IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14361

An AI-Powered Learning and Business Support Platform for Women Entrepreneurs

Abinaya Sri M[1], M. Saravanakumar[2]

B.Sc Artificial Intelligence and Machine Learning, Rathinam College of Arts and Science, Coimbatore, India[1]

Department of Computer Science, Rathinam College of Arts and Science, Coimbatore, India[2]

Abstract: Women entrepreneurs often face difficulties such as lack of proper guidance, limited skill evaluation, and poor access to digital branding support. Many women have business ideas but do not know how to start or improve them using technology. This paper presents an AI-powered learning and business support platform designed to guide women entrepreneurs from beginner level toward business readiness. The platform provides structured learning modules, course selection based on category and skill level, skill evaluation, progress tracking, and AI-based suggestions to improve their work. It also supports early-stage business growth by offering branding and social media improvement suggestions. The platform helps women gain confidence, improve skills, and prepare for digital entrepreneurship.

Keywords: Women Entrepreneurship, AI Learning Platform, Skill Evaluation, Flask, Business Support.

I. INTRODUCTION

Women entrepreneurship plays an important role in economic development and social empowerment. In recent years, many women have shown interest in starting small businesses and becoming financially independent. However, despite their interest and creativity, many women face difficulties in transforming ideas into successful businesses. These challenges often limit their confidence and slow down their entrepreneurial journey.

One of the major problems faced by women entrepreneurs is the lack of structured guidance and learning resources. Many women do not have access to proper training programs that teach business skills step by step. Existing learning platforms are often complex, expensive, or not designed specifically for beginners. As a result, women struggle to understand where to start and how to improve their skills effectively.

Another significant challenge is the absence of proper skill evaluation and feedback. Women learners often complete courses but do not receive clear feedback on their performance or areas of improvement. Without evaluation and personalized suggestions, it becomes difficult for them to identify strengths and weaknesses. This leads to uncertainty and reduces motivation to continue learning.

In addition to learning challenges, women entrepreneurs also face difficulties in digital branding and online business promotion. Creating logos, branding ideas, and promoting products through social media requires technical and creative knowledge. Many women lack guidance in these areas, which affects their ability to reach customers and grow their businesses in the digital market.

To address these challenges, this paper proposes an AI-powered learning and business support platform designed specifically for women entrepreneurs. The platform provides structured learning modules, skill evaluation, progress tracking, and AI-based suggestions to improve user work. By combining learning, evaluation, and business guidance in a single platform, the system aims to support women from beginner level to business readiness in a simple and effective manner.

II. LITERATURE REVIEW

Several studies have highlighted the importance of digital platforms in supporting women entrepreneurs. Previous research shows that online learning systems can help women acquire business-related skills such as marketing, finance, and management. However, many existing platforms provide only generic content and do not focus on the specific needs of women entrepreneurs, especially beginners who require step-by-step guidance.

In 2020, research primarily focused on digital platforms for women entrepreneurship. These studies highlighted that digital platforms enabled women entrepreneurs to access online learning resources related to marketing, finance, and

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14361

management, thereby improving knowledge accessibility. However, the findings also revealed that most platforms provided generic content and lacked structured, step-by-step guidance, which limited their usefulness for beginner women entrepreneurs.

In 2021, journal papers focused on e-learning systems and Learning Management Systems (LMS) for entrepreneurship education. The studies reported that LMS platforms improved content organization, accessibility, and delivery of entrepreneurship-related courses. Despite these advantages, a major limitation identified was the absence of skill assessment and feedback mechanisms, which reduced the effectiveness of these systems for practical entrepreneurial skill development.

Research published in 2022 emphasized personalized learning approaches to enhance learner engagement. The contributions of these studies showed that adaptive learning techniques improved user motivation by delivering content based on preferences. However, personalization remained limited, as most systems were not tailored specifically for women entrepreneurs or aligned with real-world business requirements.

In 2023, studies focused on AI-based recommendation systems in education. These papers demonstrated that AI techniques could recommend learning materials based on user behavior and interaction patterns, thereby improving engagement and learning continuity. Nevertheless, the limitation of these systems was that they were designed mainly for general education, with minimal focus on entrepreneurship development for women.

Research in 2024 concentrated on digital branding and online promotion tools for small businesses. The studies highlighted the importance of branding, logo design, and social media presence in achieving business growth. However, the findings indicated that many tools required technical expertise, making them difficult for beginner women entrepreneurs to use independently.

Recent studies in 2025 focused on integrated AI-powered entrepreneurship platforms. These papers emphasized the need for unified systems that combine learning, skill assessment, progress tracking, and business guidance. Despite recognizing this need, the literature identified a lack of end-to-end, women-centric platforms that integrate all entrepreneurship support components into a single solution.

III. METHOD

3.1 The Proposed Model

The proposed model is an AI-powered learning and business support system designed specifically for women entrepreneurs. The system guides users step by step from basic learning to business improvement using personalized recommendations and skill evaluation. As shown in Figure 1, the overall process starts when a user registers or logs into the platform.

Once the user enters the system, basic details such as location, course category, and skill level are collected. Based on this information, the platform recommends suitable learning modules. These modules are presented in a structured sequence so that users can learn one concept at a time without confusion.

After completing a learning module, the user proceeds to the skill evaluation stage. In this stage, the system presents simple assessments such as quizzes or tasks to measure the user's understanding. The evaluation results help the system identify the user's current skill level and learning gaps.

Next, the user is allowed to upload their work, such as business ideas, product descriptions, branding content, or social media plans. The AI analysis module reviews the uploaded content and generates suggestions for improvement. These suggestions may include branding ideas, content improvements, or learning recommendations to enhance business readiness.

Finally, the system displays progress tracking information, showing completed modules and improvement areas. The complete workflow follows a clear pipeline

User Input → Course Recommendation → Work Upload →_Skill Evaluation → AI Suggestions → Progress Tracking.

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526
International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering
Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026
DOI: 10.17148/IJIREEICE.2026.14361

This structured model ensures clarity, usability, and practical support for women entrepreneurs at every stage of their learning journey.

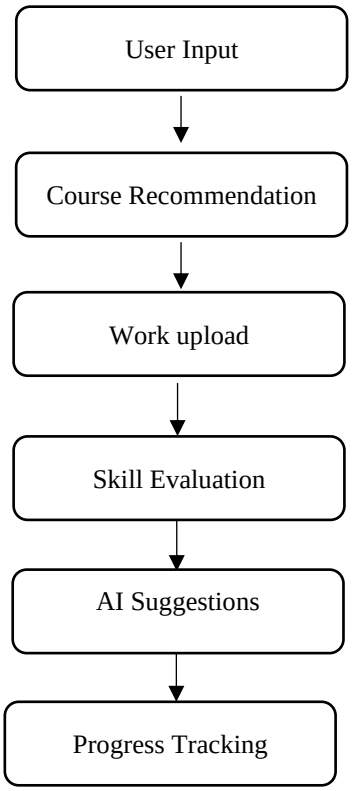

Fig.1. System Architecture of the Proposed AI-Powered Women Entrepreneur Platform

3.2 Dataset Preparation

The dataset used in this project is prepared to support personalized learning, skill evaluation, and business improvement suggestions for women entrepreneurs. The platform does not rely on a single public dataset; instead, it uses structured data created and collected within the system based on real user interactions.

The first part of the dataset includes learning content data, such as course categories, skill levels (beginner, intermediate, advanced), module topics, and learning objectives. This data is carefully designed to match women-focused business domains like small-scale entrepreneurship, digital marketing, branding, and product development.

The second part of the dataset consists of user profile and skill evaluation data, including location, selected course category, quiz responses, and task completion results. This information helps the system assess the user's current skill level and recommend suitable learning modules.

The third dataset includes uploaded work data, where users submit business-related content such as ideas, descriptions, or sample promotional text. Basic preprocessing steps like input validation and text cleaning are applied before using this data to generate AI-based suggestions for improvement. All datasets are stored in a structured database to ensure consistency and reliability.

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14361

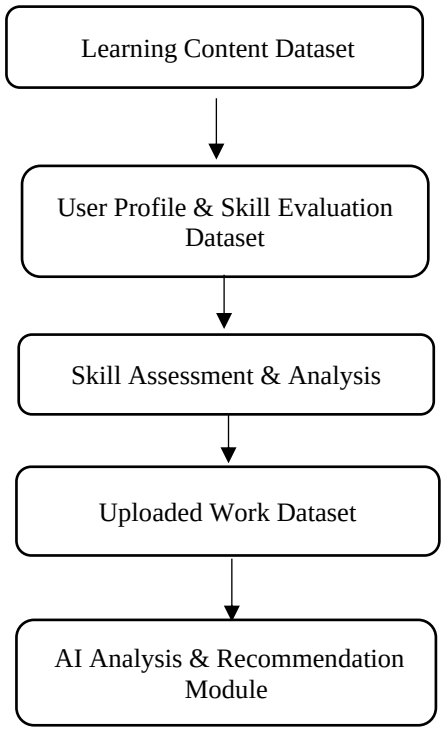

Fig.2. Dataset preparation and data flow in the proposed system

IV. PROPOSED METHODOLOGY

The proposed methodology focuses on guiding women entrepreneurs from basic learning to business readiness through a structured and intelligent workflow. The system is designed as a step-by-step process that supports learning, skill evaluation, practical application, and improvement suggestions using AI techniques.

The process begins with user registration and login, where users create an account by providing basic details such as name, location, and area of interest. After logging in, the user selects a course category and learning level (beginner, intermediate, or advanced). Based on these selections, the system displays relevant learning modules in a clear sequence so that users can progress step by step.

Once the learning modules are completed, the system moves to the skill evaluation stage**.** Here, users answer simple quizzes or perform small tasks related to the completed course. The system evaluates the responses to measure the user's understanding and practical knowledge. This evaluation helps identify strengths and areas that need improvement.

In the next stage, users upload their work, such as business ideas, product descriptions, or sample content. The system analyzes the uploaded input and provides AI-based suggestions to improve clarity, branding ideas, or presentation style. These suggestions help users refine their work and gain confidence before applying their skills in real business scenarios. Overall, the methodology follows a clear pipeline:

User Registration → Course Selection → Learning Modules → Skill Evaluation → Work Upload → AI Suggestions, ensuring a smooth and supportive learning experience for women entrepreneurs

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526
International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering
Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026
DOI: 10.17148/IJIREEICE.2026.14361

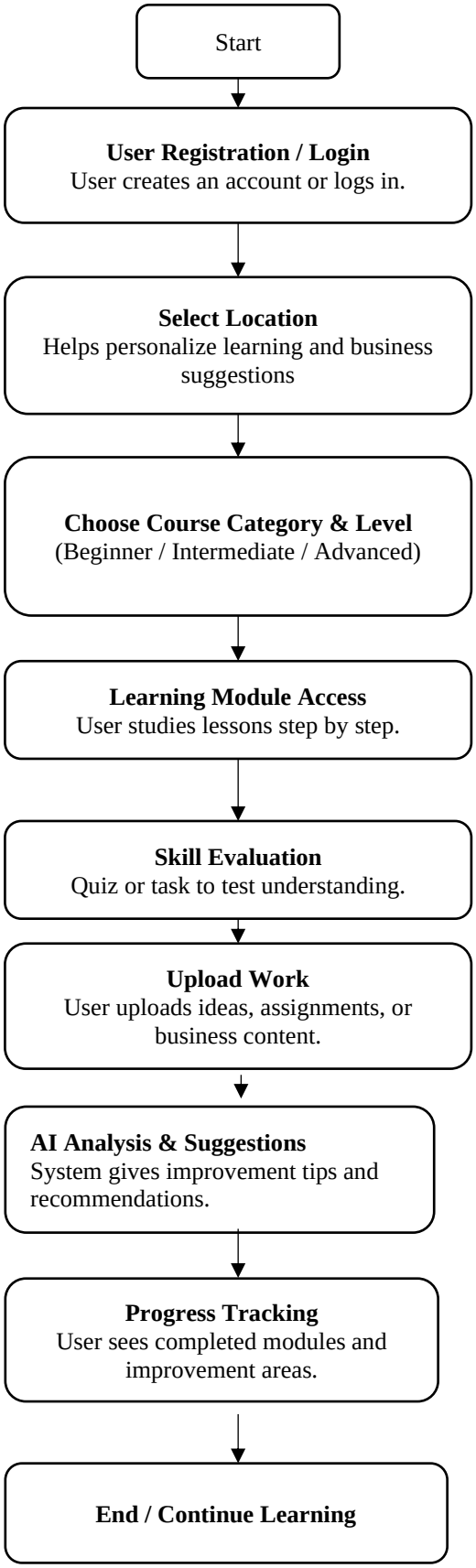

Fig.3. Workflow of the proposed methodology.

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14361

V. RESULTS

5.1 System User Interface

Once the user successfully registers and logs on to the platform, the main interface of the system is presented. The developed platform provides a simple and user-friendly interface through which the women entrepreneurs are able to access different features of the system.

The main interface of the system includes features such as AI Skill Evaluation, Market Insights, Business Guidance, and Branding Support. Through the main interface of the system, the users are able to choose the domain of their business and the skills they possess. Based on the choices provided by the users, the system recommends the courses to the users.

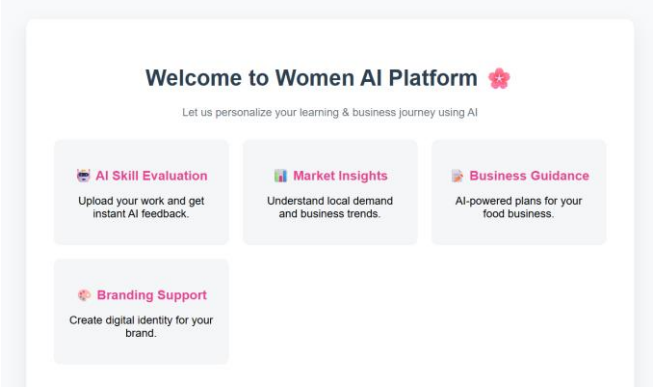

Fig.4. Main Interface of the AI-Powered Women Entrepreneur Platform

5.2 Course Recommendation Results

The platform successfully generated personalized course recommendations based on user-selected location, course category, and skill level. New users were guided from beginner-level modules, while users with prior knowledge were directed to intermediate or advanced content.

The recommendation logic ensured that users did not skip foundational concepts. This helped users clearly understand the learning path and reduced confusion during course selection.

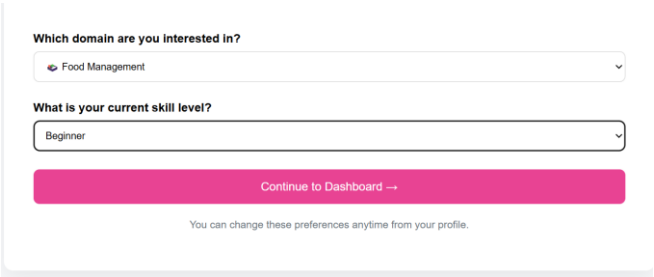

Fig.5. Domain and Skill Level Selection for Course Recommendation

In this interface, the user has to choose the domain and skill level. For example, in this interface, let's assume that the user wants to choose Food Management as the domain and Beginner as the skill level. Based on these inputs, learning modules can be determined, and recommendations can be made.

The recommendation score was computed as:
Recommendation Score = (Skill Level Match + Category Match + User Interest) / 3
Skill Level Match = 80% = 0.8
Category match = 100% = 1.0
User Interest level = 3/5 = 0.6
Score = (0.8 + 1.0 + 0.6)/3
=> 2.4/3 => 0.80 => 80%
Recommendation Score = 80%

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14361

This score is calculated by averaging three components: the learner's skill match with the module, the category alignment with the learner's interests, and the user's interest rating. The average value represents the overall suitability of the module for recommendation.

Higher scores resulted in higher priority recommendations.

Fig.6. Personalized Learning Path Generated by the System

Once the user input is received, a personalized learning path is created. The course module "Food Safety & Hygiene" is displayed for beginner-level users under the food business domain.

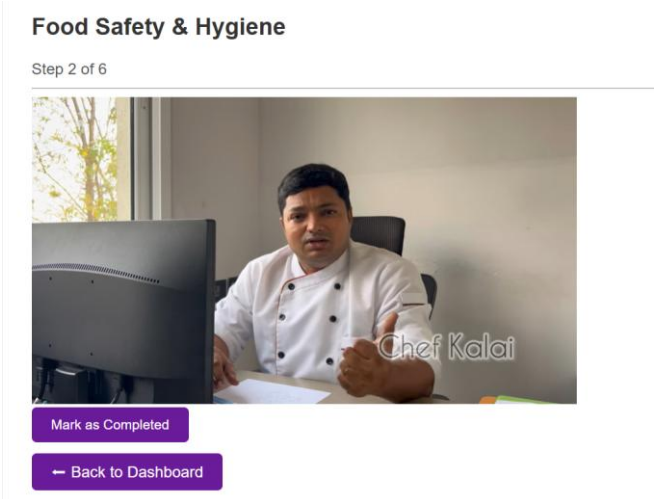

Fig.7. Learning Module Interface

Once the user selects a recommended module, the system displays the content for learning. The module has instructional videos and learning materials. Users can mark the content as complete after learning from it. This allows the system to track the progress of learning.

5.3 Skill Evaluation Performance

After completing each learning module, users participated in skill evaluation tests such as quizzes or small tasks. The system accurately measured user understanding based on their responses.

Users who scored lower were redirected to revision modules, while users with higher scores progressed smoothly to the next level. This adaptive learning approach improved confidence and reduced learning gaps.

The evaluation score was calculated as:
Evaluation Score = (Correct Answers / Total Questions) × 100
Correct Answers = 07
Total Questions = 10
Score = 07/10 x 100 => 0.70 x 100 =>70%

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526
International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering
Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026
DOI: 10.17148/IJIREEICE.2026.14361

The evaluation score measures learner performance by dividing the number of correct answers by the total number of questions and converting it into a percentage.
If
Evaluation Score ≥ Passing Threshold → Next Module
Else → Revision Suggested

Apart from that, the platform is also capable of evaluating the skills of users through practical skills. Users can upload their work, like business ideas, descriptions of products, and even promotional content for products. The AI analysis module will evaluate the input and provide users with suggestions for improvement.

The above method of combining quiz evaluation and AI analysis of work will help users identify their strengths and weaknesses, making them better prepared for real-life entrepreneurship.

Fig.8. AI-Based Skill Evaluation and Improvement Suggestions

5.4 Learning Progress Tracking Results
The platform effectively tracked individual learning progress for each user. Completed modules, pending lessons, and evaluation status were stored and displayed clearly on the user interface.

This progress tracking helped users stay motivated and understand their current learning stage. Users reported better clarity about what to learn next and how much they had already completed.

Progress completion was measured as:
Progress Percentage = (Completed Modules / Total Modules) × 100
Completed module = 5
Total modules = 12
Progress = 5/12 x 100 => 0.417 x 100 => 41.7%

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14361

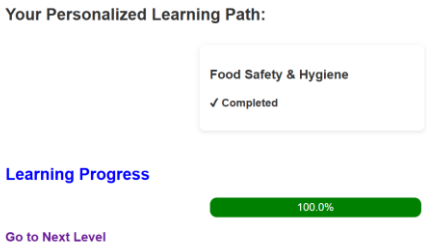

Fig.9. Learning progress tracking

Progress percentage indicates how much of the learning path has been completed by the learner relative to the total number of modules.

5.5 AI Business Support Features

In addition to learning and skill evaluation, the platform also provides AI-powered business support features to help women entrepreneurs understand the market, plan their businesses, and build digital branding. These features assist users in transforming their ideas into practical and market-ready business solutions.

5.5.1 Local Market Demand Analyzer

The Local Market Demand Analyzer helps users understand the demand and trends for their selected business domain in a specific location. After the user selects a business category and location, the AI module analyzes market trends, customer preferences, and potential competition.

Based on this analysis, the system provides insights such as:

- High-demand product categories
- Customer preferences
- Market opportunities
- Competitive insights

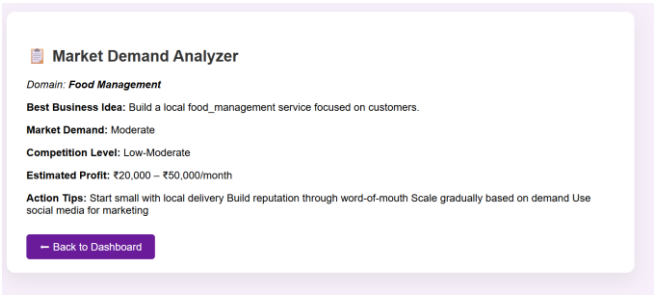

Fig.10. AI-Based Local Market Demand Analysis

This feature helps women entrepreneurs choose profitable business ideas and make informed decisions before starting their businesses.

5.5.2 AI Business Plan Generator

The AI Business Plan Generator assists users in creating a basic business plan based on their selected domain and skill level. The system analyzes user inputs and automatically generates step-by-step business guidance.

The generated plan may include:

- Business idea suggestions
- Required resources
- Basic cost estimation
- Marketing strategies
- Initial business setup steps

IJIREEICE ISSN (O) 2321-2004, ISSN (P) 2321-5526

International Journal of Innovative Research in Electrical, Electronics, Instrumentation and Control Engineering

Impact Factor 8.414 ⁜ Peer-reviewed & Refereed journal ⁜ Vol. 14, Issue 3, March 2026

DOI: 10.17148/IJIREEICE.2026.14361

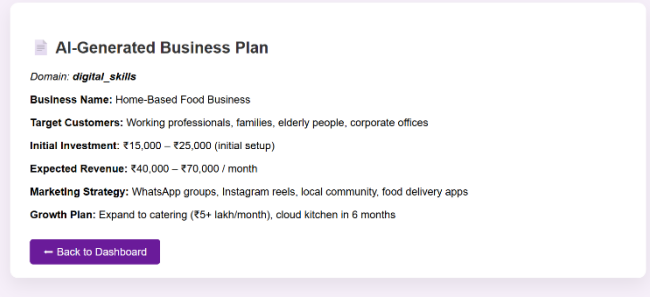

Fig.11.AI-Generated Business Guidance Plan

This feature simplifies the business planning process and helps beginners understand how to start and manage their businesses effectively.

5.5.3 Digital Branding Support

Digital branding plays an important role in promoting small businesses in the online marketplace. The platform provides AI-based branding support to help users create a digital identity for their business.
The system can generate suggestions for:

- Business name ideas
- Logo concepts
- Social media post content
- Basic marketing messages

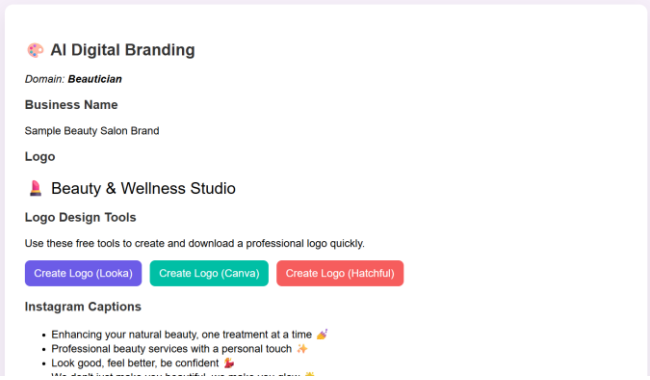

Fig.12. AI-Based Digital Branding Support

These features help women entrepreneurs promote their products and services through digital platforms and increase their market visibility.

5.6 System Usability and Testing Results

The platform was tested with multiple users accessing the system through different devices such as laptops and desktops. The system performed reliably without data conflicts, and user sessions were maintained correctly.

Testing confirmed smooth navigation between registration, learning modules, evaluation, and work upload sections. Users experienced minimal errors and found the interface easy to understand, even without technical background.
Overall results show that the platform effectively supports women entrepreneurs by providing structured learning, evaluation, progress tracking, and AI-based guidance.

VI. CONCLUSION

This paper presented an AI-powered learning and business enablement platform designed to support women entrepreneurs from beginner level to business readiness. The system provides structured learning paths, skill evaluation, progress tracking, and AI-based suggestions to improve user skills and business understanding.

By combining learning modules with practical evaluation and feedback, the platform helps users gain confidence, clarity, and readiness for digital entrepreneurship. The implementation using Python and Flask demonstrates that such a system can be lightweight, effective, and suitable for real-world deployment.

DOI: 10.17148/IJIREEICE.2026.14361

In the future, the platform can be enhanced by integrating advanced AI models for deeper content analysis, automated business idea validation, and personalized marketing guidance. Features such as logo generation, social media branding support, chatbot assistance, multilingual interfaces, and mobile application support can further improve accessibility and impact. The system can also be scaled using cloud-based infrastructure and integrated with real-time analytics to support a larger user base and evolving entrepreneurial needs.

VII. FUTURE SCOPE

The proposed AI-powered learning and business support platform provides structured learning, skill evaluation, and business guidance for women entrepreneurs. However, the system can be further enhanced by integrating advanced AI models to provide more accurate analysis of uploaded work and more personalized recommendations for business improvement and marketing strategies.

In the future, the platform can also be developed as a mobile application to improve accessibility and allow users to learn and manage their business activities from anywhere. Adding multilingual support, including regional languages such as Tamil and Hindi, would make the system more accessible to women from different linguistic backgrounds.

Another possible improvement is the integration of real-time market trend analysis and business analytics to provide more accurate demand predictions and business opportunities. The platform can also include advanced AI-based branding tools, such as automated logo generation, social media marketing suggestions, and promotional content creation.

Finally, the system can be expanded using cloud-based infrastructure to support a larger number of users and improve system scalability and performance. These enhancements would make the platform more powerful and effective in supporting women entrepreneurs in starting and growing successful businesses.

REFERENCES

[1] **S. Nambisan**, "Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship," *Entrepreneurship Theory and Practice*, 2017.
[2] **M. A. Khan and S. M. Rabbani**, "AI-Based Personalized Learning Systems in Online Education," *IEEE Access*, 2020.
[3] **T. Anderson and J. Dron**, "Three Generations of Distance Education Pedagogy," *International Review of Research in Open and Distributed Learning*, 2019.
[4] **M. K. Smith and A. Brown**, "E-Learning Platforms for Women Empowerment and Skill Development," *Sustainability Journal*, MDPI, 2022.
[5] **F. Ricci, L. Rokach, and B. Shapira**, "Introduction to Recommender Systems Handbook," *Springer Publishing*, 2021.
[6] **J. B. Schafer, J. Konstan, and J. Riedl**, "Recommender Systems in E-Commerce," *ACM Conference on Electronic Commerce*, 2018.
[7] **R. Burke**, "Hybrid Recommender Systems: Survey and Experiments," *User Modeling and User-Adapted Interaction Journal*, 2020.
[8] **A. Kapoor and S. Dwivedi**, "Digital Platforms and Women Entrepreneurship Development," *Journal of Small Business and Enterprise Development*, 2021.
[9] **A. K. Singh and R. Sharma**, "Artificial Intelligence Applications in Online Learning Systems," *IEEE International Conference on Education and Information Technology*, 2022.
[10] **P. Brusilovsky and E. Millán**, "User Models for Adaptive Hypermedia and Adaptive Educational Systems," *Springer Lecture Notes in Computer Science*, 2019.
[11] **K. Verbert, E. Duval, J. Klerkx, S. Govaerts, and J. L. Santos**, "Learning Analytics Dashboard Applications," *IEEE Transactions on Learning Technologies*, 2020.
[12] **D. B. Rawat and C. Bajracharya**, "Machine Learning for Business Intelligence Applications," *IEEE Conference on Big Data*, 2021.
[13] **S. Russell and P. Norvig**, "Artificial Intelligence: A Modern Approach," *Pearson Education*, 2021.
[14] **A. McAfee and E. Brynjolfsson**, "Machine, Platform, Crowd: Harnessing Our Digital Future," *MIT Sloan Management Review*, 2019.
[15] **S. Chatterjee and S. Kar**, "Digital Transformation and Women Entrepreneurship," *Technological Forecasting and Social Change Journal*, Elsevier, 2020.
[16] **J. Manyika et al.**, "Digital Economy and Entrepreneurship Opportunities," *McKinsey Global Institute Report*, 2021.

DOI: 10.17148/IJIREEICE.2026.14361

[17] **R. B. Freeman and R. Huang**, "Collaborative Learning and Entrepreneurship Education," *Harvard Business Review*, 2018.

[18] **N. Agarwal and H. Kumar**, "AI-Based Market Demand Prediction for Small Businesses," *IEEE International Conference on Data Science and Analytics*, 2023.

[19] **A. K. Jain and B. Dubey**, "Computer Vision Techniques for Image-Based Skill Evaluation," *International Journal of Computer Vision Applications*, 2022.

[20] **World Bank**, "Women Entrepreneurs and Digital Platforms for Business Growth," *World Bank Research Report*, 2021.