

Mali Basundi Centre – A Smart Dairy Management And E-Commerce System

Amey Bhatlavande¹, Shambhu Mali², Onkar Khatake³, Atharv Chakor⁴

^{1, 2, 3, 4} Dept of Information Technology

^{1, 2, 3, 4} SVERI's College of Engineering (Poly.), Pandharpur, Maharashtra, India

Abstract- Mali Basundi Centre is a digital transformation initiative for traditional dairy businesses focusing on promoting and selling local dairy products, especially Basundi, through an integrated e-commerce platform. The system is developed using Flask, MongoDB, and front-end technologies such as HTML, CSS, and JavaScript. Key modules include user management, order processing, admin/staff control panels, low-stock alerts, and integrated payment solutions. The project combines technology with regional entrepreneurship to create a sustainable, farmer-first dairy ecosystem.

Keywords- Cybersecurity, Vulnerability Assessment, Penetration Testing, Ethical Hacking, Web Application Security, Network Security, Mobile Application Security, SQL Injection, XSS Protection, Secure Software Development, WebSecurity, Cybersecurity Training.

I. INTRODUCTION

The dairy industry is a significant contributor to rural employment and nutrition in India, with a majority of small farmers depending on milk production for daily income. Despite its importance, the sector suffers from a lack of technological adoption. Local producers often rely on manual entries, word-of-mouth marketing, and physical stores to reach customers. This approach not only limits scalability but also fails to meet the evolving expectations of modern consumers who prefer digital convenience and doorstep delivery.

The **Mali Basundi Centre** project is conceived to bridge this digital divide by building a smart, web-based system that transforms how local dairy businesses operate and interact with consumers. The primary goal is to bring traditional dairy products—especially *Basundi*, a beloved Maharashtrian sweet—into the digital economy. By leveraging modern web technologies, the platform provides a unified interface for customers to browse products, place orders, and track deliveries while giving business owners complete control over their offerings.

What sets this project apart is its focus on **local entrepreneurship** and **cultural relevance**. Unlike

mainstream e-commerce platforms that focus on mass production and generic branding, Mali Basundi Centre emphasizes the authenticity and quality of handcrafted dairy products made in rural kitchens. This not only helps in preserving culinary heritage but also opens up new economic opportunities for small-scale producers. Additionally, features such as blog publishing, low-stock alerts, and delivery management give the business a competitive edge.

The platform's modular structure includes role-based dashboards for admins, staff, and customers, ensuring operational transparency and ease of use. Technologies like Flask (Python), MongoDB, and Razorpay integration allow for a secure and scalable solution. In future iterations, the system aims to expand with mobile app support, regional language interfaces, and AI-based inventory prediction—making it not just a project but a scalable model for smart dairy commerce in rural India.

II. IDENTIFY, RESEARCH AND COLLECT IDEA

The initial idea for the Mali Basundi Centre project emerged from real-world observations of challenges faced by local dairy sellers. Many rural dairy producers still rely heavily on manual order-taking and physical store sales, which restricts their ability to scale or serve customers beyond their immediate locality. The absence of a digital system also leads to issues like poor stock management, inconsistent delivery schedules, and lack of transaction traceability. These limitations create a gap between the product's quality and its accessibility to the growing market of digital consumers.

To validate the problem and explore viable solutions, we conducted in-depth research into existing e-commerce platforms that specialize in dairy and perishable products. Platforms such as **Heritage Foods**, **Amul Online**, and **MilkBasket** were analyzed for their product cataloging, logistics management, and user interface design. Furthermore, online platforms like **Swiggy** and **BigBasket** were studied to understand real-time ordering workflows, delivery tracking systems, and customer engagement strategies. These references provided a blueprint for features that could be adapted for small-scale local dairy businesses.

In parallel, we conducted informal surveys and interactions with both dairy vendors and customers in rural and semi-urban regions. This helped us understand user preferences, pain points, and expectations from a digital system. Customers expressed interest in home delivery, digital payments, and the ability to track their orders, while vendors wanted a simple interface to manage inventory and view sales reports. These findings formed the foundation for designing a solution tailored to both stakeholders. The collected data also informed our decision to use **Flask** for backend development and **MongoDB** for scalable, schema-flexible data handling.

III. WRITE DOWN YOUR STUDIES AND FINDINGS

A. Development Strategy

- **Frontend:** HTML5, CSS3, JavaScript with Bootstrap
- **Backend:** Flask (Python)
- **Database:** MongoDB (NoSQL)
- **Authentication:** Flask-Login with role-based access (Admin, Staff, Customer)
- **Payment Integration:** Razorpay (for future expansion)

B. Functional Modules

- **User Panel:** Registration, login, order placement, order history.
- **Admin Panel:** Add/edit products, manage staff, view orders, update stock.
- **Staff Dashboard:** View assigned orders, update delivery status.
- **Product Listing:** With filters for category and price.
- **Alert System:** Notifies admin on low-stock items.
- **Blog Section:** For publishing dairy-related health tips and recipes.

C. Special Features

- Responsive UI for mobile access.
- Order status tracking and dynamic invoice generation.
- Dashboard with total counts (users, orders, products).
- Future-ready for multilingual content and location-based delivery zones.

GET PEER REVIEWED

After completing the development of the *Mali Basundi Centre* platform and drafting the research

documentation, a structured peer review process was initiated to evaluate the system's functionality, security, usability, and overall presentation. The goal of this process was to gain unbiased, critical feedback that could guide final improvements and ensure that both the project and the paper adhered to academic and professional standards.

Key reviewers included **Prof. Amey S. Bhatlavande**, our respected project guide, who provided in-depth feedback on technical components such as the integration of a secure payment gateway and the implementation of a staff module for decentralized order handling. He emphasized the importance of proper architectural design and maintainable backend logic, which helped refine our module interactions and database schema. Additionally, faculty members from the **Department of Information Technology, SVERI's College of Engineering (Polytechnic), Pandharpur**, reviewed the project from both technical and academic documentation perspectives, offering suggestions to improve clarity, formatting, and structural flow of the research paper.

Valuable feedback was also gathered from our peers and classmates, who acted as test users to validate the user interface and overall experience. They assessed the platform's responsiveness, navigation, and the intuitiveness of its admin and customer dashboards. The feedback was categorized into several key areas:

- **Technical Review** focused on code efficiency, database schema normalization, and the inclusion of role-based authentication.
- **Usability Review** highlighted the clean layout, easy navigation, and clarity of form designs.
- **Security Review** covered aspects like session handling, route protection, and backend validation against threats such as SQL injection and XSS attacks.
- **Documentation Review** ensured that the report conformed to IJSART standards and clearly presented the system lifecycle, architecture, and outcomes.

This multi-dimensional review process significantly enhanced the quality and reliability of the system and prepared the project for real-world deployment and academic evaluation.

IMPROVEMENT AS PER REVIEWER COMMENTS

Following the peer review process, a number of functional, security, and usability improvements were incorporated into the *Mali Basundi Centre* platform.

Reviewers emphasized the importance of refined backend logic and user interface optimization. As a result, the product filtering and search functionality was significantly enhanced. Users can now search by product name, category, and sort by price—improving their overall shopping experience. A low-stock alert badge system was implemented to visually notify admins when inventory drops below a threshold, ensuring timely restocking. The admin dashboard was also restructured to allow quicker access to modules such as product control, staff management, and blog posting. Issues related to updating product quantities in the cart were resolved, and calculations for subtotal and total amounts were made more accurate. Furthermore, flash messages were integrated to provide immediate feedback to users on actions like login, logout, order placement, and status changes.

In response to feedback on the user experience, the application's interface was carefully reviewed and improved. Classmates and faculty noted inconsistencies in responsiveness and visual layout, especially on mobile devices. To address this, navigation flows were streamlined, and pages such as login, registration, and order tracking were redesigned using responsive Bootstrap components. Form elements were spaced and aligned for better readability, while color schemes and iconography were updated to match modern e-commerce aesthetics. The system now ensures consistent visual behavior across desktops, tablets, and mobile phones, enhancing accessibility and engagement for all types of users.

Security enhancements were also a key focus based on feedback from our guide and simulated penetration tests. Backend validation mechanisms were updated to guard against common vulnerabilities like Cross-Site Scripting (XSS) and injection-based attacks. User inputs are now thoroughly validated and sanitized before processing. Secure cookie handling and session expiration controls were introduced to strengthen session management. Additionally, access to the admin dashboard was further protected using login attempt tracking and conditional routing, helping to prevent unauthorized access and brute-force attacks.

Finally, improvements were made to the structure and presentation of the research documentation. The report was revised to meet IJSART academic formatting guidelines, including properly structured sections, labeled diagrams, and consistent use of technical terms. Explanations for system diagrams like Data Flow Diagrams (DFD), UML components, and flowcharts were expanded to improve clarity for evaluators. Table and figure captions were also added, ensuring that visual elements effectively supported the written

content. These revisions contributed to a more professional and academically robust submission.

IV. CONCLUSION

The *Mali Basundi Centre* project demonstrates how traditional, small-scale dairy businesses can harness the power of affordable digital technologies to expand their reach, streamline operations, and enhance customer engagement. By integrating e-commerce capabilities with intuitive dashboards for admins, staff, and customers, the platform creates a transparent and efficient order management system. It empowers dairy entrepreneurs—especially those in rural regions—to transition from manual processes to a structured digital ecosystem that is accessible, secure, and scalable. Looking forward, the platform holds great potential for further development. Features such as real-time delivery tracking, customer feedback modules, and multilingual support can greatly enhance user experience and operational depth. As the system continues to evolve, it stands as a replicable model for other local businesses aiming to embrace digital transformation. In essence, *Mali Basundi Centre* is not just a project—it is a step toward building a smarter, self-reliant, and connected rural economy rooted in tradition but powered by technology.

V. ACKNOWLEDGMENT

We would like to express our heartfelt gratitude to our project guide, **Prof. Amey S. Bhatlavande**, for his continuous guidance, technical insights, and encouragement throughout the development of the *Mali Basundi Centre* project. His expertise in web technologies and problem-solving approach greatly contributed to shaping the system and refining our research work.

We are also thankful to the **Department of Information Technology** at **SVERI's College of Engineering (Polytechnic), Pandharpur**, for providing us with the necessary infrastructure, learning environment, and resources required for the successful execution of this project. The department's commitment to academic excellence and innovation helped us stay focused and motivated throughout the development journey.

Our special thanks go to **Mrs. R. K. Malgonde (Head of Department)** for her consistent encouragement and to **Dr. Nitin D. Misal (Principal)** for creating a platform that promotes research, creativity, and real-world problem-solving. Their leadership and vision played a key role in fostering our technical growth and entrepreneurial mindset.

REFERENCES

- [1] Kumar, V. et al. (2020). Modern Web Technologies for Rural Commerce
- [2] Bhandare, P. (2022). Flask and MongoDB for Web Startups
- [3] Sharma, A. (2019). E-Commerce in Agriculture
- [4] Mehta, S. (2023). Python-Based Automation for SMEs
- [5] Patel, R. (2020). Building Secure Payment Gateways with Razorpay