



**Special Edition**

NCASIT 2023, 29<sup>th</sup> April 2023

Department of Computer Engineering,

St. Vincent Pallotti College of Engineering & Technology, Nagpur,

**AUTOMATING REVENUE COLLECTION SYSTEM**

AUTHOR NAME

Pranav Patle, Pranamyia Taral, Shreyas Chimote, Shweta Dukare, Isha Swarkar, Kshitij Gavhane, Janvi Kodmalwar, Ayushi Ghatole, Manjiri Ahirrao, Disha Dongre, Sakshi Rinke

Student, Department of Computer Engineering, St. Vincent Pallotti College of Engineering and technology, Nagpur (India)

Abstract -Automating revenue collection systems can significantly enhance the efficiency and accuracy of revenue collection processes. With the increasing complexity and volume of revenue streams, it has become essential for organizations to automate their revenue collection systems. It is a website with dashboard which is developed with machine learning for enhancing the performance and visualizations.

This project proposes an automated revenue collection system for the Nagpur Municipal Corporation (NMC) to streamline the collection of various taxes and fees from citizens. The system will use modern technology to provide a convenient and efficient way for citizens to pay their dues while reducing the administrative burden on NMC officials. The system will be designed to integrate with the existing NMC infrastructure and provide real-time data analysis to improve revenue collection and management. The proposed system aims to improve transparency, reduce corruption, and enhance citizen satisfaction with the revenue collection process. Overall, the system will enable NMC to collect revenues more effectively and efficiently, leading to better service delivery and improved financial sustainability. The paper also explores the challenges of implementing an automated revenue collection system and provides recommendations for successful implementation. Overall, this paper provides insights into how organizations can benefit from automating their revenue collection systems and ensure a seamless revenue collection process.

I. INTRODUCTION

The Nagpur Municipal Corporation (NMC) is responsible for the collection of various taxes and fees from citizens. However, the manual process of

revenue collection can lead to inefficiencies, time delays, and errors, resulting in revenue leakage and negatively impacting the organization's financial sustainability. To address these challenges, an automated revenue collection system is proposed for NMC.

1. The system will use modern technology to simplify the payment process for citizens, while reducing administrative tasks for NMC officials. It will integrate with NMC's existing infrastructure and provide real-time data analysis to facilitate effective revenue management. The proposed system aims to increase transparency, reduce corruption, and improve citizen satisfaction.
2. This system will examine NMC's revenue collection challenges, including revenue leakage, delayed revenue collection, and errors in revenue management, and propose an automated system as a solution. The benefits of the proposed system include increased efficiency and accuracy, reduced administrative burden, and improved citizen satisfaction.
3. Additionally, the system will analyze the impact of the proposed system on NMC's financial sustainability. This analysis will include a comparison of revenue collection processes before and after implementation, a cost-benefit analysis, and revenue generation potential. Overall, the proposed automated revenue collection system aims to improve revenue management, enhance citizen satisfaction, and increase NMC's financial sustainability.

II. ANALYSIS OF PROBLEM STATEMENT



**Special Edition**

NCASIT 2023, 29<sup>th</sup> April 2023

Department of Computer Engineering,

St. Vincent Pallotti College of Engineering & Technology, Nagpur,

Market revenue collection system project reduces manual work by collecting revenue through electronic payment methods and generating e-receipts. This System is developed to enhance customer convenience. It gives rental summary to the shop holder. As it is Client-Server type of system it is developed using different front-end and back-end technologies and also having Machine learning part for chatbot and live dashboard.

The goal of the market revenue collection system is to automate and streamline the process of collecting money from sales and transactions that take place in a market or marketplace. This result in Increased Efficiency, Enhanced Accuracy, Customization and Scalability, Enhanced Customer Experience.

Market revenue collection system automates the entire revenue collection process, making it easier, more effective, and less prone to human error. It also offers improved accuracy, increased financial visibility, compliance and security, scalability and customization, and improved user experience. This system provides organisations regular monitoring and tracking of revenue performance It also ensures that firms are in compliance with legal obligations by adhering to relevant tax laws, regulations, and financial reporting standards

**III. LITERATURE REVIEW**

1. A study of the literature on market revenue collecting methods focuses on looking at the literature and current research on different markets' revenue collection methods. With an emphasis on giving a succinct summary of the literature, this review tries to identify the important concepts, trends, and issues connected with market revenue collection system.
2. The literature on market revenue collection systems spans a number of disciplines, including public administration, corporate management, finance, and economics. The design, execution, efficacy, and impact of revenue collection systems on market performance have all been studied by academics and researchers.
3. The necessity of efficient and effective revenue collecting mechanisms for markets to operate efficiently is a recurring issue in the literature.

According to studies, governments and market organisers must collect taxes in order to fund public goods and services, control markets, and guarantee fair competition. A timely and transparent collection of revenues can be achieved with the use of efficient revenue collection systems, which also help ensure that market players pay their fair share of taxes, fees, and penalties. Data analytics, online payment systems, and digital platforms can increase revenue collection speed and accuracy.

4. The role of stakeholders in revenue collection systems, such as governments, market organisers, and market participants, has also been covered in the literature. Researchers have looked at how various stakeholders interact and behave, as well as how their relationships and incentives affect the results of revenue collection.
5. For the proper data visualization needs to be carried out using dashboard and chatterbot deployed for purpose of the navigation and support desk.
6. Overall, the research on market revenue collecting systems offers insights into their conception, application, and efficiency in various markets. It emphasises the significance of effective revenue collection for market operation and discusses the main issues and developments surrounding revenue collection in modern marketplaces. In order to inform the design and implementation of efficient revenue collecting systems in the future, more study is required to explore emerging concerns, such as digitization, globalisation, and changing market dynamics.

**IV. SYSTEM REQUIREMENTS**

**Hardware Requirements:** The hardware requirements for the revenue collection system will depend on the volume of transactions and data that need to be processed. The system will need a computer or a server with sufficient processing power, memory, and storage to handle the workload. The hardware should also have backup power supplies and redundancy to ensure data integrity in case of power outages or hardware failures.



**Special Edition**

NCASIT 2023, 29<sup>th</sup> April 2023

Department of Computer Engineering,

St. Vincent Pallotti College of Engineering & Technology, Nagpur,

**Software Requirements:** The software requirements for the revenue collection system will depend on the specific needs of the organization. The system will require software for database management, transaction processing, reporting, and user management. The software may need to be customized or developed from scratch to meet specific requirements. The software should also be compatible with other systems that the organization uses, such as banking or accounting systems.

**Security Requirements:** Revenue collection systems deal with sensitive financial data, so security is of utmost importance. The system should have robust authentication and authorization mechanisms to control access to the system and the data. Data should be encrypted both in transit and at rest to prevent unauthorized access. The system should also be regularly audited and monitored for security breaches.

**Integration Requirements:** The revenue collection system may need to integrate with other systems, such as banking or accounting systems, to ensure accurate and timely financial reporting. The system should have well-defined APIs or other integration mechanisms to enable seamless data transfer between systems. The system should also be able to handle data in different formats and from different sources.

**Scalability Requirements:** As the volume of transactions grows, the system should be able to scale up to handle the increased load. The system should be designed with a distributed architecture that can be easily expanded by adding more hardware or software components. The system should also be able to handle multiple users simultaneously without compromising performance.

**Compliance Requirements:** Revenue collection systems may be subject to various regulations, such as tax laws, data privacy laws, or industry-specific regulations. The system should be designed to comply with all relevant regulations and standards.

The system should also be able to generate reports that demonstrate compliance with these regulations.

**User Interface Requirements:** The revenue collection system should have an intuitive and user-friendly interface that allows users to easily enter and retrieve data, generate reports, and perform other tasks. The interface should be customizable to meet the needs of different users and departments within the organization. The system should also have tools for data visualization and analysis to help users make informed decisions based on the data.

**V. PROPOSED SYSTEM**

In today's era of digitalization requirement of online collection of payment becomes one of the crucial things. To collect the payment, market revenue system is proposed by NMC. Market revenue system refers to the process of checking, tracking and maintaining the records of payment done by user who currently owns the shop which comes under NMC. To pay rent online, user will typically need to visit the website of NMC authority which responsible for tax collection. From there, he will be able to access an online tax payment system, which may require you to create an account or log in with your existing credentials. The main objective for building this system is to implementing a user-friendly revenue management system so that user can pay tax online which not only saves time but also discard the traditional methods such as mailing in a check or visiting the office in person which is convenient for both user and employee. Market Revenue System is Mainly divided into three modules Client-side for user interface Server-side for backend and machine learning.

Client side -Client-side typically refers to operations that are performed on the user's computer or device, rather than on server or other remote system. This system is built in such a way that it is easily accessible and usable on all major browsers and devices. Also, it has clean, modern and responsive user interface design. It is made by using technologies like HTML CSS and JavaScript. Client-side scripting is often used to validate user



Special Edition

NCASIT 2023, 29<sup>th</sup> April 2023

Department of Computer Engineering,

St. Vincent Pallotti College of Engineering & Technology, Nagpur,

input, manipulate page content dynamically, and communicate with remote servers via APIs. It allows user to track their payments and current status of payment. It also offers payment gateway. A payment gateway is an online service that facilitates the processing of electronic transactions between a customer and a merchant. It has login page. When accessing a login page, users are usually prompted to enter their login credentials into designated fields, which are then verified by the system to determine whether the user is authorized to access the requested service. If the credentials are correct, the user is granted access to the service, otherwise, the user may be prompted to try again or may be denied access altogether. Login pages are typically used to protect sensitive or confidential information, such as personal data, financial records or private communications, from unauthorized access by third parties. It also has registration form for the customers who is not an existing user.

Server side –Server-side refers to the part of a software application or website that runs on the server, as opposed to running on the user's device or browser. This system is client-server model the server-side is responsible for processing and responding to client requests. In this system technologies such as PHP and MySQL are used to managed the databases. Databases are important part of this system because it provides security. It has specific tools for enforcing data constraints such as data validation rules which prevent the entry of invalid user authentication and access control. Databases provide tools for data analysis and reporting, these tools allow for the extraction of valuable insights from the data which can be used to make decisions as this system is for NMC it has larger amount of data which needs to manage so server side takes account and maintain every record. Updating data in client-side also stores and maintain at server side

Machine learning side – In this part the dashboard will display real time analysis. Dashboard abstract data for user and administrator. Chatbot will solve user queries It will also provide guidance and

navigation support. User queries are processed using NLP.

VI. RESULT

This system involves implementing a revenue management system to manage and process the data uploaded for daily tax collection accounting purpose. In this system revenue is generated and visualized to the customer who owns the shops also it become easy for the employer to manage the work load and maintaining the data. This system can help user to understand is easier for them to navigate through the website The system is made for high performance and effective work Dynamic work is handled and convenience is provided without visiting the office. Instant results of query are given by the system. Overall, this system is optimization of complex process to easier one.

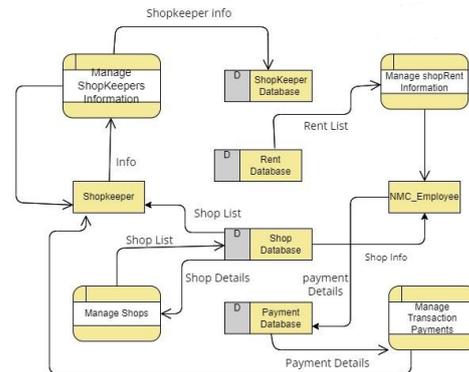


Fig. Data Flow Diagram

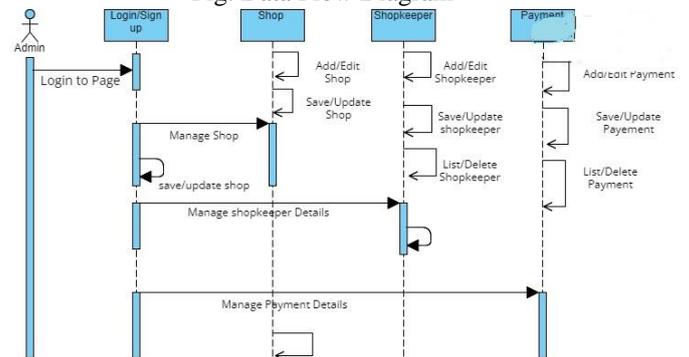


Fig. Sequence Diagram

VII. ACKNOWLEDGEMENT

A special thanks to **MR.MAHESH DHAMECHA** Assistant commissioner at NMC and **MR.SWAPNIL LOKHANDE** E-Governance Cell



**Special Edition**

NCASIT 2023, 29<sup>th</sup> April 2023

Department of Computer Engineering,

St. Vincent Pallotti College of Engineering & Technology, Nagpur,

Head at Nagpur Municipal Corporation for providing the opportunity to work on this project. A big thanks to the industry mentor **MS.REEMA ROYCHAUDHARY** who made this possible. We also would like to thank **Prof.Dr. SUNIL M. WANJARI**, Head of the Department of Computer Engineering and all our faculty members who regularly evaluated our project.

[9]

[https://www.researchgate.net/publication/220482883\\_NLTK\\_the\\_Natural\\_Language\\_Toolkit](https://www.researchgate.net/publication/220482883_NLTK_the_Natural_Language_Toolkit)

VIII. CONCLUSION

Our website will be able to collect the revenues from shopkeeper under the NMC in an efficient and more easy way. It is going to through the change from uncertain methods and techniques to well organized stream that needs to be continuously connected to the standards. The shopkeeper will be able to see and pay rent through online medium and will be able to establish a fruitful conversation between NMC team people and the shopkeepers. The database will collect all required information about the shopkeeper and will supply them the revenue that they acquired.

IX. REFERENCES

- [1] <https://www.nmcnagpur.gov.in/>
- [2] <http://www.indiabudget.gov.in/budget2020-21/economicsurvey/doc/vol1chapter/echap04.pdf>
- [3] <http://www.investindia.gov.in/policies-research-reports>
- [4] [www.w3schools.com](http://www.w3schools.com)
- [5] [https://www.researchgate.net/publication/354780181\\_AUTOMATION\\_OF\\_REVENUE\\_COLLECTION\\_SYSTEM\\_USING\\_GIS\\_IN\\_JIMETA\\_MODERN\\_MARKET\\_ADAMAWA\\_STATE](https://www.researchgate.net/publication/354780181_AUTOMATION_OF_REVENUE_COLLECTION_SYSTEM_USING_GIS_IN_JIMETA_MODERN_MARKET_ADAMAWA_STATE)
- [6] <http://www.adb.org/>
- [7] <http://www.researchgate.net/>
- [8] [https://www.researchgate.net/publication/319164243\\_Natural\\_Language\\_Processing\\_State\\_of\\_The\\_Art\\_Current\\_Trends\\_and\\_Challenges](https://www.researchgate.net/publication/319164243_Natural_Language_Processing_State_of_The_Art_Current_Trends_and_Challenges)