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Next-Gen Financial Planning System

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| Peer Review Information | Abstract |
|---|--|
| <p>Submission: 11 Sept 2025</p> <p>Revision: 10 Oct 2025</p> <p>Acceptance: 22 Oct 2025</p> <p>Keywords</p> <p>Financial Technology (FinTech); Predictive Analytics; Personal Finance Management; Full-Stack Web Application; Data Visualization; Budget Forecasting; AI-driven Insights; Secure Finance Dashboard; Expense Tracking; Goal-Oriented Financial Planning</p> | <p>This study introduces a Next-Generation Financial Planning System that leverages modern web technologies, predictive analytics, and AI-based recommendations to simplify personal financial management. The platform offers automated tracking of income and expenditures, adaptive budgeting, and forward-looking financial forecasting supported by real-time visual insights. Unlike existing solutions that are limited in scope or fragmented in design, the proposed framework integrates diverse financial data sources into a single, secure, and intelligent dashboard. By combining scalability, security, and personalized guidance, the system is intended to strengthen financial awareness, promote better savings strategies, and assist users in achieving long-term financial goals.</p> |

Introduction

Managing personal finances has become increasingly challenging due to rising living costs, debt accumulation, market fluctuations, and the shift toward digital transactions. Traditional tools rely heavily on manual tracking and lack adaptability to modern financial needs, making them unsuitable for today's users. Many individuals struggle with consolidating fragmented data, creating effective budgets, and achieving long-term goals.

To address these challenges, this paper introduces the Next-Gen Financial Planning System, which integrates automation, predictive analysis, and AI-driven decision-making into a

unified financial dashboard. The system ensures scalability, security, and user-friendliness, making it a practical solution for individuals and small enterprises.

Contributions of this work:

1. Automated tracking and categorization of income and expenses.
2. Predictive analytics for budget forecasting and financial planning.
3. Real-time data visualization through a secure and adaptive dashboard.
4. Enhanced financial literacy through actionable insights and goal-oriented strategies.

Literature Survey:

| Ref | Title / System | Approach & Technology | Strengths | Limitations |
|------|---|--|---|---|
| [1] | PENNYWISE: Personal Expense Advisor | AI-Driven expense advisor | Transaction Categorization, Automated Financial Guidance | Scalability challenges for broader adoption |
| [2] | Intelligent Financial Wellness Ecosystem | IoT-Enabled with Deep Learning | Handles diverse spending patterns, Utility Tracking capabilities | Privacy and security concerns |
| [3] | Personal Finance Management Web Application | Web-based automation system | User-friendly interface | Limited investment guidance |
| [4] | AI-Driven Decision Support Systems | AI-based optimization | Decision support capabilities, Financial optimization | Recommendation accuracy needs improvement |
| [5] | WONGA | Machine Learning with Image Processing | Predictive analysis, Advanced ML models for accuracy | Future expense categorization needs development |
| [6] | LLMs for Financial Advisement | Large Language Models (LLMs) with fairness metrics | Proposed new fairness metrics (ISIP & ISA), Reliability assessment framework | Limited visual aids in recommendations, Fairness validation needs expansion |
| [7] | Smart Expense Tracking System Using Machine Learning | Machine Learning with visualization | User-friendly interface | Data collection constraints |
| [8] | Can ChatGPT Plan Your Retirement?: Generative AI and Financial Advice | Generative AI for financial advising | Explores AI automation potential, Comprehensive discussion on AI's financial role | Model accuracy needs enhancement, Limited transparency in recommendations |
| [9] | Personal Finance Management Solutions with AI-Enabled Insights | Machine Learning for forecasting | Spending pattern forecasting, Predictive financial insights | Reliability concerns in AI recommendations, Data privacy issues need addressing |
| [10] | FinVis: Applied Visual Analytics for Personal Financial Planning | Visual Analytics Tools | Wealth and risk visualization optimization | Limited accessibility for non-experts |

Research Gap

Existing personal finance systems provide either expense tracking or budgeting, but few integrate predictive analytics, goal management, and AI-driven insights into a single platform. Current systems also face challenges related to fragmented financial data, limited automation, and lack of multi-account integration. Additionally, security and privacy concerns remain significant barriers for user adoption.

There is a gap in developing a secure, unified, and intelligent financial planning system tailored to modern digital ecosystems.

Problem Statement

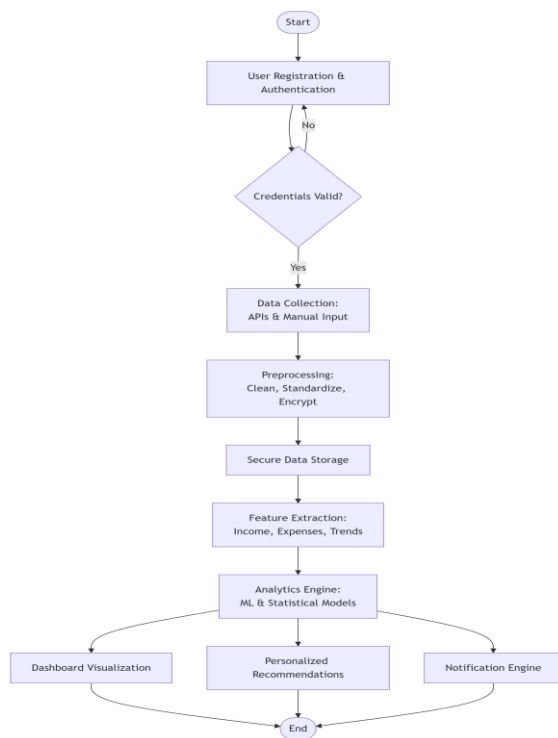
Individuals often face difficulties in managing scattered financial data, inefficient budgeting, and a lack of forward-looking analysis. Existing tools are either oversimplified or excessively complex, resulting in limited actionable

recommendations. Therefore, there is a strong need for a secure, intelligent, and user-friendly financial planning system that consolidates data from multiple sources, automates expense tracking, and applies predictive analytics to support informed financial decision-making.

Proposed System

The proposed Next-Gen Financial Planning System consists of the following modules:

1. User Registration and Authentication
2. Data Collection (transactions, IoT, APIs)
3. Data Preprocessing and Categorization
4. Database Storage
5. Analytics Engine (AI predictions)
6. Dashboard Visualization (charts, alerts)
7. Personalized Recommendations
8. Report Generation



Methodology

The Next-Gen Financial Planning System is developed using a full-stack architecture: React.js for frontend, Node.js/Express for backend, and MySQL/MongoDB for database management. APIs integrate multiple financial data sources, while predictive analytics leverage ML models (ARIMA, LSTM) for forecasting. Visualizations are created using Chart.js/D3.js, enabling users to monitor budgets, expenses, and savings in real time. Security is ensured via authentication and encryption, while scalability is supported through modular microservices.

Conclusion

The proposed system addresses the shortcomings of existing personal finance management tools by integrating automation, AI-based insights, and real-time visualizations. It not only simplifies expense tracking and budgeting but also enhances financial awareness through predictive analytics and personalized recommendations. By reducing overspending risks and supporting the achievement of long-term goals, the system empowers users to make informed financial decisions. Future enhancements may include integration with investment platforms, mobile applications, credit score monitoring, and advanced advisory modules to strengthen financial literacy and decision support further.

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