact on citizens' satisfaction levels.

Some studies reveals that some hard quality management practices (e.g. statistical process control, benchmarking) are not associated to performance (Powell et al., 1995; Samson & Terziovski, 1999), while some others suggest the opposite (Kaynak, 2003). Successful adoption of hard quality management (e.g. feedback, inter functional design, new product quality, process control, and process management) improves firm performance (Abdullah & Tari, 2012).

## **EFFECT OF SOFT TQM ON CITIZEN'S SATISFACTION**

Basically, soft TQM is human resource management (HRM) in its most basic form (Abdullah & Tari, 2012). Management literature extensively discusses soft TQM, and prescriptions offered are very similar to those in TQM literature. Practices associated to soft factors such as people management and leadership are critical to the success of quality management (Powell et al., 1995; Samson & Terziovski, 1999).

As shown in figure 6.2, the hypothesised model was tested using AMOS graphic to determine the regression effect of soft TQM on residents' satisfaction with Municipal Corporations in Kerala. Using empirical data collected from residents of Municipal Corporations, the model was analysed and validated. Figure 6.2 presents the structural model designed to investigate the impact of soft Total Quality Management (TQM) and on levels of citizen satisfaction. The diagram illustrates the proposed relationships between the dependent variable, citizen satisfaction, and the independent variables, soft TQM. This model exclusively examines the direct relationships between the dependent and independent variables, offering a graphical representation of simultaneous regression equations within the Structural Equation Modelling (SEM) framework for the citizen's satisfaction.

Following are the latent constructs and variables involved in the model:

**Soft TQM:** In this model, soft TQM is the first formative construct. It is formed by four factors i.e. 'Customer Service Attributes and Elements (CSAE)', 'Public Feedback Program (PFP)', 'Front Office Expertise (FOE)', and 'Employee Engagement and Access Control System (EE&ACS).

**Citizen's satisfaction:** The second formative construct is citizen satisfaction as set by the model. This study measure performance of Municipal Corporation by assessing citizen's satisfaction on quality of various service provided by them. Satisfaction level of citizen is assessed based on their perception towards seven services offered by Municipal Corporations namely health and environment, social service, reconstruction and urban development, urban transportation, disaster management and security services, community services and education services.

The results of the SEM analysis using Amos graphics to determine the impact of soft TQM on levels of satisfaction are shown in figure 6.4. Several indices of fit can be produced using Amos software, including goodness of fit, badness of fit, incremental fit, comparative fit, and parsimony fit. Figure 6.4 and table 6.11 provide an overview of the model's fit indices and results.

**Table 6.11***Model fit indices-soft TQM and satisfaction*

<b>Indices</b>	<b>Obtained</b>	<b>Recommended</b>
CMIN/DF	4.681	<5.0(Hair et al., 2010)
Root Mean square Residual (RMR)	0.022	<0.05
Comparative Fit Index (CFI)	0.944	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.942	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.906	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.925	>.90
Normed Fit Index (NFI)	0.939	>.90
Relative Fit Index (RFI)	0.918	>.90
RMSEA	0.08	<0.08(Hair et al., 2010)

Source: Primary data and Literature review

The model fit summary is illustrated in table 6.11. A satisfactory level of fit can be observed in the fit indices such as CMIN/DF, GFI, AGFI, NFI, CFI, TLI, RMR and RMSEA. Model fit indices are considered to be the absolute indicators of how well sample data fits a model. CMIN/DF ratio is with the acceptable threshold, suggesting that it is considered acceptable as a measure of goodness of fit.

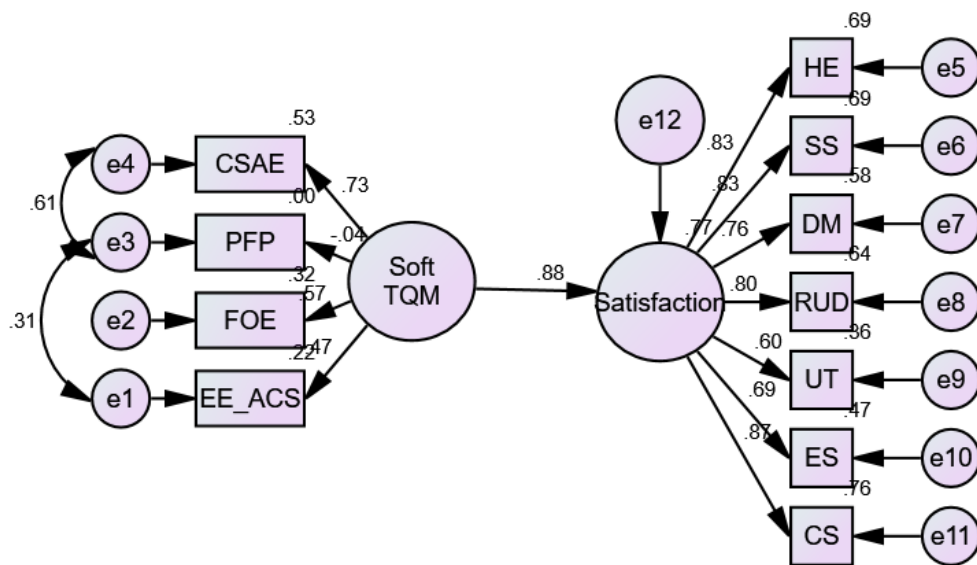
According to the model, the Goodness of Fit (GFI) value is 0.942, which is higher than the recommended value of more than 0.90. Additionally, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.906, surpassing the acceptable threshold of 0.80. The Normed Fit Index (NFI), Relative Fit Index (RFI), Comparative Fit Index (CFI), Tucker Lewis Index (TLI) are 0.939, 0.918, 0.944, 0.925 respectively which exceeds the acceptable limit of 0.90, and are considered as acceptable fit.

At 0.022, the Root Mean square Residual (RMR) is also well below the suggested threshold of 0.05. Moreover, the Root Mean Square Error of Approximation (RMSEA) registers at 0.080, a level within the acceptable limit of 0.8. These results collectively suggest a fit of the sample data to the model, supporting the conclusion that the model is well-suited to the observed data.

The path diagram showing the finalised SEM Model is shown in figure 6.4. This graphic illustration shows the interactions among various variables. Measured variables (factors) are represented by rectangular boxes, while latent variables (measured variables) are represented by oval shapes. A one-sided arrow represents factor loadings (estimates), and a two-sided arrow represents error covariances, with small circles representing residuals. Citizens' satisfaction is the dependent variable in this model, where soft TQM is the independent variable. Structural Equation Modelling (SEM) is used to test the hypothesized relationships by extending one-sided arrows from the exogenous to the endogenous variables. The path diagrams for each of these relationships also include standardized regression coefficient values.

**Figure 6.4**

*Structural equation model showing effect of soft TQM on citizen's satisfaction*



It was found that the standardised path coefficient, or regression effect, of soft TQM on the citizen's level of satisfaction, was 0.88. The data clearly demonstrates that for every unit increase in the soft components of TQM, the satisfaction level of Kerala's Municipal Corporation residents rises by 0.88 units. More importantly, the effects of soft TQM on citizen's satisfaction is found to be positive and significant (p =0.000). The hypothesis, *perception on soft elements of TQM is positively related with citizen's*



*satisfaction* was accepted and soft TQM was found to have a favourable and significant impact on citizens' satisfaction levels.

The literature indicates significant positive relationships between performance and several practices identified here as soft factors, including management commitment, people management, and customer focus. (Douglas et al., 1999; Powell et al., 1995; Samson & Terziovski, 1999). Performance can be directly improved through the implementation of the six soft quality management factors (Abdullah & Tari, 2012). Hard factors cannot produce high quality on their own, as they depend heavily on soft quality management factors for support (Chin et al., 2002).

### **ANALYSIS OF MEDIATION EFFECTS**

By examining the influence of a third variable in the relationship, mediation and moderation analyses are useful tools for understanding the relationship between an independent variable and a dependent variable. Moderation involves determining whether a third variable affects the direction or intensity of a relationship between independent and dependent variables. The purpose of mediation is to determine whether a third variable influences the strength or direction of the relationship between independent and dependent variables. By explaining the reasons for such a relationship to exist, mediation evaluates the role of a mediator who mediates the relationship between independent and dependent variables.

A perfect mediation occurs when an independent variable causes a change in the mediator variable, which leads to a change in the dependent variable. Thus, mediation analysis examines whether the influence of mediator is stronger than the influence of independent variable.

Previously, the direct effects of hard TQM and soft TQM on satisfaction levels of residents of Municipal Corporations in Kerala were studied, and both showed significant regressive effects. Using a mediation analysis, this section examines the role hard TQM plays in determining citizen satisfaction with soft TQM.

In this study, mediation analysis was conducted by following the guidelines given by Baron and Kenny (1986) to test the mediation effect of a mediator on the relationship

between the independent and dependent variables. In order to carry out mediation analysis there must be a significant relationship between the predictor and the outcome variable and the relationship between the predictor and the hypothesized mediator should be significant (Baron & Kenny, 1986). Once mediation effect was established, the strength of relationship between the predictor and the outcome will reduce after controlling for the effect of the mediator. Using of unstandardised coefficients in mediating analysis is most preferable (Baron & Kenny, 1986)

In the context of conducting mediation analysis, the following hypotheses were developed:

H1: The perception on hard TQM mediates the relationship between perception on soft TQM and citizen's satisfaction level.

H2: The perception on soft TQM mediates the relationship between perception on hard TQM and citizen's satisfaction level.

### **Mediating role of hard TQM**

The role of hard TQM as a mediator in the relationship between soft TQM and Satisfaction of residents of Municipal Corporations in Kerala or the indirect effect of soft TQM on citizen's satisfaction through hard TQM components was evaluated through SEM analysis in Amos. The total direct effect of soft TQM and citizen's satisfaction was found to be positive and significant ( $\beta=0.88$ ,  $P=0.000$ ) as shown in fig 6.4. In the current model includes hard TQM is set as mediator and examines whether it can influence the established effect and relationship between soft TQM and citizen's satisfaction level.

**Figure 6.5**

*Structural equation model – hard TQM as a mediator*

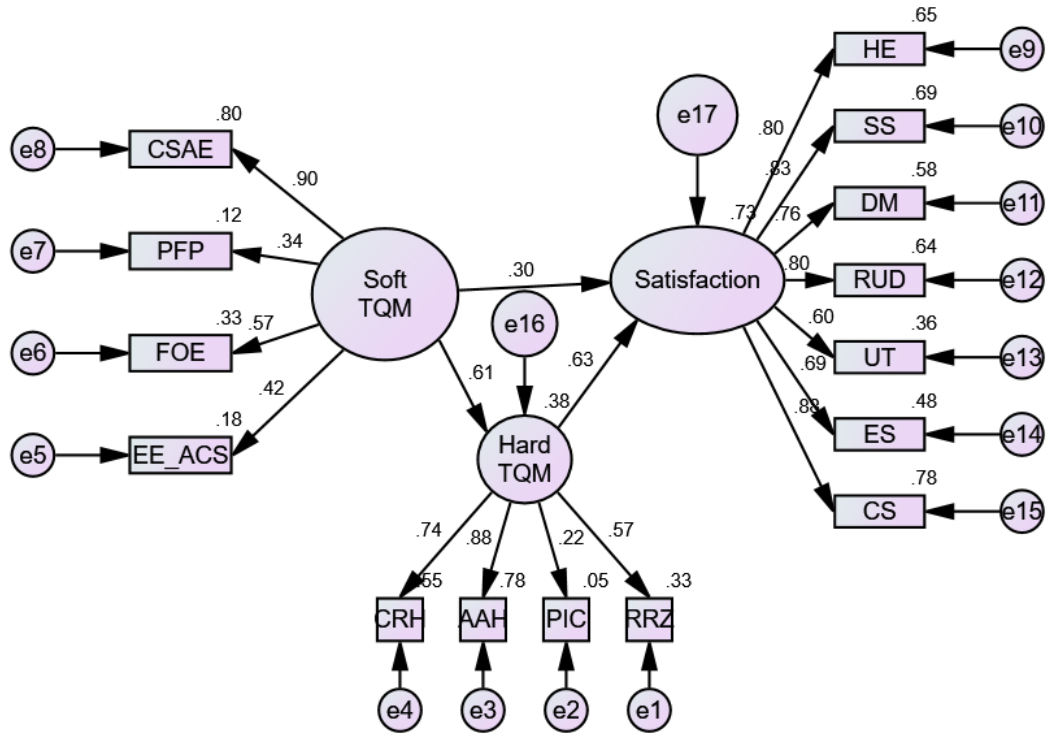


Table 6.12 provides an illustration of the model fit summary. Fit indices, including CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR, and RMSEA, show a good degree of fit. CMIN/DF ratio suggests that it is acceptable as a measure of goodness of fit.

0.90 is recommended for an acceptable fit, but it is important to note that the reference value may vary based on the complexity of the model and the size of the sample (Kline, 2011). According to the model, the Goodness of Fit (GFI) value is 0.902, which exceeds the recommended value of more than 0.90. Moreover, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.800, attaining the acceptable threshold of 0.80. A GFI or AGFI score of .80 to .89 is considered a reasonable fit; scores of .90 or higher are regarded as indicative of a good fit (Baumgartner & Homburg, 1996; Bentler, 1990; Doll et al., 1994).

The Normed Fit Index (NFI), Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) are .896, .897, .889 respectively which are little below the acceptable limit of 0.90, and are considered as acceptable fit (Kim et al., 2016). The Relative Fit Index

(RFI) registers at 0.948 agrees the recommended value of 0.90 and is considered as reasonable fit (Kline, 2016).

For RMR, values less than 0.08 or 0.05 are considered acceptable (Hu & Bentler, 1999; Kline, 2016). In addition, the Root Mean square Residual (RMR) of 0.032 is well below the recommended limit of 0.05.

Additionally, the Root Mean Square Error of Approximation (RMSEA) registers at 0.082, a level slightly above the acceptable limit of 0.08 (Hu & Bentler, 1999). Overall, these results suggest the sample data fits the model well, confirming the model's suitability for the observed data. Overall, the tested model fits all indices satisfactorily.

**Table 6.12**

*Model fit indices – Hard TQM*

Indices	Obtained	Recommended
CMIN/DF	4.33	<5.00(Hair et al., 2010)
Root Mean square Residual (RMR)	0.032	<0.05(Diamantopoulos & SiguaW.J.A., 2000)
Comparative Fit Index (CFI)	0.897	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.902	>0.90(Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.8	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.889	>.90
Normed Fit Index (NFI)	0.896	>.90(Bentler & Bonett, 1980)
Relative Fit Index (RFI)	0.948	> .90
RMSEA	0.082	<0.08(Hair et al., 2010)

Source: Primary data

It is evident from the model's output and results (see fig. 6.5) that hard TQM partially mediates the relationship between soft TQM and citizen satisfaction. After entering hard TQM to the model as a mediator, decreased the effect of soft TQM on citizen satisfaction. It was found that there was a 0.30 indirect influence of soft TQM on

citizens' satisfaction through hard TQM. The mediating effect of Hard TQM decreased the beta coefficient for soft TQM from 0.88 to 0.30.

The hard TQM as a mediator in the relationship between soft TQM and citizen satisfaction was not a perfect mediation. The direct effect of the independent variable on the dependent variable was still shown to be significant even after the mediator was added to the model, hence it was only a partial mediation. Even with the inclusion of hard TQM as a mediator in the model, the direct relationship between soft TQM and citizen satisfaction remains significant.

The hypothesis “perception on hard TQM mediate the relationship between perception on soft TQM and citizen’s satisfaction level” was accepted and a partial mediation was established.

Prior research has attempted to investigate the mediator role of hard TQM in the relationship between soft TQM and performance. Both hard and soft quality management components effect the quality management outcomes directly and indirectly, with soft quality management elements having a greater influence (Fotopoulos & Psomas, 2009). Increased overall performance has a strong association with both hard and soft aspects (Gadenne & Sharma, 2009).The effect of soft TQM on performance is positive through hard TQM as mediating variable (Abdullah & Tari, 2012; S. U. Rahman & Bullock, 2005).

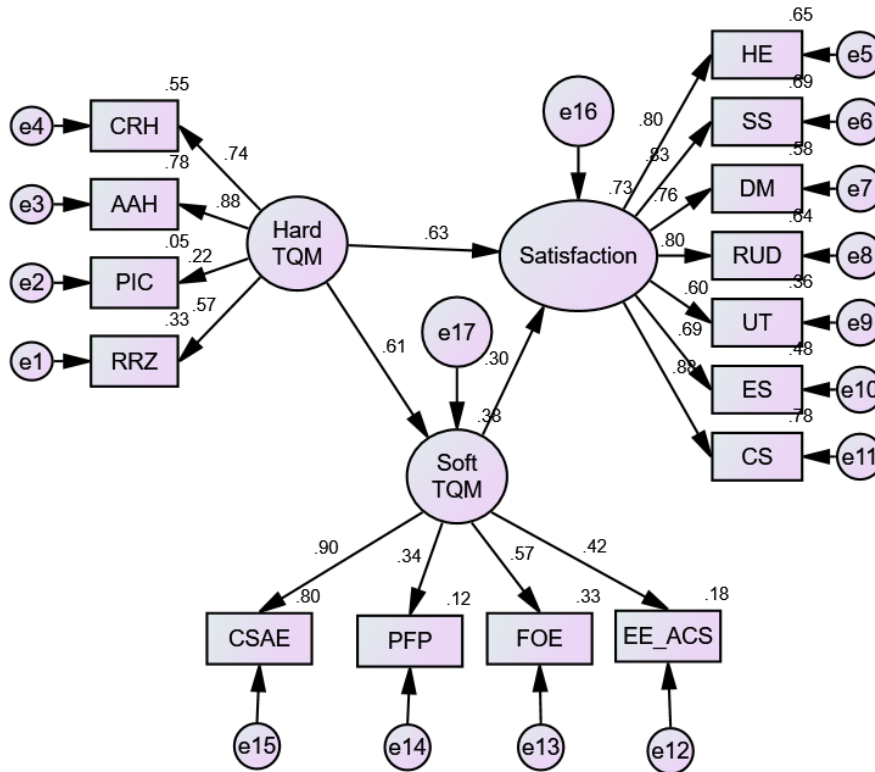
### **Mediating role of soft TQM**

The mediating role of soft TQM in the relationship between hard TQM and satisfaction of residents of Municipal Corporations in Kerala or the indirect effect of hard TQM on citizen’s satisfaction through soft TQM components was evaluated through SEM analysis in Amos. The total direct effect of hard TQM and citizen’s satisfaction was found to be positive and significant ( $\beta=0.83$ ,  $P=0.000$ ) as shown in fig 6.3.

The structural model (figure 6.6) designed to investigate the mediation effect of soft TQM in between hard TQM and citizen satisfaction. The current model exclusively examines the indirect relationships between the dependent variable customer satisfaction and independent variables “hard TQM” by considering the mediating role of soft TQM.

**Figure 6.6**

Structural equation model – soft TQM as a mediator



**Table 6.13**

Model fit indices – Soft TQM

Indices	Obtained	Recommended
CMIN/DF	4.412	<5.00 (Hair et al., 2010)
Root Mean square Residual (RMR)	0.039	<0.05 (Diamantopoulos & Siguaw J.A., 2000)
Comparative Fit Index (CFI)	0.927	>0.90(Hair et al., 2010)
Goodness of Fit Index (GFI)	0.978	>0.90 (Hair et al., 2010)
Adjusted Goodness of Fit (AGFI)	0.8	>0.80(Hair et al., 2010)
Tucker Lewis Index (TLI)	0.912	>.90
Normed Fit Index (NFI)	0.966	>.90(Bentler & Bonett, 1980)
Relative Fit Index (RFI)	0.899	>.90
RMSEA	0.077	<0.08(Hair et al., 2010)

Source: Primary data

Table 6.13 provides an illustration of the model fit summary. Fit indices, including CMIN/DF, GFI, AGFI, NFI, RFI, CFI, TLI, RMR, and RMSEA, show a good degree of fit. CMIN/DF ratio registers at 4.412, suggests that it is acceptable as a measure of goodness of fit.

0.90 is recommended for an acceptable fit, but it is important to note that the reference value may vary based on the complexity of the model and the size of the sample (Kline, 2011). According to the model, the Goodness of Fit (GFI) value is 0.978, which satisfies the recommended value of more than 0.90. Moreover, the Adjusted Goodness of Fit (AGFI) is at a satisfactory level of 0.800, attaining the acceptable threshold of 0.80. A GFI or AGFI score of .80 to .89 is considered a reasonable fit; scores of .90 or higher are regarded as indicative of a good fit (Baumgartner & Homburg, 1996; Bentler, 1990; Doll et al., 1994).

The NFI, CFI and TLI are .966, .927, .912 respectively which are within the acceptable limit of 0.90, and are considered as acceptable fit (Kim et al., 2016). The Relative Fit Index (RFI) registers at 0.899 against the recommended value of 0.90 and is considered as reasonable fit (Kline, 2016).

For RMR, values less than 0.08 or 0.05 are considered acceptable (Hu & Bentler, 1999; Kline, 2016). In addition, the RMR of 0.039 is well below the recommended limit of 0.05.

Additionally, the Root Mean Square Error of Approximation (RMSEA) registers at 0.077, a level within the acceptable limit of 0.08 (Hu & Bentler, 1999). Overall, these results suggest the sample data fits the model well, confirming the model's suitability for the observed data.

It is evident from the model's output and results (see fig. 6.6) that soft TQM partially mediates the relationship between hard TQM and citizen satisfaction. After entering soft TQM to the model as a mediator decreased the effect of hard TQM on citizen satisfaction. It was found that there was a 0.63 indirect influence of hard TQM on citizens' satisfaction through soft TQM. The mediating effect of soft TQM was decreased the beta coefficient for hard TQM from 0.83 to 0.63

The soft TQM as a mediator in the relationship between hard TQM and citizen satisfaction was not a perfect mediation. The direct effect of the independent variable on the dependent variable was still shown to be significant even after the mediator was added to the model, hence it was only a partial mediation. Even with the inclusion of soft TQM as a mediator in the model, the direct relationship between hard TQM and citizen satisfaction remains significant. The hypothesis “perception on soft TQM mediate the relationship between perception on hard TQM and citizen’s satisfaction level” was accepted and a partial mediation was established.

**Table 6.14**

*Hypotheses Testing*

<b>Analysis of Relationships</b>					
S. No.	Hypotheses	Test	r	P Value	Results
1	There is no significant relationship between soft TQM elements and citizen’s satisfaction	Pearson correlation	0.473	<0.001	<b>Rejected</b>
2	There is no significant relationship between hard TQM elements and citizen’s satisfaction	Pearson correlation	0.504	<0.001	<b>Rejected</b>

<b>Analysis of Effects</b>					
S. No.	Hypotheses	Test	Beta value	P Value	Results
1	Hard elements of TQM is positively related with citizen’s satisfaction.	SEM	0.83	<0.001	Supported
2	Soft elements of TQM is positively related with citizen’s satisfaction.	SEM	0.88	<0.001	Supported



Analysis of Mediation Effects					
S. No.	Hypotheses	Test	Mediation Type	P Value	Results
1	Hard TQM mediate the relationship between soft TQM and citizen's satisfaction level.	SEM - mediation	Partial mediation	<0.001	Supported
2	Soft TQM mediate the relationship between hard TQM and citizen's satisfaction level.	SEM – mediation	Partial mediation	<0.001	Supported

Source: Primary data

## 6.5 AN ANALYSIS OF EMPLOYEE'S PERCEPTION TOWARDS HARD AND SOFT COMPONENTS OF TQM

An organization's quality management should not only focus on its external customers, but also on its internal ones (Wilkinson et al., 1998). In order to assess the presence of TQM within the Municipal Corporation, a comprehensive examination was conducted, considering both hard and soft components. By continuously improving all aspects of processes, products, and services, TQM leads to exceptional organizational performance. The hard components, or tangible and quantifiable elements, are the driving force behind quality enhancement. Aside from tangible aspects, there are intangible and human-centric facets, which revolve around employee engagement, motivation, and cultural change. A successful implementation of TQM relies heavily on the harmonious interplay of these components. Employee perception plays a significant role in the effectiveness of TQM programs. Positive perceptions encourage commitment, involvement, and a greater willingness to adopt TQM. To determine how employees perceive components of TQM implemented at Municipal Corporations throughout Kerala, a MANOVA test was conducted. The hypothesis formulated for this purpose is given below

H0: There is no significant difference in the perception of employees regarding components of TQM among Municipal Corporations.

H1: There is a significant difference in the perception of employees regarding components of TQM among Municipal Corporations.

**Table 6.15**

*Descriptive statistics-components of TQM*

Name of Corporation	Mean	Std. Deviation	N	
HARD components	Thiruvananthapuram	3.1512	0.22730	87
	Kollam	<b>3.4168</b>	0.18270	67
	Kochi	3.3482	0.17607	74
	Kozhikode	3.2923	0.26647	50
	Thrissur	2.5928	0.21167	51
	Kannur	2.4163	0.12325	51
	Total	3.0814	0.41597	380
SOFT components	Thiruvananthapuram	2.8283	0.19097	87
	Kollam	2.9728	0.15708	67
	Kochi	<b>3.1113</b>	0.14944	74
	Kozhikode	2.6612	0.22283	50
	Thrissur	2.8835	0.20996	51
	Kannur	2.6240	0.18038	51
	Total	2.8669	0.24688	380

Source: Primary data

The table 6.15 of descriptive statistics shows the mean and standard deviation for each of the dependant variable as well as for each of independent variables i.e. Municipal Corporations in Kerala. In comparison with other Corporations, Kollam Municipal Corporation has excellent physical facilities. As far as providing basic amenities to its citizens goes, Kannur Municipal Corporation lags behind other Corporations. As far as soft components of TQM are concerned, Kochi Municipal Corporation does a better job maintaining a good atmosphere than other Municipal Corporations in Kerala. Kannur Municipal Corporation, however, performs much worse.

**Table 6.16**

*Comparison of components of TQM among various Municipal Corporations in Kerala-Citizen's perspective*

Corporation	Hard TQM-Employees			Soft TQM-Employees		
	Grand mean	SD	Rank	Grand mean	SD	Rank
Thiruvananthapuram	3.2	0.23	4	2.83	0.19	4
Kollam	3.42	0.18	1	2.97	0.16	2
Kochi	3.35	0.18	2	3.11	0.15	1
Kozhikode	3.29	0.27	3	2.66	0.22	5
Thrissur	2.59	0.212	5	2.88	0.21	3
Kannur	2.42	0.123	6	2.62	0.18	6

Source: Primary data

From table 6.16, it can be summarised that Kannur Corporation need to introduce or improve or maintain both hard and soft particles of TQM as it is very poorly ranked by its internal customers. In case of hard TQM, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> rank are respectively secured by Kollam, Kochi, Kozhikode, Thiruvananthapuram, Thrissur and Kannur Municipal Corporations. In case of soft TQM, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> rank are respectively secured by Kochi, Kollam, Thrissur, Thiruvananthapuram, Kozhikode, and Kannur Municipal Corporations.

**Table 6.17**

*Corporation wise comparison of TQM*

Effect	Value	F	Hypothesis df	Error df	Sig.	
Pillai's Trace	0.998	85887.293 <sup>b</sup>	2	373	0.000	
Wilks' Lambda	0.002	85887.293 <sup>b</sup>	2	373	0.000	
Intercept	Hotelling's Trace	460.522	85887.293 <sup>b</sup>	2	373	0.000
	Roy's Largest Root	460.522	85887.293 <sup>b</sup>	2	373	0.000

Effect	Value	F	Hypothesis df	Error df	Sig.	
Corporation	Pillai's Trace	1.125	96.092	10	748	0.000
	Wilks' Lambda	0.143	122.807 <sup>b</sup>	10	746	0.000
	Hotelling's Trace	4.13	153.634	10	744	0.000
	Roy's Largest Root	3.611	270.139 <sup>c</sup>	5	374	0.000

a. Design: Intercept + Corporation

b. Exact statistic

Source: Primary data

The table 6.17 depicts the outcomes of a MANOVA (Multivariate Analysis of Variance) conducted to examine variations in perceptions concerning both the hard and soft components of Total Quality Management (TQM) among employees of Municipal Corporations in Kerala. At a significance level of 5%, the test was conducted with a null hypothesis stating that there is no significant difference in the perception of employees concerning the governmental initiatives aimed at enhancing overall quality within Municipal Corporations in Kerala. Among the MANOVA results at a significance level of 5%, Wilk's lambda is the preferred statistic. It indicates a significant p-value of .000, which falls below the threshold of 0.05. As a result, the researcher rejects the null hypothesis and accepts the research hypothesis. A notable contrast has come to light in how employees perceive the tangible and intangible elements of Total Quality Management (TQM) in their efforts to enhance overall quality within Kerala's Municipal Corporations.

**Table 6.18***Post hoc test\_ Corporation wise comparison of TQM (Tukey HSD)*

Dependent Variable	Municipal Corporations	Mean Difference (I-J)	Sig.
Hard components	Thiruvananthapuram*Kollam	-.2656*	0.000
	Thiruvananthapuram*Kochi	-.1970*	0.000
	Thiruvananthapuram*Kozhikode	-.1411*	0.001
	Thiruvananthapuram*Thrissur	.5584*	0.000
	Thiruvananthapuram*Kannur	.7349*	0.000
	Kollam*Kozhikode	.1245*	0.014
	Kollam*Thrissur	.8240*	0.000
	Kollam*Kannur	1.0005*	0.000
	Kochi*Thrissur	.7555*	0.000
	Kochi*Kannur	.9319*	0.000
	Kozhikode*Thrissur	.6995*	0.000
	Kozhikode*Kannur	.8760*	0.000
	Thrissur*Kannur	.1765*	0.000
Soft Components	Thiruvananthapuram*Kollam	-.1445*	0.000
	Thiruvananthapuram*Kochi	-.2830*	0.000
	Thiruvananthapuram*Kozhikode	.1671*	0.000
	Thiruvananthapuram*Kannur	.2043*	0.000
	Kollam*Kochi	-.1385*	0.000
	Kollam*Kozhikode	.3116*	0.000
	Kollam*Kannur	.3488*	0.000
	Kochi*Kozhikode	.4501*	0.000
	Kochi*Thrissur	.2278*	0.000
	Kochi*Kannur	.4873*	0.000
	Kozhikode*Thrissur	-.2223*	0.000
	Thrissur*Kannur	.2595*	0.000

Based on observed means.

The error term is Mean Square (Error) = .034.

\*. The mean difference is significant at the .05 level.

This table 6.18 displays the results of a post hoc analysis (Tukey HSD) that was performed to examine and compare the mean differences across six Kerala Municipal councils. Based on the MANOVA results, it can be concluded that the hard components or physical facilities provided by Kollam, Kochi, and Kozhikode Municipal Corporations to their employees are excellent. The physical facilities in Trivandrum Municipal Corporation are rated as satisfactory. However, the physical facilities in Kannur and Thrissur Municipal Corporations for their employees are considered poor.

Among the Municipal Corporations in Kerala, Kochi Corporation stands out for its superior performance in the soft components of Total Quality Management (TQM). Trivandrum, Thrissur, and Kollam Municipal Corporations demonstrate a satisfactory level of achievement in these aspects. However, there is room for improvement in the soft components of TQM for Kannur and Kozhikode Municipal Corporations. In the subsequent section of this chapter, a Corporation-wise comparison is presented for both hard TQM and soft TQM. Furthermore, the analysis delves into a detailed element-wise comparison of these approaches among Municipal Corporations in Kerala. As observed by Dale (1997), lack of integration between the soft and hard issues of quality management tends to characterize organizations not committed to TQM. In the following section of this chapter, an element-by-element comparison of hard and soft TQM is made across Municipal Corporations in Kerala.

***Corporation wise comparison of hard TQM:***

According to Motwani et al. (1994) and Forza & Filippini (1998), hard TQM is suggested to be a key component for quality success. To gain insights into the status of hard TQM components, namely Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT), a comprehensive analysis is conducted. This involves a detailed examination across Municipal Corporations in Kerala, assessing their mean and standard deviation (SD). The descriptive statistics for hard TQM are summarized and presented in table 6.19.

**Table 6.19***Descriptive statistics-components of hard TQM*

Hard component	Municipal Corporations	N	Mean	SD
EF	Thiruvananthapuram	87	2.931	0.43916
	Kollam	67	3.4739	0.392
	Kochi	74	3.2939	0.35683
	Kozhikode	50	<b>4.12</b>	0.31233
	Thrissur	51	2.4902	0.41821
	Kannur	51	1.8725	0.24684
	Total	380		
AI	Thiruvananthapuram	87	3.1207	0.44764
	Kollam	67	3.0224	0.25647
	Kochi	74	<b>3.4392</b>	0.26435
	Kozhikode	50	2.075	0.45527
	Thrissur	51	2.1029	0.3714
	Kannur	51	1.9412	0.24284
	Total	380		
VS	Thiruvananthapuram	87	2.8966	0.67831
	Kollam	67	<b>3.291</b>	0.30338
	Kochi	74	2.8851	0.51383
	Kozhikode	50	3.06	0.41206
	Thrissur	51	2.5098	0.52431
	Kannur	51	2.5392	0.45654
	Total	380		
ATT	Thiruvananthapuram	87	3.6552	0.59378
	Kollam	67	3.9502	0.19466
	Kochi	74	3.6081	0.37159
	Kozhikode	50	<b>3.9667</b>	0.58805
	Thrissur	51	3.4379	0.50107
	Kannur	51	3.6928	0.29697
	Total	380		

Source: Primary data

The perception of employees towards Essential Facilities (EF) is better in Kozhikode Municipal Corporation (Mean=4.12), but in Kannur Municipal Corporation (Mean=1.87) it is poor. As far as AI is concerned, Kochi Corporation (Mean=3.44) outperforms all other Municipal Corporations in Kerala but Kannur Corporation (Mean=1.94) need to improve its performance. Kollam Corporation (Mean=3.29) is excellent when it comes to Venue Set up, but Thrissur (Mean=2.51) needs improvement. Among Municipal Corporations in Kerala, Kozhikode (Mean=3.97) has excellent Administrative Tools and Technology (ATT), Thrissur (Mean=3.44) needs to improve.

In brief, in order to improve service status of Thrissur Municipal Corporation, it should focus on hard elements of Administrative Tools and Technology (ATT) and Venue Setup. At the same time, Kannur Corporation have to take measures to improve their Essential Facilities (EF) and Administrative Infrastructure (AI).

**Table 6.20**

*Ranking of hard TQM components for employees in Municipal Corporations of Kerala*

Components	Thiruvananthapuram	Kollam	Kochi	Kozhikode	Thrissur	Kannur
EF	4	2	3	1	5	6
AI	2	3	1	5	4	6
VS	3	1	4	2	6	5
ATT	4	2	5	1	6	3

Source: Primary data

Particles of hard TQM namely Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT) are ranked across Municipal Corporations in Kerala based on its mean values as mentioned in table 6.18. From the result, it is clear that Kozhikode Corporation is better in maintaining three out of four soft particle of TQM (EF, VS and ATT) when compared with other Corporations in Kerala. From ranking, it is clear that Kollam Corporation is better in maintaining all the four elements of hard TQM. From the result, it is clear that, Thrissur Corporation and Kannur Corporations have to focus on all these hard components to improve their service quality. In the case of EF, Kozhikode, Kollam,



Kochi, Thiruvananthapuram, Thrissur and Kannur Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively. In case of public Administrative Infrastructure, Kochi is ranked as 1<sup>st</sup>, Thiruvananthapuram as 2<sup>nd</sup>, Kollam as 3<sup>rd</sup>, Thrissur as 4<sup>th</sup>, Kozhikode as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values. In case of VS, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Kozhikode, Thiruvananthapuram, Kochi, Kannur and Thrissur Municipal Corporations. When it comes to ‘Administrative Tools and Technology (ATT)’, Kozhikode Corporation secure 1<sup>st</sup> rank. Kollam, Kannur, Thiruvananthapuram, Kochi and Thrissur Corporation secure the subsequent ranks.

A one-way anova or welch test is conducted to assess variations in the perception of employees regarding hard TQM factors across different Municipal Corporations.

In order to perform this analysis, it is essential to confirm the equality of variances across different categories. Levene's test was employed for this purpose. The findings of the Levene's test are presented in table 6.21.

**Table 6.21**

*Test of homogeneity of variances*

<b>Hard Components</b>	<b>Levene Statistic</b>	<b>df1</b>	<b>df2</b>	<b>Sig.</b>
Essential Facilities (EF)	4.058	5	374	0.001
Administrative Infrastructure (AI)	11.807	5	374	0.000
Venue Setup (VS)	9.14	5	374	0.000
Administrative Tools and Technology (ATT)	19.104	5	374	0.000

Source: Primary data

Based on table 6.21, sig value of Levene’s test is less than 0.05, hence homogeneity of variance among the various categories is not assumed. In this case, an adjustment to F-test is used which was given by welch and Brown-Forsythe, and the result of the test is presented in table 6.22. The following hypothesis has been formulated for testing the significant differences.

H1: There is a significant difference in the perception of employees regarding hard TQM components among Municipal Corporations in Kerala.

**Table 6.22***Perception on hard TQM among Municipal Corporations in Kerala*

Hard components		Statistic <sup>a</sup>	df1	df2	Sig.
Essential Facilities (EF)	Welch	378.623	5	166.436	0.000
	Brown-Forsythe	242.39	5	340.713	0.000
Administrative Infrastructure (AI)	Welch	288.778	5	162.57	0.000
	Brown-Forsythe	210.356	5	277.681	0.000
Venue Setup (VS)	Welch	32.396	5	163.202	0.000
	Brown-Forsythe	21.393	5	332.428	0.000
Administrative Tools and Technology (ATT)	Welch	20.071	5	157.926	0.000
	Brown-Forsythe	11.874	5	257.667	0.000

a. Asymptotically F distributed.

As per table 6.22, the significance values for the components EF, AI, VS and ATT were 0.000, 0.000, 0.000, and 0.000, respectively, all of which are less than 0.05. Consequently, there are significant differences in the perception of employees regarding hard TQM components among Municipal Corporations in Kerala.

**Table 6.23***Hypotheses result-variations in the perception of hard TQM among employees of Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Essential Facilities (EF) among Municipal Corporations in Kerala.	Welch & Tamhane post hoc test	Supported
2	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) among Municipal Corporations in Kerala.	Welch & Tamhane Post hoc test	Supported
3	There is a significant difference in the perception of employees regarding Venue Setup (VS) among Municipal Corporations in Kerala.	Welch & Tamhane post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
4	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) among Municipal Corporations in Kerala.	Welch & Tamhane post hoc test	Supported

(Source: Primary data)

To specifically examine the variations among various Municipal Corporations regarding hard components EF, AI, VS and ATT, a post hoc analysis was conducted using Tamhane Post hoc test (See table 6.24, 6.26, 6.28 and 6.30)

**Table 6.24**

*Multiple comparisons Tamhane - Essential Facilities (EF)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.54285*	0.06716	0.000
Thiruvananthapuram*Kochi	-.36288*	0.06275	0.000
Thiruvananthapuram*Kozhikode	-1.18897*	0.06456	0.000
Thiruvananthapuram*Thrissur	.44084*	0.07514	0.000
Thiruvananthapuram*Kannur	1.05849*	0.05841	0.000
Kollam*Kochi	0.17996	0.06336	<b>0.075</b>
Kollam*Kozhikode	-.64612*	0.06515	0.000
Kollam*Thrissur	.98368*	0.07565	0.000
Kollam*Kannur	1.60133*	0.05906	0.000
Kochi*Kozhikode	-.82608*	0.06059	0.000
Kochi*Thrissur	.80372*	0.07176	0.000
Kochi*Kannur	1.42137*	0.05399	0.000
Kozhikode*Thrissur	1.62980*	0.07335	0.000
Kozhikode*Kannur	2.24745*	0.05609	0.000
Thrissur*Kannur	.61765*	0.06800	0.000

\*. The mean difference is significant at the 0.05 level.

**Table 6.25**

*Post hoc test -variations in the perception on “EF” among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	Supported
2	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	Supported
3	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
4	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
5	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
6	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
7	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
8	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
9	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
10	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
11	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
12	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
13	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
14	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
15	There is a significant difference in the perception of employees regarding Essential Facilities (EF) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	Supported

(Source: Primary data)

**Table 6.26**

*Multiple comparisons Tamhane - Administrative Infrastructure (AI)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	0.09830	0.05731	<b>0.751</b>
Thiruvananthapuram*Kochi	-.31850*	0.05699	0.000
Thiruvananthapuram*Kozhikode	1.04569*	0.08030	0.000
Thiruvananthapuram*Thrissur	1.01775*	0.07077	0.000
Thiruvananthapuram*Kannur	1.17951*	0.05882	0.000
Kollam*Kochi	-.41680*	0.04389	0.000
Kollam*Kozhikode	.94739*	0.07160	0.000
Kollam*Thrissur	.91945*	0.06072	0.000
Kollam*Kannur	1.08121*	0.04624	0.000

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Kochi*Kozhikode	1.36419*	0.07134	0.000
Kochi*Thrissur	1.33625*	0.06041	0.000
Kochi*Kannur	1.49801*	0.04583	0.000
Kozhikode*Thrissur	-0.02794	0.08277	<b>1.000</b>
Kozhikode*Kannur	0.13382	0.07281	<b>0.664</b>
Thrissur*Kannur	0.16176	0.06214	<b>0.151</b>

\*. The mean difference is significant at the 0.05 level.

**Table 6.27**

*Post hoc test -variations in the perception on "AI" among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
2	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	Supported
3	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
4	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
5	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
6	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
7	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
8	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
9	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
10	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
11	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
12	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
13	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
14	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
15	There is a significant difference in the perception of employees regarding Administrative Infrastructure (AI) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>

(Source: Primary data)

**Table 6.28***Multiple comparisons Tamhane - Venue Setup (VS)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.39449*	0.08162	0.000
Thiruvananthapuram*Kochi	0.01142	0.09411	<b>1.000</b>
Thiruvananthapuram*Kozhikode	-0.16345	0.09319	<b>0.722</b>
Thiruvananthapuram*Thrissur	.38675*	0.10334	0.004
Thiruvananthapuram*Kannur	.35734*	0.09683	0.005
Kollam*Kochi	.40591*	0.07030	0.000
Kollam*Kozhikode	.23104*	0.06906	0.018
Kollam*Thrissur	.78124*	0.08224	0.000
Kollam*Kannur	.75183*	0.07390	0.000
Kochi*Kozhikode	-0.17486	0.08345	<b>0.443</b>
Kochi*Thrissur	.37533*	0.09465	0.002
Kochi*Kannur	.34592*	0.08749	0.002
Kozhikode*Thrissur	.55020*	0.09373	0.000
Kozhikode*Kannur	.52078*	0.08650	0.000
Thrissur*Kannur	-0.02941	0.09735	<b>1.000</b>

\*. The mean difference is significant at the 0.05 level.

**Table 6.29***Post hoc test -variations in the perception on "VS" among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	Supported
2	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>



Sl. No.	Hypotheses	Tools used	Result
3	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
4	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
5	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
6	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	Supported
7	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
8	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
9	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
10	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
11	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
12	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
13	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
14	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
15	There is a significant difference in the perception of employees regarding Venue Setup (VS) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>

(Source: Primary data)

**Table 6.30**

*Multiple comparisons Tamhane - Administrative Tools and Technology (ATT)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.29508*	0.06796	0.000
Thiruvananthapuram*Kochi	0.04706	0.07693	<b>1.000</b>
Thiruvananthapuram*Kozhikode	-0.31149	0.10473	<b>0.053</b>
Thiruvananthapuram*Thrissur	0.21726	0.09474	<b>0.301</b>
Thiruvananthapuram*Kannur	-0.03764	0.07604	<b>1.000</b>
Kollam*Kochi	.34214*	0.04931	0.000
Kollam*Kozhikode	-0.01642	0.08650	<b>1.000</b>
Kollam*Thrissur	.51234*	0.07408	0.000
Kollam*Kannur	.25744*	0.04790	0.000
Kochi*Kozhikode	-.35856*	0.09371	0.004
Kochi*Thrissur	0.17020	0.08239	<b>0.473</b>
Kochi*Kannur	-0.08470	0.05996	<b>0.927</b>
Kozhikode*Thrissur	.52876*	0.10881	0.000
Kozhikode*Kannur	0.27386	0.09298	<b>0.063</b>
Thrissur*Kannur	-.25490*	0.08156	0.036

\*. The mean difference is significant at the 0.05 level.

**Table 6.31**

*Post hoc test -variations in the perception on “ATT” among various Municipal Corporations of Kerala*

Sl. No.	Hypothesis	Tools used	Result
1	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	Supported
2	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
3	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
4	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
5	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
6	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	Accepted
7	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
8	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	Accepted
9	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	Accepted

Sl. No.	Hypothesis	Tools used	Result
10	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	Accepted
11	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
12	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
13	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	Accepted
14	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
15	There is a significant difference in the perception of employees regarding Administrative Tools and Technology (ATT) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	Accepted

(Source: Primary data)

Tables 6.25,6.27,6.29 and 6.31 present the outcomes of the hypothesis test when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses accept the alternative hypothesis, indicating significant differences between the compared entities.

### ***Corporation wise comparison of soft TQM***

Human resources are at the core of soft TQM. There is a high level of coverage of soft TQM elements in management literature, and both management and TQM literature offer similar prescriptions. It is possible to improve quality through effective use of soft TQM practices (e.g. executive commitment, employee empowerment, customer

focus). (Adam et al., 1997; Douglas et al., 1999; Powell et al., 1995; Samson & Terziovski, 1999)

Soft TQM Components, such as Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variables (TAV) and Collaboration and Upskilling (CU), are examined in detail across Kerala Municipal Corporations by assessing their mean and standard deviation across Kerala Municipal Corporations. Table 6.32 provides descriptive statistics about these elements.

**Table 6.32**

*Descriptive statistics-components of soft TQM*

Soft Component	Municipal Corporations	N	Mean	SD
EE&EI	Thiruvananthapuram	87	2.6989	0.34892
	Kollam	67	2.606	0.31521
	Kochi	74	<b>3.1</b>	0.30205
	Kozhikode	50	1.584	0.29092
	Thrissur	51	2.6	0.3731
	Kannur	51	1.9176	0.31029
	Total	380	2.4958	0.5861
PEF	Thiruvananthapuram	87	2.705	0.36806
	Kollam	67	2.9303	0.44395
	Kochi	74	<b>3.1667</b>	0.41011
	Kozhikode	50	2.3733	0.50233
	Thrissur	51	2.732	0.44731
	Kannur	51	2.7059	0.53602
	Total	380	2.7947	0.50151
QAM	Thiruvananthapuram	87	2.8161	0.38633
	Kollam	67	<b>2.9403</b>	0.44163
	Kochi	74	2.8559	0.24101
	Kozhikode	50	2.6333	0.46291
	Thrissur	51	2.1699	0.40755
	Kannur	51	2.4771	0.34804
	Total	380	2.6895	0.45566

Soft Component	Municipal Corporations	N	Mean	SD
ECP	Thiruvananthapuram	87	3.1111	0.37926
	Kollam	67	3.3532	0.30639
	Kochi	74	3.5225	0.3493
	Kozhikode	50	3.78	0.45481
	Thrissur	51	3.3333	0.4
	Kannur	51	<b>3.8301</b>	0.26139
	Total	380	3.4482	0.44049
TAV	Thiruvananthapuram	87	2.9598	0.62514
	Kollam	67	2.9851	0.60909
	Kochi	74	2.3108	0.41134
	Kozhikode	50	<b>3.64</b>	0.7562
	Thrissur	51	3.3725	0.52767
	Kannur	51	2.3431	0.33897
	Total	380	2.9	0.72498
CU	Thiruvananthapuram	87	2.7989	0.53079
	Kollam	67	3.2537	0.60536
	Kochi	74	<b>3.3514</b>	0.4436
	Kozhikode	50	2.84	0.55733
	Thrissur	51	3.3039	0.59227
	Kannur	51	3.2157	0.32023
	Total	380	3.1158	0.56481

Source: Primary data

A pair wise comparison between Municipal Corporations shows that employees' perception towards EE and EI, PEF and TAV are better in Kochi Municipal Corporation. However, Kozhikode Corporation is far behind other Corporations when it comes to these soft particles. Kollam Corporation (Mean=**2.94**) is excellent in terms of soft components of QAM, while Thrissur Corporation (Mean=**2.17**) should pay more attention to improve QAM. Kannur Corporation (Mean=**3.83**) outperforms other Kerala Municipal Corporations in terms of ECP, but Trivandrum Corporation (Mean=**3.11**) needs to pay more attention to ECP. There is a better level of “Collaboration and Upskilling” in Kochi (Mean=**3.35**) than other Corporations. However, Thiruvananthapuram (Mean=**2.79**) requires better attention as well.

**Table 6.33***Ranking of soft TQM components for employees in Municipal Corporations of Kerala*

Components	Thiruvananthapuram	Kollam	Kochi	Kozhikode	Thrissur	Kannur
EE and EI	2	3	1	6	4	5
PEF	5	2	1	6	3	4
QAM	3	1	2	4	6	5
ECP	6	4	3	2	5	1
TAV	4	3	6	1	2	5
CU	6	3	1	5	2	4

Source: Primary data

Particles of soft TQM namely Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variables (TAV) and Collaboration and Upskilling (CU) are ranked across Municipal Corporations in Kerala based on its mean values as mentioned in table 6.33. From the result, it is clear that Kochi Corporation is better in maintaining five out of six soft particle of TQM (EE&EI, PEF, QAM, ECP and CU) when compared with other Corporations in Kerala. In the case of EE&EI, Kochi, Thiruvananthapuram, Kollam, Thrissur, Kannur and Kozhikode Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively. In case of Performance Enhancement Factors (PEF), Kochi is ranked as 1<sup>st</sup>, Kollam as 2<sup>nd</sup>, Thrissur as 3<sup>rd</sup>, Kannur as 4<sup>th</sup>, Thiruvananthapuram as 5<sup>th</sup> and Kozhikode as 6<sup>th</sup> based on their mean values.

In case of Quality Assurance Matrix (QAM), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Kochi, Thiruvananthapuram, Kozhikode, Kannur and Thrissur Municipal Corporations. When it comes to 'ECP', Kannur Corporation secure 1<sup>st</sup> rank. Kozhikode, Kochi, Kollam, Thrissur and Thiruvananthapuram, Kochi and Thrissur Corporation secure the subsequent ranks. In case of Training Accessibility Variables (TAV), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kozhikode, Thrissur, Kollam, Thiruvananthapuram, Kannur and Kochi Municipal Corporations. In case of Collaboration and Upskilling (CU), Kochi is ranked as 1<sup>st</sup>, Thrissur as 2<sup>nd</sup>, Kollam as 3<sup>rd</sup>, Kannur as 4<sup>th</sup>, Kozhikode as 5<sup>th</sup> and Thiruvananthapuram as 6<sup>th</sup> based on their mean values.

A one-way anova or welch test is conducted to assess variations in the perception of employees regarding soft TQM factors across different Municipal Corporations. In order to perform this analysis, it is essential to confirm the equality of variances across different categories. Levene's test was employed for this purpose. The findings of the Levene's test are presented in table 6.34.

**Table 6.34**

*Test of homogeneity of variances*

Soft Components	Levene Statistic	df1	df2	Sig.
Employee Engagement and Empowerment Initiatives (EE&EI)	1.538	5	374	0.177
Performance Enhancement Factors (PEF)	2.314	5	374	0.043
Quality Assurance Matrix (QAM)	4.321	5	374	0.001
Effective Communication Practices (ECP)	4.922	5	374	0.000
Training Accessibility Variable (TAV)	8.093	5	374	0.000
Collaboration and Upskilling (CU)	3.46	5	374	0.005

Source: Primary data

Based on table 6.34, sig value of Levene’s test is more than 0.05 for variable “EE&EI”, hence homogeneity of variance among the various categories is assumed and Anova can be performed with this component and the result is presented in table 6.34. At the same time, the sig value of Levene’s test is less than 0.05 for soft components i.e. PEF, QAM, ECP, TAV and CU, hence homogeneity of variance among the various categories is not assumed. In this case, an adjustment to F-test is used which was given by Welch and Brown-Forsythe, and the result of the test is presented in table 6.36. Following hypothesis has been formulated for testing the significant differences.

H1: There is a significant difference in the perception of employees regarding soft TQM components among Municipal Corporations.



**Table 6.35***Perception on soft TQM among Municipal Corporations-ANOVA*

Soft TQM		Sum of Squares	Df	Mean Square	F	Sig.
Employee Engagement and Empowerment Initiatives (EE&EI)	Between Groups	90.584	5	18.117	171.066	0.000
	Within Groups	39.609	374	0.106		
	Total	130.193	379			

**Table 6.36***Perception on soft TQM among Municipal Corporations – Welch Test*

	Soft TQM	Statistic <sup>a</sup>	df1	df2	Sig.
PEF	Welch	21.484	5	159.414	0.000
	Brown-Forsythe	20.752	5	302.785	0.000
QAM	Welch	32.455	5	158.737	0.000
	Brown-Forsythe	31.537	5	299.411	0.000
ECP	Welch	42.301	5	163.241	0.000
	Brown-Forsythe	36.929	5	298.091	0.000
TAV	Welch	61.488	5	163.385	0.000
	Brown-Forsythe	51.299	5	273.894	0.000
C_U	Welch	15.017	5	163.902	0.000
	Brown-Forsythe	15.105	5	311.605	0.000

a. Asymptotically F distributed.

As per table 6.36, the significance values for the components of PEF, QAM, ECP, TAV and CU were 0.000, 0.000, 0.000, 0.000, and 0.000, respectively, all of which are less than 0.05. Consequently, there are significant differences in the perception of employees regarding these soft TQM components among Municipal Corporations in Kerala. There is a significant difference in the perception of employees regarding “Employee Engagement and Empowerment Initiatives (EE&EI)” as depicted by the Anova table 6.35.

**Table 6.37**

*Hypotheses result-variations in the perception of soft TQM among employees of Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding “Employee Engagement and Empowerment Initiatives (EE&EI)” among Municipal Corporations in Kerala.	One-way ANOVA & Tukey HSD post hoc test	<b>Supported</b>
2	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) among Municipal Corporations in Kerala.	Welch & Tamhane post hoc test	<b>Supported</b>
3	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) among Municipal Corporations in Kerala.	Welch & Tamhane post hoc test	<b>Supported</b>
4	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) among Municipal Corporations in Kerala.	Welch & Tamhane post hoc test	<b>Supported</b>
5	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) among Municipal Corporations in Kerala	Welch & Tamhane post hoc test	<b>Supported</b>
6	There is a significant difference in the perception of employees regarding Collaboration and Upskilling (CU) among Municipal Corporations in Kerala	Welch & Tamhane post hoc test	<b>Supported</b>

(Source: Primary data)

To specifically examine the variations among various Municipal Corporations regarding soft components Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variable (TAV) and Collaboration and Upskilling (CU), a post hoc analysis was conducted (see table 6.38, 6.40, 6.42 and 6.44).

**Table 6.38***Multiple comparisons Tukey HSD- EE&EI*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	0.09288	0.05290	<b>0.496</b>
Thiruvananthapuram*Kochi	-.40115*	0.05146	0.000
Thiruvananthapuram*Kozhikode	1.11485*	0.05775	0.000
Thiruvananthapuram*Thrissur	0.09885	0.05739	<b>0.518</b>
Thiruvananthapuram*Kannur	.78120*	0.05739	0.000
Kollam*Kochi	-.49403*	0.05488	0.000
Kollam*Kozhikode	1.02197*	0.06082	0.000
Kollam*Thrissur	0.00597	0.06048	<b>1.000</b>
Kollam*Kannur	.68832*	0.06048	0.000
Kochi*Kozhikode	1.51600*	0.05958	0.000
Kochi*Thrissur	.50000*	0.05923	0.000
Kochi*Kannur	1.18235*	0.05923	0.000
Kozhikode*Thrissur	-1.01600*	0.06477	0.000
Kozhikode*Kannur	-.33365*	0.06477	0.000
Thrissur*Kannur	.68235*	0.06445	0.000

\*. The mean difference is significant at the 0.05 level.

**Table 6.39***Post hoc test -variations in the perception on "EE&EI" among various Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding EE&EI in Trivandrum and Kollam Municipal Corporations.	Tukey HSD post hoc	<b>Rejected</b>
2	There is a significant difference in the perception of employees regarding EE&EI in Trivandrum and Kochi Municipal Corporations.	Tukey HSD post hoc	Supported

Sl. No.	Hypotheses	Tools used	Result
3	There is a significant difference in the perception of employees regarding EE&EI in Trivandrum and Kozhikode Municipal Corporations.	Tukey HSD post hoc	Supported
4	There is a significant difference in the perception of employees regarding EE&EI in Trivandrum and Thrissur Municipal Corporations.	Tukey HSD post hoc	<b>Rejected</b>
5	There is a significant difference in the perception of employees regarding EE&EI in Trivandrum and Kannur Municipal Corporations.	Tukey HSD post hoc	Supported
6	There is a significant difference in the perception of employees regarding EE&EI in Kollam and Kochi Municipal Corporations.	Tukey HSD post hoc	Supported
7	There is a significant difference in the perception of employees regarding EE&EI in Kollam and Kozhikode Municipal Corporations.	Tukey HSD post hoc	Supported
8	There is a significant difference in the perception of employees regarding EE&EI in Kollam and Thrissur Municipal Corporations.	Tukey HSD post hoc	<b>Rejected</b>
9	There is a significant difference in the perception of employees regarding EE&EI in Kollam and Kannur Municipal Corporations.	Tukey HSD post hoc	Supported
10	There is a significant difference in the perception of employees regarding EE&EI in Kochi and Kozhikode Municipal Corporations.	Tukey HSD post hoc	Supported
11	There is a significant difference in the perception of employees regarding EE&EI in Kochi and Thrissur Municipal Corporations.	Tukey HSD post hoc	Supported
12	There is a significant difference in the perception of employees regarding EE&EI in Kochi and Kannur Municipal Corporations.	Tukey HSD post hoc	Supported
13	There is a significant difference in the perception of employees regarding EE&EI in Kozhikode and Thrissur Municipal Corporations.	Tukey HSD post hoc	Supported

Sl. No.	Hypotheses	Tools used	Result
14	There is a significant difference in the perception of employees regarding EE&EI in Kozhikode and Kannur Municipal Corporations.	Tukey HSD post hoc	Supported
15	There is a significant difference in the perception of employees regarding EE&EI in Thrissur and Kannur Municipal Corporations.	Tukey HSD post hoc	Supported

(Source: Primary data)

**Table 6.40**

*Multiple comparisons Tamhane - Performance Enhancement Factors (PEF)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.22537*	0.06707	0.015
Thiruvananthapuram*Kochi	-.46169*	0.06189	0.000
Thiruvananthapuram*Kozhikode	.33165*	0.08126	0.002
Thiruvananthapuram*Thrissur	-0.02705	0.07403	<b>1.000</b>
Thiruvananthapuram*Kannur	-0.00090	0.08480	<b>1.000</b>
Kollam*Kochi	-.23632*	0.07221	0.020
Kollam*Kozhikode	.55701*	0.08938	0.000
Kollam*Thrissur	0.19832	0.08286	<b>0.243</b>
Kollam*Kannur	0.22447	0.09260	<b>0.229</b>
Kochi*Kozhikode	.79333*	0.08555	0.000
Kochi*Thrissur	.43464*	0.07872	0.000
Kochi*Kannur	.46078*	0.08892	0.000
Kozhikode*Thrissur	-.35869*	0.09471	0.004
Kozhikode*Kannur	-.33255*	0.10335	0.026
Thrissur*Kannur	0.02614	0.09776	<b>1.000</b>

\*. The mean difference is significant at the 0.05 level.

**Table 6.41**

*Post hoc test -variations in the perception on “PEF” among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc	Supported
2	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc	Supported
3	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
4	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
5	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
6	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc	Supported

Sl. No.	Hypotheses	Tools used	Result
7	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
8	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
9	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
10	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
11	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
12	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc	Supported
13	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc	Supported

Sl. No.	Hypotheses	Tools used	Result
14	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc	Supported
15	There is a significant difference in the perception of employees regarding Performance Enhancement Factors (PEF) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>

(Source: Primary data)

**Table 6.42**

*Multiple comparisons Tamhane - Quality Assurance Matrix (QAM)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-0.12421	0.06802	<b>0.664</b>
Thiruvananthapuram*Kochi	-0.03976	0.05000	<b>1.000</b>
Thiruvananthapuram*Kozhikode	0.18276	0.07747	<b>0.267</b>
Thiruvananthapuram*Thrissur	.64616*	0.07051	0.000
Thiruvananthapuram*Kannur	.33897*	0.06396	0.000
Kollam*Kochi	0.08444	0.06079	<b>0.937</b>
Kollam*Kozhikode	.30697*	0.08483	0.007
Kollam*Thrissur	.77036*	0.07854	0.000
Kollam*Kannur	.46317*	0.07271	0.000
Kochi*Kozhikode	.22252*	0.07121	0.039
Kochi*Thrissur	.68592*	0.06358	0.000
Kochi*Kannur	.37873*	0.05621	0.000
Kozhikode*Thrissur	.46340*	0.08685	0.000
Kozhikode*Kannur	0.15621	0.08161	<b>0.597</b>
Thrissur*Kannur	-.30719*	0.07505	0.001

\*. The mean difference is significant at the 0.05 level.



**Table 6.43**

*Post hoc test -variations in the perception on “QAM” among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
2	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
3	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
4	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
5	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc	Supported
6	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
7	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
8	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc	Supported

Sl. No.	Hypotheses	Tools used	Result
9	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc	Supported
10	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
11	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
12	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc	Supported
13	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
14	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
15	There is a significant difference in the perception of employees regarding Quality Assurance Matrix (QAM) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc	Supported

(Source: Primary data)

**Table 6.44**

*Multiple comparisons Tamhane - Effective Communication Practices (ECP)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.24212*	0.05527	0.000
Thiruvananthapuram*Kochi	-.41141*	0.05746	0.000
Thiruvananthapuram*Kozhikode	-.66889*	0.07609	0.000
Thiruvananthapuram*Thrissur	-.22222*	0.06921	0.026

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kannur	-.71895*	0.05471	0.000
Kollam*Kochi	-.16929*	0.05523	0.038
Kollam*Kozhikode	-.42677*	0.07442	0.000
Kollam*Thrissur	0.01990	0.06737	<b>1.000</b>
Kollam*Kannur	-.47683*	0.05235	0.000
Kochi*Kozhikode	-.25748*	0.07606	0.016
Kochi*Thrissur	0.18919	0.06918	<b>0.106</b>
Kochi*Kannur	-.30754*	0.05467	0.000
Kozhikode*Thrissur	.44667*	0.08529	0.000
Kozhikode*Kannur	-0.05007	0.07400	<b>1.000</b>
Thrissur*Kannur	-.49673*	0.06691	0.000

\*. The mean difference is significant at the 0.05 level.

**Table 6.45**

*Post hoc test -variations in the perception on "ECP" among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc	Supported
2	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc	Supported
3	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
4	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
5	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc	Supported

Sl. No.	Hypotheses	Tools used	Result
6	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc	Supported
7	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
8	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
9	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc	Supported
10	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
11	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
12	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc	Supported
13	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
14	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
15	There is a significant difference in the perception of employees regarding Effective Communication Practices (ECP) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc	Supported

(Source: Primary data)

**Table 6.46***Multiple comparisons Tamhane -Training Accessibility Variable (TAV)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-0.02530	0.10015	<b>1.000</b>
Thiruvananthapuram*Kochi	.64896*	0.08233	0.000
Thiruvananthapuram*Kozhikode	-.68023*	0.12621	0.000
Thiruvananthapuram*Thrissur	-.41278*	0.09976	0.001
Thiruvananthapuram*Kannur	.61663*	0.08213	0.000
Kollam*Kochi	.67426*	0.08845	0.000
Kollam*Kozhikode	-.65493*	0.13028	0.000
Kollam*Thrissur	-.38747*	0.10486	0.005
Kollam*Kannur	.64194*	0.08826	0.000
Kochi*Kozhikode	-1.32919*	0.11715	0.000
Kochi*Thrissur	-1.06174*	0.08801	0.000
Kochi*Kannur	-0.03233	0.06738	<b>1.000</b>
Kozhikode*Thrissur	0.26745	0.12999	<b>0.480</b>
Kozhikode*Kannur	1.29686*	0.11700	0.000
Thrissur*Kannur	1.02941*	0.08782	0.000

\*. The mean difference is significant at the 0.05 level.

**Table 6.47***Post hoc test -variations in the perception on "TAV" among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc	Rejected
2	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc	Supported

Sl. No.	Hypotheses	Tools used	Result
3	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
4	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
5	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc	Supported
6	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc	Supported
7	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
8	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
9	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc	Supported
10	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
11	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
12	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc	Rejected

Sl. No.	Hypotheses	Tools used	Result
13	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc	Rejected
14	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc	Supported
15	There is a significant difference in the perception of employees regarding Training Accessibility Variable (TAV) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc	Supported

(Source: Primary data)

**Table 6.48**

*Multiple comparisons Tamhane - Collaboration and Up-skilling (CU)*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.45488*	0.09332	0.000
Thiruvananthapuram*Kochi	-.55250*	0.07680	0.000
Thiruvananthapuram*Kozhikode	-0.04115	0.09721	<b>1.000</b>
Thiruvananthapuram*Thrissur	-.50507*	0.10058	0.000
Thiruvananthapuram*Kannur	-.41684*	0.07245	0.000
Kollam*Kochi	-0.09762	0.09016	<b>0.993</b>
Kollam*Kozhikode	.41373*	0.10808	0.003
Kollam*Thrissur	-0.05019	0.11112	<b>1.000</b>
Kollam*Kannur	0.03805	0.08649	<b>1.000</b>
Kochi*Kozhikode	.51135*	0.09419	0.000
Kochi*Thrissur	0.04743	0.09766	<b>1.000</b>
Kochi*Kannur	0.13567	0.06834	<b>0.532</b>
Kozhikode*Thrissur	-.46392*	0.11441	0.002
Kozhikode*Kannur	-.37569*	0.09068	0.001
Thrissur*Kannur	0.08824	0.09428	<b>0.999</b>

\*. The mean difference is significant at the 0.05 level.

**Table 6.49**

*Post hoc test -variations in the perception on “CU” among various Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc	Supported
2	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc	Supported
3	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
4	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
5	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc	Supported
6	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kollam and Kochi Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
7	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported
8	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
9	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kollam and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
10	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc	Supported



Sl. No.	Hypotheses	Tools used	Result
11	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
12	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kochi and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>
13	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc	Supported
14	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc	Supported
15	There is a significant difference in the perception of employees regarding Collaboration and Up-skilling (CU) in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc	<b>Rejected</b>

(Source: Primary data)

Tables 6.39, 6.41, 6.43, 6.45, 6.47 and 6.49 present the outcomes of the hypothesis test when making pair wise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses accept the alternative hypothesis, indicating significant differences between the compared entities.

## 6.6 CHAPTER SUMMARY

This chapter aims to provide a comprehensive understanding of TQM and its components. Soft TQM and hard TQM are both covered in depth in this chapter. The knowledge of the relationships between the hard and soft TQM components is the main topic of discussion in the beginning section. Further, it looks at the relationship between residents' satisfaction levels and both hard and soft TQM. The chapter also looks at the effects of TQM components on citizen satisfaction levels and how they function as a mediator in affecting beneficiary satisfaction levels. The concluding section of this chapter includes an assessment of how employees perceive both hard and soft TQM. Ultimately, a thorough comparison is carried out, both element-by-element and Corporation-level, to give a comprehensive picture of TQM adoption in Kerala Municipal Corporations.

# CHAPTER 7

## AN OVERVIEW OF FUNCTIONING OF SOFTWARE FOR IMPROVING TOTAL QUALITY

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## **7.1. INTRODUCTION**

The previous chapter provides an overview of Total Quality Management and its impact on citizen satisfaction. This chapter focuses on various government programs aimed at enhancing the service quality of local bodies, with a primary emphasis on online platforms that facilitate citizens' access to local body services with minimal cost and effort.

The chapter commences with a thorough elucidation of government programs aimed at elevating the service quality of Municipal Corporations in Kerala. The analysis is bifurcated into PART A and PART B, with the former scrutinizing quality initiatives designed to support citizens and the latter focusing on initiatives geared towards facilitating employees in streamlining their work processes. Additionally, this chapter evaluates the efficacy of these government programs in enhancing the overall services provided by Municipal Corporations. Furthermore, an attempt has been made to compare six Municipal Corporations to determine whether there are variations in the effectiveness of programs such as SEVANA Civil Registration, SEVANA Pension, SANKETHAM, SANCHAYA, and SOOCHIKA programs. To measure these differences, an initial investigation to check whether citizens are aware of these programs through simple yes or no questions was made. Subsequently, only those citizens who are aware of these programs are asked to express their level of agreement regarding the effectiveness of these programs in Municipal Corporations. Besides focusing on external customers, quality management also includes internal customers (Wilkinson et al., 1998). The responses are evaluated using a five-point Likert scale

In order to fulfil the objective, the following variables have been identified and analysed

**Table 7.1**

*Variable Used for the Analysis*

Sl. No.	Programs	No. of attributes /statements	Attributes /statements
1	SEVANA - Civil Registration	5	<ul style="list-style-type: none"> <li>➤ It integrates hospital Kiosk with the local body for issuing certificates relating to births and deaths</li> <li>➤ It provides a correction facility in birth and death certificates</li> <li>➤ It provides facility for search and name inclusion over the internet</li> <li>➤ It facilitates birth registration of adopted child &amp; certificate issue</li> <li>➤ Contains clear information on how to use it (informative)</li> </ul>
2	SEVANA – PENSION	2	<ul style="list-style-type: none"> <li>➤ It computerizes pension payment and make pension distribution fast and efficient</li> <li>➤ This application covers national old age pension, widow pension, pension to unmarried women above 50 years, pension to the physically challenged and mentally challenged persons, agriculture labour pension and unemployment wages</li> </ul>
3	SANKETHAM	3	<ul style="list-style-type: none"> <li>➤ It helps in receiving building permits in a transparent and standardized manner</li> <li>➤ It facilitates online verification &amp; validation of application form for receiving building permit</li> <li>➤ I have visited this website for taking permit for my building</li> </ul>

Sl. No.	Programs	No. of attributes /statements	Attributes /statements
4	SANCHAYA	4	<ul style="list-style-type: none"> <li>➤ It covers utility payment services like hall booking, ambulance, vehicles, crematorium, payment on water bill etc</li> <li>➤ I have visited this website for paying my property tax.</li> <li>➤ Proper receipts are intimated on payment of tax</li> <li>➤ The website is well informed about due date, mode and amount of tax to be paid</li> </ul>
5	SOOCHIKA	1	<ul style="list-style-type: none"> <li>➤ I have visited this website</li> </ul>
6	STHAPANA	5	<ul style="list-style-type: none"> <li>➤ It provides credit card for all employees</li> <li>➤ All monthly transactions linked with payroll</li> <li>➤ It useful for Temporary Advance (TA) request and their online sanctioning</li> <li>➤ It is useful for providing Non-Refundable Advance (NRA) request and its online sanctioning</li> <li>➤ Useful for providing TA to NRA conversion request and its online sanctioning</li> </ul>
7	SANCHITHA	2	<ul style="list-style-type: none"> <li>➤ It is an electronic legal advisor</li> <li>➤ It provides query facility on acts, rules, government orders, court judgements based on titles, sub titles, year, reference numbers etc.</li> </ul>
8	SAANKHYA	5	<ul style="list-style-type: none"> <li>➤ It helps to overcome the problem of shortage of manpower in handling day to day operations resulting in timely closing of annual accounts.</li> <li>➤ It equips even the average employee to prepare the entire financial reports without depending upon accounting professionals</li> <li>➤ It is useful for recording each financial transaction in real time</li> <li>➤ It makes accounting process more transparent and gives financial information to the decision makers.</li> <li>➤ It helps for executing accounting with the participation of the entire employees dealing with financial transactions</li> </ul>

Sl. No.	Programs	No. of attributes /statements	Attributes /statements
9	SAKARMA	3	<ul style="list-style-type: none"> <li>➤ It Facilitate recording of decisions of the STANDING committees and the local body meetings</li> <li>➤ It provides provision for recording follow-up actions based on decisions</li> <li>➤ It provides provision for querying past decisions and facility for recording deviation</li> </ul>
10	SUGAMA	1	<ul style="list-style-type: none"> <li>➤ It is used for estimating cost of public work</li> </ul>
11	SAMVEDITHA	1	<ul style="list-style-type: none"> <li>➤ It helps for development of local government and departments</li> </ul>
12	SUBHADRA	3	<ul style="list-style-type: none"> <li>➤ It helps for Budget document creation</li> <li>➤ It facilitate cash flow management for long term, short term and medium term</li> <li>➤ It provides regular cash position reports, asset inventory, purchase orders, work orders, investment reports and budget summaries</li> </ul>
13	SAMOOHYA	2	<ul style="list-style-type: none"> <li>➤ It creates a community database with a citizen ID with the objective of finally linking them to a citizen portal</li> <li>➤ It Integrate birth, death and marriage registration of citizen</li> </ul>
14	SAPHALYA	2	<ul style="list-style-type: none"> <li>➤ It connects job seekers and job providers</li> <li>➤ It publishes job vacancies at the local, state and national levels</li> </ul>
15	SULEKHA	2	<ul style="list-style-type: none"> <li>➤ It facilitates standard project accounting with provision for fixing financial targets, physical targets, schedules, financial and physical achievements, details of approvals, beneficiaries, assets created etc.</li> <li>➤ It helps to tracks the entire course of plan formulation process by incorporating reports of working group, gramasabha, development seminars and social and other audits into plan projects.</li> </ul>

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Sl. No.	Programs	No. of attributes /statements	Attributes /statements
16	Comen variables for all programs	7	<ul style="list-style-type: none"><li>➤ Processing time</li><li>➤ Confidentiality</li><li>➤ Problem solving system</li><li>➤ Information updating</li><li>➤ Ease of navigation</li><li>➤ User friendly &amp;reduce paper works</li><li>➤ Acknowledgement on receipt of application</li></ul>

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(Source: Literature Review)

### **SEVANA - Civil Registration**

SEVANA - Civil Registration is an application software developed by Information Kerala Mission to streamline the electronic registration of births, deaths, and marriages in local governments (registration units). This innovative application aims to provide citizens with the convenience of registering vital events without the need to physically visit their local government offices. It also offers extended accessibility beyond regular office hours, making it more convenient for the public.

By facilitating online registration, SEVANA - civil registration not only enhances citizen convenience but also helps alleviate the long queues typically seen in government offices. This, in turn, contributes to the well-being of service providers, reducing their mental stress and enhancing the overall efficiency of the services they offer.

### **SEVANA Pension**

This software, developed by IKM for the local self-government department of the Kerala government, focuses on the computerization of pension payments to enhance the speed and efficiency of pension distribution. This application facilitates the disbursement of various pensions, including national old age pension, widow pension, pension for unmarried women above 50 years, pension for physically and mentally



challenged persons, agriculture labour pension, and unemployment wages to eligible beneficiaries.

### **SANKETHAM**

"SANKETHAM" is a specialized software solution designed and developed by IKM for the local self-government department of Kerala. Its primary objective is to streamline and modernize the process of obtaining building permits in accordance with the Kerala Municipal Building Rules (KMBR) and Kerala Panchayath Building Rules (KPBR). This innovative software system brings transparency and efficiency to the building permit application process. It enables individuals and organizations to apply for building permits online, making the entire procedure more accessible and convenient. This user-friendly digital solution not only reduces the burden on both parties but also contributes to the overall efficiency and transparency of the local building permit ecosystem in Kerala.

### **SANCHAYA**

IKM has developed software for the local self-government department of the government of Kerala, aimed at streamlining the revenue and license system. This software empowers building owners by providing them with vital information about the amount of building tax they are obligated to pay, the due date for payment without incurring any penalties, and the exact fine amount in case of delays. Furthermore, it simplifies the process of paying building tax through an online platform, while also enabling building owners to obtain ownership certificates and building age certificates online, directly from the local government.

### **SOOCHIKA**

IKM has developed software for the local self-government department of the government of Kerala, aimed to facilitate status monitoring via the web, integrating SMS notifications. This application allows the public to track the progress of their file submissions processed through the front office counter.

## **STHAPANA**

The IKM-developed software facilitates the accounting of Municipal employees' Provident Fund (PF) and issues credit cards to all employees. Within STAPANA, all monthly transactions can be seamlessly recorded and are directly linked to the payroll statement. This platform streamlines the process for employees to submit temporary advance (TA) requests, non-refundable advance (NRA) applications, and facilitates online approvals without the need for extensive paper work. Additionally, it serves as a valuable tool for employees to request and obtain online sanctioning for TA to NRA conversions. In essence, the software enhances transparency and simplifies the payroll-related transactions for employees.

## **SANCHITHA**

SANCHITHA, a software solution crafted by IKM, functions as a comprehensive repository that centralizes acts, rules, court orders, and other relevant or important legal documents related to local bodies. Its primary objective is to support employees in navigating and resolving uncertainties regarding applicable acts and regulations during the execution of their duties. The software offers a robust query system, enabling users to search acts, rules, government orders, and court judgments based on various parameters such as titles, sub-titles, years, reference numbers, and more. Essentially, SANCHITHA serves as an electronic legal advisor, streamlining access to critical legal information and facilitating informed decision-making in the realm of local governance.

## **SAANKYA**

The IKM-developed double entry accrual-based accounting system for local self-government departments (LSGD) in Kerala addresses the challenge of manpower shortages in day-to-day operations, ensuring timely closure of annual accounts. This system enhances transparency by recording every financial transaction in real time providing decision-makers with immediate financial information. Additionally, it empowers even average employees to independently generate comprehensive financial reports, reducing dependence on accounting professionals.

## **SAKARMA**

IKM has developed an all-encompassing software solution known as SAKARMA, designed to streamline the recording of decisions made during standing committees and local body meetings. SAKARMA is specifically tailored for managing council and committee agendas, minutes, and related documents. This innovative solution includes features such as the ability to record follow-up actions stemming from decisions made during meetings.

Moreover, SAKARMA facilitates easy retrieval of past decisions through a robust querying system, enhancing transparency and accountability. The software also includes a provision for documenting any deviations from the established decisions, aiming to minimize corruption in record-keeping processes post decision-making. Overall, SAKARMA serves as a comprehensive tool to improve efficiency, transparency, and accuracy in managing and documenting decisions within organizational structures.

## **SUGAMA**

SUGAMA stands as a pioneering cost estimation tool tailored specifically for public works, meticulously crafted and brought to fruition by IKM. This innovative solution has been designed to cater to the distinctive needs of the local self-government department of Kerala. With a focus on precision and efficiency, SUGAMA serves as a comprehensive platform for estimating costs associated with various public infrastructure projects.

Through the utilization of SUGAMA, the local self-government department of Kerala gains a valuable asset in their quest for informed decision-making and efficient resource allocation. This tool is emblematic of IKM's dedication to delivering tailored solutions that align with the unique challenges faced by local governance entities. As SUGAMA continues to evolve, it stands poised to play a pivotal role in facilitating the successful execution of public infrastructure initiatives, contributing to the overall development and progress of the region.

## **SAMVEDITHA**

IKM's software solution offers comprehensive details on the geographical, demographic, socio-economic, and developmental attributes of all local bodies in Kerala. It provides extensive information on decentralization, panchayat raj, and decentralized planning, covering nearly every aspect of these processes. The software facilitates interaction among local bodies and various institutions, fostering collaborative engagement in decentralized governance.

## **SUBADRA**

SUBHADRA, the financial management system, stands as a sophisticated software solution meticulously crafted by IKM to cater to the specific needs of local self-government departments (LSGD). This comprehensive tool serves as a pivotal asset in the hands of LSGD by streamlining the intricate process of budget document creation.

Beyond its primary function, SUBHADRA goes above and beyond, offering a robust framework for effective cash flow management. It empowers LSGD with the capability to navigate and strategize for long-term, short-term, and medium-term financial scenarios, ensuring a holistic approach to fiscal planning. With its user-friendly interface and powerful functionalities, SUBHADRA emerges as an indispensable tool for LSGD, promoting efficiency and transparency in financial operations.

## **SAMOOHYA**

SAMOOHYA is an innovative software solution designed to facilitate the establishment of a comprehensive community database by assigning a unique citizen ID to each individual. The ultimate goal is to seamlessly connect this database to a dedicated citizen portal. SAMOOHYA goes beyond mere data storage by integrating vital life events such as birth, death, and marriage registrations for citizens. Notably, this solution has received valuable contributions from the Information Kerala Mission (IKM) to enhance the capabilities of the LSGDs in Kerala.

## **SAPHALYA**

SAPHALYA stands as a comprehensive human resource package meticulously crafted by the Information Kerala Mission (IKM) specifically for the local self-government department (LSGD) of Kerala. This innovative solution is tailored to efficiently manage and disseminate job opportunities across various tiers, including local, state, and national levels. Its primary objective is to bridge the gap between job seekers and providers by serving as a dynamic platform for connecting individuals with suitable employment opportunities. Through its robust design and functionality, SAPHALYA plays a pivotal role in not only showcasing job vacancies but also fostering a seamless and effective interaction between those seeking employment and organizations offering opportunities.

## **SULEKHA**

SULEKHA, an all-encompassing software solution meticulously crafted by the Information Kerala Mission (IKM) for the LSGD of Kerala, plays a pivotal role in monitoring the entire trajectory of the plan formulation process. This is achieved by seamlessly integrating reports from various sources, including working groups, gram sabha (village meetings), development seminars, and social and other audits, into the comprehensive framework of plan projects. SULEKHA facilitates a cohesive and transparent approach, ensuring that insights and findings from diverse channels are harmoniously incorporated, thereby enhancing the efficiency and effectiveness of the planning process within the LSGD of Kerala.

## **7.2. INITIATIVES TO IMPROVE OVERALL SERVICE QUALITY**

The Information Kerala Mission (IKM) has developed a comprehensive suite of software applications tailored to meet the specific needs of local self-government department and their officials. These software solutions are designed to facilitate the efficient execution of tasks related to Panchayat Raj and Municipality acts, rules, and other decentralization laws. Additionally, IKM's software extends its functionality to include tasks associated with the registration of vital events such as births, deaths, and marriages under the hindu marriage and general marriage registration acts.

Today, IKM boasts the largest and most extensive database dedicated to supporting the needs of these government entities. The software solutions created by IKM play a pivotal role in streamlining administrative processes and ensuring compliance with relevant legislation, thereby enhancing the effectiveness and efficiency of LSG departments in Kerala.

**Table 7.2**

*Softwares Designed by IKM for LSGIs*

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Sl. No.	Software	Function
1	SULEKHA	Plan monitoring for decentralized planning at local level
2	SEVANA (CIVIL REGISTRATION)	A comprehensive system for the registration and issuance of birth, deaths, and marriage certificates.
3	SEVANA(PENSION)	The distribution of social welfare pensions, incorporating electronic money orders for direct beneficiary transfers.
4	SANCHITHA	A repository containing legislative acts and regulations pertaining to local government bodies.
5	SOOCHIKA	An application designed to facilitate status monitoring via the web, integrating SMS notifications. This application allows the public to track the progress of their file submissions processed through the front office counter.
6	SANCHAYA	A web-based software solution designed to manage revenue and licensing systems, integrating e-payment capabilities and SMS features.
7	SAANKHYA	Accrual-based double-entry accounting is the preferred method of financial record-keeping used by local governments.
8	STHAPANA	"Managing payroll and provident fund accounting for municipal and panchayath employees"
9	SAMVEDHITHA	"Comprehensive LSGD Web Portal for local governments and departments"

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Sl. No.	Software	Function
10	SACHITHRA (GPS,ASSET)	"Local government asset management and mapping solution"
12	SAKARMA	"Efficient management of council/committee meeting documents, scheduling, and communication through email and SMS"
13	SUGAMA	Tool for estimating the costs of public infrastructure projects.
14	SANKETHAM	Promote transparency in the issuance of building permits through the utilization of web-based software that facilitates the sharing of essential information concerning building permits, electronic certificates such as completion and occupancy certificates, file tracking, permit status, and other pertinent details. This digital platform also supports electronic application filing for architectural registration and provides access to relevant architectural information.
15	SUBHADRA	"System for managing finances."
16	SAMOOHYA	Citizen database
17	SAPHALYA	Human resource package
18	SUVEGA	Building permits
19	SAMAGRA	Providing citizens with a seamless experience by consolidating various applications and services into one comprehensive video.

(Source : Publication of KILA, People friendly Panchayath : ISO 9001:2008 Through TQM,2015)

**Table 7.3**

*Web Based Online Services*

Local self-government department portal	<a href="http://www.lsgKerala.gov.in">www.lsgKerala.gov.in</a>
Information Kerala Mission	<a href="http://www.ikm.gov.in">www.ikm.gov.in</a>
ILGMS Portal	<a href="http://erp.lsgKerala.gov.in">http://erp.lsgKerala.gov.in</a>
Birth-death-marriage certificate	<a href="http://www.cr.lsgKerala.gov.in">www.cr.lsgKerala.gov.in</a>
E-Payment of property tax	<a href="http://www.tax.lsgKerala.gov.in">www.tax.lsgKerala.gov.in</a>
Plan Implementation	<a href="http://www.plan.lsgkeraa.gov.in">www.plan.lsgkeraa.gov.in</a>
Accrual based double entry accounting	<a href="http://www.finance.lsgKerala.gov.in">www.finance.lsgKerala.gov.in</a>
Social welfare pension	<a href="http://www.welfarepension.lsgKerala.gov.in">www.welfarepension.lsgKerala.gov.in</a>

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File tracking	<a href="http://www.filetracking.lsgKerala.gov.in">www.filetracking.lsgKerala.gov.in</a>
Govt orders	<a href="http://www.go.lsgKerala.gov.in">www.go.lsgKerala.gov.in</a>
Tender notifications	<a href="http://www.tender.lsgKerala.gov.in">www.tender.lsgKerala.gov.in</a>
PF of panchayath employees	<a href="http://www.kpef.lsgKerala.gov.in">www.kpef.lsgKerala.gov.in</a>
PF of Municipal employees	<a href="http://www.kmpecpf.lsgKerala.gov.in">www.kmpecpf.lsgKerala.gov.in</a>
GPS Maps	<a href="http://www.gis.lsgKerala.gov.in">www.gis.lsgKerala.gov.in</a>
Permit for Building construction	<a href="http://www.buildingpermit.lsgKerala.gov.in">www.buildingpermit.lsgKerala.gov.in</a>
Property tax determination	<a href="http://www.sanchaya.lsgKerala.gov.in">www.sanchaya.lsgKerala.gov.in</a>
Meeting decisions(SAKARMA)	<a href="http://www.meeting.lsgKerala.gov.in">www.meeting.lsgKerala.gov.in</a>
D&O License	<a href="http://www.revenue.lsgKerala.gov.in">www.revenue.lsgKerala.gov.in</a>
Transfer of Municipal employees	<a href="http://www.hr.lsgKerala.gv.in">www.hr.lsgKerala.gv.in</a>
Contributory pension of employees	<a href="http://www.apps.lsgKerala.gov.in">www.apps.lsgKerala.gov.in</a>
Co-ordination committee meeting management	<a href="http://www.ccmeetings.lsgKerala.gov.in">www.ccmeetings.lsgKerala.gov.in</a>
Rebuild survey	<a href="http://www.rebuild.lsgkeral.gov.in">www.rebuild.lsgkeral.gov.in</a>
Life MIS	<a href="http://www.lifemissionmis.lsgKerala.gov.in">www.lifemissionmis.lsgKerala.gov.in</a>
Cinema ticketing	<a href="http://www.Keralafilms.gov.in">www.Keralafilms.gov.in</a>

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### **7.3 PART-A : ANALYSIS AND DISCUSSION OF WORKING OF PROGRAMS -CITIZEN'S PERSPECTIVE**

This section provides data on the frequency of citizens' awareness levels concerning several government programs aimed at facilitating access to services from their local authorities. Here five programs namely SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA, and SOOCHIKA programs are examined, all of which are designed to enhance citizens' ability to obtain services from Municipal Corporations with greater ease. To assess potential variations in the functioning of these programs across different Corporations, a one-way ANOVA analysis was carried out. Furthermore, mean values were used to evaluate their effectiveness across various Municipal Corporations in Kerala. The findings are summarized below. Table 7.4 present the frequency of residents regarding their awareness about these programs



**Table 7.4***Level of Awareness about Govt Program (in Percentage)*

	Thiruvananthapuram		Kollam		Kochi		Kozhikode		Thrissur		Kannur	
	Aware	Not aware	Aware	Not aware	Aware	Not aware	Aware	Not aware	Aware	Not aware	Aware	Not aware
SEVANA Civil registration	35.7	64.3	99.4	.6	40	60	100	NIL	99.4	.6	73.3	26.7
SEVANA Pension	37.7	62.3	86.1	13.9	19	81	91.7	8.3	99.4	.6	79.4	20.6
SANKETHAM	29	71	57.6	42.4	11.9	88.1	91.1	8.9	66.9	33.1	11.1	88.9
SANCHAYA	26.7	73.3	57.6	42.4	5.7	94.3	90.6	9.4	58.9	41.1	27.8	72.2
SOOCHIKA	14.7	85.3	41.2	58.8	41.9	58.1	72.8	27.2	41.1	58.9	31.7	68.3

(Source: Primary data)

- ✓ The level of awareness regarding the SEVANA Civil registration program varies significantly among Municipal Corporations in Kerala. Kollam, Kozhikode, Thrissur, and Kannur Municipal Corporation residents are highly informed about this government initiative aimed at enhancing the service quality of Municipal Corporations. At the same time, awareness is considerably lower, with fewer than 40% of respondents in Trivandrum and Kochi Corporations being aware of the program.
- ✓ When it comes to the SEVANA Pension program, a substantial majority of residents in Kollam (86%), Kozhikode (91.7%), Thrissur (99.4%), and Kannur (79.4%) Corporations are knowledgeable about it, as it is designed to streamline pension distribution. However, only 37.7% of respondents in Trivandrum and a mere 19% in Kochi Corporations are familiar with this initiative.
- ✓ In terms of the SANKETHAM program, which aims to provide building permits transparently and uniformly, there is a noteworthy contrast in awareness levels among Municipal Corporations. A significant majority of respondents in Kozhikode (91.1%) are well-informed about SANKETHAM. In Thrissur, 66.9% of respondents are aware of it, while in Kollam, 57.6% have knowledge about the program. On the other hand, a smaller percentage of residents in Trivandrum (29%), Kochi (11.9%), and Kannur (11.1%) Corporations are aware of the SANKETHAM initiative.
- ✓ In the Kozhikode Municipal Corporations, 90.6% of the respondents are aware of the SANCHAYA program, which offers various utility payment services such as hall booking, ambulance services, vehicle services, crematorium facilities, and water bill payments. Additionally, 72.8% of the respondents in Kozhikode are aware of the SOOCHIKA program.
- ✓ At the same time, in Trivandrum, only 26.7% of the respondents are aware of the SANCHAYA program, and merely 14.7% are aware of the SOOCHIKA program. Similarly, in Kochi, awareness of the SANCHAYA program is low, with just 5.7% of respondents being informed, while 41.9% know about the SOOCHIKA program.

- ✓ In Kollam, 57.6% of respondents are aware of the SANCHAYA program, and 41.2% are aware of the SOOCHIKA program. In Thrissur, 58.9% of respondents are informed about SANCHAYA, while only 41.1% are aware of SOOCHIKA. In Kannur, 27.8% of respondents know about the SANCHAYA program, and 31.7% are aware of the SOOCHIKA program.
- ✓ The level of awareness among residents in Municipal Corporations of Kerala regarding various government initiatives aimed at enhancing services varies significantly. Kollam, Kozhikode, Thrissur, and Kannur Municipal Corporations generally have higher awareness levels for programs like SEVANA Civil registration, SEVANA pension, SANKETHAM, SANCHAYA, and SOOCHIKA. On the other hand, Trivandrum and Kochi Corporations lag behind, with considerably lower awareness rates for most of these initiatives.
- ✓ The data suggests that there is a need for more targeted awareness campaigns and outreach efforts in Trivandrum and Kochi to improve knowledge about these programs. The higher awareness levels in Kozhikode, Thrissur, Kollam, and Kannur demonstrate the potential for successful implementation and public engagement in these areas. Efforts should be made to bridge the awareness gap among different Municipal Corporations to ensure equitable access to government services and benefits across the state of Kerala.

It is evident that residents of all Municipal Corporations are well-informed about the SEVANA civil registration program. When it comes to the SEVANA pension program, all Corporations except the residents of Kochi Corporation are knowledgeable about it. Concerning the SANKETHAM and SANCHAYA programs, citizens of Kollam, Kozhikode, and Thrissur Corporations possess a substantial level of awareness, while a lower percentage of citizens in Thiruvananthapuram, Kochi, and Kannur Corporations are aware of these programs. Regarding the SOOCHIKA program, citizens in all Corporations except Thiruvananthapuram Corporations are informed about it.

#### 7.4. Working of quality initiatives among various Municipal Corporations in Kerala

The study used one-way analysis of variance (ANOVA) to assess variations in the implementation of quality initiative programs across different Municipal Corporations. The analysis focuses on residents who express positive responses to evaluate the effectiveness of these programs. The mean values are utilized to examine the efficacy of government initiatives, and the formulated hypothesis is as follows:

H1: There is a significant difference in the working of programs introduced by the government for residents among the Municipal Corporations in Kerala

**Table 7.5**

*Working of government programs in Municipal Corporations of Kerala*

Programs	Municipal Corporation	N	Mean	SD	F	Sig.
SEVANA Civil registration	Thiruvananthapuram	107	4.2235	0.24	213.83	0
	Kollam	164	3.7591	0.153		
	Kochi	51	3.5474	0.214		
	Kozhikode	165	3.5884	0.252		
	Thrissur	174	3.7375	0.21		
	Kannur	132	3.404	0.16		
	Total	793	3.7088			
SEVANA Pension	Thiruvananthapuram	113	4.0816	0.13	188.5	0
	Kollam	142	3.7668	0.199		
	Kochi	40	3.5694	0.23		
	Kozhikode	157	3.5485	0.22		
	Thrissur	152	3.7405	0.24		
	Kannur	143	3.3745	0.16		
	Total	747	3.6775			
SANKETHAM	Thiruvananthapuram	87	3.9908	0.09	102.6	0
	Kollam	95	3.66	0.17		
	Kochi	13	3.4077	0.27		
	Kozhikode	164	3.4994	0.24		
	Thrissur	107	3.61313	0.21		
	Kannur	20	3.11	0.162		
	Total	486	3.6253			

Programs	Municipal Corporation	N	Mean	SD	F	Sig.
SANCHAYA	Thiruvananthapuram	80	3.3705	0.2	49.5	0
	Kollam	84	3.6688	0.16		
	Kochi	9	3.4444	0.11		
	Kozhikode	119	3.395	0.25		
	Thrissur	103	3.6531	0.22		
	Kannur	50	3.2309	0.19		
	Total	445	3.4846			
SOOCHIKA	Thiruvananthapuram	44	3.4602	0.46	76.6	0
	Kollam	68	3.1195	0.19		
	Kochi	88	3.6506	0.12		
	Kozhikode	130	2.9673	0.38		
	Thrissur	72	3.1128	0.23		
	Kannur	56	2.9866	0.21		
	Total	458	3.1938			

Source: Primary data, significant at 1% level

**Table 7.6**

*Ranking of working of programs for citizens in Municipal Corporations*

Programs	Thiruvananthapuram	Kollam	Kochi	Kozhikode	Thrissur	Kannur
SEVANA Civil registration	1	2	5	4	3	6
SEVANA Pension	1	2	4	5	3	6
SANKETHAM	1	2	5	4	3	6
SANCHAYA	5	1	3	4	2	6
SOOCHIKA	2	3	1	6	4	5

Source: Primary data

In the above table, programs are ranked according to its mean values. From the result, it is clear that Thiruvananthapuram Municipal Corporations is excellent in working of all programs except 'SANCHAYA'. Working of these programs in Kollam Municipal Corporation is satisfactory. Kannur Municipal Corporation needs improvement in these programs to enhance its service quality.

In the case of SEVANA civil registration program, Thiruvananthapuram, Kollam, Thrissur, Kozhikode, Kochi and Kannur Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively. In case of SEVANA Pension program, Thiruvananthapuram is ranked as 1<sup>st</sup>, Kollam as 2<sup>nd</sup>, Thrissur as 3<sup>rd</sup>, Kochi as 4<sup>th</sup>, Kozhikode as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values. In case of SANKETHAM program designed to provide building permits transparently and uniformly, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Thiruvananthapuram, Kollam, Thrissur, Kozhikode, Kochi and Kannur and Municipal Corporations. When it comes to ‘SANCHAYA’ program, Kollam Corporation secure 1<sup>st</sup> rank. Thrissur, Kochi, Kozhikode, Thiruvananthapuram, and Kannur Corporation secure the subsequent ranks. In case of SOOCHIKA program designed to facilitate status monitoring via the web, integrating SMS notifications, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kochi, Thiruvananthapuram, Kollam, Thrissur, Kannur and Kozhikode Municipal Corporations.

**Table 7.7**

*Hypothesis test-variations in the working of quality enhancement programs among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SEVANA civil registration programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
2	There is a significant difference in the working of SEVANA pension programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
3	There is a significant difference in the working of SANKETHAM programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
4	There is a significant difference in the working of SANCHAYA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
5	There is a significant difference in the working of SOOCHIKA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported

Source: Primary data

Table 7.7. explains that the government programs implemented in various Municipal Corporations in Kerala exhibit a notable variation in their functioning, as indicated by the statistical significance ( $p$ -value  $< 0.05$ ) for all these programs. To discern the differences among these programs, a post-hoc test using the Tukey's method was performed. SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA and SOOCHIKA were taken as dependent variables and Municipal Corporation was taken as independent variable. If significant value is more than 0.05, alternate hypothesis is rejected and if value significant value is less than 0.05, alternate hypothesis is accepted. Subsequent results are detailed below.

### 7.5 Post hoc test-working of quality initiative programs for citizen in Municipal Corporations of Kerala

Table 7.8 indicates a notable variance in the functioning of government-introduced programs, namely SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA and SOOCHIKA, across Municipal Corporations. To identify the specific Corporations where these differences are observed, a post hoc test using Tukey's test was conducted. The post hoc test results are provided below.

**Table 7.8**

*Post hoc test- working of SEVANA civil registration programs in Municipal Corporations of Kerala*

Programs	Corporation	Mean Difference (I-J)	P value
SEVANA Civil registration	Thiruvananthapuram*Kollam	.46437*	0.000
	Thiruvananthapuram*Kochi	.67613*	0.000
	Thiruvananthapuram*Kozhikode	.63514*	0.000
	Thiruvananthapuram*Thrissur	.48597*	0.000
	Thiruvananthapuram*Kannur	.81948*	0.000
	Kollam*Kochi	.21176*	0.000
	Kollam*Kozhikode	.17076*	0.000
	Kollam*Kannur	.35511*	0.000

Programs	Corporation	Mean Difference (I-J)	P value
	Kochi*Thrissur	-.19016*	0.000
	Kochi*Kannur	.14335*	0.001
	Kozhikode*Thrissur	-.14916*	0.000
	Kozhikode*Kannur	.18434*	0.000
	Thrissur*Kannur	.33351*	0.000

(Source: Primary data)

Among Municipal Corporations in Kerala, SEVANA civil registration program in Trivandrum Municipal Corporations (mean=4.22) is highly effective. SEVANA civil registration program in Kollam Corporation is working efficiently as compared with Kochi, Kozhikode, and Kannur Municipal Corporations. Thrissur Corporation (mean=3.74) is better than Kozhikode, Kochi and Kannur Municipal Corporation with regard to the effectiveness of SEVANA civil registration program. Sevana civil registration program in Kannur Municipal Corporation (mean=3.41) is less effective as compared with other Municipal Corporations in Kerala.

**Table 7.9**

*Hypothesis test-variations in the working of SEVANA Civil Registration Programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SEVANA civil registration between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	Supported
2	There is a significant difference in the working of SEVANA civil registration between Trivandrum and Kochi Municipal Corporations.	Tukey's post hoc test	Supported
3	There is a significant difference in the working of SEVANA civil registration between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SEVANA civil registration between Trivandrum and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported



Sl. No.	Hypotheses	Tools used	Result
5	There is a significant difference in the working of SEVANA civil registration between Trivandrum and Kannur Municipal Corporations.	Tukey's post hoc test	Supported
6	There is a significant difference in the working of SEVANA civil registration between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Supported
7	There is a significant difference in the working of SEVANA civil registration between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of SEVANA civil registration between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	Rejected
9	There is a significant difference in the working of SEVANA civil registration between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Supported
10	There is a significant difference in the working of SEVANA civil registration between Kochi and Kozhikode Municipal Corporations.	Tukey's post hoc test	Rejected
11	There is a significant difference in the working of SEVANA civil registration between Kochi and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported
12	There is a significant difference in the working of SEVANA civil registration between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Supported
13	There is a significant difference in the working of SEVANA civil registration between Kozhikode and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported
14	There is a significant difference in the working of SEVANA civil registration between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Supported
15	There is a significant difference in the working of SEVANA civil registration between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Supported

Source: Primary data

**Table 7.10**

*Post hoc test- working of SEVANA Pension Programs in Municipal Corporations*

Programs	Corporations	Mean Difference (I-J)	P value
SEVANA Pension	Thiruvananthapuram*Kollam	.31479*	0.000
	Thiruvananthapuram*Kochi	.51217*	0.000
	Thiruvananthapuram*Kozhikode	.53313*	0.000
	Thiruvananthapuram*Thrissur	.34112*	0.000
	Thiruvananthapuram*Kannur	.70710*	0.000
	Kollam*Kochi	.19738*	0.000
	Kollam*Kozhikode	.21834*	0.000
	Kollam*Kannur	.39231*	0.000
	Kochi*Thrissur	-.17105*	0.001
	Kochi*Kannur	.19493*	0.000
	Kozhikode*Thrissur	-.19202*	0.000
	Kozhikode*Kannur	.17396*	0.000
	Thrissur*Kannur	.36598*	0.000

(Source: Primary data)

In table 7.10, the detailed examination of post hoc analysis has been conducted with the help of Tukey's test. With regard to SEVANA pension program, Trivandrum Municipal Corporation (Mean=4.1) is highly effective in its functioning as compared with other Municipal Corporations in Kerala. Working of SEVANA pension program in Kollam and Thrissur Municipal Corporations are more effective when compared with Kochi, Kozhikode, and Kannur Municipal Corporations. Compared with other Corporations, the pension program in Kannur Municipal Corporations (Mean=3.37) needs improvement.

**Table 7.11**

*Hypothesis test-variations in the working of SEVANA Pension Programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SEVANA pension between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	Supported
2	There is a significant difference in the working of SEVANA pension between Trivandrum and Kochi Municipal Corporations.	Tukey's post hoc test	Supported
3	There is a significant difference in the working of SEVANA pension between Trivandrum and Kozhikode Municipal Corporations.	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SEVANA pension between Trivandrum and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported
5	There is a significant difference in the working of SEVANA pension between Trivandrum and Kannur Municipal Corporations.	Tukey's post hoc test	Supported
6	There is a significant difference in the working of SEVANA pension between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Supported
7	There is a significant difference in the working of SEVANA pension between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of SEVANA pension between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SEVANA pension between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Supported
10	There is a significant difference in the working of SEVANA pension between Kochi and Kozhikode Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
11	There is a significant difference in the working of SEVANA pension between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SEVANA pension between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Supported
13	There is a significant difference in the working of SEVANA pension between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
14	There is a significant difference in the working of SEVANA pension between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Supported
15	There is a significant difference in the working of SEVANA pension between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Supported

Source: Primary data

**Table 7.12**

*Post hoc test- working of SANKETHAM Program in Municipal Corporations*

Programs	Corporations	Mean Difference (I-J)	P value
	Thiruvananthapuram*Kollam	0.33	0.000
	Thiruvananthapuram*Kochi	.58311*	0.000
	Thiruvananthapuram*Kozhikode	.49141*	0.000
	Thiruvananthapuram*Thrissur	.37772*	0.000
	Thiruvananthapuram*Kannur	.88080*	0.000
SANKETHAM	Kollam*Kozhikode	.16061*	0.000
	Kollam*Kannur	.55000*	0.000
	Kochi*Kannur	.29769*	0.029
	Kozhikode*Thrissur	-.11369*	0.001
	Kozhikode*Kannur	.38939*	0.000
	Thrissur*Kannur	.50308*	0.000

(Source: Primary data)

**Table 7.13**

*Hypothesis test-variations in the Working of SANKETHAM Programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SANKETHAM between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	Supported
2	There is a significant difference in the working of SANKETHAM between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	Supported
3	There is a significant difference in the working of SANKETHAM between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SANKETHAM between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
5	There is a significant difference in the working of SANKETHAM between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	Supported
6	There is a significant difference in the working of SANKETHAM between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
7	There is a significant difference in the working of SANKETHAM between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of SANKETHAM between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SANKETHAM between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Supported
10	There is a significant difference in the working of SANKETHAM between Kochi and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
11	There is a significant difference in the working of SANKETHAM between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SANKETHAM between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Supported
13	There is a significant difference in the working of SANKETHAM between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
14	There is a significant difference in the working of SANKETHAM between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Supported
15	There is a significant difference in the working of SANKETHAM between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Supported

Source: Primary data

The SANKETHAM program, implemented by the Trivandrum Municipal Corporation (Mean=3.99) to streamline the building permit process, stands out as a highly efficient system compared to other Municipal Corporations in Kerala. Specifically, in the case of SANKETHAM, Kollam surpasses (Mean=3.66) Kozhikode and Kannur Municipal Corporations in effectiveness. Similarly, Thrissur (Mean=3.11) outperforms Kozhikode and Kannur Municipal Corporations. However, it's worth noting that the SANKETHAM program in Kannur Municipal Corporation lags behind in terms of effectiveness when compared to all other Municipal Corporations in Kerala.

**Table 7.14**

*Post hoc test- working of SANCHAYA Program in Municipal Corporations of Kerala*

Programs	Corporations	Mean Difference (I-J)	P value
SANCHAYA	Thiruvananthapuram*Kollam	-.29838*	0.000
	Thiruvananthapuram*Thrissur	-.28268*	0.000
	Thiruvananthapuram*Kannur	.13955*	0.002
	Kollam*Kochi	.22439*	0.001
	Kollam*Kozhikode	.27387*	0.000
	Kollam*Kannur	.43792*	0.000
	Kochi*Thrissur	-.20869*	0.002
	Kochi*Kannur	.21354*	0.002
	Kozhikode*Thrissur	-.25818*	0.000
	Kozhikode*Kannur	.16405*	0.000
	Thrissur*Kannur	.42222*	0.000

(Source: Primary data)

**Table 7.15**

*Hypothesis test-variations in the Working of SANCHAYA Programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SANCHAYA between Trivandrum and Kollam Municipal Corporations	Tukey's post hoc test	Supported
2	There is a significant difference in the working of SANCHAYA between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
3	There is a significant difference in the working of SANCHAYA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
4	There is a significant difference in the working of SANCHAYA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
5	There is a significant difference in the working of SANCHAYA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	Supported
6	There is a significant difference in the working of SANCHAYA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Supported
7	There is a significant difference in the working of SANCHAYA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of SANCHAYA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SANCHAYA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Supported
10	There is a significant difference in the working of SANCHAYA between Kochi and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
11	There is a significant difference in the working of SANCHAYA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SANCHAYA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Supported
13	There is a significant difference in the working of SANCHAYA between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
14	There is a significant difference in the working of SANCHAYA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Supported
15	There is a significant difference in the working of SANCHAYA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Supported

Source: Primary data

With regard to working of SANCHAYA program, Kollam and Thrissur Corporation is effective as compared with other Municipal Corporations in Kerala. SANCHAYA in Trivandrum (Mean=3.371) is better than Kannur Municipal Corporation. Kochi (Mean=3.44) is better than Kannur Municipal Corporation in providing utility payment services. SANCHAYA in Kannur Municipal Corporation (Mean=3.23) is comparatively less effective than all other Corporations in Kerala.

**Table 7.16**

*Post hoc test- working of SOOCHIKA program in Municipal Corporations of Kerala*

Programs	Corporations	Mean Difference (I-J)	P value
SOOCHIKA	Thiruvananthapuram*Kollam	.34074*	0.000
	Thiruvananthapuram*Kozhikode	.49292*	0.000
	Thiruvananthapuram*Thrissur	.34738*	0.000
	Thiruvananthapuram*Kannur	.47362*	0.000
	Kollam*Kochi	-.53108*	0.000
	Kollam*Kozhikode	.15218*	0.003
	Kollam*Kannur	.13288*	0.005
	Kochi*Kozhikode	.68326*	0.000
	Kochi*Thrissur	.53772*	0.000
	Kochi*Kannur	.66396*	0.000
	Kozhikode*Thrissur	-.14554*	0.011
	Thrissur*Kannur	.12624*	0.019

(Source: Primary data)



**Table 7.17**

*Hypothesis test-variations in the working of SOOCHIKA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SOOCHIKA between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	Supported
2	There is a significant difference in the working of SOOCHIKA between Trivandrum and Kochi Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
3	There is a significant difference in the working of SOOCHIKA between Trivandrum and Kozhikode Municipal Corporations.	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SOOCHIKA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
5	There is a significant difference in the working of SOOCHIKA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	Supported
6	There is a significant difference in the working of SOOCHIKA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Supported
7	There is a significant difference in the working of SOOCHIKA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of SOOCHIKA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SOOCHIKA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Supported
10	There is a significant difference in the working of SOOCHIKA between Kochi and Kozhikode Municipal Corporations.	Tukey's post hoc test	Supported
11	There is a significant difference in the working of SOOCHIKA between Kochi and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SOOCHIKA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Supported
13	There is a significant difference in the working of SOOCHIKA between Kozhikode and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported
14	There is a significant difference in the working of SOOCHIKA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
15	There is a significant difference in the working of SOOCHIKA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Supported

Source: Primary data

In comparison with Kollam, Kozhikode, Thrissur, and Kannur Municipal Corporations, SOOCHIKA in Kochi Municipal Corporations (Mean=3.65) has been shown to be effective. Compared to Kollam, Kozhikode, Thrissur and Kannur, Trivandrum (Mean=3.46) is better. In comparison with the local governments of Kozhikode and Kannur, Kollam (Mean=3.12) is better. In terms of the SOOCHIKA program, Thrissur (Mean=3.113) is better than Kozhikode and Kannur Municipal Corporations.

## **7.6 PART-B : ANALYSIS AND DISCUSSION OF WORKING OF PROGRAMS-EMPLOYEE PERSPECTIVE**

As part of quality management, not only external customers are considered, but also internal customers (Wilkinson et al., 1998). In this section, we have highlighted ten distinct programs, namely STHAPANA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SUBADRA, SAMOOHYA, SAPHALYA and SULEKHA programs. These programs are designed to assist employees in simplifying their tasks and enhancing their efficiency, ultimately contributing to the pursuit of excellence in service quality. To assess potential variations in the implementation of quality initiative programs across different Municipal Corporations in Kerala, a one-way analysis of variance (ANOVA) was carried out. The outcomes

of this analysis are displayed in table 7.18. The formulated hypothesis aims to examine whether there are noteworthy differences.

H1: There is a significant difference in the working of programs introduced by the government to assist employees among the Municipal Corporations in Kerala

**Table 7.18**

*Working of quality initiative programs in Municipal Corporations of Kerala*

Program	Corporations	N	Mean	SD	F	Sig.
STHAPANA	Trivandrum	40	2.9	0.23885	66.041	0.000
	Kollam	38	2.7127	0.2215		
	Kochi	49	3.0493	0.24704		
	Kozhikode	5	2.2	0.19185		
	Thrissur	10	1.925	0.15441		
	Kannur	29	<b>3.0977</b>	0.09726		
SANCHITHA	Trivandrum	29	3.0897	0.23806	9.187	0.000
	Kollam	16	3.0063	0.13401		
	Kochi	28	<b>3.175</b>	0.24889		
	Kozhikode	3	2.6	0.1		
	Thrissur	3	2.5667	0.20817		
	Kannur	Nil	Nil			
SAANKYA	Trivandrum	34	3.0686	0.18403	28.286	0.000
	Kollam	20	2.6792	0.18192		
	Kochi	29	2.8649	0.15009		
	Kozhikode	3	2.7778	0.04811		
	Thrissur	11	2.7424	0.21875		
	Kannur	30	<b>3.1694</b>	0.15549		
SAKARMA	Trivandrum	Nil			16.276	0.000
	Kollam	20	<b>2.925</b>	0.24682		
	Kochi	6	2.9	0.08944		
	Kozhikode	4	2.4	0.14142		
	Thrissur	11	2.5	0.14142		
	Kannur	Nil				

Program	Corporations	N	Mean	SD	F	Sig.
SUGAMA	Trivandrum	18	<b>3.5139</b>	0.12042	75.738	0.000
	Kollam	Nil				
	Kochi	5	3.275	0.39922		
	Kozhikode	2	2.75	0.17678		
	Thrissur	4	1.8438	0.21348		
	Kannur	Nil				
SAMVEDITHA	Trivandrum	11	<b>3.0101</b>	0.18227	44.490	0.000
	Kollam	Nil				
	Kochi	23	2.5121	0.19169		
	Kozhikode	7	2.254	0.17817		
	Thrissur	7	2.0476	0.19092		
	Kannur	Nil				
SUBADRA	Trivandrum	Nil			0.574	0.571
	Kollam	Nil				
	Kochi	18	2.679	0.19762		
	Kozhikode	4	<b>2.75</b>	0.10638		
	Thrissur	7	2.6349	0.10569		
	Kannur	Nil				
SAMOOHYA	Trivandrum	Nil			20.177	0.000
	Kollam	Nil				
	Kochi	6	<b>3.0556</b>	0.11653		
	Kozhikode	Nil				
	Thrissur	2	2.6667	0.000		
	Kannur	Nil				
SAPHALYA	Trivandrum	Nil			7.560	0.117
	Kollam	Nil				
	Kochi	2	<b>2.9444</b>	0.2357		
	Kozhikode	2	2.7222	0.07857		
	Thrissur	1	2.1111	0.000		
	Kannur	Nil				

Program	Corporations	N	Mean	SD	F	Sig.
SULEKA	Trivandrum	27	2.9537	0.19036	32.575	0.000
	Kollam	20	<b>3.3062</b>	0.18794		
	Kochi	15	2.9583	0.07715		
	Kozhikode	6	2.2917	0.30277		
	Thrissur	2	2.8125	0.26517		
	Kannur	9	3.125	0.10825		

(Source: Primary data)

SUBADRA and SAPHALYA programs introduced by the government do not differ significantly among Municipal Corporations. Due to the fact that the P value for all programs except SUBADRA and SAPHALYA is below .05, it cannot be accepted as true that there is no significant difference in the implementation of the government programs in Kerala.

**Table 7.19**

*Ranking of working of programs for employees in Municipal Corporations*

Programs	Thiruvananthapuram	Kollam	Kochi	Kozhikode	Thrissur	Kannur
STHAPANA	3	4	2	5	6	1
SANCHITHA	2	3	1	4	5	6
SAANKYA	2	6	3	4	5	1
SAKARMA	Nil	1	2	4	3	nil
SUGAMA	1	nil	2	3	4	nil
SAMVEDITHA	1	nil	2	3	4	nil
SUBADRA	Nil	nil	2	1	3	nil
SAMOOHYA	Nil	nil	1	nil	2	nil
SAPHALYA	Nil	nil	1	2	3	nil
SULEKHA	4	1	3	6	5	2

Source: Primary data

The above table, programs introduced by government to smoothen the work of employees were ranked based on mean values. From this it is clear that Kochi Corporation is better in the working of these programs as it secures a rank of at least three. At the same time, Thrissur Corporation need improvement in the working of all

these programs. In the case of STHAPANA program, Kannur, Kochi, Thiruvananthapuram, Kollam, Kozhikode and Thrissur, Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively. In case of SANCHITHA program, Kochi is ranked as 1<sup>st</sup>, Thiruvananthapuram as 2<sup>nd</sup>, Kollam as 3<sup>rd</sup>, Kozhikode as 4<sup>th</sup>, Thrissur as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values. In case of SAANKYA, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kannur, Thiruvananthapuram, Kochi, Kozhikode, Thrissur and Kollam Municipal Corporations. When it comes to ‘SAKARMA’, Kollam Corporation secure 1<sup>st</sup> rank. Kochi, Thrissur and Kozhikode Corporation secure the subsequent ranks. In case of SUGAMA and SAMVEDITHA programs, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> ranks are respectively secured by Thiruvananthapuram, Kochi, Kozhikode and Thrissur Municipal Corporations. In case of SUBADRA program, Kozhikode is ranked as 1<sup>st</sup>, Kochi as 2<sup>nd</sup>, Thrissur as 3<sup>rd</sup> based on their mean values. When it comes to ‘SAMOOHYA’ program, Kochi Corporation secure 1<sup>st</sup> rank, Thrissur Corporation secure 2<sup>nd</sup> rank. In case of SAPHALYA programs, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> ranks are respectively secured by Kochi, Kozhikode and Thrissur Municipal Corporations. In case of SULEKHA program, Kollam is ranked as 1<sup>st</sup>, Kannur as 2<sup>nd</sup>, Kochi as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Thrissur as 5<sup>th</sup> and Kozhikode as 6<sup>th</sup> based on their mean values.

**Table 7.20**

*Hypothesis test-variations in the working of quality enhancement programs among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of STHAPANA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
2	There is a significant difference in the working of SANCHITHA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
3	There is a significant difference in the working of SAANKYA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported

Sl. No.	Hypotheses	Tools used	Result
4	There is a significant difference in the working of SAKARMA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
5	There is a significant difference in the working of SUGAMA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
6	There is a significant difference in the working of SAMVEDITHA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
7	There is a significant difference in the working of SUBADRA programs introduced by the government among the Municipal Corporations	One way ANOVA	<b>Rejected</b>
8	There is a significant difference in the working of SAMOOHYA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported
9	There is a significant difference in the working of SAPHALYA programs introduced by the government among the Municipal Corporations	One way ANOVA	<b>Rejected</b>
10	There is a significant difference in the working of SULEKA programs introduced by the government among the Municipal Corporations	One way ANOVA	Supported

(Source: Primary data)

Among the various programs introduced by the government to enhance the service quality of Municipal Corporations in Kerala, it is necessary to find out which Municipal Corporations differ from others. The results of the post-hoc test (Tukey) is presented below.

### **7.7 POST HOC TEST-WORKING OF QUALITY INITIATIVE PROGRAMS FOR EMPLOYEES IN MUNICIPAL CORPORATIONS OF KERALA**

Table 7.20 indicates a notable variance in the functioning of government-introduced programs, namely THAPANA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SAMOOHYA, and SULEKHA, across Municipal Corporations. To identify the specific Corporation where these differences are

observed, a post hoc test using tukey's test was conducted. The post hoc test results are provided below.

**Table 7.21**

*Post hoc test- working of STHAPANA programs in Municipal Corporations of Kerala*

Program	Corporations	Mean Difference (I-J)	P value
STHAPANA	Trivandrum*Kollam	.18728*	0.009
	Trivandrum*Kozhikode	.70000*	0.006
	Trivandrum*Thrissur	.97500*	0
	Trivandrum*Kannur	-.19770*	0
	Kollam*Kochi	-.33660*	0
	Kollam*Kozhikode	.51272*	0.029
	Kollam*Thrissur	.78772*	0
	Kollam*Kannur	-.38498*	0
	Kochi*Kozhikode	.84932*	0.002
	Kochi*Thrissur	1.12432*	0.000
	Kozhikode*Kannur	-.89770*	0.005
	Thrissur*Kannur	-1.17270*	0.000

(Source: Primary data)

STHAPANA program in Trivandrum Municipal Corporation (Mean=2.9) is more effective as compared with Kollam, Kozhikode, and Thrissur Municipal Corporations. Kannur (Mean=3.098) is better in STHAPANA than Trivandrum. At the same time, the working of STHANA in Kollam Corporation (Mean=2.713) is highly effective as compared with Thrissur and Kozhikode Municipal Corporations. Moreover, Kollam Corporation is far away from Kochi and Kannur Municipal Corporations in terms of STAPANA. The working of STAHAPANA in Kochi and Kannur Corporations is better than in Kozhikode and Thrissur Municipal Corporations.



**Table 7.22**

*Hypothesis test-variations in the working of STHAPANA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of STAPANA between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	Supported
2	There is a significant difference in the working of STAPANA between Trivandrum and Kochi Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
3	There is a significant difference in the working of STAPANA between Trivandrum and Kozhikode Municipal Corporations.	Tukey's post hoc test	Supported
4	There is a significant difference in the working of STAPANA between Trivandrum and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported
5	There is a significant difference in the working of STAPANA between Trivandrum and Kannur Municipal Corporations.	Tukey's post hoc test	Supported
6	There is a significant difference in the working of STAPANA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Supported
7	There is a significant difference in the working of STAPANA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of STAPANA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
9	There is a significant difference in the working of STAPANA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Supported
10	There is a significant difference in the working of STAPANA between Kochi and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
11	There is a significant difference in the working of STAPANA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of STAPANA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
13	There is a significant difference in the working of STAPANA between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
14	There is a significant difference in the working of STAPANA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Supported
15	There is a significant difference in the working of STAPANA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Supported

(Source: Primary data)

In short, among Municipal Corporations in Kerala, STHAPANA in Kannur(mean=3.097) Municipal Corporation works efficiently. Compared with other Municipal Corporations, STHAPANA in Thrissur(mean=1.92) is less effective.

**Table 7.23**

*Post hoc test- working of SANCHITHA programs in Municipal Corporations*

Program	Corporations	Mean Difference (I-J)	P value
SANCHITHA	Trivandrum*Kozhikode	.48966*	0.012
	Kochi*Kozhikode	.57500*	0.004

(Source: Primary data)

Trivandrum and Kochi Municipal Corporations are better in the SANCHITHA program when compared with other Municipal Corporations.

**Table 7.24**

*Hypothesis test-variations in the working of SANCHITHA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SANCHITHA between Trivandrum and Kollam Municipal Corporations	Tukey's post hoc test	Rejected
2	There is a significant difference in the working of SANCHITHA between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	Rejected
3	There is a significant difference in the working of SANCHITHA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SANCHITHA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	Rejected
5	There is a significant difference in the working of SANCHITHA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	Rejected
6	There is a significant difference in the working of SANCHITHA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Rejected
7	There is a significant difference in the working of SANCHITHA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Rejected
8	There is a significant difference in the working of SANCHITHA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	Rejected
9	There is a significant difference in the working of SANCHITHA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Rejected
10	There is a significant difference in the working of SANCHITHA between Kochi and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
11	There is a significant difference in the working of SANCHITHA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	Rejected

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SANCHITHA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Rejected
13	There is a significant difference in the working of SANCHITHA between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	Rejected
14	There is a significant difference in the working of SANCHITHA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Rejected
15	There is a significant difference in the working of SANCHITHA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Rejected

(Source: Primary data)

In short, among Municipal Corporations in Kerala, SANCHITHA in Kochi(mean=3.17) Municipal Corporation works efficiently. Compared with other Municipal Corporations, SANICHITHA in Thrissur(mean=2.56)) is less effective.

**Table 7.25**

*Post hoc test- working of SAANKYA programs in Municipal Corporations of Kerala*

Program	Corporations	Mean Difference (I-J)	P value
SAANKYA	Trivandrum*Kollam	.38946*	0
	Trivandrum*Kochi	.20368*	0
	Trivandrum*Kozhikode	.29085*	0.001
	Trivandrum*Thrissur	.32620*	0.007
	Kollam*Kochi	-.18578*	0.009
	Kollam*Kannur	-.49028*	0
	Kochi*Kannur	-.30450*	0
	Kozhikode*Kannur	-.39167*	0
	Trisure*Kannur	-.42702*	0.001

(Source: Primary data)

SAANKYA in Trivandrum Municipal Corporation (Mean=3.07) works effectively as compared with Kollam, Kochi, Kozhikode and Thrissur Municipal Corporations. Kollam Corporation is far away from Kochi and Kannur Municipal Corporation in

case of SAANKYA program. Kannur is better than Kochi and Kozhikode Corporations in the SAANKYA program.

**Table 7.26**

*Hypothesis test-variations in the working of SAANKYA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SAANKYA between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	Supported
2	There is a significant difference in the working of SAANKYA between Trivandrum and Kochi Municipal Corporations.	Tukey's post hoc test	Supported
3	There is a significant difference in the working of SAANKYA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SAANKYA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
5	There is a significant difference in the working of SAANKYA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
6	There is a significant difference in the working of SAANKYA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Supported
7	There is a significant difference in the working of SAANKYA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
8	There is a significant difference in the working of SAANKYA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SAANKYA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	Supported
10	There is a significant difference in the working of SAANKYA between Kochi and Kozhikode Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>

Sl. No.	Hypotheses	Tools used	Result
11	There is a significant difference in the working of SAANKYA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
12	There is a significant difference in the working of SAANKYA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Supported
13	There is a significant difference in the working of SAANKYA between Kozhikode and Thrissur Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
14	There is a significant difference in the working of SAANKYA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Supported
15	There is a significant difference in the working of SAANKYA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	Supported

(Source: Primary data)

In summary, among Municipal Corporations in Kerala, SAANKYA in Kannur(mean=3.17) Municipal Corporation work efficiently. Comparing with other Municipal Corporations, SAANKYA in Kollam(mean=2.67)) is less effective.

**Table 7.27**

*Post hoc test- working of SAKARMA programs in Municipal Corporations of Kerala*

Program	Corporations	Mean Difference (I-J)	P value
SAKARMA	Kollam*Kozhikode	.52500*	0.003
	Kollam*Thrissur	.42500*	0.000
	Kochi*Kozhikode	.50000*	0.012
	Kochi*Thrissur	.40000*	0.000

(Source: Primary data)

SAKARMA in Kollam (Mean=2.93) and Kochi (Mean=2.9) Municipal Corporation work effectively as compared with other Municipal Corporations.

**Table 7.28**

*Hypothesis test-variations in the working of SAKARMA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SAKARMA between Trivandrum and Kollam Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
2	There is a significant difference in the working of SAKARMA between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
3	There is a significant difference in the working of SAKARMA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
4	There is a significant difference in the working of SAKARMA between Trivandrum and Thrissur Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
5	There is a significant difference in the working of SAKARMA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
6	There is a significant difference in the working of SAKARMA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
7	There is a significant difference in the working of SAKARMA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of SAKARMA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
9	There is a significant difference in the working of SAKARMA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
10	There is a significant difference in the working of SAKARMA between Kochi and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
11	There is a significant difference in the working of SAKARMA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SAKARMA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
13	There is a significant difference in the working of SAKARMA between Kozhikode and Thrissur Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
14	There is a significant difference in the working of SAKARMA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
15	There is a significant difference in the working of SAKARMA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>

(Source: Primary data)

In brief, among Municipal Corporations in Kerala, SAKARMA in Kollam(mean=2.93) Municipal Corporation works efficiently. Compared with other Municipal Corporations, SAKARMA in Kozhikode(mean=2.4) is less effective.

**Table 7.29**

*Post hoc test- working of SUGAMA programs in Municipal Corporations of Kerala*

Program	Corporations	Mean Difference (I-J)	P value
SUGAMA	Trivandrum*Thrissur	1.67014*	0.002
	Kochi*Thrissur	1.43125*	0.002

(Source: Primary data)

In the case of SUGAMA program, Thrissur (Mean=1.84) is far away from Trivandrum and Kochi Municipal Corporations.



**Table 7.30**

*Hypothesis test-variations in the working of SUGAMA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SUGAMA between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
2	There is a significant difference in the working of SUGAMA between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
3	There is a significant difference in the working of SUGAMA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
4	There is a significant difference in the working of SUGAMA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
5	There is a significant difference in the working of SUGAMA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
6	There is a significant difference in the working of SUGAMA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
7	There is a significant difference in the working of SUGAMA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
8	There is a significant difference in the working of SUGAMA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SUGAMA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
10	There is a significant difference in the working of SUGAMA between Kochi and Kozhikode Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
11	There is a significant difference in the working of SUGAMA between Kochi and Thrissur Municipal Corporations.	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SUGAMA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
13	There is a significant difference in the working of SUGAMA between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
14	There is a significant difference in the working of SUGAMA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
15	There is a significant difference in the working of SUGAMA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>

(Source: Primary data)

In a nutshell, among Municipal Corporations in Kerala, SUGAMA in Trivandrum(mean=3.5) Municipal Corporation works efficiently. Compared with other Municipal Corporations, SUGAMA in Thrissur(mean=1.84) is less effective

**Table 7.31**

*Post hoc test- working of SAMVEDITHA programs in Municipal Corporations of Kerala*

Program	Corporations	Mean Difference (I-J)	P value
SAMVEDITHA	Trivandrum*Kochi	.49802*	0.000
	Trivandrum*Kozhikode	.75613*	0.000
	Trivandrum*Thrissur	.96248*	0.000
	Kochi*Kozhikode	.25811*	0.044
	Kochi*Thrissur	.46446*	0.001

(Source: Primary data)

In Trivandrum Municipal Corporations (Mean=3.01), the SAMVEDITHA program works more effectively than Kochi, Kozhikode and Thrissur Municipal Corporations. Kochi Corporation (Mean=2.5) is better in SAMVEDITHA than Kozhikode and Thrissur Municipal Corporations.

**Table 7.32**

*Hypothesis test-variations in the working of SAMVEDITHA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SAMVEDITHA between Trivandrum and Kollam Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
2	There is a significant difference in the working of SAMVEDITHA between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	Supported
3	There is a significant difference in the working of SAMVEDITHA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SAMVEDITHA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	Supported
5	There is a significant difference in the working of SAMVEDITHA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
6	There is a significant difference in the working of SAMVEDITHA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
7	There is a significant difference in the working of SAMVEDITHA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
8	There is a significant difference in the working of SAMVEDITHA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SAMVEDITHA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
10	There is a significant difference in the working of SAMVEDITHA between Kochi and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
11	There is a significant difference in the working of SAMVEDITHA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SAMVEDITHA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
13	There is a significant difference in the working of SAMVEDITHA between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
14	There is a significant difference in the working of SAMVEDITHA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
15	There is a significant difference in the working of SAMVEDITHA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>

(Source: Primary data)

In short, among Municipal Corporations in Kerala, SAMVEDITHA in Trivandrum (mean=3.01) Municipal Corporation works efficiently. Compared with other Municipal Corporations, SAMVEDITHA in Thrissur(mean=2.04) is less effective.

**Table 7.33**

*Post hoc test- working of SAMOOHYA programs in Municipal Corporations of Kerala*

Program	Corporations	Mean Difference (I-J)	P value
SAMOOHYA	Kochi*Kozhikode	.66990*	0
	Kochi*Thrissur	.63130*	0

(Source: Primary data)

Kochi Corporation is better in the SAMOOHYA program than other Municipal Corporations.

**Table 7.34**

*Hypothesis test-variations in the working of SAMOOHYA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SAMOOHYA between Trivandrum and Kollam Municipal Corporations.	Tukey's post hoc test	<b>Rejected</b>
2	There is a significant difference in the working of SAMOOHYA between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
3	There is a significant difference in the working of SAMOOHYA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
4	There is a significant difference in the working of SAMOOHYA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
5	There is a significant difference in the working of SAMOOHYA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
6	There is a significant difference in the working of SAMOOHYA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
7	There is a significant difference in the working of SAMOOHYA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
8	There is a significant difference in the working of SAMOOHYA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SAMOOHYA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
10	There is a significant difference in the working of SAMOOHYA between Kochi and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
11	There is a significant difference in the working of SAMOOHYA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SAMOOHYA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
13	There is a significant difference in the working of SAMOOHYA between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
14	There is a significant difference in the working of SAMOOHYA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
15	There is a significant difference in the working of SAMOOHYA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>

(Source: Primary data)

In short, among Municipal Corporations in Kerala, SAMOOHYA in Kochi(mean=3.06) Municipal Corporations work efficiently. Compared with other Municipal Corporations, SAMOOHYA in Thrissur(mean=2.6) is less effective.

**Table 7.35**

*Post hoc test- working of SULEKHA programs in Municipal Corporations of Kerala*

Program	Corporations	Mean Difference (I-J)	P value
SULEKHA	Trivandrum*Kollam	-.35255*	0
	Trivandrum*Kozhikode	.66204*	0.033
	Trivandrum*Kannur	-.17130*	0.04
	Kollam*Kochi	.34792*	0
	Kollam*Kozhikode	1.01458*	0.003
	Kochi*Kozhikode	.66667*	0.039
	Kochi*Kannur	-.16667*	0.021
	Kozhikode*Kannur	-.83333*	0.011

(Source: Primary data)

The effectiveness of Municipal Corporations in implementing the SULEKHA program varies across different cities in Kerala. Kollam and Kannur's Municipal Corporations exhibit a higher level of efficiency when it comes to SULEKHA compared to other Municipal Corporations.

**Table 7.36**

*Hypothesis test-variations in the working of SULEKHA programs in Municipal Corporations of Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the working of SULEKHA between Trivandrum and Kollam Municipal Corporations	Tukey's post hoc test	Supported
2	There is a significant difference in the working of SULEKHA between Trivandrum and Kochi Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
3	There is a significant difference in the working of SULEKHA between Trivandrum and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
4	There is a significant difference in the working of SULEKHA between Trivandrum and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
5	There is a significant difference in the working of SULEKHA between Trivandrum and Kannur Municipal Corporations	Tukey's post hoc test	Supported
6	There is a significant difference in the working of SULEKHA between Kollam and Kochi Municipal Corporations	Tukey's post hoc test	Supported
7	There is a significant difference in the working of SULEKHA between Kollam and Kozhikode Municipal Corporations	Tukey's post hoc test	Supported
8	There is a significant difference in the working of SULEKHA between Kollam and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
9	There is a significant difference in the working of SULEKHA between Kollam and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
10	There is a significant difference in the working of SULEKHA between Kochi and Kozhikode Municipal Corporations.	Tukey's post hoc test	Supported
11	There is a significant difference in the working of SULEKHA between Kochi and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>

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Sl. No.	Hypotheses	Tools used	Result
12	There is a significant difference in the working of SULEKHA between Kochi and Kannur Municipal Corporations	Tukey's post hoc test	Supported
13	There is a significant difference in the working of SULEKHA between Kozhikode and Thrissur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>
14	There is a significant difference in the working of SULEKHA between Kozhikode and Kannur Municipal Corporations	Tukey's post hoc test	Supported
15	There is a significant difference in the working of SULEKHA between Thrissur and Kannur Municipal Corporations	Tukey's post hoc test	<b>Rejected</b>

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(Source: Primary data)

Additionally, Kollam outperforms both Kochi and Kozhikode in terms of the program's functioning. Kochi is more effective in this regard than Kozhikode, while Kannur surpasses Kochi when it comes to SULEKHA performance.

## **7.8. CHAPTER SUMMARY**

This chapter delves into the level of awareness and perceptions held by citizens regarding five quality initiatives (software solutions) implemented by Municipal Corporations in Kerala. The data distribution related to the perception of these programs was found to be normal, prompting the application of parametric tests to assess differences across Municipal Corporations. The software programs under scrutiny have been developed by the Information Kerala Mission for the local bodies in Kerala. The primary focus of this chapter is on the adopted quality initiatives by urban local bodies, with a specific examination of citizen assistance programs. The level of awareness about five key programs designed to aid citizens has been thoroughly examined. Furthermore, a comparative analysis of these programs has been conducted among different Municipal Corporations. The findings reveal variations in the execution of programs aimed at streamlining citizen services, such as SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA, and SOOCHIKA, across various Corporations. Additionally, this chapter scrutinizes



the comparative analysis of programs designed to assist employees in ensuring the smooth provision of services across Municipal Corporations. Ten programs were examined from the employees' perspective. Insights from employee perspectives suggest noticeable differences in the functioning of programs like STHAPANA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SAMOOHYA, and SULEKHA across Corporations. Conversely, for SAPHALYA and SUBADRA programs, the analysis indicates no significant divergence in their effectiveness when comparing different Corporations. This chapter concludes with a summary, and the subsequent chapter will explore the obstacles encountered in introducing quality initiatives in Municipal Corporations.

**CHAPTER 8**  
**QUALITY IMPLEMENTATION BARRIERS**  
**IN MUNICIPAL CORPORATIONS**  
**OF KERALA**

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## **8.1. INTRODUCTION**

The previous chapter provided a comprehensive overview of various government and local self-government programs designed to enhance service quality. These programs were evaluated from the perspectives of both the service providers and the actual beneficiaries. Furthermore, the preceding chapter included a comparative analysis of these initiatives across six Municipal Corporations in Kerala, using ANOVA. This chapter focuses on examining the barriers faced during the implementation of quality-enhancement initiatives within Municipal Corporations, as perceived by their employees. To identify the most influential factors that hinder the implementation of quality initiatives in local government bodies, with a particular emphasis on Municipal Corporations, factor analysis is employed. To assess and contrast the impediments to quality across different Municipal Corporations, a Welch test was conducted. For instances, a significant difference was identified, subsequent comparisons of mean scores were undertaken to discern the distinct responses among various categories. Additionally, post hoc analyses were carried out for further insights.

## **8.2. VARIABLES USED FOR THE ANALYSIS**

Table 8.1. gives a general view towards 13 statements regarding obstacles in implementing quality initiatives in the local self-government of Kerala with the help of a five-point Likert scale (1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree). In order to fulfil the objective, the following variables have been identified and analysed.

**Table 8.1***Variables used in the Analysis: A Table Overview*

Variables	No. of attributes /statements	Attributes /statements
Barriers	13	<ul style="list-style-type: none"> <li>➤ Human resource available in the organization is very limited</li> <li>➤ Activities of this Corporation are not based on the interest of employees</li> <li>➤ Financial resources available for the development of the Corporation is very limited</li> <li>➤ There is no clear &amp; open communication between staff</li> <li>➤ The top management doesn't support employees' suggestions to improve service quality.</li> <li>➤ The employees have no chance to be trained in improving the quality of services.</li> <li>➤ Increased work load leads to sacrificing quality</li> <li>➤ Union issues and political issues restrict the improvement of service quality</li> <li>➤ The top management doesn't take any initiative to create strong feelings in the employees about the Corporation being responsible for society.</li> <li>➤ Political uncertainty prevent organization from new quality initiatives</li> <li>➤ Employees have limited chance to participate in decision making</li> <li>➤ Citizens lack knowledge regarding their rights, duties, responsibilities etc. related with the Corporation</li> <li>➤ Employees are not willing to accept changes introduced by the authority</li> </ul>

(Source : Literature Review)

**8.3. RESULTS OF THE ANALYSIS AND DISCUSSION**

In order to find out the most powerful reason which restrict the introduction and implementation of new programs to improve the service quality of Municipal

Corporation, Factor analysis was carried out by using thirteen variables. The result of the analysis is given in table 8.3.

**Table 8.2**

*KMO and Bartlett's Test – Barriers*

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.601
	Approx. Chi-Square	652.17
Bartlett's Test of Sphericity	Df	78
	Sig.	0.000

KMO is a measure of model adequacy usually done before factor analysis. Before doing factor analysis, the factor adequacy, and the correlation between various factors identified should be measured. It shows the result after checking the simple and partial correlation between the factors. If the KMO measure is one or close to one and the minimum value is .6, the factor analysis can be done by using the factors used in KMO test. Moreover, the Bartlett's test of sphericity is less than .05; we can conclude that there is a high correlation between the factor.

The table 8.2 shows the KMO value is 0.601. So, factor analysis can be performed. More over the Bartlett's test of sphericity is less than .05. Hence, the model is significant, i.e. there is a moderate correlation between the selected factors.

#### **8.4 Identification of barriers in implementing programs to improve total service quality of Muncipal Corporations in Kerala**

The factor analysis is done using thirteen variables restraining Corporation from introducing new programmes to improve quality in their service. The response to these variables and the factor on which the loaded heavily are provided in table 8.3. The table shows the eigen values corresponding to each factor and the percentage of variation explained by these factors. The (+) or (-) sign indicates whether the factor contributes positively or negatively to that factor.

**Table 8.3***Total Variance Explained*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.334	17.952	17.952	2.334	17.952	17.952	1.843	14.179	14.179
2	1.682	12.939	30.892	1.682	12.939	30.892	1.763	13.558	27.738
3	1.551	11.929	42.821	1.551	11.929	42.821	1.688	12.988	40.726
4	1.163	8.945	51.766	1.163	8.945	51.766	1.409	10.842	51.567
5	1.083	8.334	60.100	1.083	8.334	60.100	1.109	8.533	60.100
6	0.936	7.197	67.297						
7	0.915	7.040	74.337						
8	0.725	5.580	79.917						
9	0.624	4.797	84.714						
10	0.585	4.498	89.212						
11	0.511	3.930	93.142						
12	0.489	3.760	96.902						
13	0.403	3.098	100.000						

Extraction Method: Principal Component Analysis.

The eigen values should be more than one for selection as a factor. From the above table, it is clear that there are five variables whose eigen value is more than one. Hence, the remaining can be reduced or does not much influence in restraining Corporation from introducing new programs to improve service quality.

**Table 8.4**

*Rotated Component Matrix*

	Component				
	1	2	3	4	5
Employees shortage	0.339	-0.055	<b>0.567</b>	-0.209	-0.008
Interest of employees	<b>0.583</b>	0.234	0.413	-0.175	-0.085
Limited Financial resources	-0.264	0.255	<b>0.638</b>	0.139	0.026
Poor communication	-0.227	-0.205	<b>-0.644</b>	0.280	-0.126
Not participative approach	0.270	<b>-0.497</b>	0.035	0.363	-0.099
Lack of training	0.258	0.106	-0.212	<b>0.595</b>	0.426
Increased workload	<b>0.678</b>	0.324	-0.101	0.028	0.062
Union issues	<b>-0.773</b>	0.217	0.004	-0.059	0.049
Lack of management support	0.108	<b>0.740</b>	-0.012	-0.036	-0.130
Political uncertainty	-0.079	-0.086	0.042	-0.075	<b>0.912</b>
Lack of employee involvement	0.069	<b>0.726</b>	0.172	0.149	0.013
Lack of public education	0.140	0.010	0.042	<b>-0.845</b>	0.150
Reluctance to changes	-0.170	-0.325	<b>0.534</b>	0.069	-0.128

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>

a. Rotation converged in 11 iterations.

The rotated component matrix table, labelled as Table 8.4. plays a crucial role in factor interpretation. The rotation process employs the widely accepted varimax procedure, which is an orthogonal rotation method aimed at reducing the number of variables with significant loadings on a given factor. This reduction, in turn, enhances the clarity and interpretability of the resulting factors. Table 8.3. shows that five factors have



heavy factor loadings, statements 2, 7, and 8 give up the first chapter and explain 17.952% of the variance. second component explains 12.939% of the total variance, which consists of variables 5, 9, and 11. 1st, 3rd, 4th, and 13<sup>th</sup> statements are included in the factor, which explains 11.929 % of the total variance. 4<sup>th</sup> factor explains 8.945% of total variance, which includes 6<sup>th</sup> and 12<sup>th</sup> statements. 10<sup>th</sup> statement explain about 8.334% of variance treated as 5th factor.

**Table 8.5**

*Risk factors restraining Corporation from implementing new programmes*

Factors	Description	Loadings	Eigen values	% of Variance
F1	<b>Workplace Dynamics</b>		<b>2.334</b>	17.952
	Interest of employees	.583		
	Increased workload	.678		
	Union issues	.773		
F2	<b>Management Hurdles</b>		1.682	12.939
	Not participative approach	.497		
	Lack of management support	.740		
	Lack of employee involvement	.726		
F3	<b>Organizational Challenges</b>		1.551	11.929
	Employee shortage	.567		
	Limited financial resources	.638		
	Poor communication	.644		
	Reluctance to changes	.534		
F4	<b>Educational Deficiency</b>		1.163	8.945
	Lack of training	.595		
	Lack of public education	.845		
F5	<b>Political Challenges</b>		1.083	8.334
	Political uncertainty	.912		

(Source: Primary data)

The factor loadings are estimated by principal component analysis. Based on the component matrix, respondents perceive this factor to be the most important factor,

explaining 17.952 % of the variance. Three variables load significantly. It is clear from the rotated component matrix that interest levels of employees, workload, and union issues have a high eigen value of 2.34, explaining 14.179% of the variance, this factor is named as “**Workplace Dynamics**”. The variable labelled as "**Management Hurdles**" is characterized by factors such as a non-participative approach, insufficient management support, and limited employee involvement. These factors collectively exhibit an eigen value of 1.682, explaining 12.939% of the variance in the data. The third factor, labelled "**Organizational Challenges**", consists of four variables: employee shortage, limited financial resources, poor communication, and reluctance to change. This factor exhibits an eigen value of 1.551, explaining 11.929% of the variance in the data. According to the component matrix, this factor explains 8.945 percent of the next highest explained variance. The fourth factor, labelled as "**Educational Deficiency**", encompasses two variables: lack of training and lack of public education. This factor exhibits an eigen value of 1.163, contributing to 8.945% of the total variance in the data. The fifth factor, "**Political Challenges**", consists of only one variable, namely political uncertainty, which has an eigen value of 1.083 and accounts for 8.334% of the overall variance.

### **8.5 Barriers of implementing quality initiatives- comparative analysis among various Municipal Corporations of Kerala**

A one-way ANOVA or welch test was conducted to assess the existence of a significant difference in the barriers encountered during the implementation of quality initiatives among Municipal Corporations in Kerala. In order to perform this analysis, it is essential to confirm the equality of variances across different categories. Levene's test was employed for this purpose. The findings of the Levene's test are presented in table 8.6.

**Table 8.6***Test of homogeneity of variances for different Municipal Corporations*

Factors	Levene Statistic	df1	df2	Sig.
Workplace Dynamics	3.708	5	374	0.003
Management Hurdles	7.876	5	374	0.000
Organizational Challenges	5.607	5	374	0.000
Educational Deficiency	4.068	5	374	0.001
Political Challenges	3.420	5	374	0.005

(Source : Primary data)

Based on table 8.6, sig value of levene's test is less than 0.05, hence homogeneity of variance among the various categories is not assumed. In this case, an adjustment to F-test is used which was given by welch, and the result of welch test is presented in table 8.7. The following hypothesis has been formulated for testing the significant differences.

H0: There is no significant difference in barriers faced among various Municipal Corporations.

**Table 8.7***Robust tests of equality of means of Kerala*

Factors		Statistic <sup>a</sup>	df1	df2	Sig.
Workplace Dynamics	Welch	47.704	5	160.836	0.000
Management Hurdles	Welch	35.195	5	164.689	0.000
Organizational Challenges	Welch	1.792	5	163.102	0.117
Educational Deficiency	Welch	14.480	5	161.354	0.000
Political Challenges	Welch	7.578	5	161.259	0.000

a. Asymptotically F distributed.

As per table 8.7., the significance values for the workplace dynamics, management hurdles, educational deficiency, and political challenges were 0.000, 0.000, 0.000, and 0.000, respectively, all of which are less than 0.05. Consequently, there are significant differences in the barriers to quality initiatives among Municipal Corporations in Kerala. However, for the variable "organizational challenges," the welch test yielded

a significance value of 0.117, indicating that there are no significant differences in the barriers related to "organizational challenges" among Municipal Corporations in Kerala.

**Table 8.8**

*Hypotheses result-variations in the barriers among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in workplace dynamics among various Municipal Corporations.	Welch & Tamhane post hoc test	Supported
2	There is a significant difference in management hurdles among various Municipal Corporations.	Welch & Tamhane post hoc test	Supported
3	There is a significant difference in organizational challenges among various Municipal Corporations.	Welch & Tamhane post hoc test	<b>Rejected</b>
4	There is a significant difference in educational deficiency among various Municipal Corporations.	Welch & Tamhane post hoc test	Supported
5	There is a significant difference in political challenges among various Municipal Corporations.	Welch & Tamhane post hoc test	Supported

(Source: Primary data)

To examine the variations among various Municipal Corporations regarding workplace dynamics, management hurdles, educational deficiency, and political challenges, a post hoc analysis was conducted using tamhane post hoc test (See Table 8.9,8.11,8.13 and 8.15).

The study considered workplace dynamics, management hurdles, organizational challenges, educational deficiency, and political challenges as dependent variables, with names of Municipal Corporations as the independent variable. The decision criterion was set such that if the significance value exceeded 0.05, the alternate hypothesis would be accepted; otherwise, if the value was less than 0.05, the alternate hypothesis would be rejected.

**Table 8.9***Multiple comparisons Tamhane -workplace dynamics*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.19883*	0.06436	0.036
Thiruvananthapuram*Kochi	-0.0218	0.04922	<b>1.000</b>
Thiruvananthapuram*Kozhikode	-.66391*	0.05931	0.000
Thiruvananthapuram*Thrissur	-.67410*	0.06774	0.000
Thiruvananthapuram*Kannur	-.30809*	0.06813	0.000
Kollam*Kochi	0.17709	0.05958	<b>0.053</b>
Kollam*Kozhikode	-.46507*	0.06815	0.000
Kollam*Thrissur	-.47527*	0.0756	0.000
Kollam*Kannur	-0.1093	0.07595	<b>0.917</b>
Kochi*Kozhikode	-.64216*	0.05408	0.000
Kochi*Thrissur	-.65236*	0.06321	0.000
Kochi*Kannur	-.28635*	0.06363	0.000
Kozhikode*Thrissur	-0.0102	0.07135	<b>1.000</b>
Kozhikode*Kannur	.35582*	0.07172	0.000
Thrissur*Kannur	.67410*	0.06774	0.000

\*. The mean difference is significant at the 0.05 level.

**Table 8.10***Post hoc test -variations in workplace dynamics among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the workplace dynamics of LSG in Trivandrum and Kollam Municipal Corporations.	Tamhane Post hoc test	Supported
2	There is a significant difference in the workplace dynamics of LSG in Trivandrum and Kochi Municipal Corporations.	Tamhane Post hoc test	<b>Rejected</b>
3	There is a significant difference in the workplace dynamics of LSG in Trivandrum and Kozhikode Municipal Corporations.	Tamhane Post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
4	There is a significant difference in the workplace dynamics of LSG in Trivandrum and Thrissur Municipal Corporations.	Tamhane Post hoc test	Supported
5	There is a significant difference in the workplace dynamics of LSG in Trivandrum and Kannur Municipal Corporations.	Tamhane Post hoc test	Supported
6	There is a significant difference in the workplace dynamics of LSG in Kollam and Kochi Municipal Corporations.	Tamhane Post hoc test	<b>Rejected</b>
7	There is a significant difference in the workplace dynamics of LSG in Kollam and Kozhikode Municipal Corporations.	Tamhane Post hoc test	Supported
8	There is a significant difference in the workplace dynamics of LSG in Kollam and Thrissur Municipal Corporations.	Tamhane Post hoc test	Supported
9	There is a significant difference in the workplace dynamics of LSG in Kollam and Kannur Municipal Corporations.	Tamhane Post hoc test	<b>Rejected</b>
10	There is a significant difference in the workplace dynamics of LSG in Kochi and Kozhikode Municipal Corporations.	Tamhane Post hoc test	Supported
11	There is a significant difference in the workplace dynamics of LSG in Kochi and Thrissur Municipal Corporations.	Tamhane Post hoc test	Supported
12	There is a significant difference in the workplace dynamics of LSG in Kochi and Kannur Municipal Corporations.	Tamhane Post hoc test	Supported
13	There is a significant difference in the workplace dynamics of LSG in Kozhikode and Thrissur Municipal Corporations.	Tamhane Post hoc test	<b>Rejected</b>
14	There is a significant difference in the workplace dynamics of LSG in Kozhikode and Kannur Municipal Corporations.	Tamhane Post hoc test	Supported
15	There is a significant difference in the workplace dynamics of LSG in Thrissur and Kannur Municipal Corporations.	Tamhane Post hoc test	Supported

(Source: Primary data)

**Table 8.11***Multiple comparisons Tamhane -management hurdles*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	0.03929	0.08074	<b>1.000</b>
Thiruvananthapuram*Kochi	-.32665*	0.06052	0.000
Thiruvananthapuram*Kozhikode	-.52828*	0.07045	0.000
Thiruvananthapuram*Thrissur	-.73586*	0.0668	0.000
Thiruvananthapuram*Kannur	-0.1803	0.06873	<b>0.137</b>
Kollam*Kochi	-.36594*	0.07496	0.000
Kollam*Kozhikode	-.56756*	0.08318	0.000
Kollam*Thrissur	-.77514*	0.08011	0.000
Kollam*Kannur	-0.2196	0.08173	<b>0.117</b>
Kochi*Kozhikode	-.20162*	0.06374	0.031
Kochi*Thrissur	-.40920*	0.05968	0.0000
Kochi*Kannur	0.14635	0.06183	<b>0.26</b>
Kozhikode*Thrissur	-0.2076	0.06972	<b>0.054</b>
Kozhikode*Kannur	.34797*	0.07157	0.000
Thrissur*Kannur	.55556*	0.06799	0.000

\*. The mean difference is significant at the 0.05 level.

**Table 8.12***Post hoc test -variations in management hurdles among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the management hurdles of LSG in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
2	There is a significant difference in the management hurdles of LSG in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	Supported
3	There is a significant difference in the management hurdles of LSG in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
4	There is a significant difference in the management hurdles of LSG in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
5	There is a significant difference in the management hurdles of LSG in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
6	There is a significant difference in the management hurdles of LSG in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	Supported
7	There is a significant difference in the management hurdles of LSG in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
8	There is a significant difference in the management hurdles of LSG in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
9	There is a significant difference in the management hurdles of LSG in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
10	There is a significant difference in the management hurdles of LSG in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
11	There is a significant difference in the management hurdles of LSG in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
12	There is a significant difference in the management hurdles of LSG in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
13	There is a significant difference in the management hurdles of LSG in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
14	There is a significant difference in the management hurdles of LSG in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
15	There is a significant difference in the management hurdles of LSG in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	Supported

(Source: Primary data)



**Table 8.13***Multiple comparisons Tamhane -educational deficiency*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-.52102*	0.07562	0.000
Thiruvananthapuram*Kochi	-0.2708	0.09198	<b>0.055</b>
Thiruvananthapuram*Kozhikode	-.66460*	0.11052	0.000
Thiruvananthapuram*Thrissur	-.33401*	0.09793	0.014
Thiruvananthapuram*Kannur	-.62813*	0.09531	0.000
Kollam*Kochi	0.2502	0.08553	<b>0.060</b>
Kollam*Kozhikode	-0.1436	0.10522	<b>0.946</b>
Kollam*Thrissur	0.18701	0.0919	<b>0.499</b>
Kollam*Kannur	-0.1071	0.0891	<b>0.981</b>
Kochi*Kozhikode	-.39378*	0.11753	0.017
Kochi*Thrissur	-0.0632	0.10577	<b>1.000</b>
Kochi*Kannur	-.35731*	0.10335	0.011
Kozhikode*Thrissur	0.33059	0.12224	<b>0.115</b>
Kozhikode*Kannur	0.03647	0.12015	<b>1.000</b>
Thrissur*Kannur	-0.2941	0.10868	<b>0.114</b>

\*. The mean difference is significant at the 0.05 level.

**Table 8.14***Post hoc test – variations in educational deficiency among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the educational deficiency of LSG in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	Supported
2	There is a significant difference in the educational deficiency of LSG in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
3	There is a significant difference in the educational deficiency of LSG in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
4	There is a significant difference in the educational deficiency of LSG in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
5	There is a significant difference in the educational deficiency of LSG in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
6	There is a significant difference in the educational deficiency of LSG in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
7	There is a significant difference in the educational deficiency of LSG in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
8	There is a significant difference in the educational deficiency of LSG in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
9	There is a significant difference in the educational deficiency of LSG in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
10	There is a significant difference in the educational deficiency of LSG in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported
11	There is a significant difference in the educational deficiency of LSG in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
12	There is a significant difference in the educational deficiency of LSG in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	Supported
13	There is a significant difference in the educational deficiency of LSG in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
14	There is a significant difference in the educational deficiency of LSG in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
15	There is a significant difference in the educational deficiency of LSG in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>

(Source: Primary data)

**Table 8.15***Multiple comparisons Tamhane - Political challenges*

Corporation	Mean Difference (I-J)	Std. Error	Sig.
Thiruvananthapuram*Kollam	-0.1822	0.10588	<b>0.746</b>
Thiruvananthapuram*Kochi	-.35182*	0.0907	0.002
Thiruvananthapuram*Kozhikode	-.54966*	0.12563	0.000
Thiruvananthapuram*Thrissur	0.1927	0.13498	<b>0.923</b>
Thiruvananthapuram*Kannur	-0.2191	0.10072	<b>0.381</b>
Kollam*Kochi	-0.1696	0.09546	<b>0.705</b>
Kollam*Kozhikode	-0.3675	0.12911	<b>0.078</b>
Kollam*Thrissur	0.37489	0.13822	<b>0.113</b>
Kollam*Kannur	-0.0369	0.10503	<b>1.000</b>
Kochi*Kozhikode	-0.1978	0.11698	<b>0.776</b>
Kochi*Thrissur	.54452*	0.12697	0.001
Kochi*Kannur	0.13275	0.08971	<b>0.899</b>
Kozhikode*Thrissur	.74235*	0.15387	0.000
Kozhikode*Kannur	0.33059	0.12491	<b>0.135</b>
Thrissur*Kannur	-.41176*	0.13431	0.043

\* The mean difference is significant at the 0.05 level.

**Table 8.16***Post hoc test – variations in political challenges among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the political challenges of LSG in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
2	There is a significant difference in the political challenges of LSG in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	Supported
3	There is a significant difference in the political challenges of LSG in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	Supported

Sl. No.	Hypotheses	Tools used	Result
4	There is a significant difference in the political challenges of LSG in Trivandrum and Thrissur Municipal Corporations.	Tamhane phoc test	<b>Rejected</b>
5	There is a significant difference in the political challenges of LSG in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
6	There is a significant difference in the political challenges of LSG in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
7	There is a significant difference in the political challenges of LSG in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
8	There is a significant difference in the political challenges of LSG in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
9	There is a significant difference in the political challenges of LSG in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
10	There is a significant difference in the political challenges of LSG in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
11	There is a significant difference in the political challenges of LSG in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
12	There is a significant difference in the political challenges of LSG in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
13	There is a significant difference in the political challenges of LSG in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	Supported
14	There is a significant difference in the political challenges of LSG in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
15	There is a significant difference in the political challenges of LSG in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	Supported

(Source: Primary data)

For the variable "organizational challenges," the significance value of the tamhane test indicated a failure to accept the alternative hypothesis. However, for the other dependent factors, the results were mixed, with some being partially accepted and others partially rejected.

**Table 8.17**

*Post hoc test – organizational challenges among Municipal Corporations in Kerala*

Sl. No.	Hypotheses	Tools used	Result
1	There is a significant difference in the organizational challenges of LSG in Trivandrum and Kollam Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
2	There is a significant difference in the organizational challenges of LSG in Trivandrum and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
3	There is a significant difference in the organizational challenges of LSG in Trivandrum and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
4	There is a significant difference in the organizational challenges of LSG in Trivandrum and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
5	There is a significant difference in the organizational challenges of LSG in Trivandrum and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
6	There is a significant difference in the organizational challenges of LSG in Kollam and Kochi Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
7	There is a significant difference in the organizational challenges of LSG in Kollam and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
8	There is a significant difference in the organizational challenges of LSG in Kollam and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>

Sl. No.	Hypotheses	Tools used	Result
9	There is a significant difference in the organizational challenges of LSG in Kollam and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
10	There is a significant difference in the organizational challenges of LSG in Kochi and Kozhikode Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
11	There is a significant difference in the organizational challenges of LSG in Kochi and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
12	There is a significant difference in the organizational challenges of LSG in Kochi and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
13	There is a significant difference in the organizational challenges of LSG in Kozhikode and Thrissur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
14	There is a significant difference in the organizational challenges of LSG in Kozhikode and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>
15	There is a significant difference in the organizational challenges of LSG in Thrissur and Kannur Municipal Corporations.	Tamhane post hoc test	<b>Rejected</b>

(Source: Primary data)

Tables 8.10, 8.12, 8.14, 8.16 and 8.17 present the outcomes of the hypothesis test when making pairwise comparisons among each Municipal Corporation. It provides insights into situations where statistical analyses accept the alternative hypothesis, indicating significant differences between the compared entities.

## **8.6. CHAPTER SUMMARY**

Management of quality focuses not only on the external customer but also on the internal customer (Wilkinson et al., 1998). This chapter gives an overview of the barriers faced by Municipal Corporations in the process of implementing quality initiatives designed to enhance their service standards, as observed from the

perspective of employees. Through factor analysis, five primary barriers emerge: workplace dynamics, management hurdles, organizational challenges, educational deficiency, and political challenges. To assess variations in these barriers among Corporations, the Welch test was applied, revealing significant differences. Subsequent post-hoc tests were conducted to gain deeper insights. The results indicate noteworthy distinctions among Municipal Corporations concerning workplace dynamics, management hurdles, educational deficiency, and political challenges. However, no significant differences were observed in the case of the variable organizational challenges.

**CHAPTER 9**  
**SUMMARY, FINDINGS AND CONCLUSION**

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## **9.1 Introduction**

This chapter summarizes the entire research work and discusses the findings of data analysis presented in the previous chapters. In this chapter the findings of the study have been reported in five sections. Section one deals with the service quality of Municipal Corporations in Kerala. The second section presents findings related to Total Quality Management in Municipal Corporations in the same region. The third segment details findings pertaining to the functionality of software solutions aimed at enhancing service delivery from a citizen's perspective. The fourth section is dedicated to findings concerning software solutions for improving service delivery mechanisms from an employee's standpoint. Lastly, the fifth section delves into the findings related to barriers in implementing quality enhancement programs and facilities in Municipal Corporations in Kerala.

## **9.2 Summary of research**

The study titled “TQM for service quality enhancement of Municipal Corporations in Kerala” was designed as a descriptive one based on primary data. Data were collected using pretested structured questionnaire from residents (external customers) and employees (internal customers) of Municipal Corporations in Kerala. The primary data were used to understand, evaluate and compare the application of Total Quality Management in improving quality of Municipal Corporations in Kerala. From February 2021 to December 2022, data were collected from 1290 citizens and 380 Municipal employees in Kerala. 80 of the total sample was found to be incomplete. The remaining 1210 respondents were deemed to be acceptable and appropriate for the study. hence 1210 responses from citizen side were finally accommodated. The

study was limited to Municipal Corporations of Kerala. Purposive sampling method was used in selection of sample respondents. The main objectives of the studies are as follows

1. To evaluate and compare the quality of service provided to citizen by Municipal Corporations in Kerala
2. To evaluate the perception of employees and citizen on quality initiatives taken by government to improve service quality of Municipal Corporations.
3. To analyse and compare the working of programs introduced for citizen and employees by the government to improve the quality of services of Municipal Corporations.
4. To analyse the barriers in implementing programs to improve total service quality of Municipal Corporations of Kerala.
5. To analyse factors to be implemented in Municipal Corporations of Kerala to build a full-fledged TQM.

### **9.3 Findings of the study**

Findings of primary data analysis are presented based on objectives

#### **Section 1 - Service quality of Municipal Corporations in Kerala**

To assess the quality of Municipal Corporations' services, the perceptions of their end users were taken into account. An assessment of seven services was conducted, namely health and environment services, social services, reconstruction and urban development services, urban transportation services, disaster management services, community services, and education services. Kerala's six Municipal Corporations were compared on each of these seven services. To find out more about the status and quality of service delivery by the Municipal government in Kerala, both service-wise and Corporation-wise comparisons were made. Descriptive statistics and one-way ANOVA were applied and reached the following conclusions.

- 1) The result indicates that the mean score of citizens' perception towards all these seven services is 'higher' in Kollam, Kozhikode, and Thrissur Municipal Corporations. Hence, the citizens of Kollam, Kozhikode and Kannur Corporations are satisfied with the services of their Corporation.
- 2) In the case of Kochi Municipal Corporation, the mean satisfaction of citizen regarding the services except 'urban transportation' is below three. Hence, it can be inferred that citizens are not satisfied with its services except 'urban transportation'.
- 3) In the case of Thiruvananthapuram Municipal Corporation, citizens are satisfied with all services with a mean score above three except in the case of social services and community services.
- 4) In the case of Kannur Municipal Corporation, citizens are not satisfied towards six out of seven services.
- 5) Among Corporations in Kerala, Kollam Corporation is better in health and environment services (mean=4.2). In providing health and environment services, Kochi (mean=2.6) Corporation is far behind other Corporations in Kerala.
- 6) Kollam Corporation is better in social services (mean=4.15) when compared with other Corporations in Kerala. In providing social services, Kannur (mean=2.35) Corporation is far behind other Corporations in Kerala.
- 7) Among Corporations in Kerala, Kollam Corporation is better in providing reconstruction and urban development service (mean=3.8). In providing reconstruction and urban development service, Kannur (mean=2.8) Corporation is far behind other Corporations in Kerala.
- 8) Kollam Corporation is better in providing urban transportation service (mean=3.77) when compared with other Corporations in Kerala. In providing urban transportation service, Kannur (mean=2.88) Corporation is far behind other Corporations in Kerala.

- 9) Among Corporations in Kerala, Kollam Corporation is better in providing disaster management services (mean=3.9). In providing disaster management services, Kochi (mean=2.61) Corporation is far behind other Corporations in Kerala.
- 10) Kollam Corporation is better in providing community service (mean=4.12) when compared with other Corporations in Kerala. In providing community service, Kochi (mean=2.15) Corporation is far behind other Corporations in Kerala.
- 11) Among Corporations in Kerala, Kollam Corporation is better in providing education services (mean=4.13). In providing education services, Kochi (mean=2.96) Corporation is far behind other Corporations in Kerala.
- 12) All Municipal Corporations in Kerala shows a significant difference in quality of services offered to its citizens (result of ANOVA)
- 13) A significant difference among six Municipal Corporation is observed with regards to the quality of health& environment service (F value: 683.5, sig value:0.000) provided by Municipal Corporations in Kerala
- 14) The result indicates that there is a significant difference in the quality of social service (F value: 509.2, sig value:0.000) provided by Municipal Corporations in Kerala
- 15) The result indicates that there is a significant difference in the quality of reconstruction & urban development services (F value: 347.8, sig value:0.000) provided by Municipal Corporations in Kerala
- 16) The result shows that there is a significant difference in the quality of urban transportation services (F value: 123.5, sig value:0.000) provided by Municipal Corporations in Kerala
- 17) The result indicates that there is a significant difference in the quality of disaster management services (F value: 268.8, sig value:0.000) provided by Municipal Corporations in Kerala

- 18) The result depicts that there is a significant difference in the quality of community services (F value: 692.1, sig value:0.000) provided by Municipal Corporations in Kerala
- 19) The result informs that there is a significant difference in the quality of education services (F value: 200.9, sig value:0.000) provided by Municipal Corporations in Kerala
- 20) Based on mean satisfaction towards seven services (health and environment services, social services, reconstruction and urban development services, urban transportation services, disaster management services, community services, and education services), ranks are assigned to various Corporation, from ranking it is clear that Kollam Municipal Corporation secure 1<sup>st</sup> rank in quality of providing all seven services accessed under this study.
- 21) In the case of health& environmental service, Kollam, Thrissur, Thiruvananthapuram, Kozhikode, Kannur and Kochi Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively.
- 22) In case of social service, Kollam is ranked a 1<sup>st</sup>, Thrissur as 2<sup>nd</sup>, Kozhikode as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Kochi as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values.
- 23) In case of ‘reconstruction and urban development services’, 1<sup>st</sup> rank is secured by both Kollam and Thrissur Municipal Corporation with a mean value of 3.8 each. 2<sup>nd</sup> rank is secured by Kozhikode, 3<sup>rd</sup> rank by Thiruvananthapuram Municipal Corporations. Kochi and Kannur Corporation secure 4<sup>th</sup> rank in providing “reconstruction and urban development services”.
- 24) When it comes to ‘urban transportations service’, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Thrissur, Kozhikode, Thiruvananthapuram Kochi and Kannur Municipal Corporations.
- 25) When it comes to ‘disaster management service’, Kollam and Thrissur Corporation secure 1<sup>st</sup> rank. Kozhikode, Thiruvananthapuram, Kannur and Kochi Corporation secure the subsequent ranks.

- 26) In the case of 'community services and education services', Kollam, Thrissur, Kozhikode, Thiruvananthapuram, Kannur and Kochi Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively.
- 27) Over all, Kollam Corporation is excellent in delivering quality services to its citizen. Where as Kochi Corporation is far away from other Corporations in delivering quality services.

## **Section 2- Total Quality Management in Municipal Corporations in Kerala**

Initially, this section examines the extent to which Kerala Municipal Corporations implement TQM components. There are mainly two components for TQM i.e. hard TQM and soft TQM. hard TQM were assessed using 17 perpetual variables contributing to it and soft TQM were assessed using 15 perpetual variables contributing to it using five-point Likert scale. EFA result elicit four components of hard TQM, namely Community Resource Hub (CRH), Accessible Amenities Hub (AAH), Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ) and four soft TQM components, such as Customer Service Attributes and Elements (CSAE), Public Feedback Program (PFP), Front Office Expertise (FOE) and Employee Engagement and Access Control System (EE&ACS), are examined in detail across Kerala Municipal Corporations. Additionally, it examines whether these elements of TQM influence the performance of Corporation. The performance of Municipal Corporations is assessed by checking the level of satisfaction of citizen on various services offered by it. Here an examination of the mediating role of "hard TQM" elements as well as the impact of "soft TQM" elements on citizen satisfaction is also made. Citizen's satisfaction is measured by assessing their perception towards quality of various services offered by Municipal Corporations such as health and environment service, social service, reconstruction and urban development service, urban transportation service, disaster management and security services, community services and education services. This section concludes with valuable insights into how Municipal employees perceive various aspects of TQM. Descriptive statistics, correlation, Structural Equation Modelling (SEM) was applied to arrive the following findings

- 1) The perception of citizen towards hard TQM component 'CRH (Community Resource Hub)' is better in Thiruvananthapuram Municipal Corporation (mean=3.6), but in Kannur (mean=2.24) Municipal Corporation it is poor.
- 2) As far as AAH (Accessible Amenities Hub) is concerned, Kozhikode Corporation (mean=2.83) outperforms all other Municipal Corporations in Kerala but Kannur (mean=0.85) Corporation needs to improve its performance.
- 3) Thiruvananthapuram Corporation (mean=3.92) is excellent when it comes to Public Information Centre (PIC) but Kochi (mean=2.98) needs improvement.
- 4) Among Municipal Corporations in Kerala, Kollam (mean=3.56) has excellent RRZ (Rest and Relaxation Zone), Kochi (mean=2.04) is not better in this aspect.
- 5) Particles of hard TQM namely Community Resource Hub (CRH), Accessible Amenities Hub (AAH), Public Information Centre (PIC) and Rest and Relaxation Zone (RRZ) are ranked across Municipal Corporations in Kerala based on its mean values. From ranking, it is clear that, Kochi Corporation is not better in these hard components of TQM.
- 6) In the case of Community Resource Hub (CRH), Thiruvananthapuram, Kollam, Kozhikode, Thrissur, Kochi and Kannur Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively.
- 7) In case of AAH (Accessible Amenities Hub), Kozhikode is ranked a 1<sup>st</sup>, Kollam as 2<sup>nd</sup>, Thrissur as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Kochi as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values.
- 8) In case of PIC (Public Information Centre), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Thiruvananthapuram, Kannur, Kozhikode, Thrissur, Kollam and Kochi Municipal Corporations.



- 9) When it comes to 'RRZ (Rest and Relaxation Zone)', Kollam Corporation secure 1<sup>st</sup> rank. Thrissur, Kozhikode, Thiruvananthapuram, Kannur and Kochi Corporation secure the subsequent ranks.
- 10) Particles of soft TQM namely Customer Service Attributes and Elements (CSAE), Front Office Expertise (FOE), Public Feedback Program (PFP), and Employee Engagement and Access Control System (EE&ACS) are ranked across Municipal Corporations in Kerala based on its mean values. From the result, it is clear that Kozhikode Corporation is better in maintaining three out of four soft particle of TQM (Customer Service Attributes and Elements (CSAE), Public Feedback Program (PFP), and Employee Engagement and Access Control System (EE&ACS)) when compared with other Corporations in Kerala.
- 11) Kollam Corporation (Mean=4.02) is excellent in terms of soft components of Front Office Expertise (FOE), while Thiruvananthapuram Corporation (mean=2.68) should pay more attention to it.
- 12) Citizens of Kollam Corporations are satisfied (mean values are more than three) toward all these soft particles of TQM except 'Public Feedback Program (PFP)'.
- 13) Among Municipal Corporations in Kerala, Kochi Corporation is poor in maintaining 'Employee Engagement and Access Control System (EE&ACS)'.
- 14) From ranking, it is clear that, Kochi Corporation and Thiruvananthapuram Corporations have to focus on all soft components of TQM.
- 15) In the case of Customer Service Attributes and Elements (CSAE), Kozhikode, Kollam, Thrissur, Kannur, Kochi and Thiruvananthapuram Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively.
- 16) In case of Public Feedback Program (PFP), Kozhikode is ranked a 1<sup>st</sup>, Kannur as 2<sup>nd</sup>, Kochi as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Thrissur as 5<sup>th</sup> and Kollam as 6<sup>th</sup> based on their mean values.

- 17) In case of Front Office Expertise (FOE), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Thrissur, Kannur, Kozhikode, Kochi and Thiruvananthapuram Municipal Corporations.
- 18) When it comes to 'Employee Engagement and Access Control System (EE&ACS)', Kozhikode Corporation secure 1<sup>st</sup> rank. Kollam, Thrissur, Thiruvananthapuram, Kannur and Kochi Corporation secure the subsequent ranks.
- 19) Overall, Kozhikode Corporation is excellent in maintaining hard and soft particles of TQM as perceived by its residents.
- 20) Kochi Corporation secured poor rank in maintain hard components of TQM. While Thiruvananthapuram Corporation secured only 6<sup>th</sup> rank in maintaining soft particles of TQM as perceived by citizens of Municipal Corporations.
- 21) From employees perceptive, Kollam secured first rank in maintaining hard components of TQM and Kochi Corporation secured excellent position is maintaining soft particles of TQM.
- 22) Kannur Corporation is poor in maintain both hard and soft particles of TQM as compared with other Corporations in Kerala.
- 23) Correlation coefficient of hard TQM with citizen satisfaction is 0.504, Hence a positive relationship exists between hard components of TQM and citizen's satisfaction towards services provided by Municipal Corporations in Kerala.
- 24) All four elements of hard TQM say CRH, AAH, PIC and RRZ are significantly related to the satisfaction of citizen.
- 25) Three out of the four elements of hard TQM i.e. Community Resource Hub (CRH), Accessible Amenities Hub (AAH) and Rest and Relaxation Zone (RRZ) shows a moderate positive correlation with satisfaction of citizen. 0.554, 0.663 and 0.465 are the correlation coefficient respectively.
- 26) The hard component Public Information Centre (PIC) shows a very low positive relationship with the level of satisfaction of citizens ( $r=0.023$ ).

- 27) All four elements of soft TQM (Customer Service Attributes and Elements (CSAE), Public Feedback Program (PFP), Front Office Expertise (FOE), and Employee Engagement and Access Control System (EE&ACS)) are significantly related to the satisfaction of citizen.
- 28) Three out of the four elements of Soft TQM i.e. Customer Service Attributes and Elements (CSAE), Front Office Expertise (FOE), and Employee Engagement and Access Control System (EE&ACS) show a moderate positive correlation with the satisfaction of citizen. 0.563, 0.480 and 0.427 respectively are the correlation coefficients.
- 29) One among the four elements of soft TQM, the Public Feedback Program (PFP) shows a very low negative correlation with the satisfaction of citizens (correlation coefficient = -0.081).
- 30) Soft TQM and citizen satisfaction have a moderate positive relationship ( $r=0.473$ ).

### **EFFECT OF COMPONENTS OF TQM ON CITIZEN'S SATISFACTION**

To check the effect of components of TQM (hard & soft) on citizen's satisfaction level, the following hypothesis has been developed

- H1: The perception on hard element of TQM is positively related to citizen's satisfaction.
- H2: The perception on soft element of TQM is positively related to citizen's satisfaction.

SEM is followed to prove the hypotheses; the findings are described below.

- 1) Based on hypotheses testing, it is found that both hard TQM and soft TQM have a positive effect on resident's satisfaction level towards various services of Municipal Corporations in Kerala.
- 2) It was found that the standardised path coefficient, or regression effect, of hard TQM on the citizen's level of satisfaction, was 0.83. The data clearly

demonstrates that for every unit increase in the hard components of TQM, the satisfaction level of Kerala's Municipal Corporation residents rises by 0.83 units. More importantly, the effects of hard TQM on Citizen's satisfaction were found to be positive and significant ( $p = 0.000$ ). The hypothesis, *Perception on hard elements of TQM is positively related with citizen's satisfaction* was accepted and hard TQM was found to have a favourable and significant impact on citizens' satisfaction levels.

- 3) It was found that the standardised path coefficient, or regression effect, of soft TQM on the citizen's level of satisfaction, was 0.88. The data clearly demonstrates that for every unit increase in the soft components of TQM, the satisfaction level of Kerala's Municipal Corporation residents rises by 0.88 units. More importantly, the effects of Soft TQM on Citizen's satisfaction were found to be positive and significant ( $p = 0.000$ ). The hypothesis, *Perception on soft elements of TQM is positively related with citizen's satisfaction* was accepted and soft TQM was found to have a favourable and significant impact on citizens' satisfaction levels.
- 4) The standardised path coefficient, or regression effect, of hard TQM, soft TQM on the citizen's level of satisfaction was 0.83, 0.88 respectively. Hence from Structural Equation Modelling, it can be concluded that the soft TQM particles are contributing more to the satisfaction level of citizen.

#### **ANALYSIS OF MEDIATION EFFECTS**

In the above section, the direct effects of hard TQM and soft TQM on satisfaction levels of residents of Municipal Corporations in Kerala were studied, and both showed significant regressive effects. Based on beta values, it is found that 'soft TQM' particles are contributing more to the satisfaction level of citizen. Using a mediation analysis, this section examines the role hard TQM plays in determining citizen satisfaction with soft TQM. The mediating role of soft TQM in the relationship between hard TQM and citizen's satisfaction level is also examined in this section.

In the context of conducting mediation analysis, the following hypotheses were developed:

- H1: The perception on hard TQM mediate the relationship between perception on soft TQM and citizen's satisfaction level.
- H2: The perception on soft TQM mediate the relationship between perception on hard TQM and citizen's satisfaction level.

Results are explained below

- 1) It is evident from the model's output and results that, hard TQM partially mediates the relationship between soft TQM and citizen satisfaction. After entering hard TQM to the model as a mediator, decreased the effect of soft TQM on citizen satisfaction. It was found that there was a 0.30 indirect influence of soft TQM on citizens' satisfaction through hard TQM. The mediating effect of hard TQM decreased the beta coefficient for soft TQM from 0.88 to 0.30. The hard TQM as a mediator in the relationship between soft TQM and citizen satisfaction was not a perfect mediation. The direct effect of the independent variable on the dependent variable was still shown to be significant even after the mediator was added to the model, hence it was only a partial mediation. Even with the inclusion of hard TQM as a mediator in the model, the direct relationship between soft TQM and citizen satisfaction remains significant. The hypothesis "***The perception on hard TQM mediate the relationship between perception on soft TQM and citizen's satisfaction level***" was accepted and a partial mediation was established.
- 2) It is evident from the model's output and results that soft TQM partially mediates the relationship between hard TQM and citizen satisfaction. After entering soft TQM to the model as a mediator decreased the effect of hard TQM on citizen satisfaction. It was found that there was a 0.63 indirect influence of hard TQM on citizens' satisfaction through soft TQM. The mediating effect of soft TQM was decreased the beta coefficient for hard TQM from 0.83 to 0.63. The soft TQM as a mediator in the relationship between

hard TQM and citizen satisfaction was not a perfect mediation. The direct effect of the independent variable on the dependent variable was still shown to be significant even after the mediator was added to the model, hence it was only a partial mediation. Even with the inclusion of soft TQM as a mediator in the model, the direct relationship between hard TQM and citizen satisfaction remains significant. The hypothesis *“The perception on soft TQM mediate the relationship between perception on hard TQM and citizen’s satisfaction level”* was accepted and a partial mediation was established.

- 3) While combining the direct and indirect effect, it is clear that soft TQM particles are contributing more to the satisfaction level of citizen.

### **RELATIONSHIP BETWEEN HARD AND SOFT COMPONENTS OF TQM FROM EMPLOYEE’S PERSPECTIVE**

As part of this section, the perception of Municipal employees towards TQM particles is assessed. There are mainly two components for TQM i.e. hard TQM and soft TQM. On a five-point Likert scale, hard TQM was assessed using 11 perpetual variables, while soft TQM was assessed using 18 perpetual variables. EFA result elicit four components of hard TQM, namely Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT) and six soft TQM components, such as Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variables (TAV) and Collaboration and Upskilling (CU), are examined in detail across Kerala Municipal Corporations. Furthermore, it examines the relationship between these elements. Descriptive statistics, correlation analysis, one-way MANOVA, and one-way ANOVA are followed to reach the following conclusions.

- 1) Kollam Corporation outperforms in the case of hard TQM (Mean=3.42) when compared with other Municipal Corporations in Kerala. At the same time, Kannur Corporation (Mean=2.42) needs to pay more attention in its hard or

touch and seen infrastructural facilities for employees to render services effectively.

- 2) Kochi Corporation outperform in case of soft TQM (Mean=3.11) when compared with other Municipal Corporations in Kerala. At the same time Kannur Corporation (Mean=2.62) need to pay more attention in its soft aspect of TQM.
- 3) In the case of the hard TQM component 'Essential Facilities (EF)', Kozhikode Corporation is excellent (Mean=4.12) when compared with other Corporations. At the same time, Kannur Corporation needs further attention in Essential Facilities (mean=1.87)
- 4) In the case of the hard TQM component 'Administrative Infrastructure (AI)', Kochi Corporation is excellent (Mean=3.44) when compared with other Corporations. At the same time Kannur Corporation need to pay more attention in Administrative Infrastructure (mean=1.94)
- 5) In the case of the hard TQM component 'Venue Setup (VS)', Kollam Corporation is excellent (Mean=3.29) when compared with other Corporations. At the same time Thrissur Corporation need more focus on venue setup(mean=2.51).
- 6) In the case of the hard TQM component 'Administrative Tools and Technology (ATT)', Kozhikode Corporation is excellent (Mean=3.97) when compared with other Corporations. At the same time Thrissur Corporation need more attention in Administrative Tools and Technology (ATT) (mean=3.44).
- 7) Particles of hard TQM namely Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT) are ranked across Municipal Corporations in Kerala based on its mean values. From the result, it is clear that Kozhikode Corporation is better in maintaining three out of four hard particle of TQM (Essential

Facilities (EF), Venue Setup (VS), and Administrative Tools and Technology (ATT) when compared with other Corporations in Kerala.

- 8) From ranking, it is clear that Kollam Corporation is better in maintaining all the four elements of Hard TQM as it secure minimum rank of 3.
- 9) From the result, it is clear that, Thrissur Corporation and Kannur Corporations have to focus on all these hard components of TQM.
- 10) In the case of Essential Facilities (EF), Kozhikode, Kollam, Kochi, Thiruvananthapuram, Thrissur and Kannur Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively.
- 11) In case of public Administrative Infrastructure (AI), Kochi is ranked as 1<sup>st</sup>, Thiruvananthapuram as 2<sup>nd</sup>, Kollam as 3<sup>rd</sup>, Thrissur as 4<sup>th</sup>, Kozhikode as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values.
- 12) In case of Venue Setup (VS), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Kozhikode, Thiruvananthapuram, Kochi, Kannur and Thrissur Municipal Corporations.
- 13) When it comes to ‘Administrative Tools and Technology (ATT)’, Kozhikode Corporation secure 1<sup>st</sup> rank. Kollam, Kannur, Thiruvananthapuram, Kochi and Thrissur Corporation secure the subsequent ranks.
- 14) The outcome of MANOVA (multivariate analysis of variance) indicates a significant p-value of .000, which falls below the threshold of 0.05. As a result, it can be concluded that a notable contrast has come to light in how employees perceive the tangible and intangible elements of Total Quality Management (TQM) in their efforts to enhance overall quality within Kerala's Municipal Corporations.
- 15) The component-by-component assessment of variations in the perception of employees regarding hard TQM factors across different Municipal Corporations were done using welch test. The result revealed that the significance values for the components Essential Facilities (EF),



Administrative Infrastructure (AI), Venue Setup (VS) and Administrative Tools and Technology (ATT) were 0.000, 0.000, 0.000, and 0.000, respectively, all of which are less than 0.05. Consequently, there are significant differences in the perception of employees regarding hard TQM components among Municipal Corporations in Kerala.

- 16) In the case of the soft TQM component 'Employee Engagement and Empowerment Initiatives (EE&EI)', Kochi Corporation is excellent (Mean=3.1) when compared with other Corporations. At the same time, Kozhikode Corporation needs to pay more attention in Employee Engagement and Empowerment Initiatives (mean=1.58).
- 17) In the case of the soft TQM component 'Performance Enhancement Factors (PEF)', Kochi Corporation is excellent (Mean=3.17) when compared with other Corporations. At the same time, Kozhikode Corporation needs to pay more attention in Performance Enhancement Factors (PEF) (mean=2.37).
- 18) In the case of the soft TQM component 'Quality Assurance Matrix (QAM)', Kollam Corporation is excellent (Mean=2.94) when compared with other Corporations. At the same time, Thrissur Corporation needs to focus on Quality Assurance Matrix (QAM) (mean=2.17).
- 19) In the case of the soft TQM component 'Effective Communication Practices (ECP)', Kannur Corporation is excellent (Mean=3.83) when compared with other Corporations. At the same time, Thiruvananthapuram Corporation needs to focus on Effective Communication Practices (ECP)(mean=3.11).
- 20) In the case of the soft TQM component 'Training Accessibility Variables (TAV)', Kozhikode Corporation is excellent (Mean=3.64) when compared with other Corporations. At the same time, Kochi Corporation needs to pay more attention in Training Accessibility Variables (TAV) (mean=2.31).
- 21) In the case of the soft TQM component 'Collaboration and Upskilling (CU)', Kochi Corporation is excellent (Mean=3.35) when compared with other

Corporations. At the same time, Thiruvananthapuram Corporation needs to pay more attention in Collaboration and Upskilling (CU) (mean=2.79).

- 22) A pair wise comparison between Municipal Corporations shows that employees' perception towards EE and EI, Performance Enhancement Factors (PEF) and Training Accessibility Variables (TAV) are better in Kochi Municipal Corporation.
- 23) However, Kozhikode Corporation is far behind other Corporations when it comes to these soft particles.
- 24) Particles of soft TQM namely Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), Training Accessibility Variables (TAV) and Collaboration and Upskilling (CU) are ranked across Municipal Corporations in Kerala based on its mean values. From the result, it is clear that Kochi Corporation is better in maintaining five out of six soft particle of TQM (Employee Engagement and Empowerment Initiatives (EE&EI), Performance Enhancement Factors (PEF), Quality Assurance Matrix (QAM), Effective Communication Practices (ECP), and Collaboration and Upskilling (CU)) when compared with other Corporations in Kerala.
- 25) In the case of Employee Engagement and Empowerment Initiatives (EE&EI), Kochi, Thiruvananthapuram, Kollam, Thrissur, Kannur and Kozhikode Municipal Corporations are ranked as 1, 2, 3, 4, 5 and 6 respectively.
- 26) In case of Performance Enhancement Factors (PEF), Kochi is ranked as 1<sup>st</sup>, Kollam as 2<sup>nd</sup>, Thrissur as 3<sup>rd</sup>, Kannur as 4<sup>th</sup>, Thiruvananthapuram as 5<sup>th</sup> and Kozhikode as 6<sup>th</sup> based on their mean values.
- 27) In case of Quality Assurance Matrix (QAM), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kollam, Kochi, Thiruvananthapuram, Kozhikode, Kannur and Thrissur Municipal Corporations.

- 28) When it comes to 'Effective Communication Practices (ECP)', Kannur Corporation secure 1<sup>st</sup> rank. Kozhikode, Kochi, Kollam, Thrissur and Thiruvananthapuram, Kochi and Thrissur Corporation secure the subsequent ranks.
- 29) In case of Training Accessibility Variables (TAV), 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kozhikode, Thrissur, Kollam, Thiruvananthapuram, Kannur and Kochi Municipal Corporations.
- 30) In case of Collaboration and Upskilling (CU), Kochi is ranked as 1<sup>st</sup>, Thrissur as 2<sup>nd</sup>, Kollam as 3<sup>rd</sup>, Kannur as 4<sup>th</sup>, Kozhikode as 5<sup>th</sup> and Thiruvananthapuram as 6<sup>th</sup> based on their mean values.

### **Section 3-Software Solutions for improving service delivery mechanism from citizens' perspective**

The objective of this section is to compare six Municipal Corporations to determine whether there are any differences in the working of software programs that are introduced by the government to improve the smoothness of service delivery by local bodies in Kerala, such as SEVANA civil Registration, SEVANA Pension, SANKETHAM, SANCHAYA, and SOOCHIKA. In an initial attempt to measure these differences, simple yes/no questions have been used to determine whether citizens are aware of these programs. As a result, only citizens familiar with these programs are asked to express their level of agreement with the effectiveness of these programs in Municipal Corporations. A five-point Likert scale is used to evaluate the responses. The analysis part is bifurcated into two sections. Citizens are the focus of the first section (Part A), while employees are the focus of the second section (Part B). To reach the following conclusions, percentages and one-way anova were applied

- 1) The level of awareness regarding the SEVANA civil registration program varies significantly among Municipal Corporations in Kerala. Kollam, Kozhikode, Thrissur, and Kannur Municipal Corporation residents are highly informed (A major portion of respondents are aware) about this government initiative aimed at enhancing the service quality of Municipal Corporations.

In contrast, awareness is considerably lower, with fewer than 40% of respondents in Trivandrum and Kochi Corporations being aware of the program.

- 2) When it comes to the SEVANA pension program, a substantial majority of residents in Kollam (86%), Kozhikode (91.7%), Thrissur (99.4%), and Kannur (79.4%) Corporations are knowledgeable about it, as it is designed to streamline pension distribution. However, only 37.7% of respondents in Trivandrum and a mere 19% in Kochi Corporations are familiar with this initiative.
- 3) In terms of the SANKETHAM program, which aims to provide building permits transparently and uniformly, there is a noteworthy contrast in awareness levels among Municipal Corporations. A significant majority of respondents in Kozhikode (91.1%) are well-informed about SANKETHAM. In Thrissur, 66.9% of respondents are aware of it, while in Kollam, 57.6% have knowledge about the program. On the other hand, a smaller percentage of residents in Trivandrum (29%), Kochi (11.9%), and Kannur (11.1%) Corporations are aware of the SANKETHAM initiative.
- 4) In the Kozhikode Municipal Corporations, 90.6% of the respondents are aware of the SANCHAYA program, which offers various utility payment services such as hall booking, ambulance services, vehicle services, crematorium facilities, and water bill payments. Additionally, 72.8% of the respondents in Kozhikode are aware of the SOOCHIKA program.
- 5) In contrast, in Trivandrum, only 26.7% of the respondents are aware of the SANCHAYA program, and merely 14.7% are aware of the SOOCHIKA program. Similarly, in Kochi, awareness of the SANCHAYA program is low, with just 5.7% of respondents being informed, while 41.9% know about the SOOCHIKA program.
- 6) In Kollam, 57.6% of respondents are aware of the SANCHAYA program, and 41.2% are aware of the SOOCHIKA program. In Thrissur, 58.9% of

respondents are informed about SANCHAYA, while only 41.1% are aware of SOOCHIKA. In Kannur, 27.8% of respondents know about the SANCHAYA program, and 31.7% are aware of the SOOCHIKA program.

- 7) The level of awareness among Municipal Corporation's residents in Kerala regarding various government initiatives aimed at enhancing services varies significantly. Kollam, Kozhikode, Thrissur, and Kannur Municipal Corporations generally have higher awareness levels for programs like SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA, and SOOCHIKA. On the other hand, Trivandrum and Kochi Corporations lag behind, with considerably lower awareness rates for most of these initiatives.
- 8) The data suggests that there is a need for more targeted awareness campaigns and outreach efforts in Trivandrum and Kochi to improve knowledge about these programs. The higher awareness levels in Kozhikode, Thrissur, Kollam, and Kannur demonstrate the potential for successful implementation and public engagement in these areas. Efforts should be made to bridge the awareness gap among different Municipal Corporations to ensure equitable access to government services and benefits across the state of Kerala.
- 9) Software programs (SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA and SOOCHIKA) for assisting residents to get services with minimum cost and effort are ranked according to its mean values. From the result, it is clear that Thiruvananthapuram Municipal Corporations is excellent in working of all programs except 'SANCHAYA'. Working of these programs in Kollam Municipal Corporation is satisfactory as it secures a rank of at least three. Kannur Municipal Corporation needs more attention in these programs.
- 10) In the case of SEVANA civil registration program, Thiruvananthapuram, Kollam, Thrissur, Kozhikode, Kochi and Kannur Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively.

- 11) In case of SEVANA pension program, Thiruvananthapuram is ranked as 1<sup>st</sup>, Kollam as 2<sup>nd</sup>, Thrissur as 3<sup>rd</sup>, Kochi as 4<sup>th</sup>, Kozhikode as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values.
- 12) In case of SANKETHAM program designed to provide building permits transparently and uniformly, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Thiruvananthapuram, Kollam, Thrissur, Kozhikode, Kochi and Kannur and Municipal Corporations.
- 13) When it comes to 'SANCHAYA' program, Kollam Corporation secure 1<sup>st</sup> rank. Thrissur, Kochi, Kozhikode, Thiruvananthapuram, and Kannur Corporation secure the subsequent ranks.
- 14) In case of SOOCHIKA program designed to facilitate status monitoring via the web, integrating SMS notifications, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kochi, Thiruvananthapuram, Kollam, Thrissur, Kannur and Kozhikode Municipal Corporations.
- 15) It is evident from one-way ANOVA that these government programs (SEVANA civil registration, SEVANA pension, SANKETHAM, SANCHAYA and SOOCHIKA) implemented in various Municipal Corporations in Kerala exhibit a notable variation in their functioning, as indicated by the statistical significance ( $p$ -value  $< 0.05$ ) for all these programs.

#### **Section 4 - Software solutions for improving service delivery mechanism from employee's perspective**

Software programs, namely STHAPANA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SUBADRA, SAMOOHYA, SAPHALYA and SULEKHA programs are designed to assist employees in simplifying their tasks and enhancing their efficiency, ultimately contributing to the pursuit of excellence in service quality were assessed and evaluated to check whether there is any difference in their working among various Municipal Corporation in Kerala. Employees of Municipal Corporations are asked to rate their experience on a five-point Likert scale.

Below are the results of descriptive statistics and one-way analysis of variance (ANOVA).

- 1) In the case of the STHAPANA program designed to facilitate the accounting of Municipal employees' provident fund (PF), Kochi and Kannur Corporations work in a better way with means scoring more than three
- 2) Among Municipal Corporations in Kerala, Thrissur is poor (mean=1.925) in the case of the STHAPANA program
- 3) Working of the SANCHITHA program (repository of acts, rules, etc) in Thiruvananthapuram, Kollam, and Kochi Corporations are satisfactory with a mean score of above three.
- 4) Among Municipal Corporations in Kerala, Kochi is better (mean=3.175) in the case of the SANCHITHA program
- 5) Working of the SAANKYA (double entry accrual-based accounting system) program in Thiruvananthapuram and Kannur Corporations are satisfactory with a mean score of above three.
- 6) Among Municipal Corporations in Kerala, Kannur is better (mean=**3.1694**) in the case of the SAANKYA program designed for smoothening accounting purposes.
- 7) The working of the SAKARMA program in Municipal Corporations of Kerala is not satisfactory. Result of the study reveals that Kollam Corporations in better in working of SAKARMA program with a mean score of **2.925**
- 8) Working of the SUGAMA (cost estimation tool for public works) program in Thiruvananthapuram and Kochi Corporations are better.
- 9) Among Municipal Corporations in Kerala, Thiruvananthapuram is better (mean=**3.5139**) in the case of the SAANKYA program designed for accounting purposes.

- 10) With regards to SAMVEDITHA, Thiruvananthapuram Corporation outperforms other Corporations with a mean score of **3.0101**
- 11) Working of the SUBADRA (financial management system) program in Municipal Corporations of Kerala is not satisfactory. Result of the study reveals that Kozhikode Corporations in better in working of SUBADRA program with a mean score of **2.75**
- 12) With regards to the working of SAMOOHYA (community database) program, Kochi Corporation shows a satisfactory performance when compared with other Corporations in Kerala.
- 13) Working of SAPHALYA (human resource package) program in Municipal Corporations of Kerala is not satisfactory. Result of the study reveals that Kochi Corporations in better in working of SAPHALYA program with a mean score of **2.9444**
- 14) Working of SULEKHA program in Kollam and Kannur Corporations are satisfactory.
- 15) Among Municipal Corporations in Kerala, Kollam is better (mean=**3.3062**) in case of SULEKHA program
- 16) Software programs introduced by government to smoothen the work of employees were ranked based on mean values. From this it is clear that Kochi Corporation is better in the working of these programs. At the same time, Thrissur Corporation need to pay more attention for the working of all these programs.
- 17) In the case of STHAPANA program, Kannur, Kochi, Thiruvananthapuram, Kollam, Kozhikode and Thrissur, Municipal Corporations are ranked as 1,2,3,4,5 and 6 respectively.
- 18) In case of SANCHITHA program, Kochi is ranked as 1<sup>st</sup>, Thiruvananthapuram as 2<sup>nd</sup>, Kollam as 3<sup>rd</sup>, Kozhikode as 4<sup>th</sup>, Thrissur as 5<sup>th</sup> and Kannur as 6<sup>th</sup> based on their mean values.



- 19) In case of SAANKYA, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> ranks are respectively secured by Kannur, Thiruvananthapuram, Kochi, Kozhikode, Thrissur and Kollam Municipal Corporations.
- 20) When it comes to 'SAKARMA', Kollam Corporation secure 1<sup>st</sup> rank. Kochi, Thrissur and Kozhikode Corporation secure the subsequent ranks.
- 21) In case of SUGAMA and SAMVEDITHA programs, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> ranks are respectively secured by Thiruvananthapuram, Kochi, Kozhikode and Thrissur Municipal Corporations.
- 22) In case of SUBADRA program, Kozhikode is ranked as 1<sup>st</sup>, Kochi as 2<sup>nd</sup>, Thrissur as 3<sup>rd</sup> based on their mean values.
- 23) When it comes to 'SAMOOHYA' program, Kochi Corporation secure 1<sup>st</sup> rank, Thrissur Corporation secure 2<sup>nd</sup> ranks.
- 24) In case of SAPHALYA programs, 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> ranks are respectively secured by Kochi, Kozhikode and Thrissur Municipal Corporations.
- 25) In case of SULEKHA program, Kollam is ranked as 1<sup>st</sup>, Kannur as 2<sup>nd</sup>, Kochi as 3<sup>rd</sup>, Thiruvananthapuram as 4<sup>th</sup>, Thrissur as 5<sup>th</sup> and Kozhikode as 6<sup>th</sup> based on their mean values.
- 26) Municipal Corporations seem to differ significantly from each other in the way they work with the STHAPANA, SANCHITHA, SAANKYA, SAKARMA, SUGAMA, SAMVEDITHA, SAMOOHYA, and SULEKHA programs introduced by the government.
- 27) Municipal Corporations do not seem to differ significantly from each other in the way they work with the SUBADRA and SAPHALYA programs introduced by the government.

**Section 5 – Barriers in implementing quality enhancement programs and facilities in Municipal Corporations of Kerala.**

Employee perceptions of barriers to the implementation of quality-improvement initiatives within Municipal Corporations are examined in this section. To identify the most influential factors that hinder the implementation of quality initiatives in local government bodies, with a particular emphasis on Municipal Corporations by using 13 statements, factor analysis is used. A welch test was used to evaluate and compare the barriers to quality among various Municipal Corporations. The findings are presented below

- 1) Workplace dynamics, management hurdles, organizational challenges, educational deficiency, and political challenges are the major barriers faced by Municipal Corporations when introducing quality initiatives.
- 2) In introducing quality initiatives by Municipal Corporations, workplace dynamics are the crux of the issue. Workplace dynamics involve barriers namely Interest of employees, Increased workload and Union issues.
- 3) The result revealed that there exists a significant difference in workplace dynamics among various Municipal Corporations.
- 4) The result revealed that there exists a significant difference in management hurdles among various Municipal Corporations.
- 5) The result revealed that there exists a significant difference in educational deficiency among various Municipal Corporations.
- 6) The result revealed that there exists a significant difference in political challenges among various Municipal Corporations.
- 7) For the barrier "organizational challenges," the welch test yielded a significance value of 0.117, indicating that there are no significant differences in the barriers related to "organizational challenges" among Municipal Corporations in Kerala.

#### **9.4 Conclusions based on findings**

This study “TQM for service quality enhancement of Municipal Corporations in Kerala” mainly focuses on assessing the present service delivery status of urban local bodies namely Municipal Corporations of Kerala. Additionally, it tries to identify what all aspects of Total Quality Management are presently covered by Municipal Corporations. And what all aspects need to be added to each Municipal Corporation to improve their service delivery mechanism. One significant part of this study is to get insight into various software programs introduced as part of improving infrastructural facility i.e. hard particle of Total Quality Management. Working of this software introduced by government to serve both the residents and employees of Municipal Corporation are assessed under this study. Moreover the study attempt to elicit the major barriers faced in implementing quality enhancement programs or facilities by Municipal Corporations in Kerala.

This study is descriptive in nature based on primary data collected from 1210 residents and 380 employees of Municipal Corporations in Kerala. This study covers all six Municipal Corporations in Kerala i.e. Thiruvananthapuram, Kollam, Thrissur, Kochi, Kozhikode and Kannur Municipal Corporations. The study begins by assessing and comparing the performance of Municipal Corporations, performance is measured in terms of satisfaction level citizen regarding various services offered by Municipal Corporations in Kerala, and the result revealed that Kollam Corporation is excellent in providing all seven services namely health and environment services, social services, reconstruction and urban development services, urban transportation services, disaster management services, community services, and education services accessed under this study. The study also reveals that Corporations have to focus on various hard particles and soft particles of TQM to improve the satisfaction level of its internal customers (employees) and external customers (residents). Workplace dynamics, management hurdles, organizational challenges, educational deficiency, and political challenges are the major barriers faced by Municipal Corporations in the process of implementing quality initiatives designed to enhance their service standards.

**CHAPTER 10**  
**RECOMMENDATIONS AND SCOPE FOR**  
**FURTHER RESEARCH**

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## **10.1 Introduction**

The key findings and conclusions derived from the data analysis are presented in the previous chapter. Certain valid suggestions and recommendations are formulated based on these findings. Furthermore, an attempt has been made to examine the implications of the research work and to identify the topics for further research in the area. This chapter focuses on these topics.

## **10.2 Recommendations/Suggestions**

Based on the findings and conclusions, the following recommendations are made.

- 1) The mean score of perception of residents of Thiruvananthapuram, Kochi and Kannur Municipal Corporation towards social services and community services are low. Hence, it can be inferred that citizens are not satisfied with these services. Therefore, Thiruvananthapuram Municipal Corporation should make efforts to improve the quality of these services. These services can be improved by improving the quality of women and child empowering programs, youth and sports activities, by providing vocational courses, smoothening and simplifying registration of birth, death, marriage etc, and establishing or maintaining KIOSK for checking service status at each Corporation office.
- 2) The study findings indicate that Kollam, Thrissur and Kozhikode Corporation excel in delivering services related to health, environment, social services, reconstruction, urban development, disaster management, community

services, and education. Despite this, the Corporation needs to make ongoing efforts to uphold these services, ensuring the satisfaction of its residents is maintained at a high level.

- 3) The mean score of perception of citizens of Kochi and Kannur Municipal Corporations towards services like health and environment, reconstruction and urban development and disaster management are low. Hence, it can be inferred that citizens are not satisfied with these services. Therefore, these Corporation should make efforts to improve the quality of these services.
- 4) Thiruvananthapuram, Kozhikode and Kannur Corporations should take effort to improve quality of health and environment service. This is possible by improving the quality of water service, sewer system service, waste management, cleaning service of streets, forestation, prevention against infections, pest control and prevention of pollution.
- 5) The mean score of citizen's perception towards 'urban transportation services' is low. Hence, it can be inferred that citizens are not satisfied with these services. Therefore, Thiruvananthapuram and Kannur Corporations should take effort to improve quality of 'urban transportation service'. This is possible by ensuring proper traffic management and control, providing car parking facilities and by ensuring effective bus transportation.
- 6) The mean score of citizen's perception towards education service of Thiruvananthapuram, Kochi and Kannur Municipal Corporations are low. Hence, it can be inferred that citizens are not satisfied with these services. Therefore, these Corporation should make efforts to improve the quality of education services. This is possible through establishment & maintenance of education institutions.
- 7) The mean score of perception of residents of Thiruvananthapuram and Kannur Municipal Corporation towards 'reconstruction & urban development service' and 'disaster management & security services' are low. Hence, it can be

inferred that citizens are not satisfied with these services. Therefore, Corporations should make efforts to improve the quality of these services. 'reconstruction & urban development service' can be improved by proper city planning, establishing and maintaining street lights, building and maintaining road, green field and parks, shopping centers, cemeteries, construction and maintenance of markets and by ensuring regulation of markets and protecting the market from dangerous trade practices. 'Disaster management & security services' can be improved by establishing and maintaining camera facilities, controlling beggary, by following adequate rehabilitation measures during the time of disaster and by ensuring reconstruction activities after disaster.

- 8) Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT) aspects of hard TQM for officials have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The findings indicate that Thiruvananthapuram and Thrissur Corporation has obtained low ranks in upkeeping these facilities. Therefore, it is crucial to implement measures to introduce or maintain these facilities. Major attention should be given towards VS to enhance the satisfaction level of its citizen. Perception of employees towards 'VS' can be improved by ensuring 'first aid kit' and 'seating arrangement & name board.
- 9) The perception of citizens towards hard TQM component AAH (Accessible Amenities Hub) is poor in Thiruvananthapuram, Kollam, Thrissur, Kozhikode and Kannur Corporations. This can be improved by adding or maintaining facilities like ramp, touch screen for understanding service status, baby feeding room, first aid kit and reading corner/materials. Hence Corporations should make an effort to introduce or improve or maintain AAH. By improving AAH facility, Corporation can improve its overall service delivery mechanism.
- 10) Essential Facilities (EF), Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT) aspects of hard Total



Quality Management (TQM) for officials have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The findings indicate that Thiruvananthapuram, Thrissur, Kozhikode and Kannur Corporation have obtained low ranks in upkeeping these facilities. Therefore, it is crucial to implement measures to introduce or maintain these facilities. Major attention should be given towards EF to enhance the satisfaction level of its citizen. Perception towards 'EF' can be improved by introducing or maintaining facilities like ramp, effective record management system, ensuring drawer for cash and essential stationary for employees. Perception of employees towards 'VS' can be improved by ensuring 'first aid kit' and 'seating arrangement & name board'.

- 11) Public Information Centre (PIC) aspects of hard Total Quality Management (TQM) for citizen have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The findings indicate that Kollam, Kochi and Thrissur Corporation have obtained low ranks in upkeeping these facilities. Therefore, it is crucial to implement measures to introduce or maintain these facilities, aiming to enhance the satisfaction of citizens of Kollam Municipal Corporation. PIC can be improved by introducing or maintaining an efficient front office counter, complaint box, notice board-RTI and anti-corruption board.
- 12) Since the perception of residents towards hard TQM and soft TQM is poor or negative, effort should be taken on the part of Kochi Corporation to improve hard TQM components and soft TQM components.
- 13) In order to improve service status of Kochi and Kannur Municipal Corporation, it should focus on hard elements of Rest and Relaxation Zone (RRZ). Perception towards RRZ can be improved by introducing or improving or maintaining facilities like Thapal box for putting applications without waiting in long queue and seating facility for public.

- 14) To improve the service status of Thrissur Municipal Corporation, it should focus on hard elements of Administrative Tools and Technology (ATT) and Venue Setup (VS). ATT can be improved by introducing or maintaining a movement register, receipt book.
- 15) The Administrative Infrastructure (AI), Venue Setup (VS), and Administrative Tools and Technology (ATT) aspects of hard Total Quality Management (TQM) for officials have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The findings indicate that Thrissur and Kannur Corporation has obtained low ranks in upkeeping these facilities. Therefore, it is crucial to implement measures to introduce or maintain these facilities, aiming to enhance the satisfaction of employees of Thrissur Municipal Corporation. This initiative is expected to boost employee motivation, foster a workaholic culture, stimulate creativity, and promote expertise in service delivery, ultimately leading to a reduction in workload.
- 16) CRH (Community Resource Hub) aspects of hard Total Quality Management (TQM) for citizen have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The findings indicate that Kozhikode and Kannur Corporation has obtained low ranks in upkeeping this facility. Therefore, it is crucial to implement measures to introduce or maintain CRH, aiming to enhance the satisfaction of citizens of Kozhikode Municipal Corporation. CRH can be improved by introducing or maintaining adequate writing desk, toilets, wash basin, ensuring drinking water facility, availability of application forms, stationary for public and rehabilitation centres and programs for differently-abled citizens.
- 17) The findings indicate that Kozhikode Corporation has obtained low ranks in up-keeping Administrative Infrastructure (AI) facilities. Therefore, effort should be made from the part of Corporation to introduce or improve or maintain updated telephone registry, toilets, ensuring the availability of govt orders & rules for reference, and a front office diary.

- 18) In Thiruvananthapuram, Thrissur, Kozhikode, Kochi and Kannur Corporations, citizen perception towards soft TQM component 'Front Office Expertise (FOE)', can be improved by providing training to front office officials to effectively manage the residents who visit Corporation for various services.
- 19) Perception of citizens of Thiruvananthapuram, Kochi and Kannur towards Soft TQM components namely Customer Service Attributes and Elements (CSAE), and Employee Engagement and Access Control System (EE&ACS) are not satisfactory. Therefore, measures should be taken from the part of local body to improve these components. Satisfaction towards CSAE can be improved by reducing or simplifying the procedure for availing service, maintaining proper complaint redressal system, ensuring availability and helping mentality of officials in front office, providing services with minimum time etc.
- 20) Effective Communication Practices (ECP) aspects of soft Total Quality Management (TQM) for employees have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The study result reveals that Kollam, Kochi and Thiruvananthapuram Corporation have obtained low ranks in upkeeping this component of soft TQM. Efforts should be taken on the part of these Corporation to improve ECP. It is possible by ensuring clear and open communication between staff, superiors, and subordinates. Moreover, it can be improved by conducting meetings properly by ensuring the participation of all members.
- 21) The Public Feedback Program (PFP) in Thiruvananthapuram, Kochi, Kollam and Thrissur Municipal Corporation is poor, hence PFP should be improved by organizing regular meetings of citizens, ensuring timely acknowledgment of applications and complaints, organizing wad sabha meetings and by maintaining a proper feedback system.

- 22) The perception of Kannur and Kochi Corporation's citizens regarding the soft aspects of TQM, namely Employee Engagement and Access Control System (EE&ACS), is not up to satisfactory levels. Consequently, proactive measures and programs, including training initiatives, electronic token distribution should be implemented to improve these dimensions of Total Quality Management . The collective improvement in both hard and soft aspects is anticipated to enhance the overall quality of Municipal Corporations in Kerala
- 23) Performance Enhancement Factors (PEF), aspects of soft Total Quality Management (TQM) for employees have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The study result reveals that Thiruvananthapuram, Thrissur, Kozhikode and Kannur Corporation has obtained low ranks in upkeeping this component of soft TQM. Efforts should be taken on the part of these Corporation to improve PEF. It is possible by ensuring trainings are fit for employees' job, providing employees a chance to participate in problem solving and by following proper performance appraisal system.
- 24) Employee Engagement and Empowerment Initiatives (EE&EI), aspects of soft Total Quality Management for employees have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The study result reveals that Thiruvananthapuram, Thrissur Kozhikode and Kannur Corporation have obtained low ranks in upkeeping this component of soft TQM. Efforts should be taken on the part of these Corporation to improve EE&EI. It is possible by sharing of information and future plans among employees by the top management, providing chance for participation in decision making, creating and maintaining quality circle of staff to solve work problem and by ensuring support of top management for long term quality improvement process.
- 25) Quality Assurance Matrix (QAM), aspect of soft Total Quality Management for employees have been assessed across Municipal Corporations in Kerala,

using mean values for ranking. The study result reveals that Thiruvananthapuram, Thrissur, Kozhikode and Kannur Corporation has obtained low ranks in upkeeping this component of soft TQM. Efforts should be taken on the part of these Corporation to improve QAM. It is possible by creating informal group of officials, conducting quality audit and by proper measurement and evaluation of work performed. This initiative is expected to boost employee motivation, foster a workaholic culture, stimulate creativity, and promote expertise in service delivery, ultimately leading to a reduction in workload.

- 26) Training Accessibility Variables (TAV) aspects of soft Total Quality Management (TQM) for officials have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The findings indicate that Thiruvananthapuram and Kannur Corporation has obtained low ranks in upkeeping this quality. Therefore, measures should be taken to improve this particle of TQM. This is possible by ensuring equal opportunity for training and development and by creating a culture of team work. This initiative is expected to boost employee motivation, foster a workaholic culture, stimulate creativity, and promote expertise in service delivery, ultimately leading to a reduction in workload.
- 27) Perception of employees towards 'Collaboration and Upskilling (CU)' aspects of soft Total Quality Management for officials have been assessed across Municipal Corporations in Kerala, using mean values for ranking. The findings indicate that Thrissur, Kozhikode and Kannur Corporation have obtained low ranks in upkeeping these qualities, hence measures should be taken to improve these parts of TQM. This is possible by maintaining friendly work culture and ensuring technology-oriented training to employees. This initiative is expected to boost employee motivation, foster a workaholic culture, stimulate creativity, and promote expertise in service delivery, ultimately leading to a reduction in workload.

- 28) Thiruvananthapuram, Kollam, Thrissur and Kannur Corporation should organize awareness programs to enhance residents' understanding of SOOCHIKA program designed to facilitate status monitoring via the web, integrating SMS notifications. This application is introduced to streamline service delivery mechanisms, and raising awareness among residents is crucial for improving the overall quality of service delivery.
- 29) Thiruvananthapuram, Kochi and Kannur Corporation should organize awareness programs to enhance residents' understanding of software applications such as SANKETHAM program designed to issue building permits in a transparent manner. This application is introduced to streamline service delivery mechanisms, and raising awareness among residents is crucial to improving the overall quality of service delivery.
- 30) Thiruvananthapuram, Kochi and Kannur Corporation should organize awareness programs to enhance residents' understanding of software applications such as SANCHAYA program designed to streamline the revenue and licensing system of LSGD of Kerala. This application is introduced to streamline service delivery mechanisms, and raising awareness among residents is crucial to improving the overall quality of service delivery.
- 31) Thiruvananthapuram and Kochi Corporation should organize campaigns to improve the awareness level of residents regarding software solutions namely SEVANA civil registration and SEVANA pension, program which are introduced to simplify the procedure for availing service or allowing residents to access services without the need for physical visit and reducing long queue in the Corporation office.
- 32) The study result shows that Thiruvananthapuram, Kochi, Kozhikode and Kannur Municipal Corporations are poor in 'SANCHAYA' program designed to manage revenue and licensing systems, integrating e-payment capabilities and SMS features. Hence proper measures should be taken to improve the functioning of SANCHAYA. It can be improved by ensuring proper coverage

of utility payment services like hall booking, ambulance, vehicles, crematorium, payment on water bill, property tax etc, ensuring proper acknowledgment or receipt on these payments, ensuring the confidentiality of users' data, maintain the website with proper updates in time etc.

- 33) Efforts should be taken on the part of Thiruvananthapuram, Thrissur and Kozhikode Corporations to improve the working of SULEKA program designed for plan monitoring for decentralized planning at the local level. This can be improved by ensuring confidentiality, reducing processing time, providing a facility for problem- solving. This will boost employee motivation, foster a workaholic culture, stimulate creativity, and promote expertise in service delivery, ultimately leading to a reduction in workload.
- 34) Kollam, Kochi and Kozhikode Corporation should focus on improving the working quality of software application namely STHAPANA designed for managing payroll and provident fund accounting for Municipal and panchayath employees. This is possible by linking all monthly transactions entered here to payroll, accommodating Municipal employees PF related transactions, ensuring confidentiality, improving page loading speed, and maintaining the application with proper updates.
- 35) Kollam and Kozhikode Corporations should focus on improving the working quality of software applications SAANKYA designed for accounting purpose. This is possible by ensuring confidentiality, improving page loading speed, and maintaining the application with proper updates
- 36) Some software programs are introduced by local bodies as part of improving the hard parts of Total Quality Management . The study result reveals that Kochi, Thrissur, Kozhikode and Kannur Corporation secured poor ranking in case of SANKETHAM program designed to issue building permits in a transparent manner. This is possible by providing facilities for online verification & validation of application form for receiving building permit,

- ensuring the citizens are receiving building permits in a transparent and standardized manner with minimum time, cost and effort.
- 37) The study findings indicate that Thrissur Corporation excels in the functioning of SEVANA civil registration, SEVANA pension, SANCHAYA, and SOOCHIKA programs. Despite this, the Corporation needs to make ongoing efforts to uphold these programs, ensuring the satisfaction of its residents is maintained at a high level.
- 38) Some software programs are introduced by local bodies as part of improving the hard parts of Total Quality Management . The study result reveals that Kochi, Kozhikode and Kannur Corporation secured poor ranking in case of SEVANA civil registration program designed to facilitate registration of birth, death, marriage etc. This is possible by integrating hospital Kiosk with the local body for issuing certificates relating to births and deaths, providing correction facility in birth and death certificates, providing facility for search and name inclusion over the internet and by facilitating birth registration of adopted child & certificate issue.
- 39) The study result reveals that Kochi, Kozhikode and Kannur Corporation secured poor ranking in case of SEVANA pension program designed to facilitate smooth distribution of pension payment. This is possible by computerizing pension payment and make pension distribution fast and efficient, and by covering more pension schemes like national old age pension, widow pension, pension to unmarried women above 50 years, pension to the physically challenged and mentally challenged persons, agriculture labour pension and unemployment wages.
- 40) Efforts should be taken on the part of Kozhikode and Kannur Municipal Corporations to improve the working of SOOCHIKA program designed to facilitate status monitoring via the web, integrating SMS notifications. This can be improved by ensuring confidentiality, reducing processing time, ensuring status monitoring of service, providing a facility for problem-



solving. This will boost employee motivation, foster a workaholic culture, stimulate creativity, and promote expertise in service delivery, ultimately leading to a reduction in workload.

- 41) Working of SANCHITHA program, designed to function as a comprehensive repository of acts, rules, court orders, and other relevant or important legal documents related to local bodies in Kozhikode, Thrissur and Kannur Municipal Corporation is not satisfactory. Hence effort should be taken to improve the usage of these software which will clarify act/rules related doubts of employees for smooth completion of their duty.
- 42) Perception of employees of Kozhikode and Thrissur Municipal Corporation towards programs namely SAKARMA, SUGAMA, SAMVEDITHA, SUBADRA, SAMOOHYA, SAPHALYA programs are poor. Hence proper measures should be taken to improve the functioning of these programs designed to assist employees in simplifying their tasks and enhancing their efficiency, ultimately contributing to the pursuit of excellence in service quality. This is possible by ensuring confidentiality, improving page loading speed, and maintaining the application with proper updates, ensuring proper acknowledgment of applications, providing facility for seeking assistance in solving problems etc.
- 43) Efforts should be taken on the part of Thrissur Municipal Corporations to improve the working of SAANKYA program designed to smoothen accounting of local bodies. This can be improved by making an average employee to prepare the entire financial reports without depending upon accounting professionals, providing facility for recording each financial transaction in real time, helping for executing accounting with the participation of the entire employees dealing with financial transactions ensuring confidentiality, reducing processing time, ensuring status monitoring of service, providing a facility for problem- solving. This will boost employee

motivation, foster a workaholic culture, stimulate creativity, and promote expertise in service delivery, ultimately leading to a reduction in workload.

### **10.3. Implications of the research**

TQM has several important implications for Municipal Corporations in the area of service quality enhancement. Here are some key implications that can be drawn from a study on TQM for improving service quality in Municipal Corporations.

- a) As a result of this study, local governments will have a better understanding of the specific issues they face when introducing or implementing quality enhancement programs. Policymakers can use this information to design and implement more effective policies and regulations to address these challenges, resulting in improved government policies in the future.
- b) This study emphasizes both the tangible and intangible aspects of Total Quality Management, pinpointing gaps in these components within each Municipal Corporation in Kerala. This insight can guide Corporations in undertaking initiatives to enhance and fortify these facilities and capabilities.
- c) This study highlights that addressing the "interest of employees, increased workload, and union issues" is crucial as these factors pose significant barriers to quality initiatives. Policy makers should recognize the importance of resolving these issues before implementing initiatives aimed at improving the quality of local bodies' functioning.
- d) This research directly benefits members or internal customers, specifically the employees of Municipal Corporations, by addressing the current state of various physical facilities. The findings will contribute to ensuring adequate amenities such as toilets, drinking water, computer and internet facilities, ramps, movement registers, etc. This, in turn, will enhance employee satisfaction, ultimately leading to an improvement in the quality of their service delivery.

- e) By assessing the human aspects of Total Quality Management , the research would be beneficial to the internal customers of Municipal Corporations. The result will be the opportunity to participate in decision-making, involvement in solving problems, establish friendly relationships between superiors and subordinates, communicate clearly and openly among employees, and inculcate a culture of sharing information and plans with employees, which ultimately leads to a positive work environment, a reduction in workload, a reduction in long lines in the office, and an improved service delivery.
- f) Training, a major human aspect of Total Quality Management will assist employees to deliver services effectively and efficiently. The present status of the training aspect enables the training institute to provide effective work-oriented training, provide awareness campaigns regarding various software solutions that reduce employee workloads and stress. Finally, contribute to the effective delivery of services.
- g) The study emphasizes Essential Facilities required for residents visiting the Corporation office. This information enables the Corporation to identify and address any gaps to ensure the provision of these necessary facilities. Furthermore, this will enhance the service experience of by equipping Corporation with necessary facilities.
- h) The research would benefit citizens of Municipal Corporations by showing how various software solutions aid citizens in getting services without visiting the office in person. Their satisfaction will increase, the procedure and formality for getting service will be reduced, their mental stress will be reduced, and ultimately, a positive attitude towards the local government offices will be instilled.
- i) The public or citizens are the ultimate beneficiary of this research work. An assessment of tangible and intangible elements of Total Quality Management for improving service delivery standards for employees will identify the gap need to fulfil for improvement of their efficiency and service quality.

Ultimately, help the residents to get services with minimum effort, cost, and time without having to physically visit the office.

- j) A successful local government can only be ensured through efficient performance. In Kerala, various aspects of Total Quality Management are currently covered by Municipal Corporations. The purpose of this study is to create awareness about the coverage of these aspects. As a result, the members and authorities will pay attention in this regard. It will enable the authorities to improve employee mental and physical health through quality enhancement techniques, seeking support, and implementing more quality enhancement facilities and programs. It will improve their efficiency and performance. As a result of improved performance and efficiency, members will be able to serve the public better. Ultimately, all of these will improve local government performance.

#### **10.4 Scope for further research**

According to the findings of this study, further research is needed in the following areas:

- a) The research is focused on the perspectives and experiences of both residents and employees within the Municipal Corporation. There is considerable potential for extending the study to encompass the opinions of councillors, elected representatives, and mayors.
- b) This study is conducted within Municipal Corporations in Kerala. Future research could explore similar dynamics at other levels of government say Panchayats, municipalities etc.
- c) The current research provides a comprehensive overview of Total Quality Management. Future investigations can delve into the detailed implementation of specific components of TQM, such as enhancing the effectiveness of training programs, fostering a culture of quality circles, and establishing an efficient record management system.

- d) Future study could concentrate on exploring the impact of 'quality circles' in enhancing the quality-of-service delivery by Municipal employees.
- e) Future study could concentrate on exploring the working of K-Smart in enhancing quality of service of local bodies of Kerala.

### **10.5 Chapter Summary**

A concerted effort has been made to formulate pertinent suggestions and recommendations based on the study's findings and conclusions. Furthermore, a comprehensive analysis has been carried out to explain the implications arising from the study endeavour, while simultaneously pinpointing possible directions for further research within the designated field.

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## **Appendices**

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## Appendix I

### QUESTIONNAIRE FOR CITIZEN

Sir/Madam,

I, Farseena Mol P, currently doing PhD in Commerce at PSMO College, Tirurangadi, affiliated to the University of Calicut on "Role of TQM (Total Quality Management) for improving the service quality of Municipal corporations in Kerala". This questionnaire has been developed to study the perception of citizens on services offered by the Municipal Corporations in Kerala. I solicit your co-operation and support in filling the questionnaire. Your response will be kept confidential and use only for academic purposes.

1. In which corporation you are belong to  
 Trivandrum  
 Kollam  
 Trissur  
 Kochi  
 Kozhikkode  
 Kannur
2. State your level of satisfaction regarding the following services offered by your municipal corporation, (HS:-Highly satisfied. S:-Satisfied. N:-Nuetral. D:-Dissatisfied. HD:-Highly Dissatisfied)

Sl No.		H.S	S	N	D	H.D
1	Water service					
2	Sewer system service					
3	Waste management system like HARITHA KARMA SENA					
4	Cleaning service of streets					
5	Forestation					
6	Prevention against infections					
7	Pest control					
8	Prevention of pollution					
9	Functions of Women activity centre					
10	Youth and sports activities					
11	Women and child empowering programs					
12	Vocational courses					
13	City planning					

S1 No.		H.S	S	N	D	H.D
14	Street lighting					
15	Road building and maintenance					
16	Green field and parks					
17	Shopping centers					
18	Cemeteries					
19	Construction and maintenance of markets (regulation of markets, prevention of dangerous trade practices)					
20	Bus transportation					
21	Car parking					
22	Traffic management and control					
23	Rehabilitation measures during the time of disaster					
24	Reconstruction activities after Disaster					
25	Camera facility(CCTV)					
26	Control of beggary					
27	Registration of birth, death, marriage etc					
28	Establishment of education institutions					
29	Maintenance of educational institutions					
30	KIOSK for checking service status					

3. State your perception regarding the following (E=Excellent, VG=Very Good, A=Average, P=Poor, VP=Very Poor)

		E	VG	A	P	VP
	Front office counter					
	Thapal box					
	Seating facility					
	Writing desk					
	Availability of Application forms, Stationary for public					
	Complaint box					
	Notice board-RTI					
	Anti-corruption board					

		E	VG	A	P	VP
	Reading corner and materials					
	First aid kit					
	Drinking water facility					
	Toilets					
	Wash basin					
	Baby Feeding room					
	Touch screen for understanding service status					
	Facilities for physically challenged people like ramp					
	Rehabilitation centers and programs for differently-abled citizens					
	Attitude of officials in Front office					
	Knowledge of officials in Front office					
	Availability of officials in Front office					
	Helping mentality of officials					
	Attitude of Councilors					
	staff appearance					
	Timely service					
	procedures for availing service					
	Complaint Redressel system					
	Meeting of citizen					
	Participation in decision making					
	Timely acknowledgement of applications and complaints					
	ward saba meeting					
	Citizen's feedback system					
32	electronic token distribution					

4. State whether you are aware about the following programs implemented by municipal corporation for rendering speedy services

	Yes	No
SEVANA for civil registration (Birth, death, marriage etc.)		
SEVANA (Pension) for Distribution of social security pensions to the poorest of the poor in the society.		

	Yes	No
SANKETHAM program is designed for issuing building permits.		
SANCHAYA for facilitating payment of taxes (property, profession, etc.) and licenses (Dangerous and Offensive (D&O), Prevention of food Adulteration (PFA) and Advertisement tax etc.)		
SOOCHIKA for tracking the position of my file/application.		

5. If Aware, please state your level of agreement regarding the following programs implemented by Municipal corporation. (SA=Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree)

I.	SEVANA - Civil Registration	SA	A	N	D	SD
	It integrate Hospital Kiosk with local body for issuing certificates relating to Births and Deaths					
	It provide correction facility in birth and death certificates					
	It provide Facility for search and name inclusion over the Internet					
	It facilitate Birth Registration of Adopted Child & Certificate issue					
5	Contains clear information on how To use it (Informative)					
II.	SEVANA –PENSION	SA	A	N	D	SD
	It computerize pension payment and make pension distribution more fast and efficient					
2	This application covers National Old Age Pension, Widow Pension, Pension to Unmarried Women above 50 years, Pension to the Physically Challenged and Mentally Challenged Persons, Agriculture Labour Pension And Unemployment wages					
III.	SANKETHAM	SA	A	N	D	SD
	It help in receiving building permits in a transparent and standardized manner					
	It facilitate Online verification & validation of Application form for receiving building permit					

3	I have visited this website for taking permit for my building					
IV.	SANCHAYA	SA	A	N	D	SD
	It covers Utility payment services like Hall booking, ambulance, vehicles, crematorium, payment on water bill etc					
	I have visited this website for paying my property tax.					
	Proper receipts are intimated on payment of tax					
4	The website is well informed about due date, mode and amount of tax to be paid					
V.	SOOCHIKA	SA	A	N	D	SD
	I have visited this website					

6. Rate your opinion regarding the following? (E=Excellent, VG=Very Good, A=Average, P=Poor, VP=Very Poor)

	Processing time					Confidentiality					Problem solving system				
	E	VG	A	P	VP	E	VG	A	P	VP	E	VG	A	P	VP
Sevana - Civil Registration															
Sevana – Pension															
Sanketham															
Sanchaya															
Soochika															

	Information updating					Ease of navigation				
	E	VG	A	P	VP	E	VG	A	P	VP
Sevana - Civil Registration										
Sevana – Pension										
Sanketham										
Sanchaya										
Soochika										



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	User friendly & reduce paper works					Acknowledgement on receipt of application				
	E	VG	A	P	VP	E	VG	A	P	VP
Sevana - Civil Registration										
Sevana – Pension										
Sanketham										
Sanchaya										
Soochika										

**QUESTIONNAIRE FOR EMPLOYEES**

Sir/Madam,

I, Farseena Mol P, currently doing PhD in Commerce at PSMO College, Tirurangadi, affiliated to the University of Calicut on "Role of TQM (Total Quality Management) for improving the service quality of Municipal corporations in Kerala". This questionnaire has been developed to study the perception of citizens on services offered by the Municipal Corporations in Kerala. I solicit your co-operation and support in filling the questionnaire. Your response will be kept confidential and use only for academic purpose.

1. In which corporation you are belong to

- Trivandrum
- Kollam
- Trissur
- Kochi
- Kozhikkode
- Kannur

2. In which department you are belongs to

- General Section
- Accounts
- Health
- Revenue
- Engineering Department
- Town Planning
- Council Section

3. State your perception regarding the following

		H.S	S	N	D	H.D
1	Seating arrangement &Name board					
2	Availability of stationery					
3	Telephone registry					
4	Movement register					
5	Drawer for cash					
6	Receipt book					
7	Computer &Internet facility					
8	Toilets					

		H.S	S	N	D	H.D
9	Govt. orders & rules for reference					
10	Record management					
11	Front office diary					
12	First aid kit					
13	Facilities for physically challenged people like ramp					
14	Sharing of information & future plans among employees by Top management					
15	Clear & open communication between staff					
17	Chance for Participation in decision making					
18	Involvement in problem solving					
19	Meetings are properly conducted and ensure the participation of all members					
20	Informal group of officials					
21	Quality circle of staff to solve work problem					
22	Friendly relationship					
23	Job rotation					
24	Teamwork					
25	Training programs fit the job of employees.					
26	Trainings to equip with new technologies					
27	Equal opportunities for training and development					
28	Quality audit					
29	Proper Measurements and evaluation of works performed.					
30	Proper performance appraisal system					
31	Support of top mgt for long term quality improvement process (management commitments)					

4. Following are some of the hindrances generally faced while implementing quality improvement programmes, State your level of agreement regarding the following hindrances faced in your corporation

Sl.No.		S.A	A	N	D	S.D
1	Human resource available in the organization is very limited					
2	Activities of this corporation are not based on the interest of employees					

Sl.No.		S.A	A	N	D	S.D
3	Financial resources available for the development of the corporation is very limited					
4	There is no Clear & open communication between staff					
5	The top management does'nt support employees' suggestion to improve service quality.					
6	The employees have no chances to be trained in improving the quality of services.					
7	Increased work load leads to sacrificing of quality					
8	Union issues and political issues restrict improvement of service quality					
9	The top management doesn't take any initiatives to creates strong feeling in the employees about the corporation responsible for the society.					
10	Political uncertainty prevent organisation from new quality initiatives					
11	Employees have limited chance for participating in decision making					
12	Citizen lack knowledge regarding their rights, duties, responsibilities etc. related with corporation					
13	Employees are not willing to accept changes introduced by the authority					

5. Are you aware about programmes implemented by municipal corporation for rendering services

Sl. No.		Yes	No
1	STHAPANA for maintaining employees database (including leave particulars, service matters, disciplinary issues, promotions, Payroll, Provident Fund etc.)		
2	SANCHITHA for providing detailed knowledge on acts and rules, Allied act, allied rules, government orders, circulars, gazette notification,court orders etc. relating to local bodies.		
3	SAANKHYA program designed for accounting purpose		

Sl. No.		Yes	No
4	SAKARMA program designed for handling of council/committee agenda, minutes etc		
5	SUGAMA program for cost estimation		
6	SAMVEDHITHA: LSGD Web portal for all local government and department		
7	SUBHADRA : Financial Management System		
8	SAMOOHYA for maintaining citizen's database		
9	SAPHALYA for Human resource Package		
10	SULEKHA- Plan Monitoring System		

6. If aware, please state your level of agreement regarding the following

		S.A	A	N	D	S.D
1	STHAPANA(Municipal employees PF)					
	It provide credit card for all employees					
	All Monthly Transactions linked with payroll					
	It useful for Temporary Advance (TA) request and their online sanctioning					
	It is useful for providing Non-Refundable Advance (NRA) request and its online sanctioning					
	Useful for providing TA to NRA conversion request and its online sanctioning					
2	SANCHITHA(Repository of acts and rules relating to local bodies)	S.A	A	N	D	S.D
	It is an electronic legal advisor					
	It provide Query facility on Acts, Rules, Government Orders, Court Judgements based on titles, sub titles, year, reference numbers etc.					
	It act as a Repository of acts and rules ,court orders etc. relating to local bodies.					
3	SAANKHYA(Double entry accrual based accounting for all local govt)	S.A	A	N	D	S.D
	It helps to overcome the problem of shortage of manpower in handling day to day operations resulting in timely closing of annual accounts.					

	It Equips even the average employee to prepare the entire Financial Reports without depending upon accounting professionals					
	It is useful for Recording each financial transaction in real time					
	It makes accounting process more transparent and gives financial informations to the decision makers.					
	It helps for executing Accounting with the participation of the entire employees dealing with financial transactions					
4	SAKARMA(handling of council/committee agenda,minutes etc)	S.A	A	N	D	S.D
	It Facilitate recording of decisions of the standing committees and the local body meetings					
	It provide Provision for recording follow-up actions based on decisions					
	It provide Provision for querying past decisions and facility for recording deviation					
5	SUGAMA(Cost estimation tool for public works)	S.A	A	N	D	S.D
	SUGAMA software is using for estimating cost of public work					
6	SAMVEDHITHA(LSGD Web portal for all local government and department)	S.A	A	N	D	S.D
	It helps for development of local government and departments					
7	SUBHADRA(Financial Management System)	S.A	A	N	D	S.D
	It helps for Budget document creation					
	It Facilitate cash flow management for long term, short term and medium term					
8	SAMOOHYA	S.A	A	N	D	S.D
	It creates a community database with a citizen ID with the objective of finally linking them to a citizen portal					
	It Integrate birth, death and marriage registration of citizen					
9	SAPHALYA(Software for Human resource Package)	S.A	A	N	D	S.D
	It connect job seekers and job providers					

	It publishes job vacancies at the local, state and national levels					
10	SULEKHA- Plan Monitoring System	S.A	A	N	D	S.D
	It helps to Tracks the entire course of plan formulation process by incorporating reports of working group, gramasabha, development seminars and social and other audits into plan projects.					

7. Rate your opinion regarding the following? (E=Excellent, VG=Very Good, A=Average, P=Poor, VP=Very Poor)

	Processing time					Confidentiality					Problem solving system				
	E	VG	A	P	VP	E	VG	A	P	VP	E	VG	A	P	VP
Sthapana															
Sanchitha															
Saankhya															
Sakarma															
Sugama															
Samvedhitha															
Subhadra															
Samoohya															
Saphalya															
Sulekha															

	Information updating					Ease of navigation				
	E	VG	A	P	VP	E	VG	A	P	VP
Sthapana										
Sanchitha										
Saankhya										
Sakarma										
Sugama										
Samvedhitha										
Subhadra										
Samoohya										
Saphalya										
Sulekha										

	Page loading speed					Reduce workload				
	E	VG	A	P	VP	E	VG	A	P	VP
Sthapana										
Sanchitha										
Saankhya										
Sakarma										
Sugama										
Samvedhitha										
Subhadra										
Samoohya										
Saphalya										
Sulekha										

8. Have you implemented any special programme which are not yet implemented commonly by other corporations to improve your performance quality?

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