

# FinEdu: An AI-Driven Unified Financial Education Platform

Dipak M. Khamkar<sup>1</sup>, Suraj M. Nath<sup>2</sup>, Chandrakant A. Maske<sup>3</sup>, Mauli S. Bhogil<sup>4</sup>, Ms. K. G. Raut<sup>5</sup>

Students, Department of Computer Technology<sup>1,2,3,4</sup>

Lecturer, Department of Computer Technology<sup>5</sup>

Sou. Venutai Chavan Polytechnic, Pune, Maharashtra, India

**Abstract:** *Financial literacy remains a critical challenge among retail investors, particularly in emerging markets where access to structured and personalized financial education is limited. Existing platforms often provide generic content without adapting to individual user needs, resulting in ineffective learning outcomes and poor financial decision-making. This paper presents FinEdu, an AI-driven unified financial education platform designed to provide personalized learning experiences and integrated investment tools. The system incorporates user profiling, adaptive content recommendation, and intelligent stock screening features to enhance user engagement and learning efficiency. By analyzing user behavior and knowledge levels, the platform dynamically suggests relevant courses and financial tools tailored to individual requirements. The integration of education and investment tools within a single platform demonstrates the potential to significantly improve financial literacy and decision-making among retail investors.*

**Keywords:** Financial Education, Artificial Intelligence, Personalized Learning, FinTech, Stock Screener, Recommendation System

## I. INTRODUCTION

Financial literacy has become an essential skill in today's digital economy, where individuals actively participate in investments, savings, and financial planning activities. With the rapid growth of online trading platforms and financial applications, users are increasingly required to make independent financial decisions. Despite the availability of various financial platforms and resources, many retail investors still lack the necessary knowledge and analytical skills to make informed and effective decisions. Most existing systems provide static and generalized content that does not adapt to the individual needs, experience levels, or financial goals of users, thereby limiting their overall effectiveness.

Furthermore, the complexity of financial markets and the abundance of unstructured information make it difficult for beginners to navigate and understand key concepts. As a result, users often rely on unreliable sources or make decisions based on incomplete knowledge, which can lead to financial losses. This highlights the need for a more structured and adaptive approach to financial education that can cater to diverse user profiles.

With advancements in artificial intelligence and modern web technologies, there is a growing opportunity to transform financial education into a more personalized, adaptive, and interactive experience. Intelligent systems can analyze user behavior, preferences, and knowledge levels to deliver customized learning paths and relevant financial insights. However, current platforms often focus either on providing educational content or offering financial tools, without effectively integrating both into a unified system that supports end-to-end learning and decision-making.

## II. LITERATURE REVIEW

Several studies have explored the application of technology in financial education and investment analysis. Existing e-learning platforms emphasize structured content delivery but lack personalization, which limits their effectiveness. On the other hand, financial tools such as stock screeners and prediction systems focus on market analysis without integrating educational support.



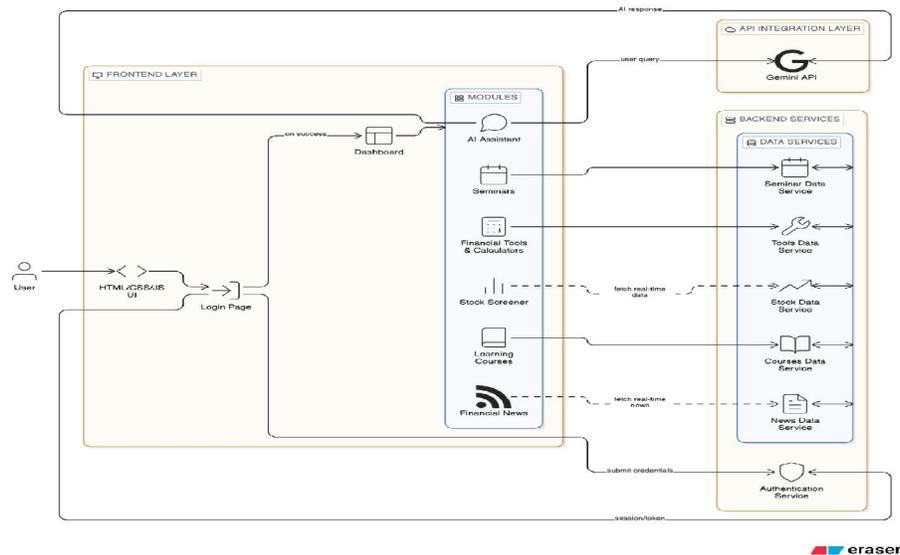
This gap motivates the development of FinEdu, which integrates personalized learning and financial tools into a single system to enhance financial literacy and user experience

Recent research highlights the importance of combining artificial intelligence with financial systems to improve decision-making. However, most existing solutions address isolated functionalities rather than providing a comprehensive and unified platform.

Machine learning-based recommendation systems have been widely used in domains such as e-commerce and online learning to improve user engagement. However, their application in financial education platforms remains limited

### III. METHODOLOGY

**System Architecture:** The proposed FinEdu platform follows a client-server architecture designed to ensure scalability, flexibility, and efficient data processing. The frontend interface, developed using modern web technologies, serves as the interaction layer where users access learning content and financial tools. This interface communicates with backend services through secure APIs. The backend is responsible for handling application logic, user requests, and data processing, while a centralized database stores user information, learning resources, and financial data. The system is divided into multiple functional modules, including user management, recommendation engine, learning module, and stock analysis tools, which work collaboratively to deliver a seamless and personalized user experience.



**Fig. 1. System Architecture of FinEdu Platform**

**User Profiling:** The user profiling module plays a critical role in personalization by collecting and analyzing user-specific data such as knowledge level, interests, learning behavior, and financial goals. This information is obtained during user registration and continuously updated based on user interactions with the platform. Using this data, the system categorizes users into different proficiency levels, such as beginner, intermediate, and advanced. This classification enables the platform to tailor content delivery and recommendations according to the individual needs of each user, thereby enhancing learning efficiency and engagement.

**Learning Module:** The learning module provides structured and organized financial education content, including courses, tutorials, and interactive resources. The content is designed to cover a wide range of financial topics such as investment strategies, risk management, stock market fundamentals, and personal finance. The module supports progressive learning, allowing users to advance through different levels based on their performance and understanding.



Additionally, it incorporates multimedia elements and interactive components to improve user engagement and knowledge retention.

**Technologies Used:** The FinEdu platform is implemented using modern web development technologies to ensure robustness and scalability. The frontend is developed using responsive frameworks to provide a user-friendly interface across devices, while the backend is built using server-side technologies capable of handling concurrent user requests efficiently. A relational or NoSQL database is used for data storage and management. Artificial intelligence techniques are integrated into the system to enhance personalization, recommendation accuracy, and user experience. These technologies collectively ensure efficient system performance and reliability.

**Recommendation Algorithm:** The recommendation system utilizes a hybrid approach combining rule-based techniques with user profiling to deliver personalized content. Based on user inputs such as knowledge level, preferences, and interaction history, the system dynamically generates recommendations for courses and financial tools. The algorithm continuously updates its suggestions by analyzing user behavior and feedback, enabling adaptive learning paths. This mechanism ensures that users receive relevant and timely recommendations aligned with their financial objectives, thereby improving both learning outcomes and decision-making capabilities.

**Data Flow:** The data flow within the FinEdu platform begins with user input through the frontend interface, where users interact with various features such as course selection and stock analysis tools. This input is transmitted to the backend server for processing. The backend analyzes the data, retrieves relevant information from the database, and applies the recommendation algorithm to generate personalized outputs. The processed results, including recommended courses and financial insights, are then sent back to the frontend and displayed through an interactive dashboard. This continuous flow of data ensures real-time updates and a responsive user experience.

#### **Advantages of the Proposed System:**

**All-in-One Platform:** FinEdu integrates financial learning, investment tools, stock analysis, and real-time news into a single unified platform, eliminating the need for multiple applications.

**Personalized Learning Experience:** The system uses user profiling and recommendation techniques to provide tailored learning content based on user knowledge level and interests.

**Real-Time Data Integration:** The platform provides live stock market updates and financial news, enabling users to stay informed and make timely decisions.

**User-Friendly Interface:** The application is designed with a clean, intuitive, and interactive interface, ensuring ease of use for both beginners and advanced users.

**Interactive Learning:** The system combines theoretical content with practical tools such as calculators, stock screeners, and seminars to enhance engagement.

**Accessibility:** FinEdu can be accessed through a web-based interface, allowing users to learn and analyze financial data anytime and from anywhere.

#### **Technologies Used**

**1. Frontend Technologies:** The user interface is developed using modern frontend frameworks such as HTML, CSS, and JavaScript (or react). These technologies provide a responsive and interactive user experience across devices.

**2. Backend Technologies:** The backend is implemented using server-side technologies such as Node.js (or similar frameworks), which handle user requests, business logic, and communication with external services.

**3. Database:** A structured database (such as MongoDB or SQL-based systems) is used to store user data, course content, financial information, and system logs efficiently.



**4. AI and Recommendation System:** Artificial intelligence techniques are used to analyze user behaviour and provide personalized recommendations for learning content and financial tools.

**5. API Integration:** External APIs are integrated to fetch real-time stock data, financial news, and AI-based responses, ensuring up-to-date information delivery.

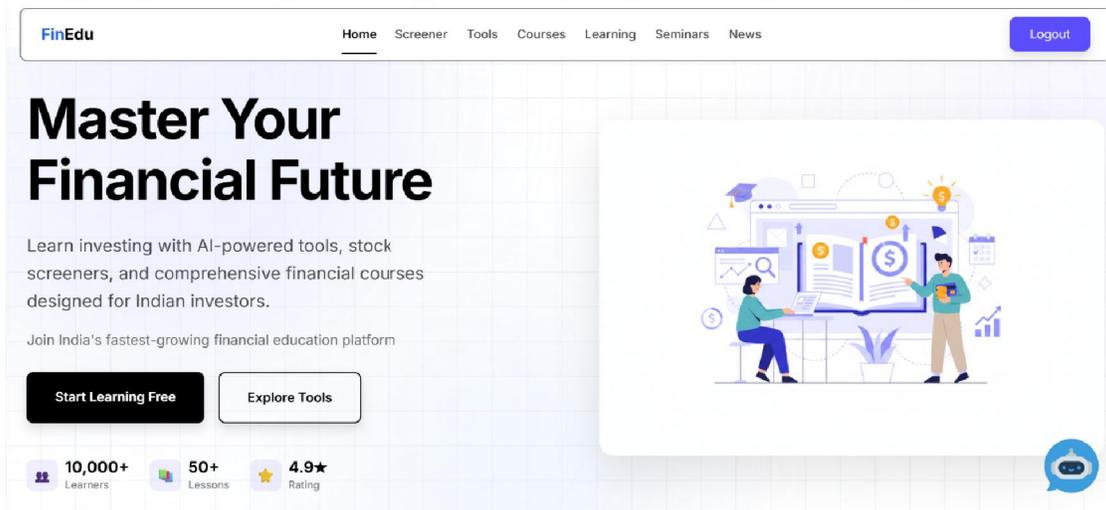
#### IV. RESULTS AND DISCUSSION

**1. Home Page:** The FinEdu platform was successfully developed as a web-based application integrating financial education with intelligent tools. The user interface, as shown in Fig. 1, demonstrates a clean and intuitive dashboard designed to enhance user experience and accessibility. The homepage provides users with key features such as AI-powered learning tools, stock screeners, and structured financial courses, all within a unified environment.

The platform offers a personalized learning experience by guiding users through various financial topics and tools based on their interests. The presence of features such as “Start Learning Free” and “Explore Tools” enables easy navigation and encourages user interaction. Additionally, the system highlights key metrics such as number of learners, available lessons, and user ratings, which contribute to user trust and engagement.

The integration of multiple modules, including learning resources, tools, and stock screening functionalities, ensures that users can

Seamlessly transition between theoretical knowledge and practical application.



**Fig. 1 Home Page FinEdu Website**

**2. Screener Page:** The stock screener module of the FinEdu platform provides real-time market insights by displaying key indices such as NIFTY 50, SENSEX, and BANKNIFTY along with their performance trends. The interface categorizes stocks into top gainers and top losers, allowing users to quickly analyze market movements. Users can filter and sort stocks based on parameters such as price, percentage change, and trading volume, enabling efficient decision-making. This feature enhances practical learning by integrating real-time financial data with analytical tools, helping users understand market behavior and make informed investment decisions.



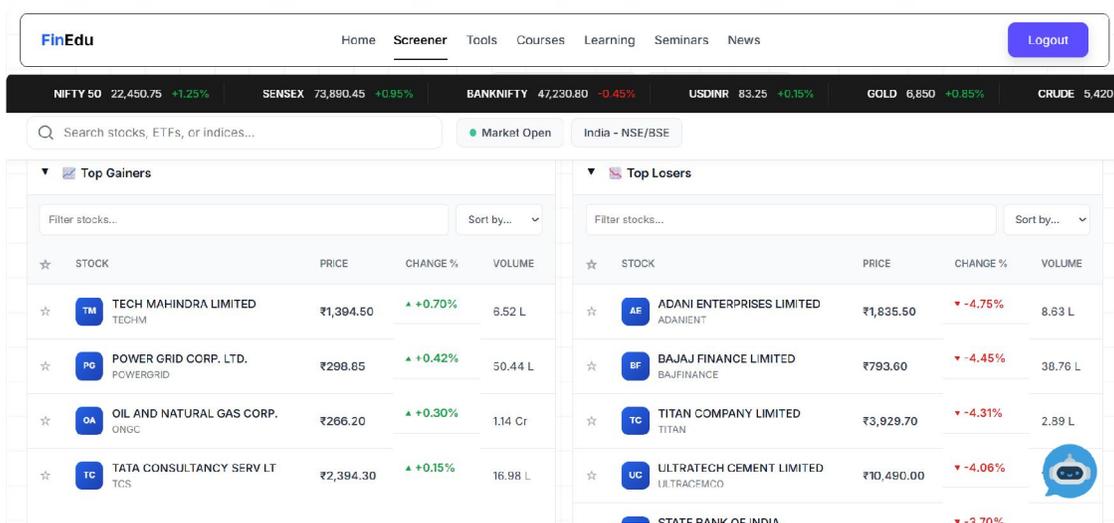


Fig.2 Screener page FinEdu

**3. Tools Page:** The loan tools module of the FinEdu platform provides users with interactive financial calculators, including EMI calculation, loan eligibility estimation, and loan prepayment analysis. The interface allows users to input key financial parameters such as loan amount, interest rate, tenure, and income to obtain accurate results instantly. The system also presents calculated outputs such as monthly EMI, total interest, and principal breakdown using visual representations like charts.

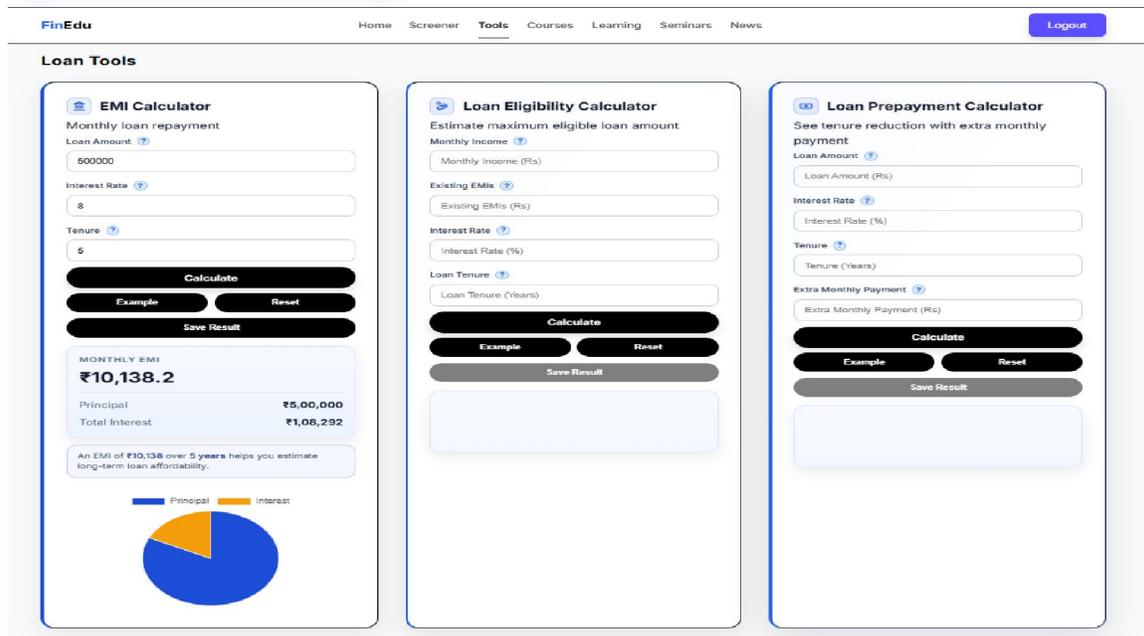
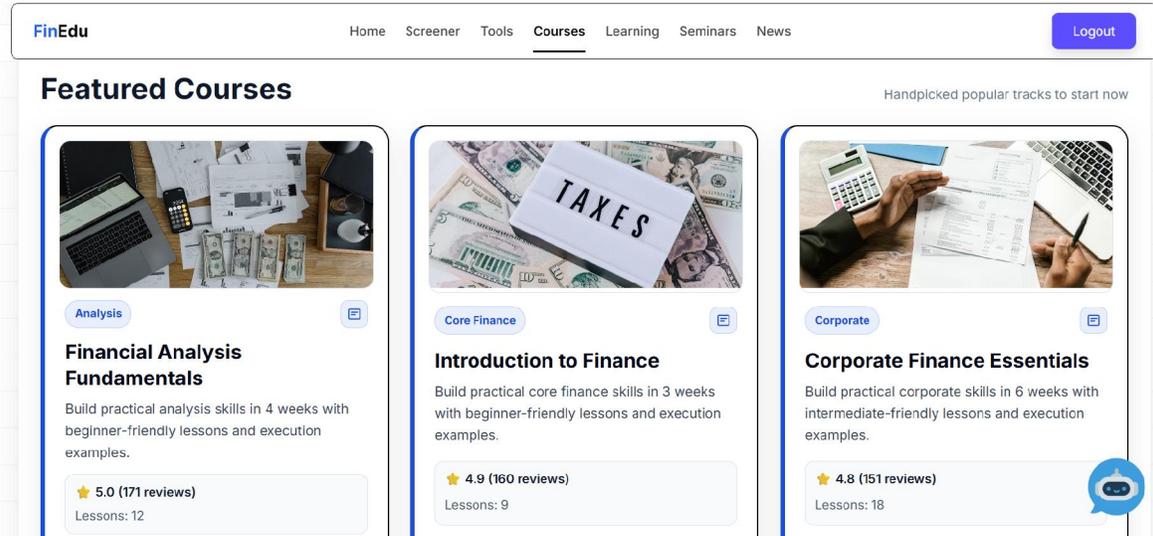


Fig. 3 Tools Page FinEdu

**4. Course Page:** The learning module of the FinEdu platform provides structured educational content through interactive chapters and multimedia resources. The interface presents topic-based learning material, such as taxation concepts, along with detailed explanations to enhance conceptual understanding. Additionally, the module integrates

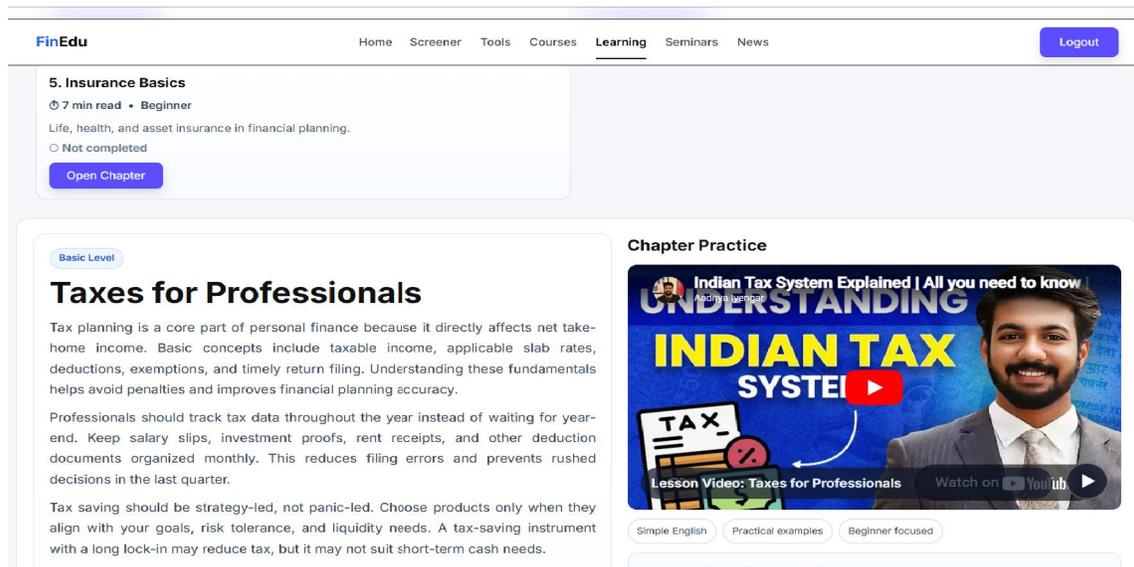


video-based learning and practice sections, enabling users to reinforce knowledge through real-world examples. This feature supports self-paced learning and improves user engagement by combining theoretical content with practical insights, thereby enhancing overall financial literacy.



**Fig. 4 Course page FinEdu**

**5. Course Page:** The FinEdu system includes a learning module that provides structured and topic-based financial education content to users. The module is designed to deliver fundamental and advanced concepts in areas such as taxation, investments, insurance, and personal finance. Each topic is organized into chapters with clear explanations to support step-by-step learning.



**Fig. 5 Learning Page FinEdu**

The platform supports interactive learning by integrating multimedia resources such as video lectures, practice sections, and real-world examples. Users can track their progress through different chapters and revisit topics as needed,



enabling a self-paced learning experience. The content is categorized based on difficulty levels, such as beginner, intermediate, and advanced, to suit users with varying levels of financial knowledge.

### V. CONCLUSION

This paper presented FinEdu, an AI-driven unified financial education platform that integrates personalized learning with intelligent financial tools. The proposed system addresses the limitations of traditional financial education platforms by providing adaptive content tailored to individual user needs. By combining user profiling, recommendation algorithms, and interactive learning modules, the platform enhances both financial knowledge and practical decision-making capabilities.

The results demonstrate that integrating education with financial tools significantly improves user engagement and learning effectiveness. The system provides a comprehensive approach to financial literacy by bridging the gap between theoretical knowledge and real-world application.

Future work will focus on enhancing the recommendation engine using advanced machine learning techniques, improving scalability, and incorporating additional financial services to further enrich the user experience. The proposed approach highlights the potential of AI-driven systems in transforming financial education into a more accessible, personalized, and efficient process for retail investors.

### ACKNOWLEDGMENT

The authors would like to express their sincere gratitude to the faculty members and project guides of the Department of Computer Science and Engineering at their institution for their continuous guidance, encouragement, and valuable insights throughout the development of this project. Their support played a crucial role in shaping the technical direction and successful completion of this work.

### REFERENCES

- [1]. Lusardi and O. S. Mitchell, "The economic importance of financial literacy: Theory and evidence," *Journal of Economic Literature*, vol. 52, no. 1, pp. 5–44, 2014.
- [2]. S. Kumar and R. Sharma, "Financial literacy and investment decision-making among retail investors," *IEEE Access*, vol. 8, pp. 123456–123465, 2020.
- [3]. J. Smith and L. Brown, "Artificial intelligence in personalized learning systems," *IEEE Transactions on Learning Technologies*, vol. 14, no. 2, pp. 210–220, 2021.
- [4]. R. Gupta, P. Singh, and K. Verma, "Stock market prediction using machine learning techniques," in *Proc. International Conference on Data Science*, 2022, pp. 45–50.
- [5]. M. Chen, Y. Li, and X. Wang, "A recommendation system for online learning platforms using user profiling," *IEEE Access*, vol. 9, pp. 56789–56798, 2021.
- [6]. IEEE Author Center, "IEEE paper template guidelines." [Online]. Available: <https://www.ieee.org>
- [7]. T. O'Reilly, "What is FinTech? Understanding financial technology and its applications," *IEEE Computer Society*, 2022

