

From Paper to Platform: A MERN Stack-Based Digital System for Managing Bachat Gats

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Abstract -

Bachat Gats, also known as self-help savings groups, play a significant role in promoting financial inclusion and economic empowerment in rural India, particularly among women. These community-based groups enable members to collectively save money, provide small loans to one another, and support local financial stability. However, many Bachat Gats continue to rely on traditional handwritten registers to record contributions, loans, repayments, and meeting details. Such manual record-keeping methods often lead to issues such as data loss, calculation errors, lack of transparency, and difficulty in tracking financial transactions over time.

This paper presents **eBachat Gat**, a web-based digital platform developed using the MERN stack, consisting of MongoDB, Express.js, React.js, and Node.js. The proposed system aims to modernize the management of Bachat Gat activities by providing a centralized platform for financial tracking, role-based access control, document management, and automated reporting. The platform also integrates secure authentication mechanisms, cloud-based document storage, and online payment processing to ensure data integrity and operational efficiency. By replacing paper-based systems with a scalable digital solution, the eBachat Gat platform improves transparency, simplifies record management, and enhances accessibility for users with limited technical experience. The system demonstrates how modern web technologies can effectively support community-driven financial systems and contribute to rural digital transformation.

Key Words: MERN stack, Bachat Gat, self-help groups, financial management system, rural digitization

1. INTRODUCTION

Bachat Gats, also known as self-help savings groups, are widely used community-based financial systems across rural India. These groups typically consist of individuals, primarily women, who voluntarily come together to save small amounts of money on a regular basis. The pooled savings are then used to provide small loans to members within the group, helping them meet personal, household, or small business financial needs. Over the years, Bachat Gats have played an important role in promoting financial inclusion, supporting women's

empowerment, and strengthening local economic stability in rural communities.

Despite their significant social and economic impact, many Bachat Gats still rely on **manual record-keeping methods** using handwritten registers and paper documents. These traditional approaches often lead to several operational challenges, including the risk of data loss, errors in financial calculations, difficulty in tracking member contributions and loan repayments, and limited transparency in financial records. In addition, maintaining paper records can become increasingly complex as the number of members and financial transactions grows. Such inefficiencies can reduce trust among members and make it difficult for group leaders to manage financial activities effectively.

With the increasing availability of internet connectivity and digital technologies, there is a growing opportunity to modernize the management of Bachat Gat operations. Digital platforms can significantly improve the accuracy, accessibility, and security of financial records while reducing administrative workload. In this context, the **eBachat Gat system** is proposed as a web-based solution designed to digitize the core activities of Bachat Gats. The platform is developed using modern web technologies based on the **MERN stack (MongoDB, Express.js, React.js, and Node.js)** to create a scalable and user-friendly application. The system enables efficient financial tracking, role-based access control for different group members, secure document management, and automated reporting. By transforming traditional paper-based processes into a digital platform, the eBachat Gat system aims to improve operational efficiency, enhance transparency, and make financial management more accessible for rural communities.

2. RELATED WORK

Existing financial platforms and digital banking systems primarily focus on services provided by formal financial institutions such as banks, microfinance organizations, and online payment systems. These platforms are designed to support large-scale financial operations including account management, digital payments, credit services, and transaction monitoring. While such systems have significantly improved financial accessibility and efficiency, they are often complex and not specifically designed to meet the operational needs of small community-based savings groups such as Bachat Gats. These groups operate with simpler financial structures, localized decision-making processes, and limited technical

resources, which makes many traditional financial management platforms unsuitable for their use.

In recent years, several digital tools and mobile applications have been developed to support financial record keeping and microfinance management. However, most of these solutions are either targeted toward institutional use or require advanced technical knowledge and infrastructure that may not be easily accessible in rural environments. Additionally, many existing systems lack features tailored to the organizational structure of Bachat Gats, such as role-based management for group leaders, member contribution tracking, loan distribution and repayment monitoring, and meeting management.

SYSTEM ARCHITECTURE

The system follows a MERN three-tier architecture consisting of frontend, backend, and database layers.

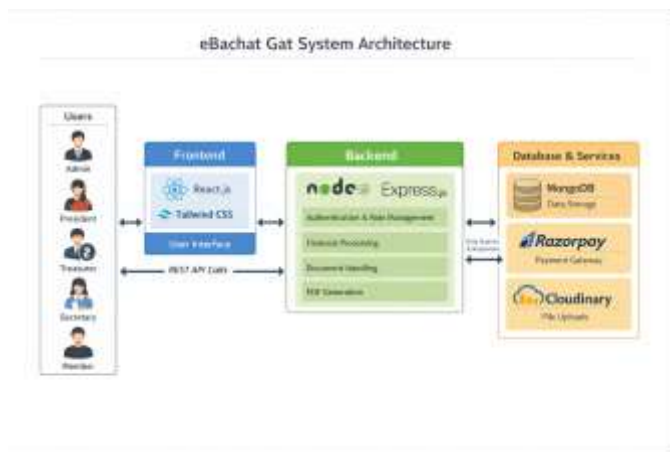


Fig – 1: System Architecture

SYSTEM FEATURES

Role-based access control allows Admin, President, Treasurer, Secretary, and Member roles. The system manages contributions, loans, meeting schedules, documents, and analytics dashboards.

RESULTS AND DISCUSSION

The **eBachat Gat platform** significantly improves the transparency, security, and efficiency of managing Bachat Gat operations compared to traditional paper-based record systems. In many rural savings groups, financial transactions such as member contributions, loan distributions, and repayments are recorded in handwritten registers, which often leads to errors, misplaced records, and difficulty in tracking past transactions. The eBachat Gat system replaces these manual processes with a centralized digital platform where all financial activities are stored and managed electronically. This enables group members and authorized officials such as the president, treasurer, and secretary to easily access financial information through dashboards and automated reports, improving accountability and trust. Additionally, digital storage enhances data security by protecting records from

physical damage or loss, while role-based authentication ensures that only authorized users can access sensitive information. The platform also increases operational efficiency by automating tasks such as financial calculations, record maintenance, and PDF report generation, reducing the administrative burden on group leaders. As a web-based system with a simple and user-friendly interface, eBachat Gat allows users to access information from any device with internet connectivity. Overall, the platform modernizes traditional Bachat Gat management by providing a secure, transparent, and efficient digital alternative to paper-based registers.

SYSTEM SCREENSHOT

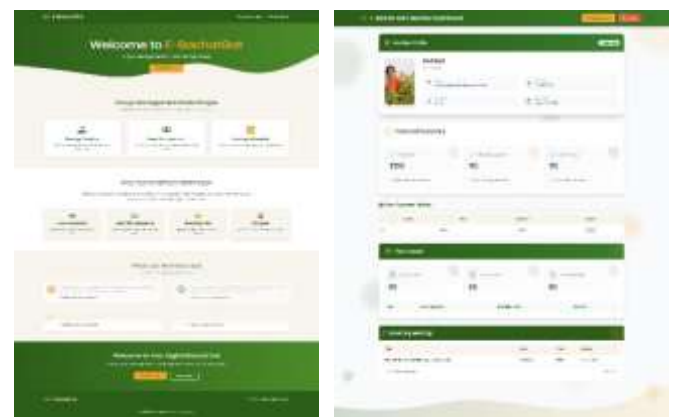


Fig – 2: Actual System

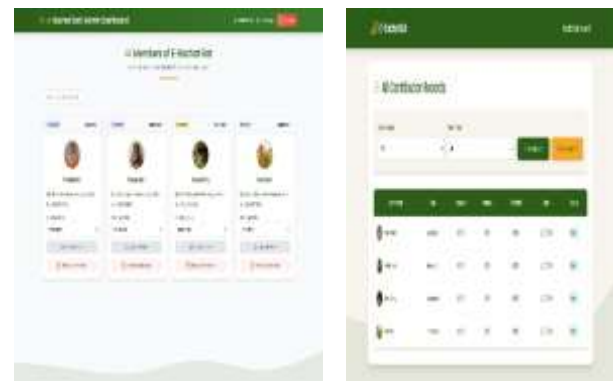


Fig – 3: Actual System

3. CONCLUSIONS

The **eBachat Gat system** demonstrates how modern web technologies can successfully digitize traditional community-based financial systems, making them more efficient, transparent, and accessible. By moving manual record-keeping and cash-based processes to a digital platform, the system helps members of self-help groups manage their savings, loans, and financial activities with greater accuracy and ease.

Overall, the eBachat Gat system represents an important step toward the digital transformation of community finance. By combining technology with traditional cooperative practices, it empowers self-help groups to operate more effectively, promotes financial inclusion, and supports sustainable economic development at the grassroots level.

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