

Feasibility Study: Civic+ – Smart Municipality Management System

Feasibility is defined as the practical extent to which a project can be performed successfully. To evaluate feasibility, a feasibility study is performed, which determines whether the solution considered to accomplish the requirements is practical and workable in the software. In this study, we assess whether the Civic+ platform — a smart municipality management system for Kerala's panchayat and ward-level governance — can be developed effectively, meet its objectives, and be adopted by real users. The project focuses on improving grievance handling, welfare scheme distribution, and civic planning using a web platform integrated with Machine Learning and IoT-based smart triggers.

The objective of the feasibility study is to establish the reasons for developing the software that is acceptable to users, adaptable to change, and conformable to established standards. Various other objectives of the feasibility study are listed below:

- To analyze whether the software will meet organizational requirements.
- To determine whether the software can be implemented using the current technology and within the specified budget and schedule.
- To determine whether the software can be integrated with other existing software.
- To ensure that Civic+ offers long-term benefits in terms of digital governance.

The information assessment phase identifies the information that is required to answer the three questions set out above. Once the information has been identified, you should question information sources to discover the answers to these questions.

Q1: How would the panchayat/ward operate without this system? Manual logging of complaints, poor transparency, unprioritized issue resolution, and inefficiencies in welfare distribution would continue.

Q2: What problems does Civic+ solve? Civic+ automates complaint collection, uses AI for classification/prioritization, digitally distributes welfare schemes, forecasts ward-level issues, and supports real-time IoT alerts for problems like waterlogging or garbage overflow.

Q3: What value does it add to local governance? Transparency, automation, time-saving for councillors, smart decision-making, and improved citizen satisfaction.

Q4: Is it compatible with other systems or future integrations? Yes. APIs can be added to link Aadhaar, GIS layers, or WhatsApp bots for future upgrades.

Q5: Does it use unfamiliar technologies? No. It uses the MERN stack and basic ML libraries, which are widely adopted and manageable for academic development.

Types of Feasibility

Various types of feasibility that are commonly considered include technical feasibility, operational feasibility, and economic feasibility.

1. Technical Feasibility

Technical feasibility assesses the current resources (such as hardware and software) and technology, which are required to accomplish user requirements in the software within the allocated time and budget.

- The development team has hands-on experience with full-stack web technologies (MongoDB, Express, React, Node.js) and basic machine learning using Python libraries like scikit-learn. The team is capable of integrating APIs (e.g., WhatsApp, SMS) and deploying the project on cloud platforms.
- All the technologies used in Civic+ (MERN stack, Python, and common deployment services) are stable, production-ready, and well-supported by the developer community.
- MERN stack and Python have large global communities with extensive documentation, tutorials, forums (like Stack Overflow), and support channels. These resources ensure that any issues can be quickly addressed during development or enhancement phases.
- IoT integration (optional) is feasible using simple HTTP or MQTT protocols from sensor boards like ESP32.

Civic+ is technically feasible with available knowledge, tools, and support systems.

2. Operational Feasibility

Operational feasibility assesses the extent to which the required software performs a series of steps to solve business problems and user requirements. This feasibility is dependent on human resources (software development team) and involves visualizing whether the software will operate after it is developed and be operative once it is installed.

- The problems Civic+ addresses — complaint mismanagement, lack of prioritization, and welfare misuse — are real and high-priority in Kerala's local bodies.
- The system aligns with how Panchayats and wards function (multi-role users: citizen, councillor, officer, admin).
- Features are intuitive and can be adopted by users with minimal training (especially councillors and officers).
- Councillors can approve schemes based on AI-predicted family need, rather than arbitrary decisions.

The system is operationally aligned with user workflows and governance structure.

3. Economic Feasibility

Economic feasibility determines whether the required software is capable of generating financial gains for an organization. It involves the cost incurred on the software development team, estimated cost of hardware and software, cost of performing feasibility study, and so on.

- Civic+ is an academic project — development is free using open-source tools.
- No costly infrastructure is needed; it works with basic laptops, mobile internet, and cloud hosting (like Vercel, Render, MongoDB Atlas).
- IoT components (optional) cost under ₹500 each (e.g., garbage sensor with ESP32).
- Training cost is minimal, as interfaces are simple and role-specific.

The system is economically feasible for both academic use and pilot implementations in small panchayats.

Civic+ is technically sound, operationally useful, and economically sustainable. It addresses key challenges in Kerala's local governance through modern digital solutions. With role-based access, AI modules, and optional IoT features, it provides a scalable and impressive platform for academic research and future civic transformation.