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Simple CRM Ticketing Tool

Swati Andhale[1], Nilam Kadam[2,*]

Abstract

The objective of this project is to design and develop a simple customer relationship management (CRM) ticketing tool specifically aimed at small and medium-sized businesses (SMBs) to help streamline customer support operations. The system enables users to raise support tickets for issues, queries, or service requests, which can then be tracked and managed by the support team. Administrators or support staff can assign tickets, update statuses, such as open, in progress, or closed, and monitor resolution times. This tool enhances customer satisfaction by reducing response time, improving communication, and ensuring proper tracking of issues. Built using technologies like HTML, CSS, JavaScript for the frontend, and Node.js/PHP/Python with MySQL or MongoDB for the backend, the system is both lightweight and scalable. The project demonstrates how a simplified CRM solution can automate essential customer service workflows without the need for expensive or overly complex enterprise tools. In today's competitive business environment, customer satisfaction is a critical success factor for any organization. However, SMBs often lack access to advanced and affordable tools to manage customer interactions effectively. This project focuses on the design and development of a simple CRM (customer relationship management) ticketing tool that addresses this need by providing an intuitive and cost-effective solution to streamline customer support services. The system allows users to create and submit support tickets for various issues, which are then tracked and managed by support staff or administrators. Each ticket follows a defined lifecycle– including states such as "Open", "In Progress", and "Closed"– ensuring transparency and accountability throughout the support process. The admin panel enables staff to view, assign, update, and monitor tickets, helping reduce response and resolution times. A basic reporting module is also included to give insights into ticket volumes, resolution rates, and pending issues.

Keywords: Communication, CRM ticketing tool, HTML, model-view-controller (MVC), MySQL

INTRODUCTION

In today's highly competitive and customer-driven business environment, the ability to respond quickly and efficiently to customer issues is a key factor in building trust and ensuring customer satisfaction. Organizations, particularly small and medium-sized enterprises (SMEs), often face challenges in managing customer support processes because of the absence of automated systems. Many still rely on manual methods, such as emails, calls, and spreadsheets, to handle customer complaints or service requests. These approaches are not only time-consuming but also inefficient, leading to miscommunication, delayed responses, and unresolved issues.

A customer relationship management (CRM) system helps businesses manage their interactions with current and potential customers by organizing data, automating tasks, and improving communication. Within a CRM, a ticketing tool plays a crucial role by allowing customer issues to be logged as "tickets" that can be tracked, assigned, prioritized, and resolved in a systematic manner. This structure ensures that every issue is recorded

***Author for Correspondence**
Nilam Kadam
E-mail: nilamkadam162001@gmail.com

[1]Head and Assistant Professor, Department of Master of Computer Application, Parvatibai Genba Moze College of Engineering Wagholi, Pune, Maharashtra, India
[2]Student, Department of Master of Computer Application, Parvatibai Genba Moze College of Engineering Wagholi, Pune, Maharashtra, India

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and followed through until resolution, improving transparency, accountability, and efficiency in support operations.

However, most CRM solutions available in the market today are designed for large enterprises and come with high costs, complex features, and steep learning curves, making them inaccessible to smaller businesses. This project proposes the development of a simple CRM ticketing tool tailored to the needs of SMEs. The system is designed to be user-friendly, cost-effective, and scalable, providing essential functionalities, such as ticket creation, assignment, status tracking, and reporting.

EXISTING SYSTEM

In the current scenario, many small and medium-sized businesses (SMBs) manage customer queries and support requests manually through emails, phone calls, spreadsheets, or basic contact forms. These methods are not only time-consuming but also prone to errors and miscommunication. Without a centralized system to log, assign, and track customer issues, support staff often struggle to prioritize tasks, leading to delayed responses and unresolved complaints.

Furthermore, there is no proper mechanism to monitor ticket status or generate reports, which makes it difficult for management to evaluate performance or identify recurring issues.

Although large organizations often use advanced CRM platforms such as Salesforce, Zendesk, or Freshdesk, these solutions are typically complex and expensive, making them unsuitable for smaller businesses with limited technical and financial resources.

Additionally, such platforms may include features that are unnecessary for a small team, thereby increasing the learning curve and deployment time. Consequently, many SMBs lack reliable or efficient customer support systems, which impacts their ability to maintain strong customer relationships.

The limitations of the existing system highlight the need for a simplified, low-cost, and user-friendly CRM ticketing tool that can automate basic support workflows while remaining accessible to non-technical users.

In many SMEs, customer support is still managed through fragmented and inefficient methods, such as email threads, phone calls, social media messages, and manually maintained spreadsheets. These traditional methods lack structure and traceability, making it difficult to track the lifecycle of a customer issue from initiation to resolution. When tickets are not logged properly or if multiple support team members respond to the same issue without coordination, it leads to confusion, redundancy, and, ultimately, poor customer service. There is no reliable way to categorize issues, set priorities, assign responsibilities, or ensure timely resolution.

NEED FOR SYSTEM

As businesses continue to grow and interact with a larger customer base, managing customer queries, complaints, and service requests in an organized manner becomes increasingly important. SMEs, in particular, face a significant challenge in delivering timely and efficient customer support because of a lack of structured systems.

Most of these businesses still rely on traditional and manual methods, such as phone calls, emails, and spreadsheets, to handle customer issues. These methods often lead to missed complaints, delayed responses, and a lack of accountability, which ultimately results in poor customer satisfaction and a damaged brand image.

A centralized and easy-to-use system is needed to track, assign, and monitor customer support tickets from when they are raised until they are resolved. A simple CRM ticketing system provides a structured workflow in which each issue is recorded, categorized, prioritized, and assigned to the appropriate staff

member. This ensures faster resolution and better customer service, while also allowing management to monitor team performance through reports and metrics.

LITERATURE REVIEW

CRM systems have evolved significantly over the years and have become essential tools for managing customer interactions, support processes, and business relationships [1]. A major component of CRM is the ticketing system, which facilitates structured issue tracking and resolution. Various studies and implementations have demonstrated the impact of automated support tools on improving customer service efficiency and satisfaction. Commercial platforms, such as Zendesk, Freshdesk, and Salesforce, offer robust ticketing solutions; however, they are primarily targeted at large enterprises with the infrastructure and budget to support them [2]. These tools come with a wide range of features, many of which are unnecessary for smaller teams, thereby increasing system complexity.

The lack of affordable, simplified CRM ticketing solutions leaves SMBs with a gap in essential support features without the overhead of enterprise systems.

In contrast, some academic projects and startups have attempted to develop lightweight, custom-built ticketing systems [3]. A study by Aglibar et al. (2022) [4] on the use of Jira in IT project management showed that minimal ticketing frameworks can drastically improve accountability and communication among teams.

However, tools such as Jira are primarily geared towards internal task management rather than customer support.

These studies collectively highlight the need for a simple, customizable CRM ticketing system that provides core functionalities, such as ticket submission, assignment, and tracking, in an intuitive interface suitable for non-technical users [5]. This project addresses this gap by developing a simplified CRM ticketing tool specifically designed for SMEs to manage customer support with minimal cost and technical barriers.

CRM systems have become indispensable in modern business environments for efficiently managing customer interactions and support [6]. A critical function within CRM is the ticketing system, which organizes and tracks customer requests, complaints, or queries to ensure timely resolution. Numerous research studies and commercial products have contributed to advancements in this domain over the years [7].

Although these systems provide comprehensive CRM functionalities, including ticket management, they often require customization and technical expertise to align with specific business needs. This presents a challenge for smaller businesses that may lack technical resources, indicating a demand for simpler, out-of-the-box solutions [8].

Commercial platforms, such as Zendesk, Freshdesk, and Salesforce Service Cloud, are widely adopted across industries and are known for their robust features, including multi-channel support, automation rules, analytical dashboards, and AI-powered chatbots [9].

However, these solutions can be cost-prohibitive for SMBs and involve steep learning curves. Additionally, they often include numerous advanced features that are unnecessary for businesses with straightforward support requirements, resulting in underutilization and inefficiency.

Aglibar et al. (2022) [4] explored the effectiveness of ticketing systems in IT project management and highlighted how basic ticket tracking can improve communication, transparency, and accountability within teams. Their findings suggest that minimalistic ticketing tools, when designed with usability in mind, can substantially enhance operational workflows [10]. However, most such systems focus on internal task management rather than external customer support.

PROPOSED SYSTEM

The proposed system aims to develop a simple CRM ticketing tool designed specifically for SMBs to efficiently manage customer support activities. Unlike complex and costly enterprise CRM solutions, this system focuses on providing essential ticketing functionalities through a user-friendly and lightweight platform. Customers can easily submit support tickets detailing their issues or requests, which are then recorded and stored in a centralized database.

Support staff and administrators can view, assign, and update the status of tickets, ensuring a clear workflow from ticket creation to resolution. The system facilitates transparent tracking by categorizing tickets based on priority and status (such as open, in progress, and closed), enabling both customers and support teams to monitor progress in real time. Additionally, the system incorporates role-based access, allowing administrators to manage users and generate reports that summarize ticket metrics, such as the number of tickets created, resolved, and pending.

Developed using modern web technologies, such as HTML, CSS, and JavaScript for the frontend and Node.js/PHP/Python for backend logic, the application is designed to be scalable, responsive, and easy to deploy. The database, managed with MySQL or MongoDB, ensures data integrity and quick retrieval of ticket information. The proposed system follows the model-view-controller (MVC) architecture to maintain a clean separation of concerns, facilitating easier maintenance and future enhancements.

Overall, this project seeks to bridge the gap in affordable, simple CRM ticketing solutions for smaller businesses by automating key customer support processes, reducing response times, improving accountability, and enhancing overall customer satisfaction. Future enhancements may include automated notifications, integration with email and SMS services, AI-based ticket categorization, and analytical dashboards to provide deeper insights into support team performance.

The proposed system is a simple CRM ticketing tool developed to cater specifically to the needs of SMBs that require an affordable, efficient, and easy-to-use platform for managing customer support requests. Recognizing that many existing CRM solutions are either too complex or financially inaccessible for SMBs, this system focuses on delivering only the essential features necessary for effective ticket management, thereby simplifying the customer support workflow.

The system allows customers to create and submit support tickets through a straightforward web interface, where they can describe their issues or requests in detail. Each ticket is assigned a unique identifier and securely stored in a centralized database, ensuring that no request is lost or overlooked. Support agents and administrators have access to a dedicated dashboard that displays all active tickets, enabling them to assign, update, prioritize, and resolve tickets systematically. The inclusion of ticket statuses, such as “Open,” “In Progress,” and “Closed,” helps in monitoring the lifecycle of each customer issue and improves communication transparency between the support team and the customers [11, 12].

METHODOLOGY

The development of the simple CRM ticketing tool follows a structured methodology to ensure systematic design, implementation, and testing. The software development life cycle (SDLC) model chosen for this project is the waterfall model, because of its sequential phases and clear documentation, which suit the academic environment and project scope.

The process begins with requirement analysis, in which the functional and non-functional requirements are gathered by understanding the needs of SMBs for a lightweight ticketing system.

This phase involves studying existing manual processes, identifying pain points such as delayed response and lack of tracking, and defining core features such as ticket creation, assignment, status updates, and reporting.

Subsequently, the system design phase involves creating the overall architecture, database schema, and user interface design. The system architecture follows the MVC pattern to separate concerns, improve maintainability, and facilitate future enhancements. Data flow diagrams (DFDs) and entity-relationship diagrams (ERDs) are developed to represent system workflows and database relationships clearly.

Following the design, the implementation phase involves coding the frontend and backend components using suitable technologies. The frontend is developed with HTML, CSS, and JavaScript frameworks (such as React or Bootstrap) to build a responsive and user-friendly interface. The backend logic is implemented using Node.js/PHP/Python, which handles ticket management, user authentication, and database operations. The database is designed using MySQL or MongoDB to efficiently store and retrieve ticket data.

Once the coding is complete, the testing phase ensures that the system meets all requirements and functions as expected. Various testing methods are employed, including unit testing to verify individual components, integration testing to check the interaction between modules, and system testing to validate end-to-end workflows. User acceptance testing (UAT) is conducted with sample users to gather feedback on usability and functionality.

Finally, the system was deployed on a web server or cloud platform, making it accessible to users. Documentation was prepared to support users and administrators in operating the system effectively.

Throughout development, an iterative approach was followed to incorporate feedback and promptly fix defects. This structured methodology ensures the delivery of a reliable, efficient, and easy-to-use CRM ticketing tool that fulfills the project objectives and addresses the support management challenges faced by small businesses.

Development Approach

- The project follows the Waterfall Model for software development.
- The Waterfall Model is a linear and sequential process with clearly defined phases.
- Enables the delivery of a stable, easy-to-maintain, and scalable CRM ticketing tool tailored for SMBs.

Technology Stack

Frontend

- *HTML5:* For creating the structure of web pages.
- *CSS3:* For styling and layout to ensure a responsive and user-friendly interface.
- *JavaScript:* For client-side scripting to make the interface interactive.
- *Bootstrap (optional):* A CSS framework that speeds up responsive design and ensures consistency.

Backend

- *PHP:* Server-side programming languages/frameworks to handle business logic, API endpoints, and server operations.

Database

- *MySQL:* Relational database to store structured ticket and user data.
- *MongoDB (optional):* NoSQL database alternative for flexible data storage.
- *Server Environment:* XAMPP is used to simulate a local server for development and testing.

Module Development

User Registration and Authentication Module

- Allows new users (customers and support staff) to register.
- Supports login/logout functionality.
- Implements role-based access control (admin, support agent, customer).

Ticket Management Module
- Enables customers to create and submit new tickets with details.
- Allows support staff to view, update, assign, and close tickets.
- Tracks ticket status (Open, In Progress, Closed).

Ticket Categorization and Prioritization Module
- Supports categorizing tickets by issue type (e.g., Technical, Billing).
- Allows setting ticket priority levels (Low, Medium, High).

Dashboard and Reporting Module
- Provides summary dashboards for administrators and support agents.
- Generates reports on ticket status, resolution time, and staff performance.

Notification Module
- Sends automated email or SMS alerts on ticket creation, updates, or resolution.
- Keeps customers informed about their ticket progress.

Search and Filter Module
- Allows users to search for tickets by ID, status, priority, or date.
- Provides filters to easily manage and sort tickets.

User Management Module
- Allows admin to manage user accounts, roles, and permissions.
- Supports resetting passwords and deactivating users.

Testing Process

Unit Testing
- Tests individual modules and components (e.g., ticket creation, user login).
- Ensures each function performs as expected in isolation.
- Conducted using manual test cases or automated scripts.

Integration Testing
- Verifies interaction between different modules (e.g., frontend and backend communication).
- Checks data flow and functionality across the system.
- Detects interface defects between integrated units.

System Testing
- Tests the complete, integrated system as a whole.
- Validates the system against all specified requirements.
- Includes functionality, usability, performance, and security testing.

User-Centered Design

Focus on User Needs
- The system is designed to meet the requirements of small business users, support agents, and administrators.
- Interfaces are simplified to ensure ease of use for non-technical users.

Intuitive Interface
- Clear navigation menus and forms.
- Minimal steps to create, track, and update tickets.
- Responsive design to support use on desktops, tablets, and smartphones.

Accessibility

- Use of readable fonts, appropriate color contrasts, and clear labels.
- Keyboard navigation and screen reader compatibility considered.

Documentation and Maintenance

Comprehensive Documentation

- User Manual: Step-by-step guide for customers, support agents, and administrators.
- Technical Documentation: Details of the system architecture, database schema, APIs, and code structure.

Maintenance Activities

- Regular bug fixes and patch updates based on user feedback.
- Performance monitoring to ensure system stability and scalability.

RESULT AND DISCUSSION

The development and implementation of the simple CRM ticketing tool successfully demonstrated the feasibility and effectiveness of a lightweight ticket management system tailored for SMBs. After deploying the system in a controlled environment and testing it with sample users, it was observed that the tool facilitated smoother customer support workflows by enabling timely ticket creation, assignment, and resolution tracking.

Users reported that the intuitive interface significantly reduced the learning curve, allowing both customers and support agents to interact with the system efficiently without prior technical knowledge. The system's ability to categorize tickets by priority and status enhanced the support team's ability to manage workloads and focus on critical issues first.

Automated notifications kept customers informed about ticket progress, reducing the need for manual follow-ups and improving overall communication.

Performance testing indicated that the system handled concurrent ticket submissions and updates without significant delays, affirming its reliability for day-to-day use in small business scenarios. Additionally, the reporting module provided valuable insights into ticket volumes and resolution times, enabling management to identify bottlenecks and improve support strategies.

Although the system met its core objectives, some limitations were identified during testing, such as the absence of advanced AI-based ticket categorization or multi-channel support integration (e.g., social media and live chat). These could be considered for future enhancements to further automate and streamline customer service operations.

In conclusion, the project successfully delivered a simple and cost-effective CRM ticketing tool that addresses the critical needs of SMEs by improving ticket management, enhancing user experience, and supporting better customer relationship management. The results validate that focused solutions can bridge the gap left by complex and expensive enterprise CRM software.

The ticket prioritization and categorization features allowed support teams to organize their workload more effectively, ensuring that critical issues were addressed promptly. Automated email notifications kept customers informed throughout the ticket lifecycle, which improved transparency and reduced customer anxiety and follow-up inquiries. Feedback collected through surveys during UAT indicated high satisfaction levels, with users appreciating the simplicity and clarity of the system.

CONCLUSION

The development of the simple CRM ticketing tool has successfully demonstrated the creation of an efficient, user-friendly, and cost-effective solution for managing customer support requests in SMBs.

By focusing on essential features, such as ticket creation, tracking, prioritization, and reporting, the system streamlines customer service operations and enhances communication between customers and support teams.

The implementation of the project confirmed that a lightweight CRM ticketing tool can significantly improve the speed and organization of issue resolution without the complexity and high costs associated with enterprise-level CRM systems. Role-based access control ensures appropriate permissions and security, and automated notifications keep users informed and engaged throughout the support process.

Although there are areas for future improvement, such as integrating multi-channel support and advanced analytics, the current system meets the core objectives and provides a solid foundation for further development. Overall, this project adds value by empowering smaller businesses to manage customer relationships more effectively, contributing to better customer satisfaction and operational efficiency.

The development and implementation of the simple CRM ticketing tool represent a significant step towards providing SMEs with an accessible and effective means of managing customer support. Throughout the project, emphasis was placed on creating a system that is not only functional but also easy-to-use, ensuring quick adoption by users with varying technical expertise.

The system successfully automates the ticket lifecycle, from creation to resolution, thereby reducing manual overhead, minimizing response times, and improving overall customer satisfaction. By incorporating features such as ticket prioritization, categorization, role-based access control, and automated notifications, the tool streamlines support operations and enhances communication between customers and support teams.

The adoption of modular and scalable architecture based on the MVC pattern provides a solid foundation for future enhancements. This ensures that the system can evolve with changing business needs and accommodate new features, such as multi-channel integration, AI-based ticket handling, and advanced analytics.

Despite certain limitations, such as the absence of omnichannel support and limited scalability testing, the project effectively fulfilled its core objectives.

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