

# MAD LAB FINAL REPORT.pdf

*by Hardic gupta*

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*Report of*

# EmpowerHer-Connecting Learning and Growing Together

*A report to be submitted by*

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# 1 Introduction

In the sprawling landscapes of rural regions, where women entrepreneurs thrive amidst unique challenges, EmpowerHer stands as a beacon of innovation and empowerment. Crafted as a revolutionary mobile application, EmpowerHer represents a paradigm shift in fostering the growth and success of rural women entrepreneurs. Harnessing the power of technology, community, and collaboration, this groundbreaking app is poised to redefine the landscape of female entrepreneurship in rural areas.

At its core, EmpowerHer is more than just a mobile application; it's a dynamic community platform meticulously designed to uplift and empower rural women entrepreneurs. Leveraging the versatility of Flutter for seamless cross-platform experiences and fortified by the robust infrastructure of Firebase, EmpowerHer bridges geographical barriers, connecting women across diverse landscapes and fostering a sense of solidarity and collaboration.

Central to EmpowerHer's mission is its vibrant community forum, serving as a nexus where women entrepreneurs converge to share insights, seek guidance, and celebrate successes. Beyond mere networking, this forum cultivates a spirit of camaraderie and mutual support, laying the foundation for collaborative ventures and collective advancement.

Moreover, EmpowerHer goes beyond connectivity; it's a comprehensive resource hub tailored to the unique needs of rural women entrepreneurs. Through personalized skill development resources, the app equips women with the tools and knowledge necessary to thrive in their entrepreneurial endeavors. From honing business acumen to mastering new technologies, EmpowerHer is committed to empowering women with the skills essential for sustainable growth and success.

Furthermore, EmpowerHer recognizes the critical importance of effective financial management in driving business sustainability. With intuitive features geared towards financial literacy and management, the app empowers women to make informed decisions, manage resources efficiently, and pave the way for long-term business growth and stability.

In essence, EmpowerHer epitomizes the fusion of technology and community support, representing a bold endeavor to break barriers, promote continuous learning, and catalyze the growth of women-led businesses in rural areas. By providing a platform where women can connect, collaborate, and cultivate their entrepreneurial aspirations, EmpowerHer is poised to usher in a new era of empowerment and prosperity for rural women entrepreneurs worldwide.

## 2 Literature Survey

- [1 ] Flutter is an open-source SDK designed for cross-platform mobile application development, focusing on high performance and reliability for iOS and Android. Its key features include Just-in-time compilation for dynamic code execution and Ahead-of-time compilation for native system-dependent machine code generation. Hot reload facilitates quick experimentation, UI building, feature addition, and bug fixing by updating source code files into the running Dart Virtual Machine. Flutter provides GPU rendering and UI solutions powered by native ARM code, targeting top mobile operating systems.
- [2 ] Flutter excels in cross-platform development by providing a single codebase for iOS and Android, reducing development time and costs. Its hot reload feature allows for rapid iteration and debugging, enhancing developer productivity. Flutter's performance is optimized with GPU rendering and native ARM code compilation, resulting in smooth and responsive applications. Its rich set of customizable UI widgets enables pixel-perfect designs across platforms, offering a superior user experience. Additionally, Flutter's seamless integration with Firebase services simplifies backend development and real-time data synchronization.
- [3 ] The research paper discusses using Firebase for Android app development. It highlights Firebase's advantages like real-time database, user authentication, and cloud storage. The high-level design involves modules for user authentication, profiles, home page, products, learning, community, and expense tracking. The low-level design focuses on implementing Firebase services, data structures, UI components, and real-time functionality in each module. Following this design can leverage Firebase's strengths for a seamless Android app experience.
- [4 ] Firebase Cloud Messaging (FCM) is engineered to establish connections with your devices through messages and notifications. It's engineered to be dependable, ensuring that 98% of messages reach connected devices within 500ms or less, and highly scalable, boasting an infrastructure capable of delivering over a trillion messages weekly. While delivering messages efficiently is crucial, FCM also prioritizes effective targeting to prevent unwanted notification overload. It provides a range of methods to grant users precise control over message targeting, ensuring a tailored and spam-free notification experience.
- [5 ] The research paper discusses the development of the "Evecurate" mobile application using Flutter and Firebase. It provides insights into how Flutter was used as the

development framework for building the cross-platform app, while Firebase offered various services like authentication, real-time database, and cloud storage. This paper can help in designing the high-level and low-level architecture for your proposed modules by leveraging the integration of Flutter and Firebase services. Specifically, it highlights the use of Firebase Authentication for secure user registration and login, Cloud Firestore for storing and syncing structured data like user profiles and event details in real-time, and Firebase Storage for handling user-generated content. Additionally, it demonstrates the implementation of real-time features like QA, polling, and reviews using Firestore or Realtime Database listeners. The system architecture separating the presentation, business logic, and data layers can guide the design of your modules, while the modular approach to features like event sharing, audience interaction, and planning can inform the high-level and low-level design decisions for your proposed modules

[6 ] Development policies and programs often overlook the pivotal role of women in driving economic development, opting instead to prioritize investments in women's reproductive roles, particularly within population programs. Despite this, women across the developing world actively participate in economically productive endeavors and earn incomes, primarily within agriculture, the informal sector, and increasingly in formal wage employment. However, their earnings typically remain low. Since the 1950s, development agencies have attempted to address the necessity for impoverished women to generate income through modest investments in income-generating projects. Unfortunately, many of these initiatives have faltered due to their focus on welfare rather than developmental objectives. They often provide women with temporary and part-time employment opportunities in traditionally feminine skills like knitting and sewing, which possess limited market demand. Conversely, certain non-governmental organizations, such as the Self-Employed Women's Association in India, have succeeded in enhancing women's economic status by recognizing women's fundamental role in the economic development process from the outset.

[7 ] The paper presents an expense tracking application. It allows users to add, delete, and categorize expenses, view expenses day-wise or category-wise, and manage categories. The application follows a modular architecture with modules for different functionalities like welcome screen, main window, adding expenses, and viewing expenses. The waterfall model was used for implementation, and the application aims to help users efficiently manage their daily expenses without manual effort. Future enhancements include adding email and payment integration, and backup data storage.

- [8 ] The paper introduces an <sup>1</sup>OTP-SMS framework as a second authentication factor. The framework uses Blockchain technology and an Ethereum smart contract to generate and encrypt the OTP with the user's public key, sending a <sup>1</sup>hash value to the website/application. The user decrypts the OTP with their private key, computes the hash, and sends it for authentication by comparing hash values. This prevents MITM attacks on the OTP and solves third-party vulnerabilities, providing security with low computation power. It aims to implement the framework with real applications and measure authentication time.
- [9 ] EmpowerHer prioritizes accessibility, considering factors such as internet connectivity and device availability for rural women. Unlike platforms like Coursera or Udemy, which may assume higher internet speeds and modern devices, we optimize for lower bandwidths and support less sophisticated devices. Additionally, our platform curates content specifically tailored to the needs and interests of rural women, featuring courses on entrepreneurship, financial literacy, agricultural practices, and other relevant topics. While Coursera and Udemy offer a wide range of courses, they may not target the needs of rural women as precisely. Moreover, EmpowerHer fosters a supportive community through features such as peer-to-peer support, mentorship programs, and forums where users can share experiences and advice. While Coursera and Udemy offer discussion forums, our app explicitly focuses on building a supportive network for rural women entrepreneurs.

### 3 Problem Definition

The research problem addressed by EmpowerHer is the pervasive challenges faced by rural women entrepreneurs worldwide. These challenges include limited access to resources, lack of networking opportunities, insufficient skill development support, and inadequate financial management tools. Existing solutions often fail to meet the diverse and specific needs of rural women entrepreneurs, leading to barriers in their business growth and contribution to economic development. Therefore, the research problem centers on the necessity for a comprehensive solution tailored to address the unique <sup>1</sup>challenges faced by rural women entrepreneurs. This solution should provide a platform for connectivity, collaboration, skill development, and financial management, ultimately empowering rural women entrepreneurs to succeed in their ventures and contribute significantly to their communities' economic growth.

## 4 Objective

The primary objective of EmpowerHer is to empower rural women entrepreneurs by providing them with a comprehensive mobile application that facilitates connectivity, fosters collaboration, offers personalized skill development resources, and enables effective financial management. Through this platform, EmpowerHer aims to:

- 1 Foster a supportive community: Create a vibrant and inclusive community platform where rural women entrepreneurs can connect, collaborate, and support each other, breaking down barriers of isolation and fostering a sense of solidarity.
- 2 Provide tailored resources and skill development: Offer personalized skill development resources, educational materials, workshops, and training modules designed to address the unique needs and challenges faced by rural women entrepreneurs, empowering them with the knowledge and skills necessary for business success.
- 3 Enable effective financial management: Equip women entrepreneurs with intuitive financial management tools and resources to help them manage their resources efficiently, make informed decisions, and plan for sustainable business growth and stability.
- 4 Ensure accessibility and scalability: Develop EmpowerHer as a cross-platform mobile application using Flutter, ensuring accessibility for women entrepreneurs regardless of their device or operating system. Backed by Firebase, the app is built on a robust infrastructure that allows for scalability and sustainability, ensuring its long-term viability and relevance.
- 5 Promote gender equality and economic development: By empowering rural women entrepreneurs with the tools, resources, and support they need to succeed, EmpowerHer aims to promote gender equality, catalyze economic development in rural areas, and uplift entire communities.

Overall, EmpowerHer seeks to empower rural women entrepreneurs, break down barriers to success, and create opportunities for growth and prosperity in rural communities worldwide.



# 5 Methodology



Figure 1: High-Level Design (Class Diagram)

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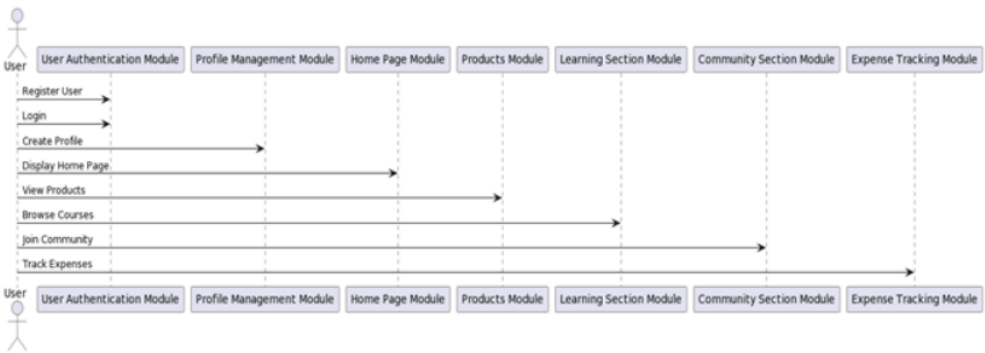


Figure 2: Low Level Design (Sequence Diagram)



Figure 3: Flow diagram

## 6 Results and Conclusion

EmpowerHer, the comprehensive mobile application designed to empower rural women entrepreneurs, has successfully achieved its primary objectives. Through a range of features and resources, EmpowerHer facilitates connectivity, collaboration, skill development, and financial management for women in rural areas.

The application fosters a supportive community where rural women entrepreneurs can connect, collaborate, and support each other, breaking down barriers of isolation and fostering solidarity. Tailored resources, educational materials, workshops, and training modules address the unique needs and challenges faced by these entrepreneurs, empowering them with the necessary knowledge and skills for business success.

Moreover, EmpowerHer equips women entrepreneurs with intuitive financial management tools and resources, facilitating efficient resource management, informed decision-making, and sustainable business growth. Developed as a cross-platform mobile application using Flutter and backed by Firebase, EmpowerHer ensures accessibility across different devices and operating systems while allowing for scalability and sustainability.

Overall, EmpowerHer aims to promote gender equality, catalyze economic development in rural areas, and uplift entire communities by empowering rural women entrepreneurs. By providing them with the tools, resources, and support they need to succeed, EmpowerHer not only benefits individual entrepreneurs but also drives growth and prosperity in rural areas worldwide.

As EmpowerHer continues to evolve, it remains dedicated to its mission of breaking down barriers to success and creating a more inclusive and equitable world for all. Through ongoing development and expansion, EmpowerHer will continue to empower rural women entrepreneurs, foster economic development, and create opportunities for growth and prosperity in rural communities globally.

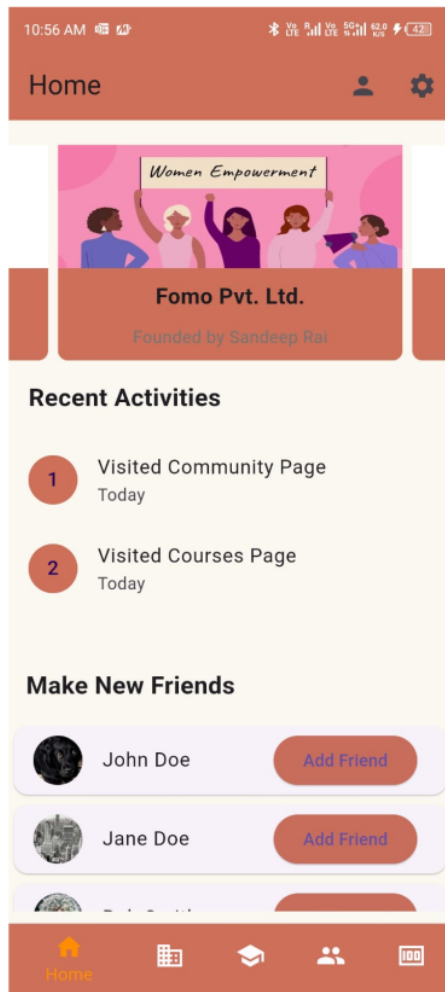


Figure 4: Home

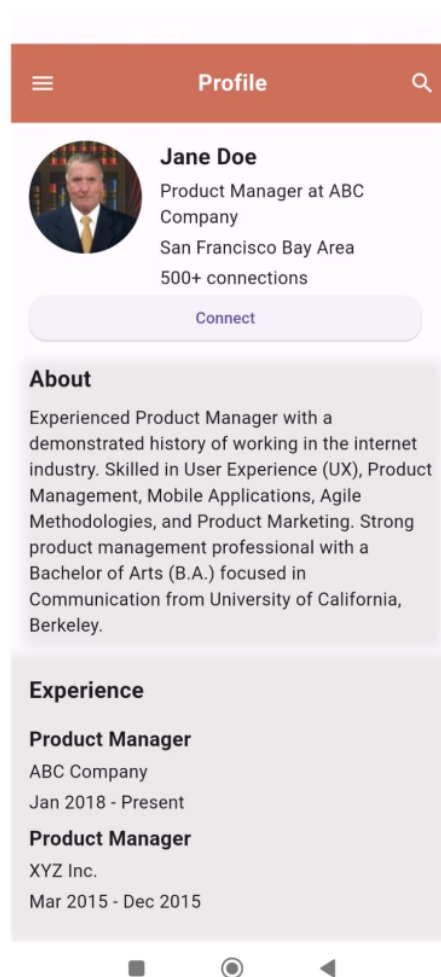


Figure 5: Profile page

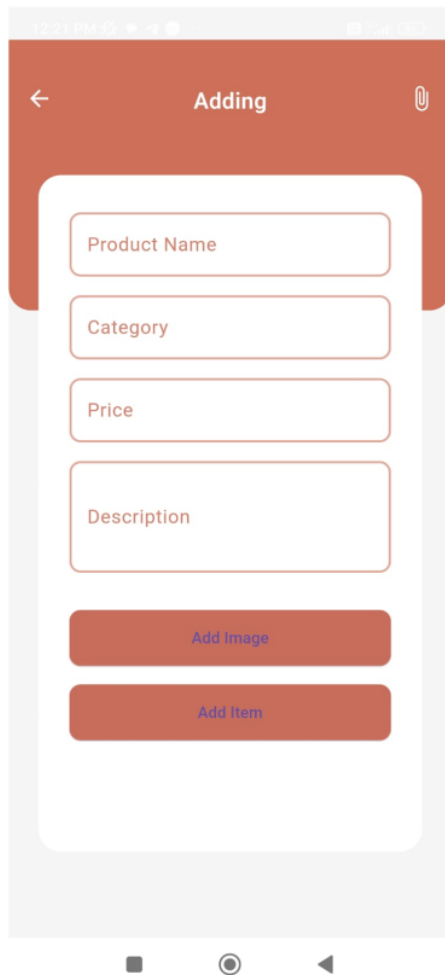


Figure 6: Adding products

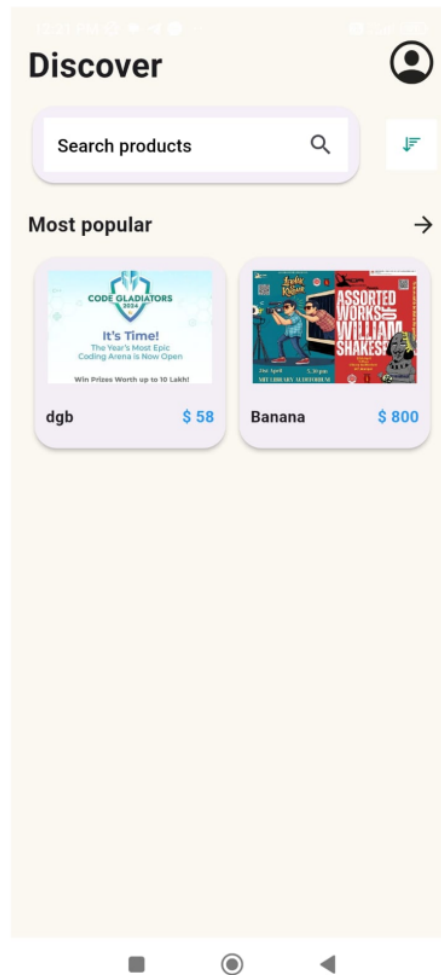


Figure 7: Discover products

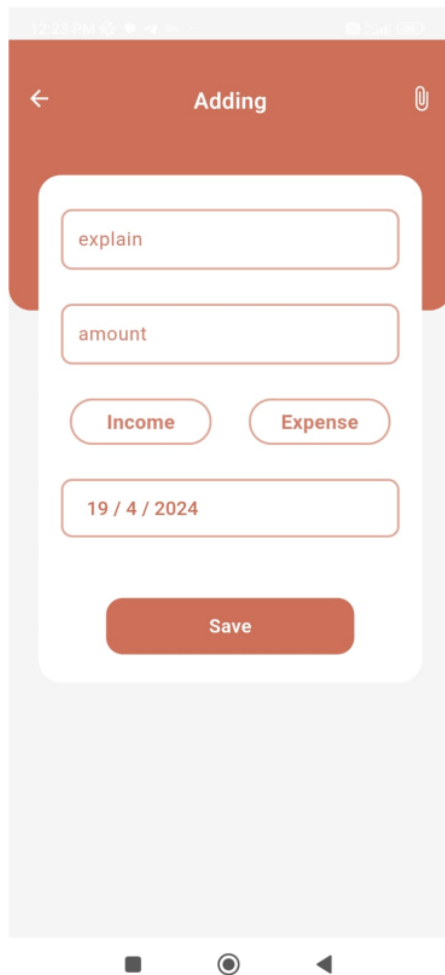


Figure 8: Adding transactions

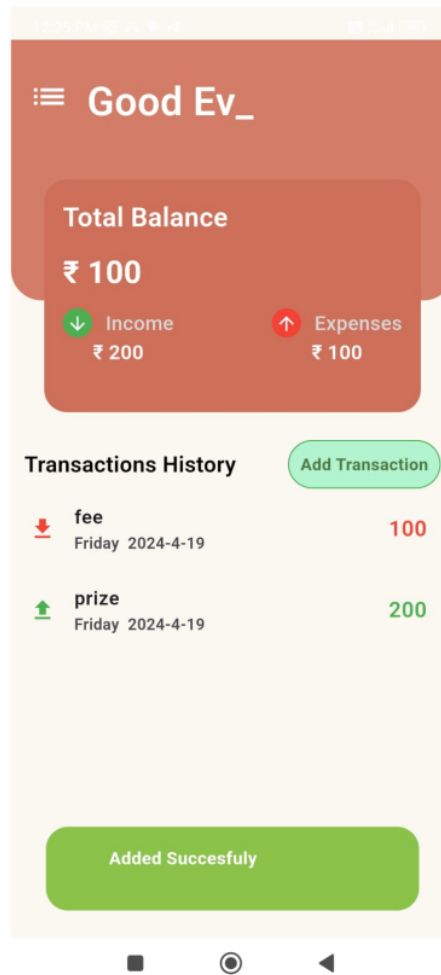


Figure 9: viewing transactions



Figure 10: Cart



Figure 11: add to cart

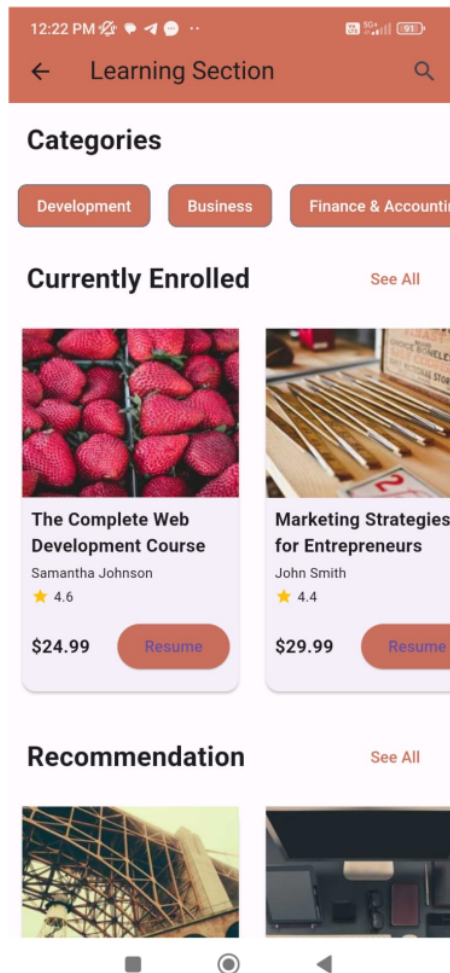


Figure 12: Learning Section

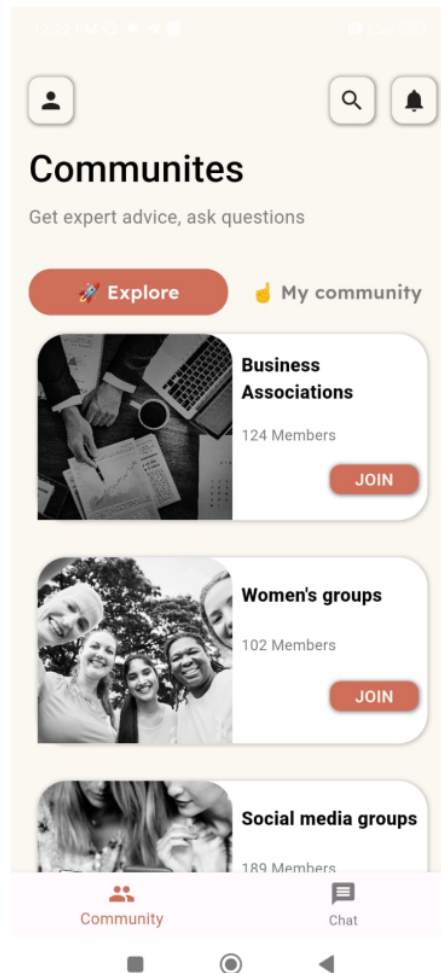


Figure 13: View Communities



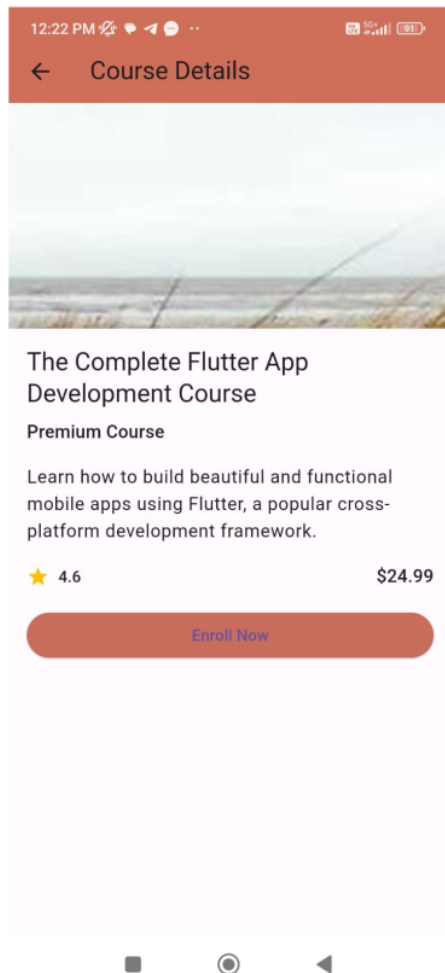


Figure 14: enroll course

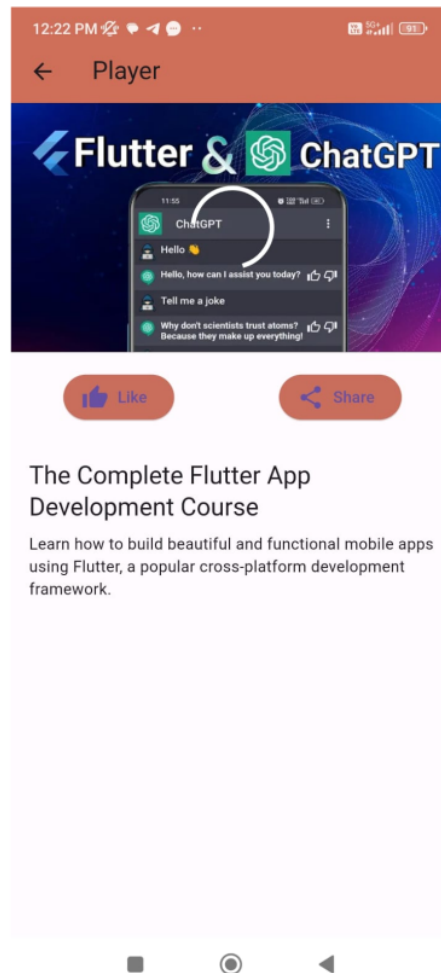


Figure 15: courses videos

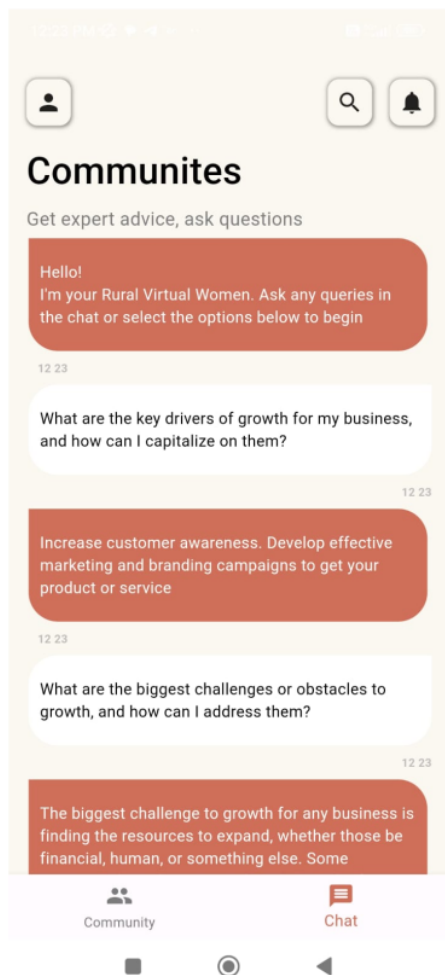


Figure 16: chat section.

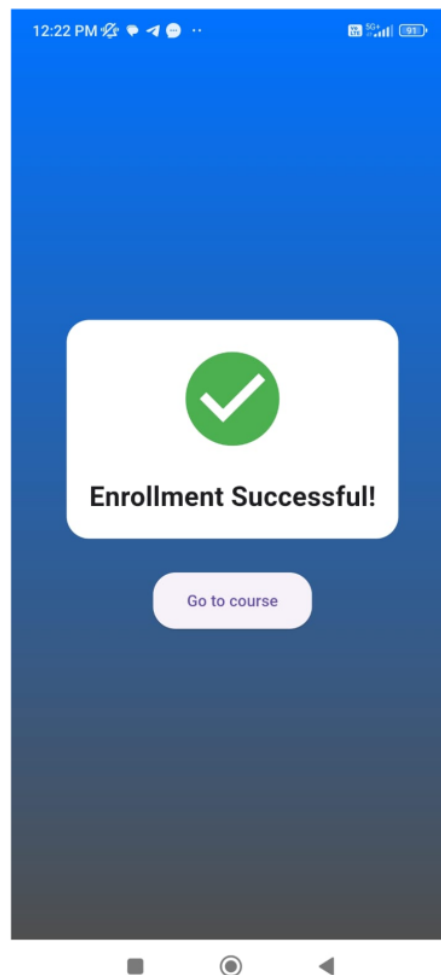


Figure 17: Successful enrollment.

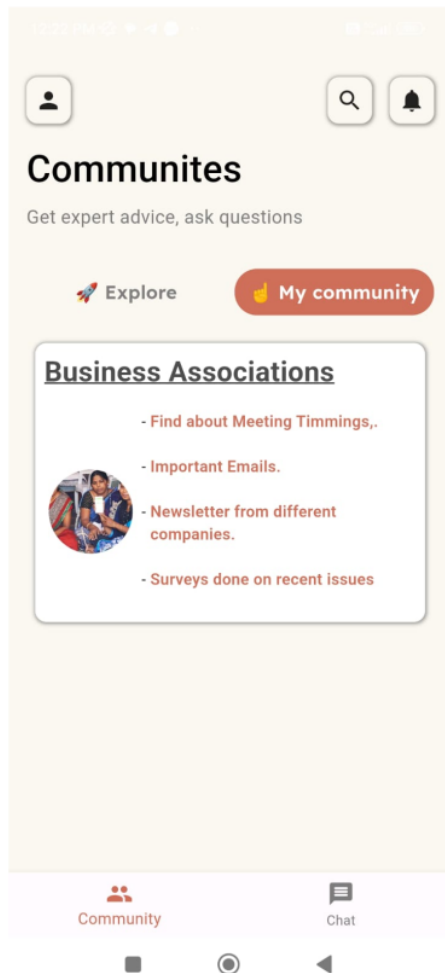


Figure 18: My Communities

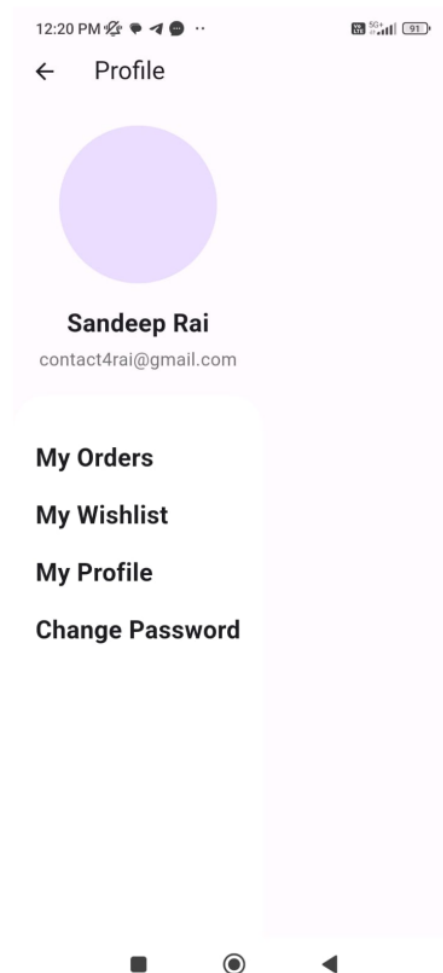


Figure 19: Profile Page

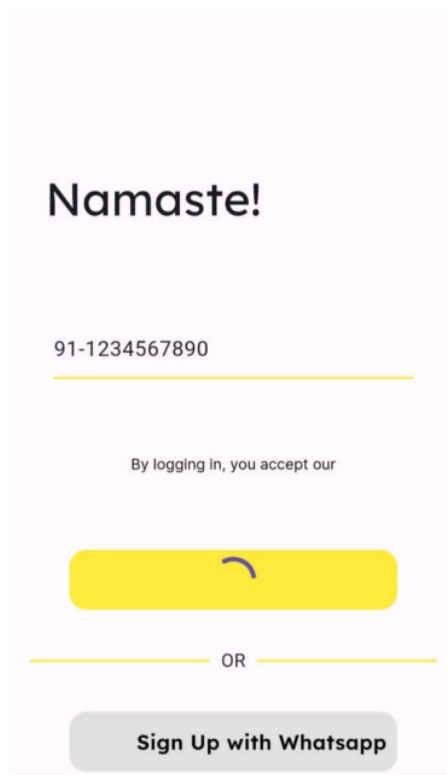


Figure 20: Login page

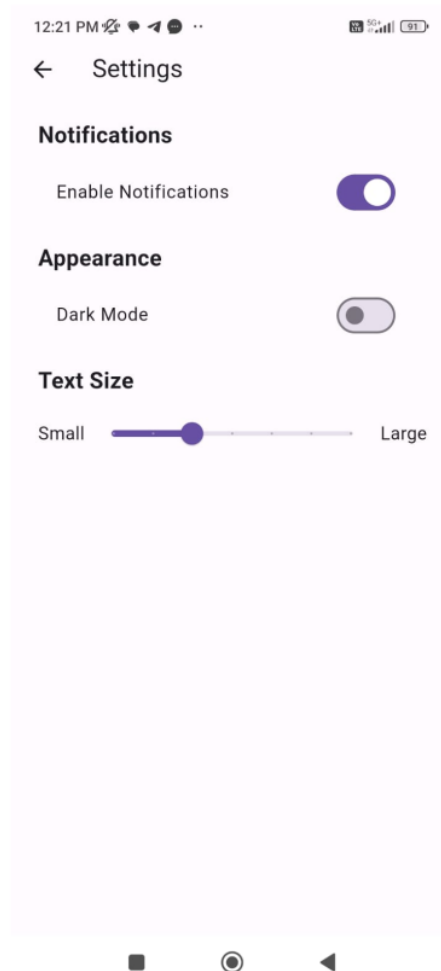


Figure 21: Settings Page

## 7 Scope

- 1 Platform Development: Designing and developing a user-friendly mobile application utilizing the Flutter framework to ensure seamless cross-platform experiences. The application will feature intuitive navigation, interactive features, and personalized user profiles to enhance user engagement and satisfaction.
- 2 Community Platform: Implementing a dynamic community platform within the application to facilitate networking, collaboration, and support among rural women entrepreneurs. This platform will include features such as discussion forums, mentorship programs, and networking events to foster a sense of community and encourage knowledge-sharing.
- 3 Skill Development Resources: Curating and delivering a wide range of skill development resources tailored to the specific needs and challenges faced by rural women entrepreneurs. These resources may include educational materials, workshops, training modules, and tutorials covering topics such as business planning, marketing strategies, financial management, and technology adoption.
- 4 Financial Management Tools: Integrating intuitive financial management tools and resources within the application to assist women entrepreneurs in managing their resources effectively. These tools may include budgeting calculators, expense trackers, financial planning guides, and access to financial literacy resources to promote informed decision-making and sustainable business growth.
- 5 Accessibility and Scalability: Ensuring the accessibility of the EmpowerHer application to women entrepreneurs in rural areas with varying levels of technological infrastructure. This may involve optimizing the application for low-bandwidth connections, providing offline access to essential features, and offering multilingual support to accommodate diverse user demographics. Additionally, the application will be built on a scalable infrastructure using Firebase to accommodate growth and expansion over time.
- 6 Monitoring and Evaluation: Implementing mechanisms for monitoring and evaluating the effectiveness of EmpowerHer in achieving its objectives. This may include tracking user engagement metrics, conducting user surveys and feedback sessions, and analyzing key performance indicators to identify areas for improvement and refinement.

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