Smart Complaint Management System
(Gov Style)

A PROJECT REPORT

Submitted by

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in partial fulfillment for the award of the degree of

BACHELOR

IN

COMPUTER APPLICATION

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BONAFIDE CERTIFICATE

Certified that this project report **SMART COMPLAINT MANAGEMENT SYSTEM** is the bonafide work of Mr. **PEMA DORJI** who carried out the project work under my/our supervision.

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<<Academic Designation>>

INTERNAL EXAMINER

EXTERNAL EXAMINER

TABLE OF CONTENTS

List of Figures 5

List of Tables 6

Abstract 7

Graphical Abstract 8

Abbreviations 9

CHAPTER 1. INTRODUCTION 10

1.1. Identification of Client/Need/Relevant Contemporary issue 10

1.2. Identification of Problem 10

1.3. Identification of Tasks 11

1.4. Timeline 12

1.5. Organization of the Report 12

CHAPTER 2. LITERATURE REVIEW/BACKGROUND STUDY 13

2.1. Timeline of the reported problem 13

2.2. Existing solutions 13

2.3. Bibliometric analysis 14

2.4. Review Summary 14

2.5. Problem Definition 14

2.6. Goals/Objectives 15

CHAPTER 3. DESIGN FLOW/PROCESS 16

3.1. Evaluation & Selection of Specifications/Features 16

3.2. Design Constraints 17

3.3. Analysis of Features and finalization subject to constraints 18

3.4. Design Flow 19

3.5. Design selection 21

3.6. Implementation plan/methodology 21

CHAPTER 4. RESULTS ANALYSIS AND VALIDATION 24

4.1. Implementation of solution 24

CHAPTER 5. CONCLUSION AND FUTURE WORK 25

5.1. Conclusion 25

5.2. Future work 26

REFERENCES 27

APPENDIX 28

1. Plagiarism Report 29

2. Design Checklist 29

USER MANUAL 30

List of Figures

Figure 1. Graphical Abstraction Of SCMS

Figure 2. Data Flow Diagram

Figure 3. ER Diagram

List of Tables

Table 1.4: Timeline

Table 2.3: Bibliometric Analysis

Table 3.5: Design Selection

Figure A.1: Plagiarism Check Result

Figure B.1: Requirement Checklist

Figure B.2: Technical Checklist

Figure C.2: System Requirement

Figure F.1: Economic Feasibility

Figure F.4: Schedule Feasibility

Figure H.1.1: Roles and Responsibility

Figure H.2: Risk Assessment Matrix

ABSTRACT

The Smart Complaint Management System (SCMS) is a web-based platform designed to simplify and modernize the process of complaint handling within organizations, institutions, or government bodies. It provides a digital platform where users can easily log in and lodge complaints online, and then track the status of their complaints in real time.

Once a complaint is submitted, users can view its progress — from submission to resolution — ensuring transparency and accountability throughout the process. On the admin side, administrators can view complaint details, including citizen information, and assign or update complaint statuses based on urgency and type, enabling efficient management and faster redressal.

The system is developed using HTML, CSS, JavaScript, and PHP, with XAMPP and MySQL used for backend operations and database management. SCMS ensures reliability, scalability, and a smooth user experience through its clean and responsive interface.

By integrating technology with transparency and user-focused design, SCMS enhances public service efficiency, strengthens institutional accountability, and fosters better communication between citizens and authorities. It represents a meaningful step toward digital transformation and smart governance in complaint management.

GRAPHICAL ABSTRACT

Figure 1: Graphical Abstract of Smart Complaint Management System

ABBREVIATIONS

- SCMS — Smart Complaint Management System
- HTML — Hypertext Markup Language
- JS — JavaScript
- PHP — Hypertext Preprocessor
- CSS — Cascading Style sheets
- ICT — Information and Communication Technology
- DBMS — Database Management System
- SQL — Structured Query Language
- API — Application Programming Interface
- UI — User Interface
- UX — User Experience
- ERD — Entity Relationship Diagram
- DFD — Data Flow Diagram

CHAPTER 1

INTRODUCTION

1.1. Identification of Client /Need / Relevant Contemporary issue

Project: Smart Complaint Management System (SCMS) — a digital government website designed to streamline the process of filing, tracking, and resolving public complaints through an integrated online platform.

Client / Stakeholders:

- Government Departments and Agencies: Responsible for receiving, managing, and resolving complaints related to public services.
- Citizens and Residents: End-users who lodge complaints or feedback regarding public issues or service quality.
- Administrative Officers and Complaint Handlers: Officials who monitor, verify, and address the complaints within their departments.
- IT and System Administrators: Responsible for maintaining the SCMS platform, ensuring security, uptime, and data integrity.

Justification / Need:

Traditional complaint management in government offices often relies on manual recordkeeping or fragmented systems, leading to delays, lack of transparency, and inefficiency.

Recent studies and reports on public service digitalization highlight the following:

- Manual complaint handling leads to delays in response and loss of accountability.
- Citizens often face difficulties tracking complaint status or receiving timely updates.
- Paper-based or isolated systems make data analysis and performance tracking difficult.
- Adoption of digital grievance redressal systems has been shown to improve citizen satisfaction and administrative efficiency.

1.2. Identification of Problem

Problem Statement (broad):

The existing manual or semi-digital complaint handling systems in many government offices lead to delays, lack of accountability, and data mismanagement. Citizens face difficulties in filing and tracking complaints, while administrators struggle to monitor and ensure timely resolutions.

Impact:

- Citizens experience frustration and lack of trust in public services.
- Government officials face challenges in tracking, prioritizing, and resolving complaints efficiently.
- Administrative transparency and performance evaluation are weakened due to the absence of centralized data and automated reporting.

CHAPTER 1

1.3. Identification of Tasks

The project is structured around the following key tasks, which will guide the report's development and implementation phases:

Task A — Requirements Gathering & Stakeholder Analysis: Collect requirements through surveys, literature reviews, and consultations with government officials and citizens to understand key pain points and functional needs.

Task B — System Design: Design the architecture of SCMS including database structure, user interface flow, and integration modules for complaint submission, tracking, and resolution.

Task C — Smart Contract Development & Testing: Develop server-side logic and APIs to handle complaint registration, categorization, and routing to the relevant departments securely and efficiently.

Task D — Frontend Integration: Build an intuitive web interface for users (citizens and officials) using modern web technologies, ensuring accessibility, responsiveness, and user-friendliness.

Task E — Database Setup & Deployment: Implement a secure and scalable database for complaint data storage and deploy the SCMS on a local or cloud-based server environment.

Task F — Validation & Testing: Perform functional, integration, and user acceptance testing to ensure all modules work correctly and meet project requirements.

Task G — Documentation & Report Preparation: Prepare comprehensive project documentation, including system design reports, user manuals, and final project evaluation.

Acceptance Criteria:

The system allows users to successfully register, track, and resolve complaints through an efficient and user-friendly interface. All complaint data is securely stored in the database and can be retrieved only by authorized users, ensuring privacy and data protection. The administrator dashboard provides real-time insights by accurately displaying complaint statistics, departmental performance, and status updates. Furthermore, all major workflows—such as complaint submission, forwarding, and resolution—are thoroughly tested to ensure seamless functionality and reliable system performance.

1.4. Timeline

Week	Task
1	Requirements Gathering
2	Literature review & problem scoping
3–4	System design & architecture diagrams
5–7	Backend and API Development with Unit Testing
8–9	Frontend development & integration
10	Deployment to test network & integration testing
11	Deployment, Database Setup & Integration Testing
12	User Testing, Validation, and Final Refinement

1.5. Organization of the Report

Chapter 1 — Introduction: Project justification, problem statement, tasks, timeline, and report overview.

Chapter 2 — Literature Review: Background of complaint management systems, existing solutions, and project objectives.

Chapter 3 — Design & Implementation: System features, design alternatives, chosen architecture, workflows, and implementation plan.

Chapter 4 — Results & Validation: Implemented modules, testing methodology, test results, and system validation.

Chapter 5 — Conclusion & Future Work: Summary of outcomes, deviations, and recommended improvements.

Back Matter — References & Appendices: Bibliography, design checklist, plagiarism report, and user manual with instructions.

CHAPTER 2
LITERATURE REVIEW/BACKGROUND STUDY

2.1. Timeline of the reported problem

Inefficient and fragmented complaint management has been a persistent issue in public service delivery for many years. Reports from government audits and citizen surveys in South Asia, including Bhutan and India, between 2015–2023, indicate delays in resolving public grievances, lack of transparency, and difficulties in tracking complaint status. Traditional paper-based systems and isolated digital tools often caused lost records, slow responses, and citizen dissatisfaction. The COVID-19 pandemic (2020–2022) further highlighted the need for robust online grievance mechanisms, as citizens increasingly relied on digital channels to report issues while physical offices remained less accessible. These challenges emphasize the urgent need for a centralized, transparent, and secure digital complaint management system like SCMS.
The global shift towards **online and remote education during the COVID-19 pandemic (2020–2022)** further intensified the challenge, as digital certificates were easily reproduced without secure verification mechanisms. These documented incidents collectively emphasize the urgent need for **tamper-proof, verifiable, and decentralized credential systems** such as blockchain-based certificate validation.

2.2. Existing solutions

Several approaches have been attempted to address inefficiencies in complaint management:

Manual / Paper-Based Systems:
Most government offices relied on registers, files, and manual tracking, which were prone to delays, lost records, and lack of accountability.

Isolated Digital Solutions:
Some departments introduced separate online portals or email-based complaint mechanisms. While this improved accessibility, they often lacked **centralized tracking, inter-departmental coordination, and real-time status updates.**

Integrated Digital Platforms (Limited Pilots):
A few governments piloted digital grievance redressal systems with dashboards and workflow automation. These systems demonstrated better transparency and faster response times, but deployment was limited due to **technical complexity, insufficient staff training, and integration challenges with existing office workflows**.
Despite these efforts, there remains a significant gap in providing a **fully centralized, user-friendly, and secure complaint management platform** that can serve citizens and administrators efficiently. SCMS aims to fill this gap by combining **centralized tracking, role-based access, automated notifications, and real-time analytics** to improve public service delivery.

2.3. Bibliometric analysis

Approach	Key Features	Effectiveness	Drawbacks
Manual / Paper-Based Systems	Registers, files, and physical complaint records	Familiar process for staff	Slow, prone to errors, records can be lost, low transparency
Isolated Digital Portals	Separate online forms or email-based submissions	Improved accessibility	No centralized tracking, limited inter-department coordination
Centralized Digital Systems	Integrated dashboards within departments	Faster response, some transparency	Single-point failures, dependent on administrative accuracy
Integrated Pilot Platforms	Workflow automation, real-time dashboards	Improved accountability and citizen satisfaction	Limited adoption, technical complexity, requires staff training

This analysis shows that while integrated digital systems offer better transparency and efficiency, practical implementations require **user-friendly interfaces, centralized tracking, and seamless inter-department coordination,** which SCMS targets.

2.4. Review Summary

The literature review confirms that existing complaint management approaches, whether manual, isolated digital, or limited pilot platforms, fail to provide a fully centralized, secure, and citizen-friendly system. Manual and semi-digital PROCESSES are prone to delays and errors, while pilot digital platforms face challenges with adoption, usability, and integration.

The **Smart Complaint Management System (SCMS)** addresses these gaps by combining **centralized complaint tracking, role-based access, automated notifications, and real-time analytics**, providing a transparent, efficient, and reliable platform for both citizens and

government officials.

2.5. Problem Definition

Government offices currently face persistent issues with **slow complaint resolution, fragmented workflows, lack of accountability, and citizen dissatisfaction**. Citizens struggle to track complaint status, and administrators find it challenging to monitor performance and ensure timely resolutions.

SCMS aims to develop a **centralized digital platform** that allows citizens to submit complaints, track progress, and receive timely updates, while administrators can efficiently route, monitor, and resolve grievances. The system will ensure **secure data storage, role-based access control, and automated notifications**, reduce manual workload and increase transparency.

2.6. Goals/Objectives

The specific, measurable objectives of SCMS are:

i. Develop a centralized web application with **role-based access** for citizens, administrators, and department officers.
ii. Enable citizens to **submit, track, and manage complaints** through a user-friendly interface**.**
iii. Provide administrators with a **dashboard displaying real-time complaint statistics, status updates, and workflow analytics.**
iv. Implement **secure data storage** and **restricted access** to protect sensitive information.
v. Send **automated notifications and alerts** for complaint updates to both citizens and officials**.**
vi. Ensure **system reliability and performance** through functional, integration, and user acceptance testing.
vii. Evaluate system efficiency based on **response time, resolution rate, and user satisfaction**.

These objectives provide a structured roadmap toward **a transparent, accountable, and citizen-centric complaint management system**, supporting modern government digitalization initiatives.

CHAPTER 3
DESIGN FLOW/PROCESS

3.1. Evaluation & Selection of Specifications/Features

Objective: To critically evaluate the possible features of digital complaint management systems from literature and existing platforms, and to identify a practical, secure, and user-friendly feature set suitable for deployment in the Smart Complaint Management System (SCMS).

Candidate features (from literature & prior sections):

i. Centralized database for complaint storage and retrieval
ii. Role-based access control (Citizen, Admin, Department Officer)
iii. Complaint categorization and prioritization system
iv. Real-time tracking of complaint status
v. Automated notifications via email/SMS for updates
vi. Search and filter functionality for complaint records
vii. Dashboard for analytics and performance reporting
viii. Secure authentication and authorization mechanism
ix. Complaint forwarding and escalation workflow
x. Feedback and rating option for closed complaints
xi. Data encryption and backup system
xii. Multi-language interface for accessibility
xiii. Mobile-friendly responsive design
xiv. Audit trail and log management
xv. Integration with existing government systems or APIs

Selected features for the SCMS solution (prioritized):

1. **Centralized complaint database** (MySQL) for secure storage, fast retrieval, and record management.
2. **Role-based access control** for Citizens, Admins, and Department Officers to ensure proper authorization.
3. **Complaint registration and tracking module** enabling users to file complaints and monitor progress in real time.

4. **Automated notifications and alerts** to inform users about complaint status updates and actions taken.
5. **Admin dashboard** providing analytical insights on total complaints, resolution rates, and departmental performance.
6. **Search and filter functionality** for quick retrieval and management of complaint records.
7. **Escalation and forwarding mechanism** to ensure unresolved complaints reach higher authorities automatically.
8. **Audit logging system** to maintain transparency and accountability in all complaint-related actions.
9. **Responsive web interface** developed using modern frontend technologies (HTML, CSS, JavaScript) for usability across devices.
10. **Secure login and session management** with encrypted passwords and limited data access for users.

3.2. Design Constraints

1.1.1. Standards:

When designing and implementing SCMS, several standards and constraints must be considered to ensure legal compliance, technical stability, and user accessibility.

Regulatory & Legal

- Must comply with data protection and privacy laws by ensuring that citizens' personal information is securely stored and not shared without authorization.
- Follow government regulations on public grievance redressal, digital recordkeeping, and information disclosure.
- Ensure proper documentation and audit trails to maintain accountability.

Economic

- Limited budget allocations for hosting, domain management, and system maintenance.
- Minimize operational costs by using open-source technologies and optimized database queries.
- Plan for affordable scalability and cloud resource utilization within government budgets.

Technical / Performance

- Dependence on stable internet connectivity for both users and administrators.
- System must handle multiple complaints simultaneously without performance degradation.
- Database should be optimized for quick queries and reports, especially during high complaint inflow periods.

Security / Safety

- Protect user credentials and complaint data using encryption, SSL/TLS, and secure authentication.
- Implement role-based access control to prevent unauthorized data access.
- Maintain system backups and adopt server-side security best practices.

Ethical / Social / Political

- Ensure accessibility for users with limited digital literacy through a simple, multilingual, and intuitive interface.
- Provide transparency in complaint processing to build public trust.
- Avoid bias or discrimination in complaint categorization and handling.

Standards & Professional

- Follow web security standards (e.g., OWASP Top 10) and database integrity guidelines
- Adopt standard naming conventions, version control, and documentation practices.
- Ensure compliance with government IT and accessibility standards for public-facing portals

3.3. Analysis of Features and finalization subject to constraints

Based on the above constraints, the initially proposed feature set for SCMS has been reviewed and adjusted to ensure practical deployment, efficiency, and security.

Remove:

- Storage of sensitive personal data in non-secure environments — to prevent privacy violations.
- Exclusive use of advanced authentication methods — as this could exclude users with limited technical access; traditional login is retained.

Modified:

- Hosting setup changed to a **secure cloud-based or local government server**, ensuring controlled access and cost efficiency.
- **Notification system** modified to support both email and SMS for broader citizen accessibility.
- **Database optimization** enhanced for better scalability during peak complaint submissions.
- **Authentication mechanism** includes both username/password and optional secure token-based login for admin-level users.

Added:

- Complaint escalation and auto-reminder system for unresolved cases.
- Comprehensive logging and monitoring for tracking all activities and ensuring accountability.
- Backup and recovery mechanisms to maintain data integrity in case of system failures.
- Feedback and rating feature to evaluate service quality post-resolution.

The finalized SCMS includes a centralized complaint database, role-based access, secure authentication, automated notifications, escalation and tracking modules, search and analytics dashboard, data encryption, and comprehensive monitoring and backup support. These features collectively ensure that the system remains efficient, transparent, secure, and citizen-friendly, while adhering to regulatory and technical constraints.

3.4. Design Flow

The Smart Complaint Management System (SCMS) follows a simple, efficient client–server model suitable for deployment on local (XAMPP) or institutional networks. The system is implemented using HTML, CSS, JavaScript, PHP, and MySQL.

Alternative A — Static Web + Manual Database Entry (Traditional Approach)

Components: Frontend (HTML/CSS/JS) → Manual Admin Entry (Spreadsheet or Local File)

Flow (high level):

i. Users submit complaints via a simple HTML form or email.
ii. Admin manually logs each complaint into Excel or another local record.
iii. Complaint status updates are communicated offline (email, phone, or notice board).

Pros: Extremely simple and low-cost setup and requires minimal technical expertise.

Cons: No automation or tracking, data can be lost or duplicated, time-consuming manual updates and Limited transparency and reporting.

Alternative B — Dynamic PHP–MySQL Web Application (Implemented System)

Components: Frontend (HTML/CSS/JS embedded in PHP) ⇄ Backend (PHP Scripts) ⇄ Database (MySQL via XAMPP)

Flow (High-Level):

i. The user submits a complaint using a web form.
ii. PHP validates the input and stores the details in the MySQL database.
iii. The admin/staff views and updates complaint status from their dashboard.
iv. Users can log in to track complaint progress in real time.
v. Admins can generate reports and analyse complaint statistics.

Pros: Fully automated complaint tracking, secure and structured data storage, easy to use and deploy on XAMPP/local server, supports multiple roles (User, Staff, Admin) and real-time updates and reporting.

Cons: Requires PHP and database setup knowledge and centralized database — needs regular backup.

3.5. Design selection

Selected Design: Alternative B — Dynamic PHP–MySQL Web Application

Comparison & Justification:

Criterion	Alternative A (Static)	Alternative B (Dynamic PHP–MySQL)
Automation	None (manual tracking)	Fully automated workflow
Data Security	Low	High (database validation, authentication)
Performance	Basic	Fast and optimized
Transparency	Limited	Real-time tracking and reporting
Scalability	Minimal	Scalable for multiple departments
Maintenance	Manual	Easier with database and dashboards

Why B fits the project constraints:

Alternative B aligns perfectly with the system's objectives — **offering a cost-effective, maintainable, and secure complaint management platform**. It automates complaint handling, enables faster resolution, and improves accountability within institutions. The use of **PHP and MySQL** ensures compatibility with widely available local servers like **XAMPP**, making it easy to deploy and maintain.

3.6. Implementation plan/methodology

The SCMS will be implemented in structured phases to ensure consistency, functionality, and security at each stage.

High-level implementation stages

i. **Requirement & Architecture Finalization:** — Identify the system modules — User (Citizen), Staff, and Admin. Define the complaint registration workflow, access levels, and security measures such as input validation and session control.

ii. **Frontend Development:** Design responsive web pages using HTML, CSS, and JavaScript for form submissions, dashboards, and complaint tracking. Ensure a clean and user-friendly interface for citizens and administrators.

iii. **Backend & API Development:** Develop PHP scripts to handle form submissions, login authentication, data processing, and complaint management logic. Use PHP sessions to maintain user login states and access control.

iv. **Database Design & Integration:** Design a MySQL database (through XAMPP's phpMyAdmin) with tables for users, complaints, feedback, and complaint status updates. Establish relationships between tables for easy retrieval and reporting.

v. **Notification & Automation:** Implement basic automation features such as automatic status updates on complaint resolution and admin notifications. Optional: integrate email alerts using PHP's mail () function if supported by the local server.

vi. **Testing Phase:** Perform functional testing for complaint submission, login authentication, and admin operations. Validate data handling, error messages, and ensure there are no SQL injection or form validation issues.

vii. **Deployment:** Host the system locally on XAMPP (Apache + MySQL). Ensure proper configuration of the htdocs folder, database import, and environment setup for smooth execution.

viii. **Monitoring & Maintenance:** Regularly back up the MySQL database, monitor user activity logs, and perform system updates or bug fixes when required. Maintain data consistency and ensure all modules operate correctly.

Figure 2. Detailed Block Diagram

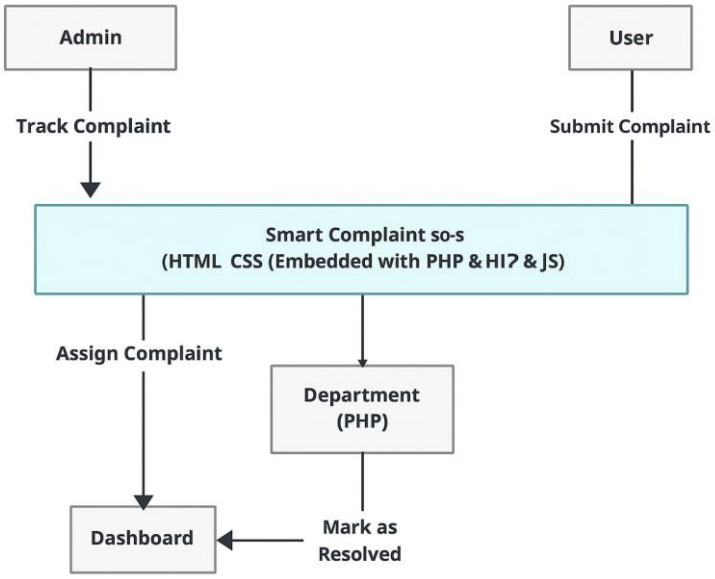
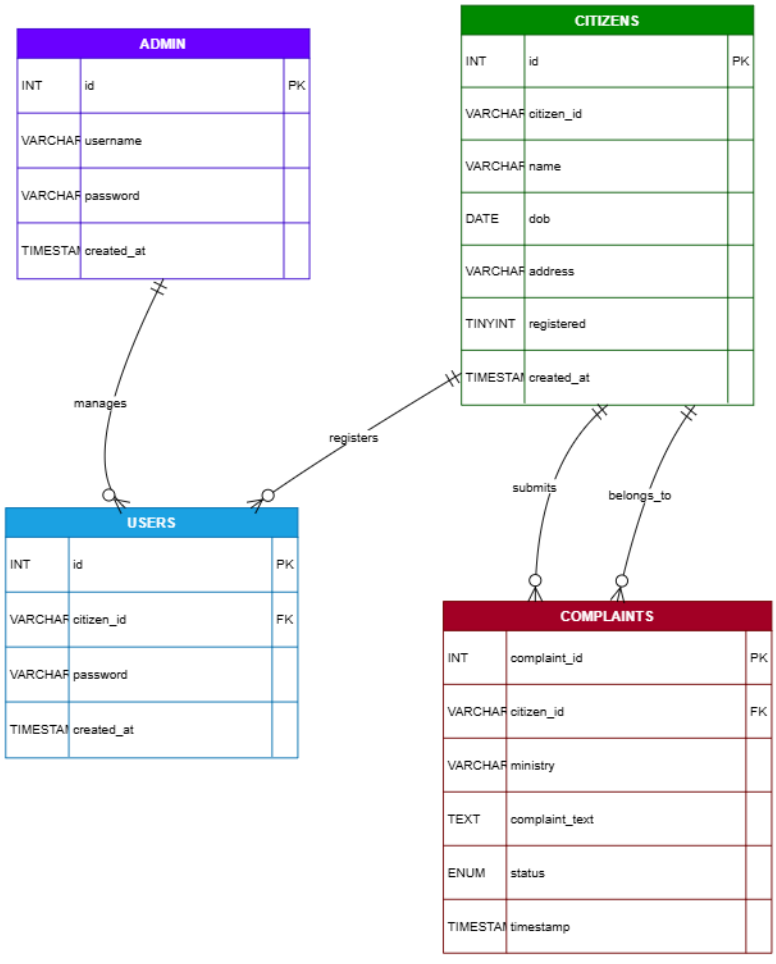


Figure 3. ER Diagram



CHAPTER 4

RESULTS ANALYSIS AND VALIDATION

4.1. Implementation of solution

The implementation of the Smart Complaint Management System (SCMS) was executed using a structured, modular approach to ensure usability, reliability, and efficiency. The system integrates front-end and back-end components.

Use of Modern Tools

- **Design and Analysis:**
  Flowcharts, ER diagrams, and system architecture were created using Draw.io and Napkin to visualize database relationships and workflow between users, staff, and administrators.
- **Frontend Development:**
  The interface was developed using HTML, CSS, and JavaScript, providing responsive forms and dynamic dashboards for users to register and track complaints easily.
- **Backend Implementation:**
  The backend logic was implemented in **PHP**, handling data processing, authentication, and role-based access. PHP scripts were used for form submission, complaint tracking, and automated updates.

- **Database Design:**
  The system uses a **MySQL database** managed through **phpMyAdmin** in XAMPP. Tables were created for users, complaints, feedback, and complaint status, with relational integrity and indexing for fast queries.

- **Testing and Validation:**
  The following validation mechanisms were used:
  - **Functional Testing:** Verified complaint submission, tracking, and admin workflows for accuracy.
  - **Form Validation:** Ensured proper input validation to prevent SQL injection and invalid entries.
  - **User Role Testing:** Each module (User, Staff, Admin) was tested to confirm permissions and correct workflow transitions.
  - **Database Validation:** Checked for consistent and accurate data insertion, retrieval, and update operations.

Overall, the implementation successfully demonstrated how a web-based complaint system can streamline grievance handling, improve transparency, and ensure efficient resolution tracking in an institutional setup.

CHAPTER 5
CONCLUSION AND FUTURE WORK

5.1. Conclusion

The **Smart Complaint Management System (SCMS)** effectively achieves its primary goal of providing a structured, transparent, and efficient platform for handling and tracking complaints within an organization.

The system successfully:

- Enables citizens or students to submit and track complaints online.
- Automates the forwarding and resolution process, reducing manual workload.
- Stores and retrieves complaint records securely from the database.
  Allows administrators to monitor performance and generate reports for better decision-making.

Expected Outcomes:

- Faster complaint resolution and improved accountability.
- Centralized data storage and easy retrieval.
- Enhanced transparency between users and departments.

Deviation from Expected Results:

Minor challenges were encountered related to:

- Form submission delays when multiple users were active.
- Browser compatibility inconsistencies in older browsers.

5.2. Future work

While the Smart Complaint Management System (SCMS) has successfully demonstrated an efficient digital platform for complaint handling, several improvements can be made in future versions to enhance functionality and scalability:

1. **Integration with Government Portals:**
   Connect the system with existing Government Department or municipal portals through APIs for seamless login and data synchronization.
2. **Mobile Application Development:**
   Develop an Android/iOS application to allow users to submit, track, and receive updates on complaints anytime, anywhere.
3. **Automated Notifications:**
   Integrate email and SMS alert systems to notify users about complaint status updates and responses in real time.
4. **Data Analytics Dashboard:**
   Implement a visual dashboard for administrators to view complaint statistics, response rates, and department performance insights.
5. **Role-Based Access Expansion:**
   Introduce multiple administrative levels and customizable permissions for large organizations handling multiple departments.
6. **AI-Based Complaint Categorization:**
   Use machine learning to automatically categorize and prioritize complaints based on urgency or keywords.
7. **Cloud Deployment and Backup:**
   Migrate the system to a secure cloud environment for remote access, scalability, and automatic data backups.

These improvements will make **SCMS stronger, easier to use, and smarter**. It will become a complete and flexible system that helps manage complaints in a clear and quick way for schools, offices, and other organizations.

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APPENDIX A – PLAGIARISM REPORT

We hereby declare that this project report titled “Smart Complaint Management System (SCMS)” is our original work and has been written by us in its entirety. We have duly acknowledged all sources. This project has not been submitted elsewhere.

Student Details and Signatures

Name	**UID**	**Signature**
Pema Dorji	**23BCA10400**	**_____**
Sonam Namgyel	**23BCA10413**	**_____**
Sonam Tshering Wangchuk	**23BCA30009**	**_____**

Date: _____

Table A.1: Plagiarism Check Results

Parameter	Result
Similarity Index	< 15%
Internet Sources	< 10%
Publications	< 5%
Student Papers	0%

APPENDIX B – DESIGN CHECKLIST

Table B.1: Requirements Checklist

Problem Identification	✓ Completed	Covered in Chapter 1
Literature Review	✓ Completed	Discussed in Chapter 2
System Architecture	✓ Completed	Explained in Chapter 3
Design Diagrams (DFD, ERD, Use Case)	✓ Completed	Included in Chapter 3
Implementation Details	✓ Completed	Documented in Chapter 4
Testing and Validation	✓ Completed	Results shown in Chapter 4.4
Future Scope and Conclusion	✓ Completed	Presented in Chapter 5
References and Bibliography	✓ Completed	Listed in Bibliography Section
Appendices (Plagiarism & Certificate)	✓ Completed	Added as Appendix A & B

Table B.2: Technical Checklist

S.No.	Technical Aspect	Description / Status
1	**Frontend Technology**	Implemented using HTML, CSS, JavaScript
2	**Backend / Database**	PHP and MySQL used for data processing and storage

3	**Hosting & Deployment**	Deployed locally using XAMPP server
4	**Authentication System**	Secure user and admin login implemented with PHP session handling
5	**Complaint Module**	Allows users to submit and track complaints
6	**Department Module**	Admin assigns complaints to appropriate departments
7	**Status Tracking**	Users can view complaint progress and resolution
8	**Notification System**	Email/SMS or dashboard updates on complaint status
9	**Report Generation**	Admin can generate and export complaint reports
10	**Security Validation**	Input sanitization, SQL injection prevention applied
11	**UI/UX Design**	Simple and user-friendly interface using CSS styling
12	**Version Control**	Maintained project versions manually via folder snapshots
13	**Testing**	Manual and functional testing completed successfully

APPENDIX C – USER MANUAL

C.1 Introduction

This user manual provides detailed instructions to operate the Smart Complaint Management System (SCMS).
It helps users, administrators, and departments understand how to register complaints, assign, track, and resolve them through a centralized online platform.

C.2 System Requirements

Component	Minimum Requirement

Operating System	Windows 10
Processor	Intel Core i3 or higher
RAM	4 GB or more
Storage	Minimum 500 MB free space
Web Browser	Latest version of Google Chrome / Edge / Firefox
Server Software	XAMPP (Apache + MySQL + PHP)
Editor	Visual Studio Code or Sublime Text

C.3 Installation Steps

1. Install XAMPP and start Apache and MySQL services.
2. Copy the project folder "smart_complaint_system" into the htdocs directory of XAMPP.
3. Import the database file scms_db into phpMyAdmin.
4. Open a browser and navigate to http://localhost/smart_complaint_system.
5. Login using default credentials (admin/user) as provided.

C.4 How to Use

- User Dashboard: Register and log in to submit complaints.
- Submit Complaint: Fill complaint form with details and attach files if required.
- Track Status: View real-time updates on complaints.
- Admin Dashboard: View all complaints and assign them to respective departments.
- Department Dashboard: Update progress and mark complaints as resolved.
- Reports: Generate analytics and summary reports for management.

APPENDIX D – ACKNOWLEDGMENT

I express my sincere gratitude to my supervisor **Mr. Jitender Kumar** for his invaluable guidance, consistent support, and encouragement throughout the project.

I would also like to thank **Dr. Kavita Gupta**, Head of the **Department of Computer Applications**, for providing the resources and academic support to successfully complete this project.

My heartfelt thanks to all the faculty members of Chandigarh University for their insights and assistance during project evaluations.

Finally, I thank my peers and family for their motivation and moral support throughout the development of **Smart Complaint Management System (SCMS)**.

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APPENDIX E – SYSTEM TESTING AND VALIDATION

E.1 Introduction

Testing ensures the accuracy, security, and reliability of SCMS. Multiple levels of testing were conducted — including unit, integration, and system testing — to validate complaint handling, data flow, and system usability.

E.2 Testing Levels

APPENDIX F – COST ANALYSIS AND FEASIBILITY STUDY

F.1 Economic Feasibility

The system was developed using free and open-source tools, minimizing cost and improving accessibility.

Item	Estimated Cost (INR)
Development Hardware (Laptop, Peripherals)	45,000
Software Tools (XAMPP, PHP, MySQL, VS Code)	0
Internet and Utilities	3,000
Miscellaneous (Printing, Documentation)	1,000
Total Estimated Cost	**49,000**

F.2 Technical Feasibility

SCMS uses reliable technologies:

- **Frontend:** HTML, CSS, JavaScript
- **Backend**: PHP
- **Database:** MySQL
- **Deployment**: Localhost / XAMPP

F.3 Operational Feasibility

- Easy to use with minimal training.
- Dashboard-based complaint management.
- Fast processing and response tracking.
- Low maintenance and scalable.

F.4 Schedule Feasibility

Phase	Duration	Key Tasks
Requirement Analysis	1 Week	Identified user and admin

Phase	Duration	Key Tasks
		needs
System Design	2 Weeks	Created DFDs, ERD, and architecture
Implementation	3 Weeks	Developed front-end and backend
Testing	2 Weeks	Performed manual and system testing
Documentation	1 Week	Compiled project report

APPENDIX G – ETHICAL, ENVIRONMENTAL AND SOCIETAL IMPACT

G.1 Ethical Considerations

- Protects user data through secure authentication and encryption.
- Ensures transparency and accountability in complaint resolution.
- Maintains unbiased complaint processing and fair assignment.

G.2 Environmental Impact

- Paperless online complaint system reduces physical documentation.
- Promotes digital governance and eco-friendly communication.

G.3 Societal Benefits

- Encourages citizen participation and transparency.
- Improves trust between users and administration.
- Promotes efficient issue resolution and accountability.

G.4 Professional and Legal Compliance

- Complies with IT Act 2000 and basic data privacy principles.
- Uses only licensed and open-source software (PHP, MySQL, XAMPP).
- Follows ethical and professional software engineering practices.

APPENDIX H – PROJECT MANAGEMENT AND RISK ASSESSMENT

H.1 Project Management Approach

The SCMS project followed the Waterfall methodology for systematic development — including analysis, design, implementation, testing, and maintenance.

H.1.1 Roles and Responsibilities

Role	Responsibilities
Project Supervisor	Guided technical and documentation work
Developer (Pema Dorji, Sonam Namgyel, Sonam Tshering Wanguck)	Designed, coded, and tested system modules
Tester	Verified complaint flow, validation, and database integrity

H.2 Risk Assessment Matrix

Risk	Impact	Likelihood	Mitigation Strategy
Data Breach	High	Low	Implement secure login and validation
Database Failure	Medium	Medium	Maintain backup copies of MySQL data
Server Downtime	Low	Low	Use local testing before deployment
Incorrect Complaint Assignment	Medium	Low	Admin double-verification before assignment
Integration Errors	Low	Low	Regular module testing

H.3 Tools Used

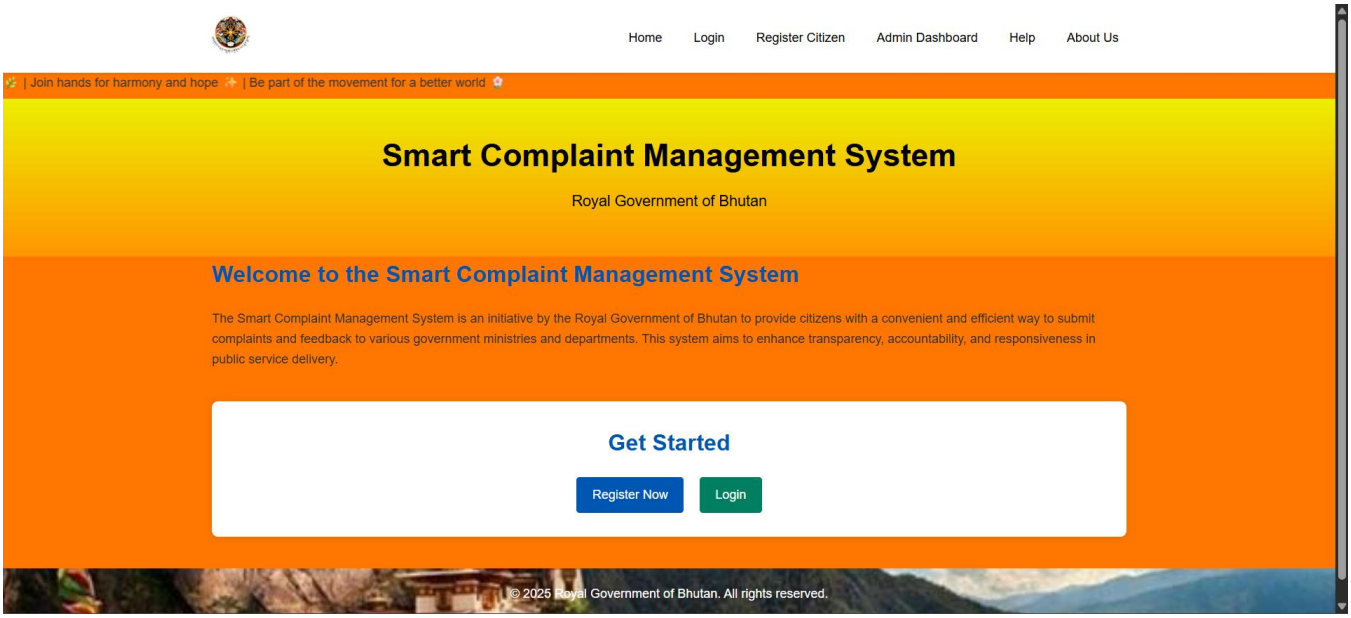
- XAMPP: Development and database hosting
- VS Code: Coding and debugging
- phpMyAdmin: Database management
- Google Drive: Documentation and backup

H.4 Quality Assurance

- Code Reviews: Performed regularly for clean and optimized code.
- Testing: Manual and integration testing ensured accuracy.
- User Feedback: Collected from students for usability improvement.

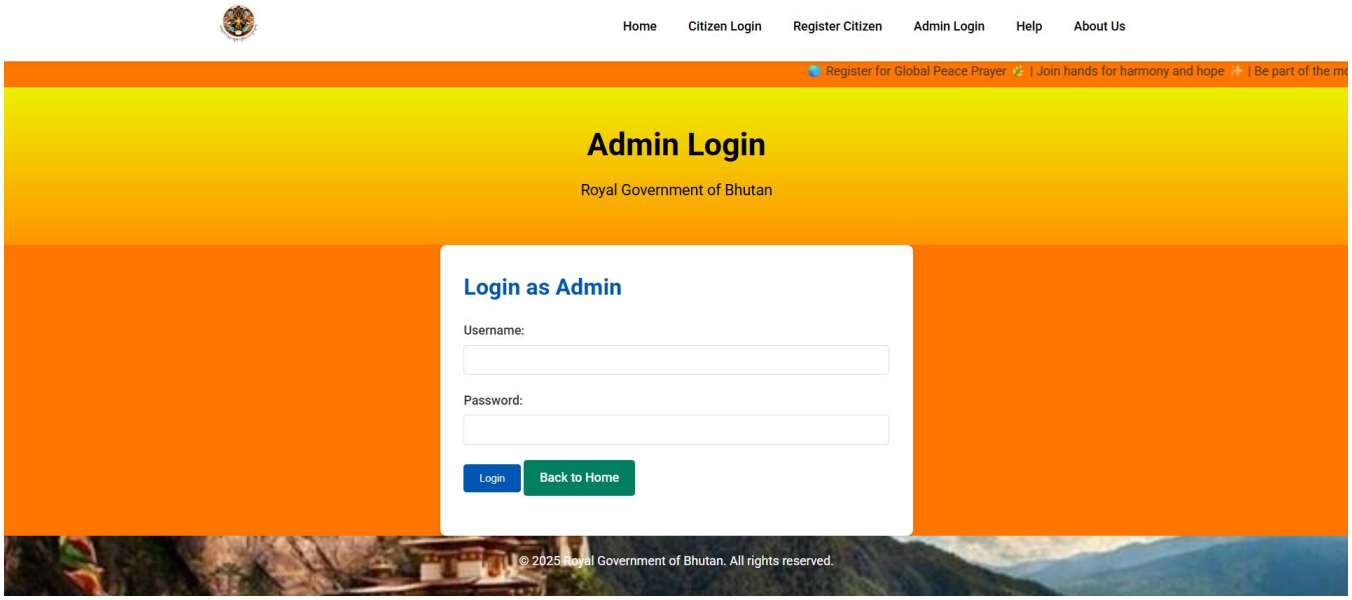
Screenshot of Smart Complaint Management System (Gov Style)

1.Home Page (Welcome Page):
Displays the main dashboard with quick access to all modules like Register, Login, Admin Dashboard, Help, and About Us.



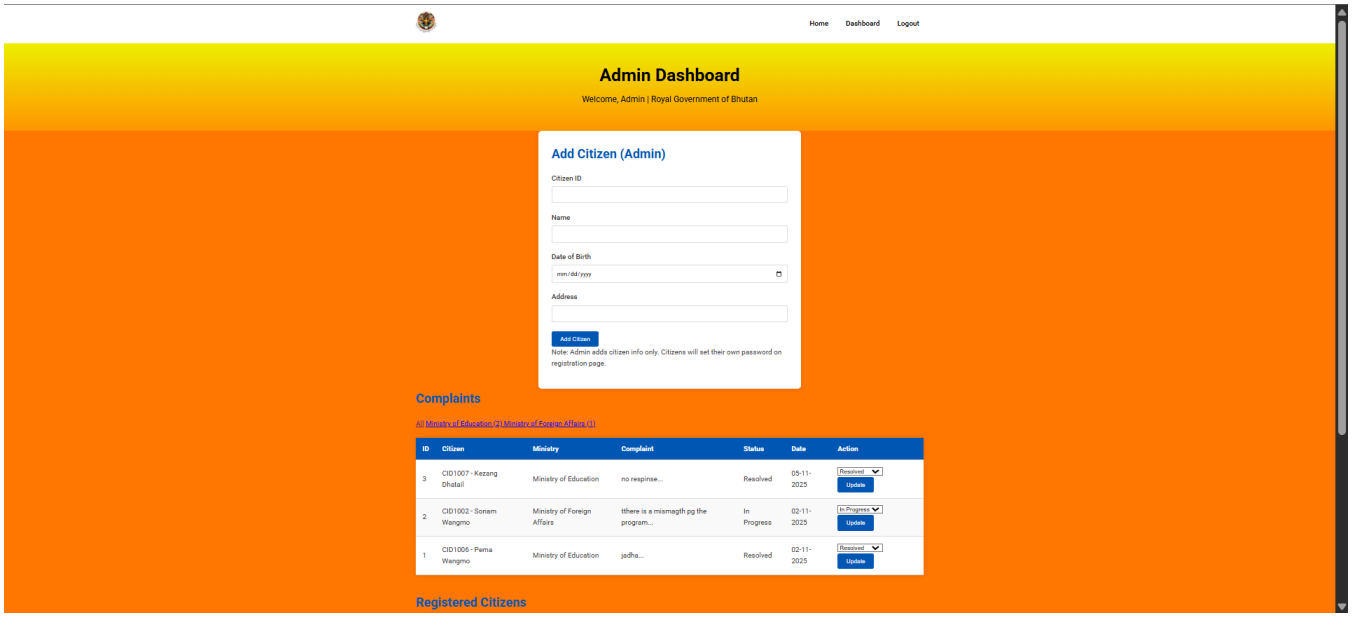
2.Admin Login

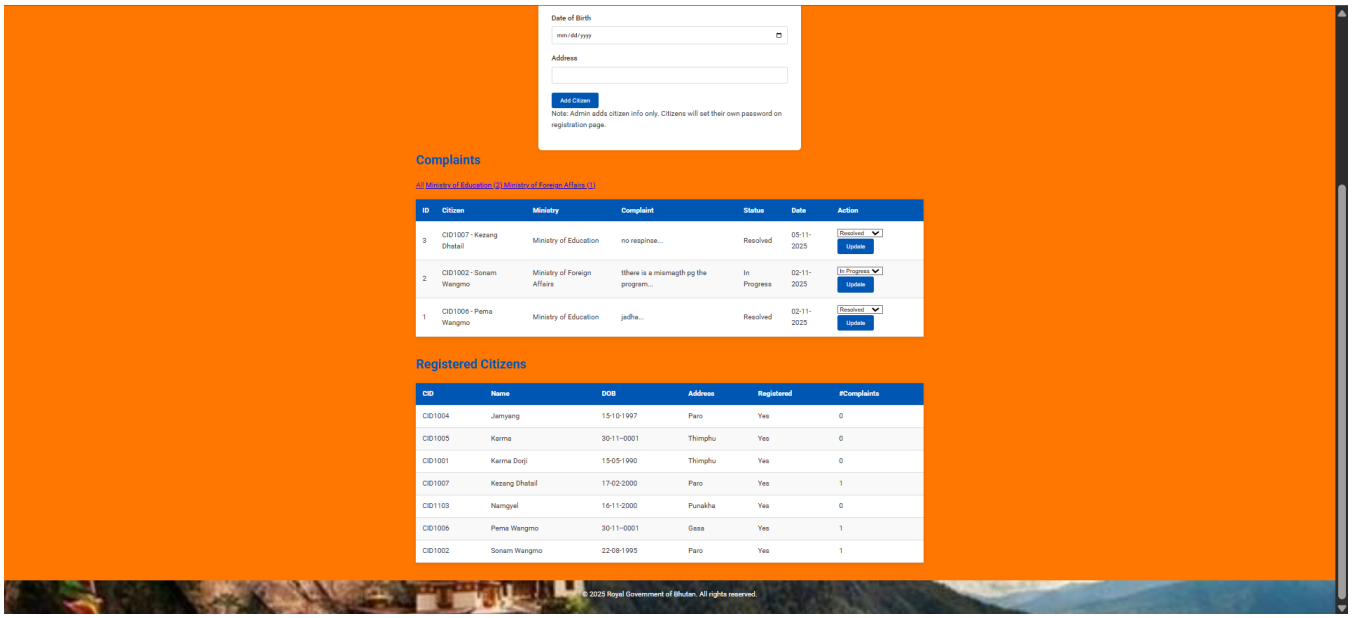
Page for admin to login into the admin dashboard.



3. Admin Dashboard Page:

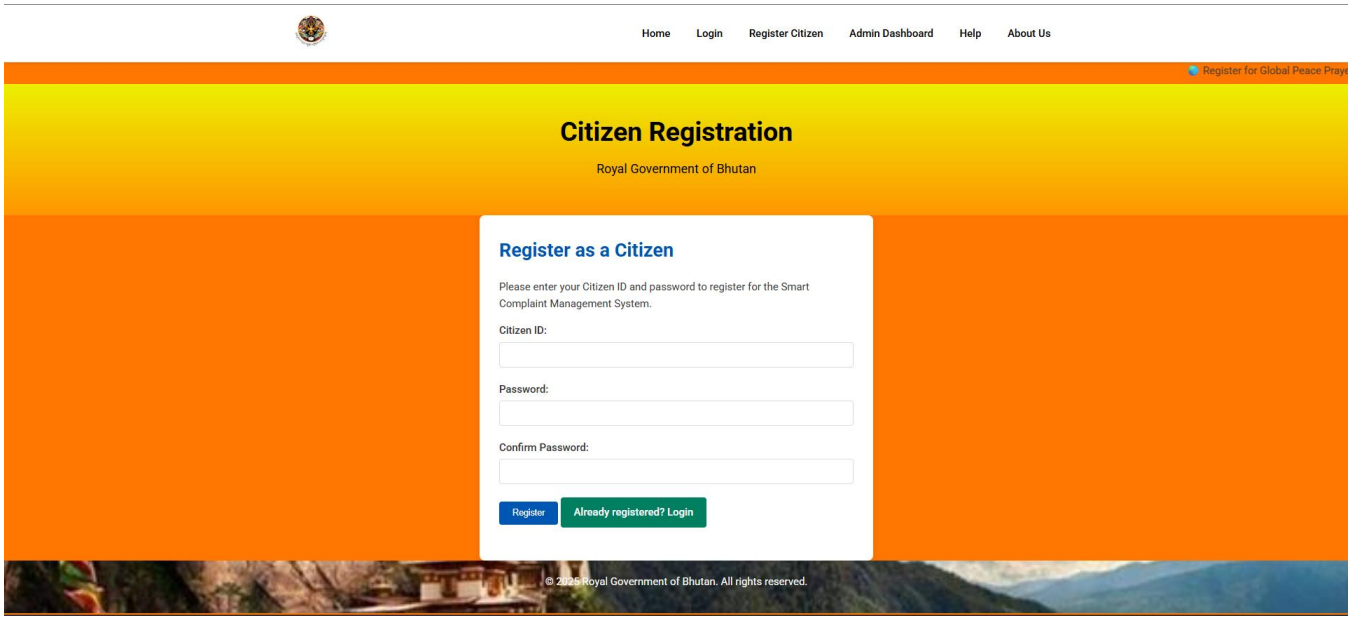
Displays the administrative control panel for **managing the system**. The Admin Dashboard allows the administrator **to add new citizens** by entering details such as Citizen ID, Name, Date of Birth, and Address. It also provides a **Complaints Section** where the admin can **view and update the status** of complaints submitted by citizens, **categorized** by ministries. Additionally, a Registered Citizens Table lists all registered users with their details such as Citizen ID, Name, Date of Birth, Address, Registration Status, and the number of complaints submitted.





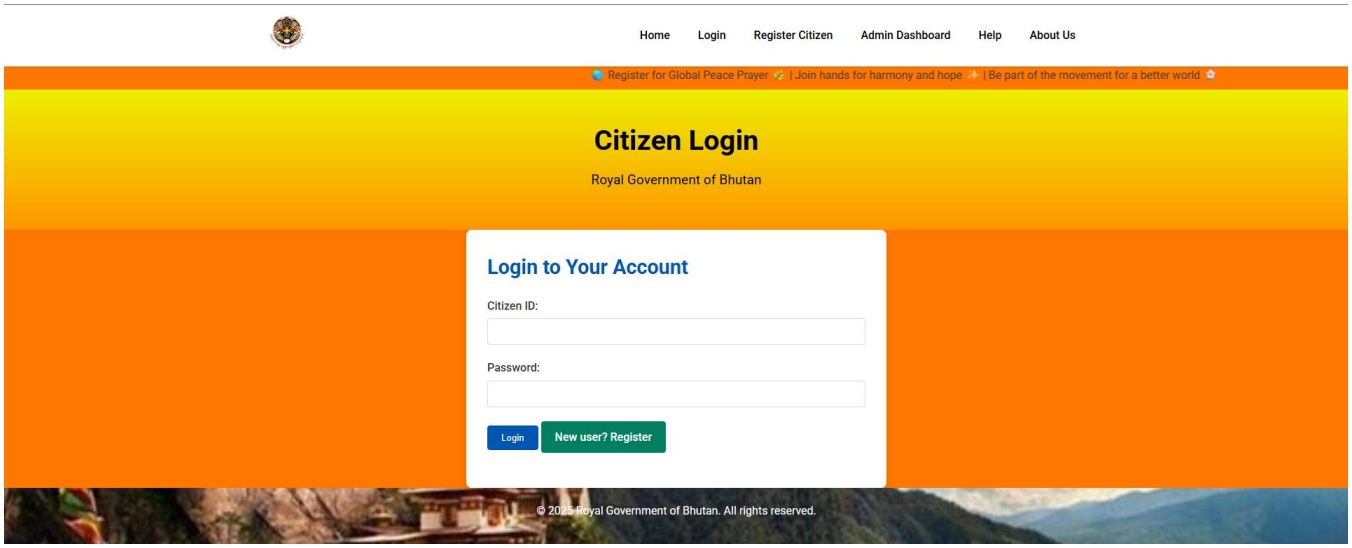
4. Citizen Registration Page

Page for citizen to register themselves to the system.

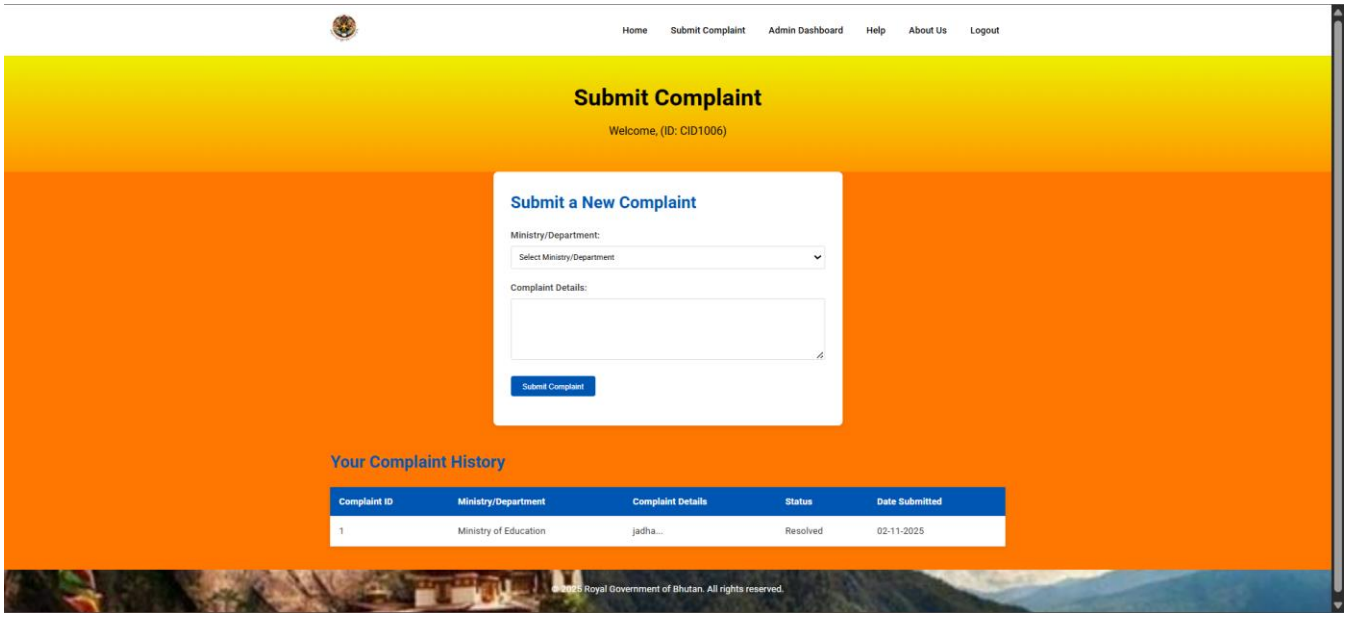


5. Citizen Login Page

Page for citizen to login into their system account.



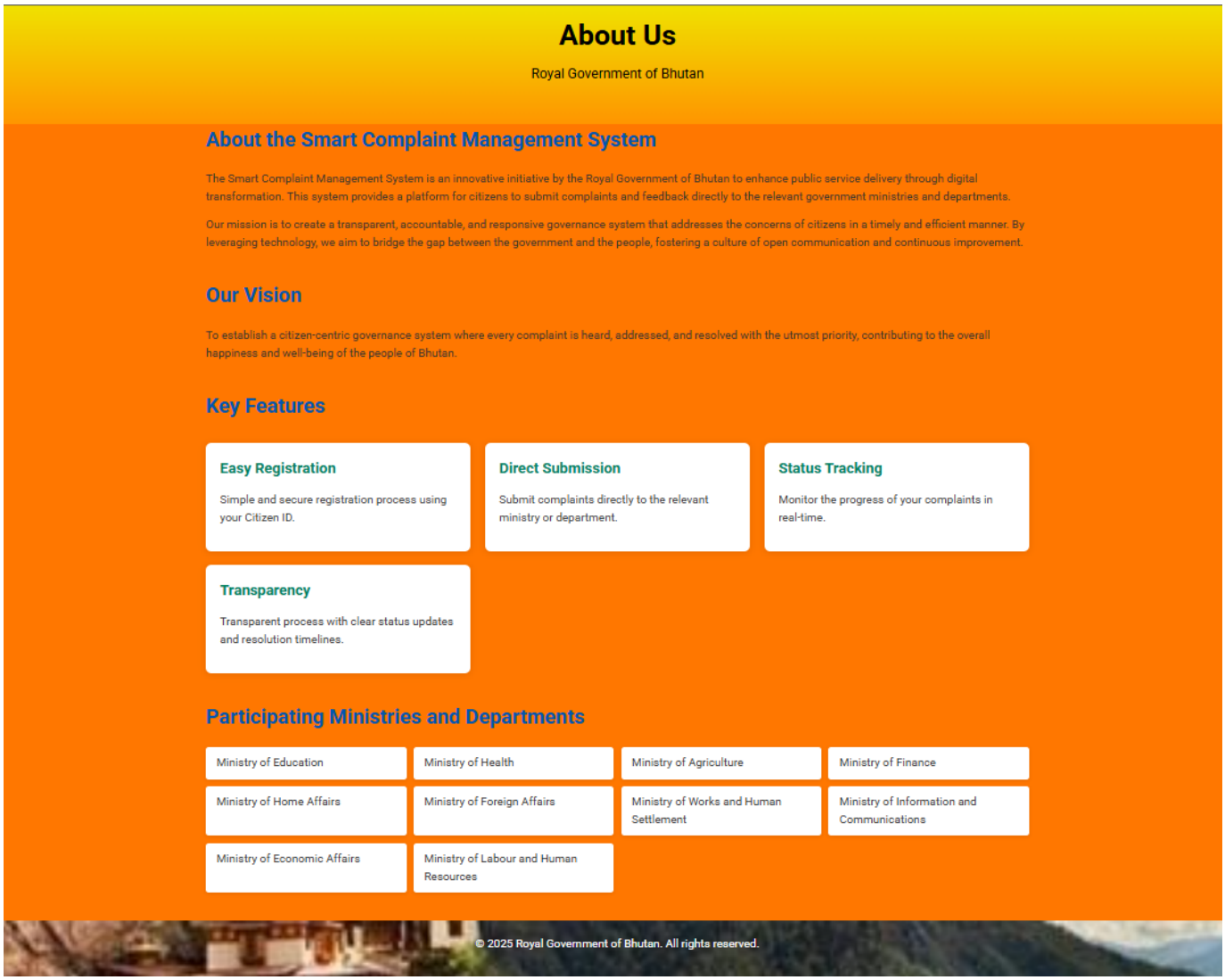
6. Citizen Dashboard (Submit Complaint Page):
After logging in, citizens can file new complaints by selecting the relevant ministry or department and providing details. The page also shows their complaint history with status updates for easy tracking.



7. Help & Support Page
Page providing frequently asked questions (FAQs) and contact information to assist users with filing complaints, password recovery, tracking complaint status, and contacting support.

8. About Us Page

Page describing the Smart Complaint Management System, its vision, key features, and participating ministries.



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Pema Dorji

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