

A Personal and Family Financial Decision Support System

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Abstract- *Managing personal and family finances has become more challenging in recent years due to increasing living expenses and the presence of multiple sources of income. The Personal and Family Financial Decision Support System is developed to simplify this process by offering a single, convenient platform where users can track their expenses, plan their savings, and make more informed financial decisions. By combining budgeting tools, financial tracking, and data visualization, it turns raw financial data into useful information. These information helps users in managing their income, expenses, and investments better. With careful analysis and organized data, it helps families improve their financial planning, reduce unnecessary spending, and promote long-term financial security.*

Keywords: Financial Management, Decision Support System, Budget Planning, Personal Finance, Expense Tracking, Savings Management.

- Personal savings and portfolio management
However, they often lack:
- Family-level financial planning
- Simple budgeting tools
- Decision support for financial stability
- Support for low-income or irregular-income households

Contribution

The proposed system:

- Helps individuals and families manage finances effectively
- Provides financial information using data analysis
- Supports better financial decision-making
- Improves savings and budgeting habits

I. INTRODUCTION

The most important thing for long-term economic stability is being able to manage your own and your family's money well. But without careful planning, people often end up spending too much, getting into debt, and not having enough money saved for emergencies. Digital technology is changing quickly, and new financial decision support systems are being made to make it easier to keep track of income and budgets. However, many of the financial platforms available today can be difficult for users to understand or may have complicated designs that do not easily adapt to the changing needs of modern households. The system is developed to overcome these challenges by offering a simple and user-friendly interface that enables users to track their expenses, manage budgets, and monitor their savings in real time.

Research gap

Most existing financial applications focus on:

- Individual expense tracking
- Banking transactions
- Investment management

II. LITERATURE REVIEW

Financial decision support systems help people and families manage their resources better by using advanced data analysis techniques to turn raw transaction history into useful information about spending patterns and ways to save money that haven't been used yet. Research shows that using digital budgeting and expense tracking tools together improves financial discipline, reduces unplanned spending, and increases financial knowledge and long-term planning skills. Many modern financial apps today provide useful features like real-time expense tracking, automatic budgeting, detailed reports, and savings analysis. However, most of these systems are designed with corporate accounting in mind, not the more complex needs of personal or family life. As a result, there is still a big hole in the technology world for a dedicated financial decision support system that is specifically designed to help families with their unique social and economic problems. This makes sure that advanced financial advice is easy to find and useful for each user.

Conclusion

The transition from complex business-oriented financial tools to family-focused financial management systems has become increasingly important in addressing the realities of modern personal finance. As living expenses continue to rise, such systems can support households in building financial stability by providing the knowledge, structure, and control necessary for achieving long-term financial security.

III. PROPOSED SYSTEM

3.1 System overview

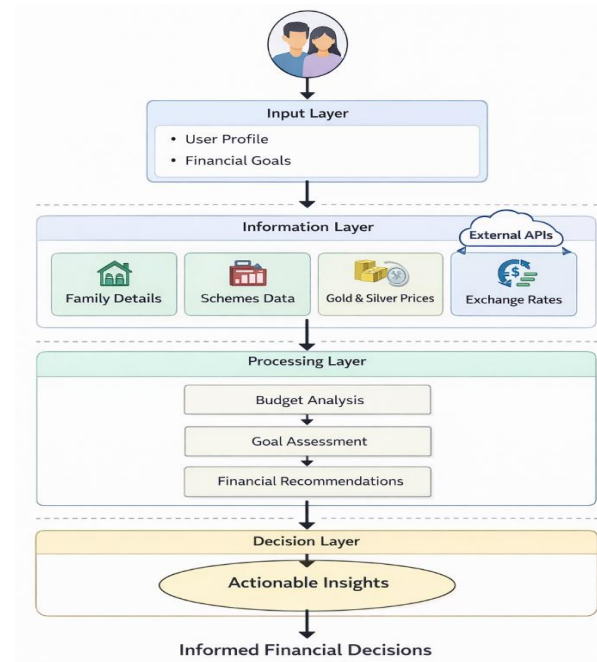
The proposed system is a financial decision support platform that helps users manage personal and family finances efficiently.

The system integrates:

- Income management
- Expense tracking
- Budget planning
- Goal-based financial planning
- Savings monitoring
- Financial reporting
- Family-level financial management
- User-friendly dashboard

The platform analyzes financial data and provides information to help users make better financial decisions.

3.2 System Architecture Workflow



The workflow systematically processes User Input through Financial Data Storage, Data Processing, and Financial Analysis to provide useful reports and suggestions.

3.3 Functional modules

3.3.1 User Management

The User Management module is the secure starting point of the platform, providing a safe and personalized environment where families can manage their finances confidently. It controls the registration and login process using modern security methods to confirm user identity and keep personal data secure. The module also allows users to manage their personal information and adjust system settings based on their family needs. By using encryption and strong access controls, it keeps financial records, from monthly income to daily expenses, safe and secure from unauthorized users.

3.3.2 Income Management

The Income Management module is the main system for tracking household income and showing a clear view of all income sources. It allows users to record different kinds of income, such as monthly salaries, business earnings, and other income like dividends, rent, or freelance payments. By organizing different sources of income, the system helps users keep track of their total monthly and yearly earnings and provides a clearer understanding of a family's overall earning capacity. This information is essential for assessing financial stability, as it allows the system to accurately calculate the debt-to-income ratio. Using the actual amount of money available, the system can also support more effective

budgeting and investment planning, helping users manage their finances in a practical and well-informed manner.

3.3.3 Expense Tracking

The Expense Tracking module is the main tool for maintaining daily financial discipline by showing clearly where money is being spent. It makes it easy to record daily expenses, from large utility bills to small regular purchases, ensuring that no transaction is missed. By allowing users to categorize their expenses into groups such as groceries, transport, or entertainment, the system turns a scattered list of transactions into well-organized information. This structured method makes it easier to track spending habits over time and identify patterns or trends that might otherwise be missed.

3.3.4 Budget Planning

The Budget Planning module functions as the strategic core of the system, moving beyond simple record-keeping to proactive financial management. The module allows users to set realistic monthly budgets for different categories, creating clear spending limits before the month starts. It helps users compare their actual expenses with their budget in real time, giving instant feedback on their financial situation. Regular monitoring plays an important role in maintaining financial discipline, as it helps users notice when their spending goes beyond the planned budget and alerts them to possible overspending. Ultimately, this module supports financial balance by ensuring that essential needs are met while also encouraging long-term savings and overall financial stability.

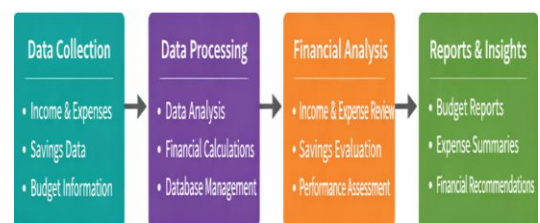
3.3.5 Savings Management

The Savings Management module is an important part of the system that shifts the focus from handling daily expenses to building long-term financial security. It provides a simple and user-friendly interface for tracking savings across multiple accounts, making it easier for users to understand their overall financial situation. By enabling families to set clear financial goals such as creating an emergency fund, saving for a house, or planning for a child's education the system makes the process of saving more organized and meaningful. Regular progress updates also encourage users to stay motivated and remain committed to achieving their financial goals over time. In the end, this module supports long-term financial planning and ensures that daily spending does not affect the goal of building a safe and stable financial future.

3.3.6 Financial Reporting

The Financial Reporting module acts as the main analytical part of the system, converting financial data into useful and meaningful information for users. It automatically generates monthly reports and expense summaries that display spending habits in simple and easy-to-understand visual formats. By examining savings and spending patterns, the module can identify long-term trends and point out areas where money may be overspent or not used efficiently. These automated insights give users a better understanding of their financial condition and help them plan for the future.

IV. METHODOLOGY



4.1 Data Collection

The system collects financial data from users, including:

- Income
- Expenses
- Savings
- Budget information
- Investment information
- Family members information

4.2 Data Processing

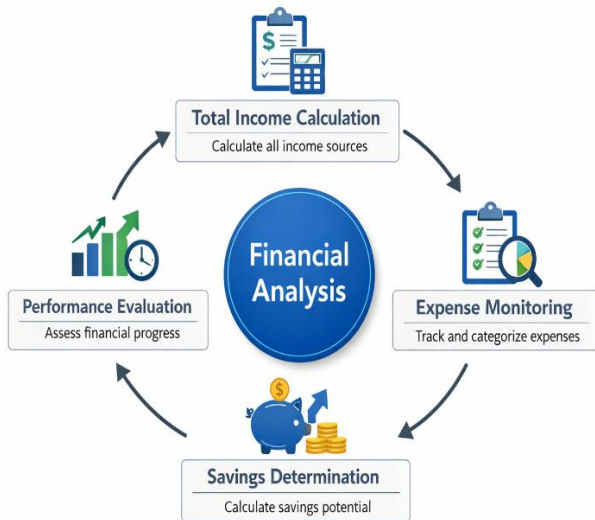
The system transforms raw financial data into organized insights using three key processing layers:

- **Database Management:** This layer safely stores, retrieves, and organizes all transaction data, making sure the information remains accurate across various income and expense types.
- **Data Analysis Techniques:** The system examines spending data to identify patterns and unusual changes, allowing it to recognize seasonal trends or

sudden increases and decreases in household expenses.

- **Financial Calculations:** The system reviews spending data to identify patterns and unusual changes, helping users recognize seasonal trends or sudden increases and decreases in household expenses more easily.

4.3 Financial Analysis



The system interprets raw data to provide a clear picture of a household's economic health through the following core functions:

- **Total Income Calculation:** Automatically aggregates all revenue streams, from fixed salaries to side earnings, to establish a baseline for monthly liquidity.
- **Expense Monitoring:** The system records and categorizes each transaction, making it easier to see where money is actually being spent compared to the original budget.
- **Savings Determination:** The system calculates the difference between total income and expenses to determine how much money is available for savings and future financial growth.
- **Performance Evaluation:** The system compares current financial habits with past data to determine whether a user's financial situation is improving or declining over time.

V. DISCUSSION

The proposed system enhances financial management by organizing financial information in a structured way and providing useful insights that support better decision-making.

Compared to manual financial tracking, the system offers:

- Better financial visibility
- Accurate financial records
- Improved budgeting
- Better decision-making

This system supports individuals and families in maintaining financial stability while also helping them minimize potential financial risks.

VI. CONCLUSION

The Personal and Family Financial Decision Support System provides a complete solution for modern financial management by combining income tracking, expense monitoring, and planned budgeting into one easy-to-use platform. By converting raw financial data into useful information, the system enables users to move beyond simple record-keeping toward sophisticated, data-driven decision-making. Through consistent savings analysis and real-time oversight, The Proposed system helps to build good financial habits and provides families with the tools to achieve long-term financial stability and security.

VII. FUTURE WORK

In the future, the system will grow to meet the changing needs of modern families. One possible improvement is adding investment tracking, allowing users to manage stocks, mutual funds, and their total net worth in one place.

- **Loan Management:** Adding tools to track loans, interest rates, and payment schedules so users can manage their debts properly.
- **AI Recommendations:** Using machine learning to give personalized suggestions based on a user's spending habits.
- **Mobile Support:** Creating a mobile app that allows users to track their finances in real time and receive quick alerts about their budget anytime, anywhere.
- **Bank Integration:** Connecting the system directly with banks to automatically import transaction details, reducing manual data entry and improving the accuracy of financial records.

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