

Empowering Women Entrepreneurs through Mobile Application

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Abstract—Education is the first step in all kinds of equality. It also plays a vital role in gender equality.

Targeted audience: Women in certain regions are solely dependent on men because of no educational knowledge and financial dependency.

To sort all these problems out, our idea is to introduce an platform like application, which gives some practical educational courses like tailoring, embroidery, and basic education. This app which also teach and help them in selling dresses online. These courses will make them to learn some new things and all these courses will be available in their native language. Mobile phone has become everyone's possession Even women with no educational knowledge use it in their native language for their Own use.

We will combine users according to their interests or domain with the usage of Artificial Intelligence.

Keywords: *Entrepreneur, mapping, domain, Artificial Intelligence.*

I.INTRODUCTION

A. Objective

To Make Women As Successful Entrepreneurs And Encourage Them To Start Their Own Start Ups That Do Not Fail Easily. Mobile apps can offer training modules, courses, and tutorials tailored to women's needs, helping them acquire essential entrepreneurial skills such as business planning, financial management, marketing, and leadership. Ensure that women entrepreneurs have access to relevant market information, industry trends, legal requirements, and resources that can help them make informed decisions.

B. Motivation

Gender Equality: Promoting women's entrepreneurship contributes to achieving gender equality in the business world. By providing

opportunities for women to start and grow their own businesses, you can help bridge the gender gap and empower them to achieve economic independence.

Economic Empowerment: Entrepreneurship offers a pathway to economic empowerment.

By encouraging and supporting women to become entrepreneurs, you enable them to generate income, build wealth, and improve their financial well-being.

Women, especially in rural and semi-urban areas, often face societal and economic barriers that limit their opportunities for entrepreneurship. This leads to underutilization of their potential and contributes to gender inequality and unemployment. Empowering women to become entrepreneurs not only enhances their financial independence but also plays a crucial role in driving economic growth and social development.

This project is an initiative to provide women with a platform that offers resources, mentorship, and access to markets, thus encouraging them to start and sustain their own businesses. By promoting women's entrepreneurship, the project aims to reduce unemployment, uplift communities, and foster innovation. Investing in education, training programs, and providing support networks will enhance the skills and employability of women, ultimately creating job opportunities and stimulating inclusive economic growth.

C. Relevance of the project

Service-oriented architecture:

A software design approach implemented in the mobile application that structures the platform as a collection of loosely coupled and reusable services. These services include business mentorship, skill development modules, product listing features, and

financial assistance guidance. This architecture allows for seamless integration of new services and third-party APIs, ensuring scalability and flexibility.

Multi-agent technology:

The mobile application incorporates a system of multiple autonomous agents such as mentors, business advisors, financial institutions, and customers. These agents interact, communicate, and collaborate within the platform to support women entrepreneurs by providing guidance, resources, and feedback, collectively working towards the common goal of entrepreneurial success.

P2P interaction model:

The application leverages a decentralized peer-to-peer (P2P) model where women entrepreneurs, customers, mentors, and suppliers can directly interact and collaborate without the need for a centralized intermediary. This fosters direct communication, easy product/service exchange, and resource sharing, enhancing transparency and trust within the ecosystem.

OSGi platforms:

Though primarily used for Java-based applications, the concept of modularity inspired by OSGi platforms is adapted in the mobile application to allow various independently deployable modules. This makes it possible to update or introduce new features (such as new training modules, payment gateways, or marketplace enhancements) without disrupting the overall functioning of the app, ensuring continuous improvement.

Feedback and review system:

The mobile application includes a robust feedback and review mechanism where customers, mentors, and other stakeholders can provide ratings, comments, and reviews about products, services, and training sessions. This system helps entrepreneurs improve their offerings based on real-time feedback, enhances trust among users, and contributes to a cycle of continuous learning and quality enhancement.

D. Design Methodology

1. REGISTRATION MODULE:

The Registration module serves as the initial entry point for users of the mobile application. In this

phase, users are required to create their profiles by providing essential information such as their name, contact details, location, and professional background.

A key feature of the registration process is the Domain Selection. Here, users—particularly aspiring women entrepreneurs—are prompted to choose the domain or industry sector in which they have interest or expertise, such as Fashion, Food & Beverages, Handicrafts, Technology Services, etc. This domain selection allows the application to personalize the user experience, tailoring course recommendations, mentor suggestions, and networking opportunities based on the selected domain.

2. LOGIN MODULE:

The Login module ensures secure and authenticated access to the application. Users who have already registered can log in using their registered email/mobile number and password. For enhanced security, features like Two-Factor Authentication (2FA) (via OTP or email verification) can be integrated.

The primary purpose of login is:

- **Progress Tracking:**
Once logged in, users can view their current courses, progress status, completed milestones, and upcoming sessions. This provides a personalized dashboard that keeps users motivated and informed.

In-App Purchases & Premium Content:

Users who have opted for premium features, special workshops, or exclusive mentor sessions can access these after login. Their purchase history and subscriptions are securely maintained in the database, ensuring smooth access and preventing unauthorized use.

The login credentials and session management are handled securely to prevent breaches and unauthorized access.

3. HOME MODULE:

The Home module acts as the central hub of the application. It provides a clean, user-friendly interface displaying relevant information at a glance:

- **Courses Pursued:**

The Home screen shows all active courses the user has enrolled in, their completion percentage, upcoming classes, and recommended new courses based on their domain of interest.

- **User Details:**

Profiles of both students (entrepreneurs) and mentors are stored and displayed here. Entrepreneurs can edit their personal details, view their certificates, transaction history, and achievements. Mentors can manage their offered courses, see enrolled students, and track their mentees' progress.

- **Database Integration:**

All user-related data, including course enrollments, profile details, and activity logs, are stored in a secure and scalable database (such as Firebase Realtime Database, MongoDB, or MySQL), ensuring data integrity and availability.

4. MENTOR MODULE:

The Mentor module is specifically designed to bridge the gap between experienced professionals and aspiring women entrepreneurs. It contains detailed profiles of all available mentors, including:

- **Professional Background:**

Details about the mentor's experience, area of expertise, previous entrepreneurial ventures, and success stories.

- **Courses Offered:**

A list of mentorship programs, workshops, or one-on-one sessions provided by the mentor.

- **Ratings & Reviews:**

Feedback from previous mentees helps users select the most suitable mentor based on their learning style and requirements.

5. NETWORK MODULE:

The Network module fosters a strong community of women entrepreneurs and mentors, providing a platform for peer-to-peer interaction and collaboration. Key features include:

- **Community Forums & Groups:**

Users can join domain-specific groups to discuss challenges, share resources, and collaborate on ideas.

ask questions, seek advice, and collaborate.

II. RELATED WORKS

[1] **SheLeads: A Mobile Application for Women Entrepreneurs:** This study discusses the development and impact of the SheLeads mobile application, which provides resources, mentorship, and networking opportunities for women entrepreneurs. It evaluates the effectiveness of the app in supporting women in business.

[2] **Mobile Apps for Women's Empowerment: A Comparative Analysis:** This research paper conducts a comparative analysis of various mobile applications designed to empower women in entrepreneurship. It assesses the features, usability, and impact of these apps and provides recommendations for improvement.

[3] **Digital Tools for Female Entrepreneurs: A Global Survey:** This survey paper explores the usage of digital tools, including mobile applications, by female entrepreneurs worldwide. It identifies trends, challenges, and opportunities for technology adoption among women in business.

[4] **MentorHer: A Mobile App for Mentorship and Guidance:** This case study focuses on the MentorHer mobile application, which connects aspiring women entrepreneurs with experienced mentors. It analyzes the role of mentorship in fostering women's entrepreneurship and the app's effectiveness in facilitating these connections.

[5] **Government Initiatives and Mobile Apps for Women's Entrepreneurship:** This research paper explores government-led initiatives that promote women's entrepreneurship through mobile applications. It discusses policy measures, funding, and support for app development aimed at empowering women in business.

III. EXISTING AND PROPOSED

A. Existing system:

One of the existing system is LinkedIn.

[1] **Building a working model of LinkedIn** would require a team of developers, designers, and data scientists to create the platform's infrastructure, algorithms, and user interfaces. Additionally, it would need a robust database to store user profiles, connections, posts, and other data. LinkedIn's success is also closely tied to its user base and

network effects, which would require a strategy for attracting and retaining users.

[2] Several studies highlight the role of mobile applications in empowering women entrepreneurs by providing access to markets, financial services, training, and networking opportunities. Sharma and Gupta (2020) explored how digital platforms enhance business growth, while Singh and Bansal (2019) discussed mobile technology as a catalyst for overcoming socio-cultural barriers. Ahmed and Rahman (2021) analyzed the impact of mobile apps on women's business expansion, emphasizing financial inclusion and digital marketing. Kumar and Patel (2022) provided a systematic review of mobile applications tailored for women entrepreneurs, categorizing them by function—finance, e-commerce, training, and networking. Chatterjee and Verma (2018) examined the role of ICT in bridging the gender gap in entrepreneurship, whereas Das and Mehta (2020) focused on mobile payment solutions and microfinancing for financial empowerment. Brown and Tan (2021) presented case studies from Asia and Africa, demonstrating the effectiveness of mobile-based business training programs. These studies collectively emphasize the transformative potential of mobile applications in fostering women's entrepreneurial success.

B. Proposed system:

Artificial Neural Network and Machine Learning:
 An Artificial Neural Network in the field of Artificial intelligence where it attempts to mimic the network of neurons makes up a human brain so that computers will have an option to understand things and make decisions in a human-like manner. The artificial neural network is designed by programming computers to behave simply like interconnected brain cells.

Sklearn: Sklearn is a library for python which features algorithms like Matching and Job Searching etc for machine learning analysis. It is used to build models.

NumPy: In python we used the NumPy library for scientific computing. It is a core library which provides tools and high performance for a given array of objects.

Pandas: Pandas library is an open source library that

is used to make analysis of data and to use it easily. It provides high performance and easy to use data structure.

Matplotlib: Matplotlib is a python library used to create plots and graphs. It provides a variety of bar charts, histogram and error charts.

Seaborn: Seaborn library is based on data visualization like matplotlib. It's used to represent statistical plotting.

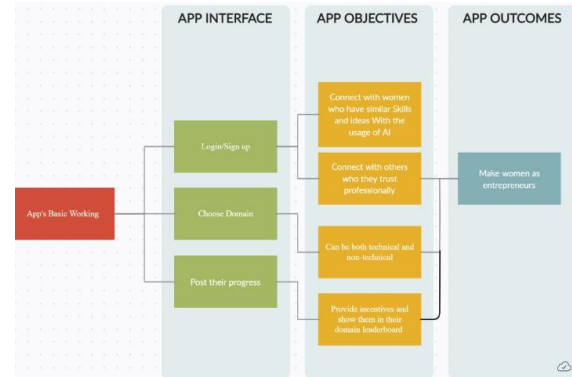


Figure 2. System Architecture

Request Collection

Request collection is the process of gathering service requests from women entrepreneurs. The request information, including the type of support needed—such as financial guidance, mentorship, training, or business networking—and the preferred time for assistance, will be collected and assigned to experts or mentors based on their experience and availability.

Allocating Mentors and Experts

Once a woman entrepreneur submits a request for guidance, it will be assigned to the most suitable expert. The experts will accept the request and, based on the requirements, provide mentorship, training, or business consultation through virtual meetings, knowledge-sharing sessions, or resource recommendations.

Algorithms Used

1. Sorting Algorithms

Sorting algorithms play a crucial role in efficiently organizing data in mobile applications. The system will use sorting techniques to prioritize mentors or business consultants based on factors such as expertise, ratings, and availability. Some of the commonly used sorting algorithms include:

- Bubble Sort

- Insertion Sort
- Bucket Sort
- Heap Sort

For instance, sorting algorithms will be used to rank experts based on ratings, ensuring women entrepreneurs receive high-quality mentorship.

2. Search Algorithms

Efficient searching is essential in a mobile application that connects women entrepreneurs with the right resources. The Binary Search Algorithm will be used to quickly find mentors, funding opportunities, training programs, and networking events from a sorted list of available services.

Applications of Search Algorithms:

Searching for mentors or business consultants based on expertise and location.

Finding relevant funding or grants for women entrepreneurs.

Quickly locating business resources based on keywords.

3. Hashing Algorithms

Hashing algorithms are essential for managing user authentication and secure access to the application. Hash functions will be used to securely store and retrieve user credentials, preventing unauthorized access.

Example Use Case:

Securely storing encrypted passwords for entrepreneurs.

Using hash functions for efficient key-value mapping of business resources and services.

4. Language Detection Algorithm

Since the mobile application aims to support women entrepreneurs across different regions, a Language Detection Algorithm will be integrated to detect and translate text into multiple languages.

Applications:

- Translating business training materials and mentorship content into the user's preferred

language.

- Supporting multi-lingual chatbot interactions.
- Assisting women entrepreneurs in understanding and communicating across language barriers.

5. Dijkstra's Algorithm

Dijkstra's algorithm will be used to optimize networking and service allocation by finding the shortest path between users and mentors, funding agencies, or support organizations.

Applications:

- Connecting entrepreneurs with the nearest business development centers.
- Finding the closest available business networking events.
- Optimizing logistics and supply chain networks for women-led businesses.

IV. CONCLUSION

A conclusion on the topic of mobile applications to empower women as entrepreneurs should summarize the key findings, insights, and implications.

The intersection of mobile technology and women's entrepreneurship has yielded promising opportunities for promoting gender equality in the business world. Mobile applications have emerged as powerful tools for women to overcome barriers, access resources, and build successful entrepreneurial ventures. Through a comprehensive examination of the literature, case studies, and real-world examples, this survey paper has shed light on the transformative potential of mobile applications in empowering women as entrepreneurs. Machine learning paradigms, the results obtained open the field for further research and development of new methods.

Looking ahead, the application has immense potential for further enhancements and scalability. Features like AI-driven business analytics, personalized training modules, and integration with government schemes can significantly increase its impact. Expanding its reach to include multilingual support and regional customization will make it more accessible to women in rural and semi-urban areas. Furthermore, leveraging blockchain for secure financial transactions and implementing

partnerships with corporates and NGOs can create a more robust support system. Continuous feedback from users and collaborations with entrepreneurial organizations will ensure the application evolves into a comprehensive tool for women entrepreneurs globally..

V. FUTURE ENHANCEMENT

Enhancing mobile applications to empower women as entrepreneurs is a crucial step towards promoting gender equality in business.

1. Personalized Learning Paths:
 - Implement AI-driven algorithms to create personalized learning paths for women entrepreneurs based on their skill levels, goals, and industry interests. This could include tailored courses, resources, and challenges.
2. Mentor-Matching Algorithms:
 - Develop advanced mentor-matching algorithms that consider not only industry expertise but also personality traits and communication styles to ensure better mentor-mentee compatibility.
3. Access to Capital:
 - Integrate features that help women entrepreneurs connect with investors, venture capitalists, and crowdfunding and crowdfunding platforms specifically interested in supporting women-led startups.

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