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A Web-Based Financial Management Framework for Self-Help Groups Enhancing Accuracy, Accountability, and Transparency

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Abstract

Self-Help Groups (SHGs) or Bachat Gats play a vital role in community-level micro-finance, empowering economically weaker sections and promoting financial independence, especially among rural and semi-urban women. However, traditional manual record-keeping using physical notebooks leads to frequent miscalculations, missing entries, data duplication, difficult auditing, and limited transparency. To address these operational challenges, a Web-Based Self-Help Group Management System, developed using modern web technologies such as PHP, MySQL, HTML, CSS, JavaScript, and Apache with XAMPP, is presented in this paper. The platform digitizes key SHG operations including member profile registration, monthly savings tracking with automated late fees, loan issuance with interest calculations, loan recovery monitoring, and real-time report generation with data visualizations. A comprehensive feasibility study covering technical, economic, and operational aspects demonstrates the practicality and cost-effectiveness of the proposed system. Performance evaluations confirm significant improvements in transaction accuracy, reporting speed, administrative efficiency, and long-term financial sustainability.

Keywords: Self-Help Groups, Bachat Gat, Financial Management System, Web Technologies, PHP, MySQL, Micro-Credit, Micro-Finance, Automated Reporting

1. Introduction

A Bachat Gat, commonly known as a Self-Help Group (SHG), is a community-based decentralized financial framework designed to encourage systematic savings, provide micro-credit access, and foster financial independence among economically disadvantaged communities—particularly women. By acting as an intermediary between local communities and formal financial institutions, SHGs facilitate credit access, skill acquisition, and income-generating opportunities.

Traditionally, SHGs manage financial records manually via handwritten notebooks. These ledgers capture monthly member savings deposits, loan distributions, interest payments, late penalties, and periodic group financial summaries. However, manual record-keeping presents significant vulnerabilities:

- Frequent arithmetic and calculation errors during interest and penalty assessments.
- Omission or duplication of transaction entries.
- Inefficiencies and delays during financial audits and government reporting.
- Restricted transparency and accessibility for individual group members.

To resolve these limitations, this paper introduces a web-based automated Bachat Gat Management System. Designed using standard open-source technologies (PHP backend, MySQL database, HTML/CSS/JS frontend), the system provides an integrated digital environment to streamline daily financial transactions, automate running totals, enforce access control, and generate detailed graphical and tabular financial summaries.

2. System Architecture and Proposed Framework

The proposed system transitions SHG operations from manual paper ledgers to a centralized relational database architecture.

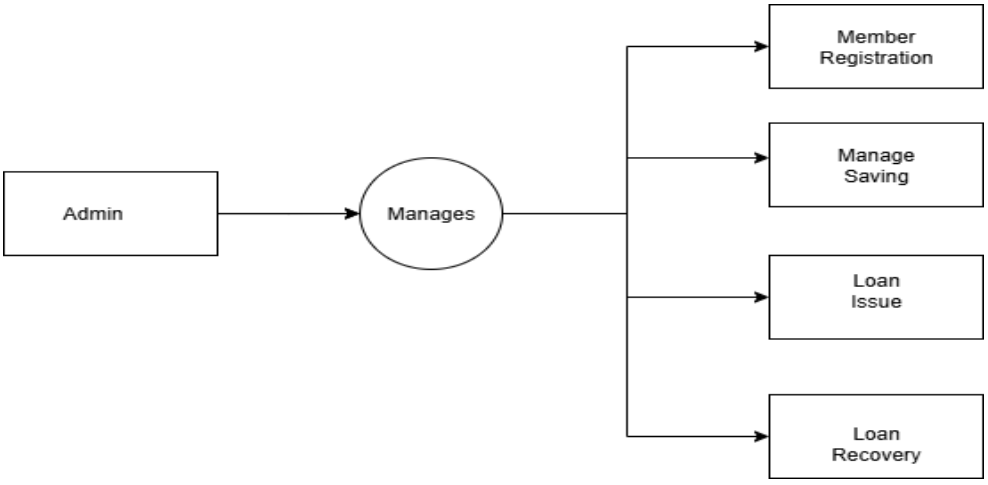
A. Core Objectives

1. **Digitization of Records:** Replace manual ledgers with structured relational tables to eliminate manual calculation errors.
2. **Member Profile Management:** Centralize personal, contact, and identity data management.
3. **Automated Monthly Savings Tracking:** Compute member savings deposits and late fee penalties dynamically.
4. **Comprehensive Loan Lifecycle Management:** Track loan applications, calculate interest rates, schedule installment structures, and log loan recoveries.
5. **Security and Role-Based Access Control:** Protect group records using authenticated user access (Admin and Group President roles).
6. **Real-Time Report Generation:** Generate member-level, monthly, yearly, and group-wide financial reports.

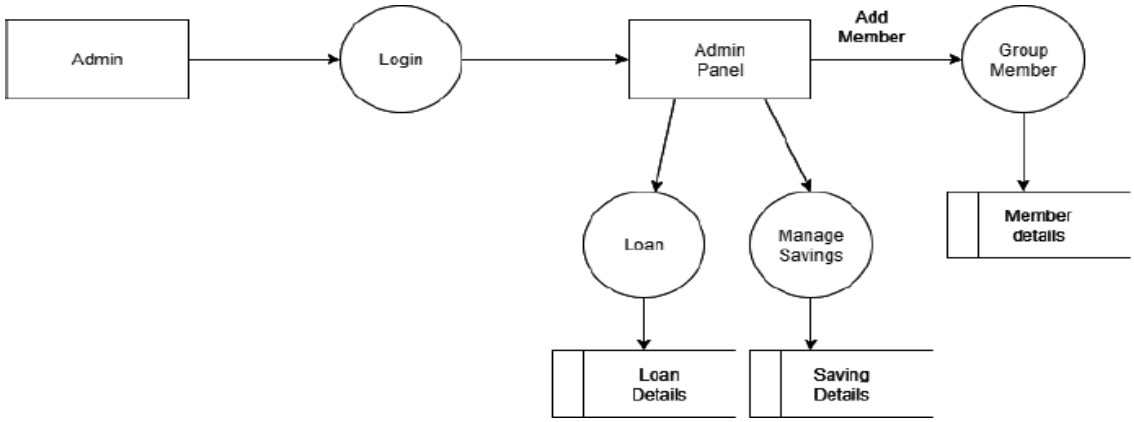
B. Data Flow Architecture

The system architecture governs data movement across user access points, application logic, and database persistence:

- **Level-0 DFD:** Illustrates administrative oversight over core processes—Member Registration, Savings Management, Loan Issuance, and Loan Recovery.



- **Level-1 DFD:** Maps authentication workflows leading into the Admin Panel, branching out to execute transactional CRUD operations on specific database entities (Loan Details, Saving Details, Member Details).



- Entity Relationship (ER) Model: Defines relationships between main system entities including Admin, Member, Savings, Loan, and Loan_Repay.

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3. System Design and Database Schema

The database design consists of six relational tables configured within a MySQL environment. The tables are summarized in Table 1.

Table 1: Database Schema of the Proposed System

Schema Entity	Identifiers	Attributes and Functional Scope
Login Table	username	Handles authentication credentials (username, password).
Groups Table	loan_id, member_id	Stores loan applicant and group loan records (loan_id, group_name, member_id, name, reason, Date, amount, rate_of_interest, interest, no_installment, ins_amount, total_amount).
Member Registration Table	Id, member_id	Stores member demographic and identity attributes (Id, group_name, member_id, name, joining_date, Dob, nationality, mobile_no, email, local_add, permanent_add, adhar_no, Age, photo, aadhar_photo).
Loan Issue Table	loan_id, member_id	Stores structured loan parameters (loan_id, group_name, member_id, name, reason, Date, amount, rate_of_interest, interest, no_installment, ins_amount, total_amount).

Schema Entity	Identifiers	Attributes and Functional Scope
Monthly Savings Table	si_no, member_id	Tracks monthly contributions and late penalties (si_no, group_name, member_id, name, previous_savings, late_fees, amount, issue_date, total_amount).
Loan Recovery Table	recovery_id, loan_id	Logs installment repayments and transaction payment modes (recovery_id, group_name, loan_id, member_id, name, total_loan_amount, installment_number, installment_amount, paid_till_today, Date, balance_loan, late_fees, payment_type, cash_receipt, cheque_no, cheque_bank, upi_id, bank_transaction_id, bank_name).

4. Feasibility Analysis

A feasibility study was performed to validate the operational viability of the platform:

- Technical Feasibility: The system is built on open-source technologies (PHP, MySQL, Apache with XAMPP, HTML, CSS, and JavaScript) requiring no proprietary licenses or specialized hardware. It can run on basic Core i3 desktop systems with 4 GB to 8 GB of Random Access Memory (RAM).
- Economic Feasibility: Development costs are minimized by utilizing open-source software tools, while paper and notebook overheads and financial miscalculations are eliminated.
- Operational Feasibility: An intuitive Graphical User Interface (GUI) is provided, which is usable by non-technical SHG members and group leaders.

5. Results and Reporting Capabilities

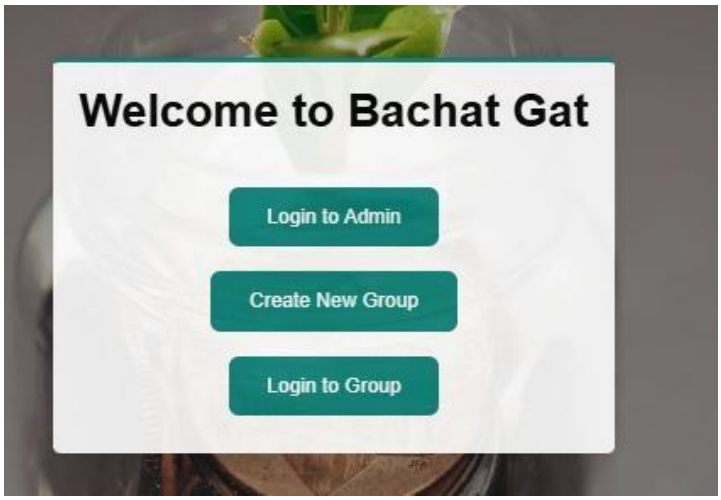
The implemented platform features six dedicated reporting modules:

- Member Report: Personal profile details, historical savings, and active or closed loan status are aggregated.
- Monthly Savings Report: Monthly collection metrics, late fee levies, and cumulative savings per member are summarized.
- Loan Issue Report: Principal disbursements, calculated interest, installment breakdowns, and loan purpose are outlined.
- Loan Recovery Report: Installment receipts, repayment channels (Cash, Unified Payments Interface (UPI), Cheque, and Bank Transfer), and outstanding balances are documented.
- Yearly Financial Summary: Annual aggregate financial trends across savings and credit activities are presented.
- Group Detail Report: Consolidated group profile metadata, overall liquidity status, and member rosters are displayed.

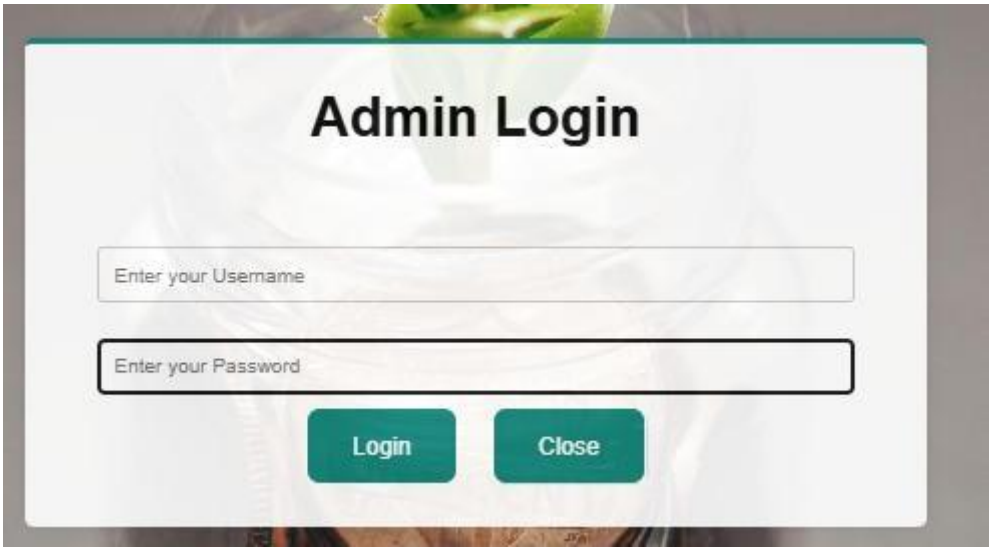
6. Appendix

Welcome Screen & Admin/Group Login Interfaces

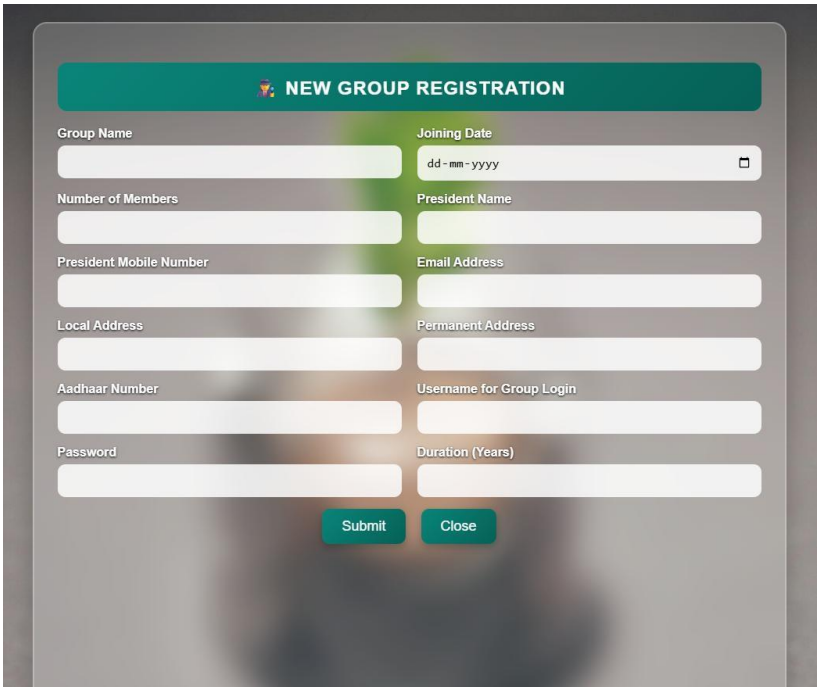
Interface Screens



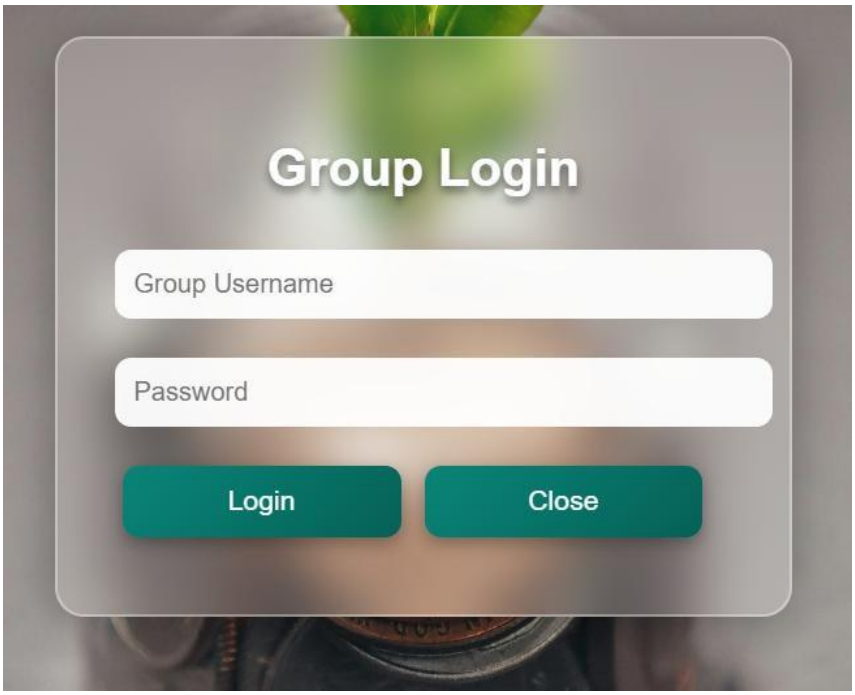
Admin Login



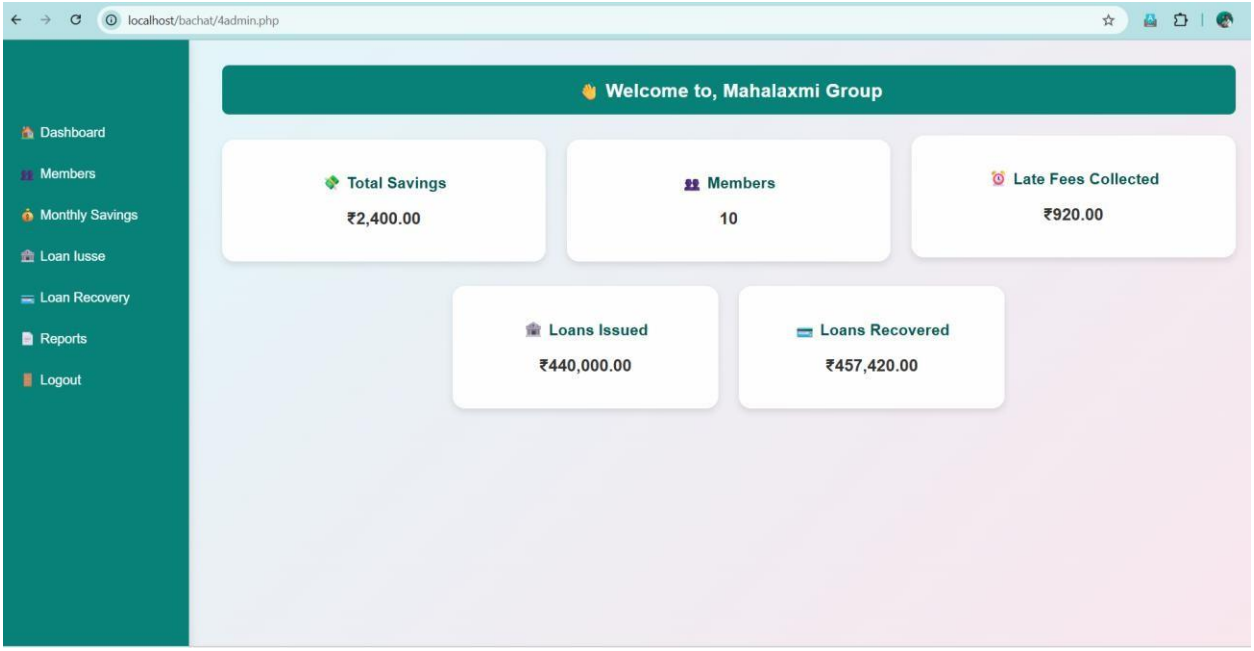
Create group



Group Login



Dashboard



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8. Conclusion and Future Scope

The Bachat Gat Management System successfully digitizes micro-finance operations for Self-Help Groups, establishing dynamic financial monitoring, automated calculations, and enhanced administrative efficiency. Future enhancements include:

- Automated daily or weekly database backup and restoration features.
- Mobile application development (Android and iOS) optimized for mobile devices.
- Direct integration with digital payment gateways (UPI and Net Banking) for automated savings deposits and loan repayments.

References

1. Government of Maharashtra, Maharashtra State Rural Livelihood Mission (MSRLM), "Bachat Gat Guidelines and Documentation", Official Government Resources on SHGs, 2024.
2. National Bank for Agriculture and Rural Development (NABARD), "Microfinance and Self Help Groups in India", Credit Linkage Models and Documentation, 2023.
3. Ministry of Rural Development, "Guidelines for Formation, Functioning, and Financial Management of SHGs", Government of India, 2023.
4. L. Welling, L. Thomson, "PHP and MySQL Web Development", Pearson Education, 5th Edition, Boston, 2016.
5. T. Powell, "HTML and CSS: The Complete Reference", McGraw-Hill Education, 5th Edition, New York, 2010.
6. D. Flanagan, "JavaScript: The Definitive Guide", O'Reilly Media, 7th Edition, Sebastopol, 2020.