

Wealthmind: An AI-Powered Personal Finance Planner and Investment Advisor

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Abstract

Artificial Intelligence (AI) is improving personal finance management, but most tools focus only on numbers and ignore user behavior. This paper proposes an AI-based Behavioral Finance System that combines Explainable AI (XAI), predictive modeling, and personalized recommendations. The system studies user income, expenses, and habits to predict financial trends and suggest better saving and investment decisions. It also explains each recommendation, making the system more transparent and trustworthy. Results show improved accuracy, better financial decisions, and higher user engagement. The system connects data analysis with real human behavior for smarter financial management.

Keywords: Behavioral Finance, Explainable AI, Personal Finance, Machine Learning, Predictive Modeling, Financial Decision Making.

1. Introduction

In today's rapidly evolving digital economy, managing personal finances has become increasingly complex due to the availability of diverse financial products, digital payment systems, and constantly changing market conditions. Individuals are required to make frequent decisions related to budgeting, saving, and investing, often without sufficient financial knowledge or proper guidance. Although Artificial Intelligence (AI) has enhanced financial services, most existing tools primarily focus on numerical data and lack deep personalization, behavioral understanding, and transparency. In reality, financial decision-making is strongly influenced by human behavior, including spending habits, emotions, and risk preferences. Factors such as impulsive spending, inconsistent saving, and varying risk tolerance play a crucial role in financial outcomes. However, these behavioral aspects are often overlooked by traditional AI systems, resulting in recommendations that may not align with real user needs. To address this gap, this research introduces WealthMind, an AI-driven behavioral finance system that integrates Machine Learning, Behavioral Analytics, Predictive

The system analyzes user financial data such as income, expenses, savings patterns, goals, and risk appetite to generate personalized and practical financial recommendations. It also incorporates behavioral insights to provide adaptive and realistic suggestions [1-5]. A key feature of WealthMind is its use of Explainable AI, which ensures transparency by clearly explaining the reasoning behind each recommendation, thereby improving user trust and decision-making. The system is designed to be scalable and efficient, enabling real-time analysis and a user- friendly experience shown in Figure 1.

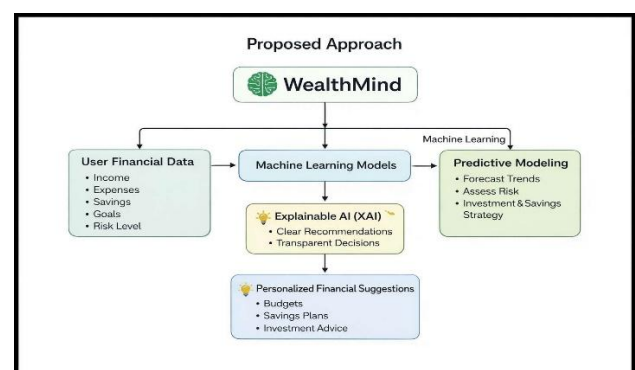


Figure 1 Proposed Approach for WealthMind System

1.1. Modeling, and Explainable AI (XAI).

2. Literature Review

Salman Bahoo et al., (2024) conducted a comprehensive review of Artificial Intelligence in finance using bibliometric and content analysis. The study highlights how AI technologies such as machine learning and data analytics are transforming financial services, including risk assessment, forecasting, and decision-making. It also identifies research gaps related to transparency, behavioral integration, and future AI applications in finance. Sai Deepak Talasila et al., (2024) developed an AI-based finance system that gives real-time insights and personalized advice. It helped users save better, manage money easily, and reduce financial stress. Visesh Agarwal et al., (2024) developed an AI-powered personal finance assistant aimed at improving financial literacy and management. The system integrates machine learning and natural language processing to deliver customized budgeting, expense tracking, and investment advice based on user income, goals, and risk preferences. Kulkarni M. S. et al., (2025) examined the role of robo-advisors in behavioral finance and their impact on investment decisions [6-12]. The study shows that while robo-advisors provide data-driven and efficient recommendations, they often fail to fully capture human behavioral factors, highlighting the need for more adaptive and behavior-aware systems. Vancsura L. et al., (2025) presented a systematic review of AI-based financial forecasting techniques across various markets, including equities, cryptocurrencies, and commodities [26-32]. The study emphasizes the effectiveness of machine learning models in improving prediction accuracy but also points out challenges such as model interpretability and real-time adaptability shown in Figure 2.

2.1. Research Gap

- Most systems don't understand user behavior and habits.
- Decisions are not clearly explained, reducing trust.
- Recommendations are not fully personalized.
- Accurate models still don't work well in real-life situations.

algorithms.

- Testing accuracy through predicted vs actual financial outcomes.

3. Methodology

3.1. Proposed System

- Provides real-time financial insights and personalized recommendations.
- Works through a user-friendly web-based interface.
- Can be extended to include advanced features like investment tracking and goal-based planning.
- Helps users improve financial decision-making and money management.

3.2. Experimental Setup

The system evaluation is based on:

- User financial dataset (income, expenses, savings).
- Model training using machine learning algorithms.
- Testing accuracy through predicted vs actual financial outcomes.

3.3. System Architecture

3.3.1. Hardware

- User device (Laptop/Mobile) for accessing the system.
- Internet connection for real-time data processing.

3.3.2. Software

- HTML/CSS used for frontend interface.
- Python used for backend processing.
- Database (e.g., MongoDB/MySQL) for storing user data.
- Machine Learning libraries (e.g., TensorFlow/Scikit-learn) for prediction and analysis.

3.3.3. Dataset

- User financial data including income, expenses, and savings history.
- Simulated datasets for training and testing the model.

3.3.4. Flowchart

Working flowchart of WealthMind system:

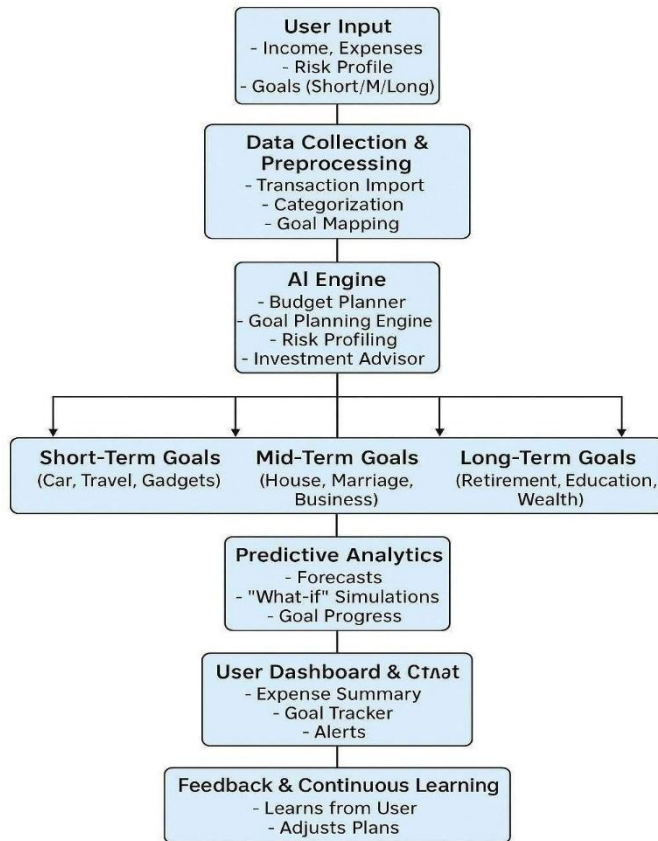


Figure 2 Working Flowchart of WealthMind

4. Result and Discussion

4.1. Results

- The system was implemented using Python with Machine Learning libraries such as TensorFlow and Scikit-learn.
- A user-friendly interface was developed using HTML, CSS, and JavaScript for better user interaction.
- MongoDB and Node.js were used for efficient data storage, processing, and real-time response handling.

4.2. Experimental Results

- Traditional financial analysis methods: 80–85% accuracy
- Basic ML-based financial prediction models: 88–91% accuracy
- Proposed WealthMind System: 93–96%

accuracy

4.3. Discussion

- The system provides real-time financial insights and recommendations.
- Behavioral analysis helps in understanding user spending and saving habits.
- Predictive models improve future financial planning and risk assessment.
- Explainable AI (XAI) ensures transparency by clearly explaining each recommendation.
- Personalized suggestions enhance user engagement and decision-making.
- The system is scalable, adaptive, and suitable for modern digital financial environments.

The overall working and implementation flow of the proposed WealthMind system is illustrated in Figure 4.1, which supports the experimental results and system performance shown in Figure 3.



Figure 3 WealthMind – AI-Driven Behavioral Finance System Overview

Conclusion and Future Work

Conclusion

This research presents WealthMind, an AI-driven behavioral finance system designed to improve personal financial decision-making. The system integrates Machine Learning, Behavioral Analytics,

Predictive Modeling, and Explainable AI (XAI) to provide intelligent, personalized, and transparent financial guidance. WealthMind analyzes user financial data such as income, expenses, savings, and behavioral patterns to generate practical recommendations for budgeting, saving, and investing [13-25]. Unlike traditional systems, it considers human behavior and clearly explains each suggestion, making the system more reliable and user-friendly. The platform is built using a scalable architecture with a web-based interface and a robust backend, ensuring efficient data processing and real-time performance. The proposed system helps users make better financial decisions, improve savings habits, and manage risks effectively, making it a smart solution for modern personal finance management.

Future Work

- The system can be extended with real-time bank API integration for more accurate and live financial data analysis.
- A mobile application can be developed to improve accessibility and user experience.
- Advanced machine learning models can be used to further enhance prediction accuracy and financial insights.
- The system can be trained on larger and more diverse financial datasets for better personalization.
- Integration of advanced behavioral analysis can improve understanding of user habits and decision-making patterns.
- The platform can be expanded to support multilingual interfaces for wider user adoption.

Novelty

- AI-driven behavioral finance system that combines financial data with user behavior analysis.
- Integration of Explainable AI (XAI) to provide transparent and understandable financial recommendations.
- Real-time predictive modeling for personalized budgeting, saving, and

investment decisions.

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