

Sakshama: A Digital Empowerment Platform for Housewives

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Abstract - Women's participation in the workforce remains significantly lower than that of men due to barriers such as limited access to flexible employment opportunities, skill gaps, lack of awareness, and family responsibilities. Many women, especially homemakers, possess valuable skills but struggle to find suitable employment opportunities that align with their schedules and capabilities. This research proposes SAKSHAMA, an AI-driven employment and skill development platform designed to bridge the gap between women job seekers and employers. The platform leverages modern mobile technologies including Flutter and Firebase to provide a scalable, secure, and user-friendly ecosystem. The system offers personalized job recommendations, skill enhancement resources, profile management, employer interactions, and real-time notifications. Firebase Authentication ensures secure user access, while Cloud Firestore provides efficient data management and synchronization. The proposed solution aims to increase employment accessibility, improve digital inclusion, and empower women through technology-driven opportunities. Experimental evaluation demonstrates improved user engagement, faster job discovery, and efficient management of employment resources compared to conventional job search approaches.

Key Words: Women Empowerment, Employment Platform, Flutter, Firebase, Mobile Application, Job Recommendation System, Skill Development, Digital Inclusion.

1. INTRODUCTION

The rapid advancement of digital technology has transformed various sectors, including education, healthcare, finance, and employment. Despite these advancements, many women continue to face challenges in accessing suitable employment opportunities. Homemakers and women seeking flexible work arrangements often encounter difficulties in identifying jobs that match their skills, availability, and personal circumstances.

The increasing penetration of smartphones and internet connectivity has created opportunities for digital employment platforms. However, existing job portals are generally designed for traditional full-time employment and do not adequately address the specific requirements of women seeking flexible, remote, or part-time work opportunities.

SAKSHAMA is proposed as a dedicated platform that connects women with employers while also supporting skill development and career growth. The application is developed using Flutter for cross-platform compatibility and Firebase for backend services, enabling seamless user experiences and real-time data synchronization.

The primary objective of the proposed SAKSHAMA platform is to create a dedicated digital ecosystem that empowers

women by connecting them with suitable employment opportunities and career development resources. The platform aims to facilitate access to flexible and remote job opportunities that accommodate diverse personal and professional commitments. It also seeks to provide personalized job recommendations based on users' skills, qualifications, experience, and preferences, enabling more effective job matching. In addition, the system supports continuous skill enhancement through learning resources, training materials, and career guidance content to improve employability and professional growth. To ensure reliability and long-term usability, the platform is designed with a secure and scalable architecture using modern technologies such as Flutter and Firebase. Through these objectives, SAKSHAMA contributes to women's economic empowerment, promotes digital inclusion, and encourages greater participation of women in the workforce through technology-enabled solutions.

The platform contributes toward economic empowerment and promotes inclusive workforce participation through technology-enabled solutions.

2. RELATED WORK

The rapid growth of digital technologies has led to the development of numerous online employment platforms aimed at improving job accessibility and workforce participation. Researchers have explored various approaches, including web-based recruitment systems, cloud-enabled employment portals, mobile job applications, and intelligent recommendation systems, to simplify the job search and hiring process. Although these solutions have contributed significantly to employment management, many existing platforms primarily focus on general job seekers and fail to address the unique challenges faced by women, such as career breaks, household responsibilities, flexible work requirements, and skill redevelopment needs.

Sharma et al. proposed an online recruitment system that streamlined the processes of job posting, candidate registration, and application management. The system successfully reduced manual recruitment efforts and improved communication between employers and job seekers. However, the platform mainly focused on managing recruitment activities and lacked personalized recommendation mechanisms that could help users identify suitable opportunities based on their qualifications and preferences. Additionally, the system did not provide features specifically designed to support women returning to the workforce or seeking flexible employment opportunities.

Patel and Kumar developed a cloud-based employment portal that incorporated machine learning techniques for job matching and recommendation. Their research demonstrated

that intelligent recommendation algorithms could improve the accuracy of matching candidates with relevant job opportunities by analyzing user profiles, qualifications, and employment history. While the proposed solution enhanced recommendation effectiveness, its scope remained limited to general employment services. The platform did not address challenges such as work-life balance, skill enhancement, or flexible job opportunities that are particularly important for women seeking employment.

Singh et al. introduced a mobile-based employment application designed to improve job accessibility for individuals living in rural and underserved areas. The study emphasized the importance of mobile technology in bridging geographical barriers and enabling users to access employment information through smartphones. The application improved accessibility and ease of use; however, it primarily focused on job discovery and application management. The system lacked an integrated skill development framework that could help users enhance their competencies and increase their chances of securing employment in competitive job markets.

Gupta and Verma explored the application of Artificial Intelligence techniques in career guidance and job recommendation systems. Their research highlighted the effectiveness of intelligent recommendation algorithms in analyzing user profiles and suggesting career paths or job opportunities aligned with individual capabilities and interests. The findings demonstrated that AI-driven systems can significantly improve job matching efficiency and user satisfaction. Nevertheless, the study focused primarily on recommendation mechanisms and did not provide a comprehensive employment ecosystem that combines job discovery, skill development, employer interaction, and user support within a single platform.

Recent studies on women's participation in the workforce and the gig economy further highlight the need for specialized employment solutions. Research indicates that women often face barriers such as limited access to flexible work opportunities, safety concerns, lack of awareness regarding available jobs, inadequate digital literacy, and difficulties in balancing professional and household responsibilities. Furthermore, many women experience career interruptions that require skill redevelopment and continuous learning before re-entering the workforce. Existing employment platforms rarely provide integrated support for these challenges, resulting in reduced workforce participation and limited economic opportunities for women.

Based on the analysis of existing research, it is evident that current employment systems primarily focus on generic recruitment services and fail to address the specific needs of women job seekers. Most platforms lack dedicated mechanisms for skill enhancement, personalized career guidance, flexible employment opportunities, and women-centric support services. To overcome these limitations, the proposed SAKSHAMA platform integrates employment assistance, personalized job recommendations, skill development resources, employer interaction, and real-time communication within a single mobile application. By adopting a user-centric approach and leveraging modern technologies such as Flutter and Firebase, the proposed system

aims to create an inclusive digital ecosystem that promotes women's economic empowerment, career growth, and active participation in the workforce.

3. PROBLEM STATEMENT

Many women possess valuable skills and qualifications but often struggle to access suitable employment opportunities due to the absence of dedicated women-focused job platforms, limited awareness of available opportunities, inadequate skill development resources, challenges in balancing professional and family responsibilities, and a lack of personalized job recommendations. These barriers restrict their participation in the workforce, reduce economic independence, and limit career growth. Consequently, there is a growing need for a dedicated digital platform that connects women with relevant employment opportunities, supports skill enhancement, and provides a flexible and inclusive environment that empowers them to achieve financial and professional self-reliance.

4. PROPOSED SYSTEM

The proposed system, SAKSHAMA, is a mobile-based employment and skill development platform designed to empower women by providing access to flexible job opportunities, career guidance, and learning resources through a single digital ecosystem. The platform aims to bridge the gap between women job seekers and employers by creating an accessible and user-friendly environment where users can discover suitable employment opportunities based on their skills, qualifications, and preferences. Developed using Flutter and Firebase, the system ensures cross-platform compatibility, secure data management, and real-time communication between stakeholders.

The platform consists of three primary modules: the User Module, Employer Module, and Administration Module. Women users can register, create professional profiles, manage their skills and qualifications, browse job opportunities, apply for jobs, and access skill development resources. Employers can post job vacancies, review applications, shortlist candidates, and communicate with potential employees through the platform. The administration module is responsible for managing users, monitoring job postings, verifying employer information, and maintaining overall system functionality. This structured approach ensures transparency, security, and efficient management of employment-related activities.

To improve employment accessibility and job matching accuracy, the system incorporates a recommendation mechanism that analyzes user profiles, skills, educational qualifications, experience, and job preferences to suggest relevant opportunities. Additionally, the integrated skill development module provides training resources, career guidance materials, and learning content that help users enhance their competencies and increase employability. Real-time notifications keep users informed about new job postings, application status updates, and training opportunities. By combining employment services, skill enhancement, and digital accessibility within a single platform, the proposed system aims to promote women's economic empowerment, career growth, and participation in the workforce.

Fig -1: Proposed System Architecture



Fig -2: System Architecture

5. SYSTEM ARCHITECTURE

The architecture of the SAKSHAMA platform is designed using a cloud-based client-server model that ensures scalability, security, and efficient data management. The system consists of three primary stakeholders: women job seekers, employers, and administrators. The mobile application is developed using Flutter, providing a responsive and user-friendly interface for both Android and iOS platforms. Users interact with the application to register, manage profiles, search for jobs, access skill development resources, and communicate with employers. Employers use the platform to post job vacancies, review applications, and manage recruitment activities, while administrators monitor platform operations and maintain data integrity.

The backend infrastructure is powered by Firebase services. Firebase Authentication is used to securely manage user registration and login processes, ensuring authorized access to the platform. User profiles, job postings, applications, and training resources are stored in Cloud Firestore, which enables real-time data synchronization and efficient retrieval of information. Firebase Storage is utilized to store documents such as resumes, certificates, and profile images, while Firebase Cloud Messaging delivers instant notifications regarding job recommendations, application status updates, and training opportunities. This cloud-based architecture reduces infrastructure complexity and supports seamless communication between users and the system.

The platform incorporates a job recommendation module that analyzes user profiles, skills, educational qualifications, and employment preferences to identify relevant opportunities. When employers publish job vacancies, the system compares job requirements with user information and generates personalized recommendations. The integrated skill development module provides learning resources and training materials to help users enhance their competencies and improve employability. By combining employment services, skill enhancement, real-time notifications, and secure cloud-based data management within a single architecture, SAKSHAMA creates a comprehensive digital ecosystem that promotes women's career growth and economic empowerment.

6. METHODOLOGY

The development of the SAKSHAMA platform follows a user-centered and cloud-based methodology aimed at connecting women with suitable employment opportunities and skill development resources. The process begins with user registration and authentication through Firebase Authentication, where users create profiles containing personal information, educational qualifications, skills, work experience, and employment preferences. This information is securely stored in Cloud Firestore and serves as the foundation for matching users with relevant job opportunities. Employers can simultaneously register on the platform and post job vacancies with detailed requirements, enabling a structured and transparent recruitment process.

Once user and job data are available, the system performs job matching by comparing user profiles with employer requirements. The recommendation mechanism analyzes factors such as skills, qualifications, preferred work type, and experience to identify suitable opportunities. Users receive personalized job suggestions and can directly apply through the application. The platform also includes a skill development module that provides access to learning resources, training materials, and career guidance content, helping users improve their competencies and increase their employability. Real-time notifications are delivered through Firebase services to keep users informed about new job opportunities, application updates, and training programs.

The implementation adopts Flutter as the front-end framework to ensure a consistent and responsive experience across Android and iOS devices, while Firebase provides backend services including authentication, database management, storage, and cloud messaging. This architecture enables secure communication, efficient data synchronization, and scalable system performance. By integrating employment services, skill enhancement resources, and employer connectivity within a single platform, the proposed methodology creates a comprehensive ecosystem that supports women's career development and promotes economic empowerment through digital technology.



Fig -3: Methodology

7. IMPLEMENTATION TECHNOLOGIES

The development of SAKSHAMA utilizes modern cross-platform and cloud-based technologies to ensure scalability, security, and efficient performance. The frontend of the application is developed using Flutter, an open-source UI toolkit by Google, which enables the creation of responsive and visually appealing mobile applications for both Android and iOS from a single codebase. The application logic is implemented using the Dart programming language, which provides high performance and seamless integration with Flutter components.

The backend infrastructure is powered by Firebase, a cloud-based platform that offers a comprehensive suite of services for application development. Firebase Authentication is used to manage secure user registration and login processes, while Cloud Firestore serves as the real-time NoSQL database for storing user profiles, job postings, applications, and skill development content. Firebase Storage is utilized for storing documents such as resumes, certificates, and profile images, whereas Firebase Cloud Messaging (FCM) enables real-time notifications for job recommendations, application updates, and important announcements.

The development environment includes Android Studio and Visual Studio Code, which provide tools for coding, debugging, testing, and deployment. The user interface is designed using Flutter's Material Design components to ensure a consistent and intuitive user experience. Together, these technologies provide a secure, scalable, and efficient foundation for delivering employment opportunities, skill development resources, and seamless communication between users and employers.

Component	Technology/API Used
Frontend Framework	Flutter
Programming Language	Dart
Backend Platform	Firebase
Authentication	Firebase Authentication

Database	Cloud Firestore
Storage	Firebase Storage
Notifications	Firebase Cloud Messaging (FCM)
IDE/Development Tools	Android Studio, Visual Studio Code
UI Design	Figma
Version Control	Git, GitHub

Table -1: Technology Table

8. RESULTS AND DISCUSSION

The proposed SAKSHAMA platform was developed and tested to provide employment opportunities and skill development resources for women, particularly housewives seeking flexible and remote work options. The system successfully integrates user registration, profile management, job recommendations, skill enhancement modules, and employer interaction within a single mobile application. Testing demonstrated that users could easily browse available jobs, apply for suitable opportunities, and access training resources based on their interests and qualifications. The Firebase backend ensured secure authentication, real-time data synchronization, and efficient storage of user and job-related information.

The results indicate that the proposed platform offers a more accessible and user-friendly solution compared to traditional job-search methods. Features such as personalized job recommendations, flexible work opportunities, and digital skill development address many of the barriers identified in the literature, including limited mobility, lack of awareness, and work-life balance challenges. User feedback and system performance analysis showed improved job discovery efficiency and enhanced engagement with employment resources. These findings suggest that the SAKSHAMA platform can contribute significantly to women's economic empowerment by increasing access to employment opportunities and promoting digital inclusion.

8. CONCLUSION AND FUTURE SCOPE

The proposed SAKSHAMA platform is a mobile-based solution designed to empower women by connecting them with suitable employment opportunities and skill development resources. The system addresses key challenges faced by women in the workforce, including limited access to flexible jobs, lack of awareness of employment opportunities, insufficient skill enhancement resources, and difficulties in balancing professional and household responsibilities. Developed using Flutter and Firebase, the platform provides a secure, scalable, and user-friendly environment that facilitates job discovery, application management, employer interaction, and continuous learning. The implementation and evaluation of the system demonstrate its potential to enhance women's participation in the digital economy, promote financial

independence, and support career growth through technology-driven solutions.

In the future, the platform can be expanded to provide a more personalized and inclusive employment ecosystem through the integration of Artificial Intelligence and Machine Learning techniques for advanced job recommendations based on user skills, interests, experience, and application history. Additional features such as multilingual support, resume generation, interview preparation modules, and career counseling services can further improve employability and accessibility. Collaborations with government agencies, NGOs, and private organizations can help provide verified employment opportunities, certification programs, and entrepreneurship support. Furthermore, advanced analytics, online learning integrations, and financial literacy programs can strengthen the platform's impact, transforming SAKSHAMA into a comprehensive digital solution for women's career development, economic empowerment, and long-term self-sufficiency.

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