

Finguard: Personal Budget Planner - A Web-Based Solution for Financial Management and Literacy

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Abstract - Managing personal budgets effectively is crucial for financial stability, yet many of us struggle to keep track of their income, expenses, savings, goals, and awareness about investment and insurance. This paper introduces Finguard, a web-based personal budget planner designed to provide users with a simple and efficient tool for managing their budgets. Finguard enables users to record income sources, categorize expenses, categorize savings, and monitor their financial activities. Also, Finguard facilitates the awareness of insurance and investment. The platform offers an accessible and user-friendly interface, making budget planning straightforward even for individuals with minimal financial expertise. Additionally, the system provides insights into spending patterns, helping users make informed budget decisions and develop better money management habits. By promoting financial awareness and disciplined spending, Finguard is a valuable tool for personal budget planning. This paper discusses the Finguard design architecture, key features, implementation details, and potential benefits in enhancing budgeting efficiency.

Key Words: Budget Planning, Financial Management, Financial Literacy, Expense Tracking, Savings Goal Setting, 50/30/20 Budgeting Rule.

1. INTRODUCTION

Effective personal budget management is crucial for maintaining budget stability. Many individuals face challenges in tracking their income, managing expenses, and setting budgets. Without a structured approach, it becomes difficult to monitor spending habits, leading to poor financial decisions, unplanned expenses, and difficulty saving money. Many people rely on manual tracking methods or lack awareness of their financial patterns, making it harder to control their budgets. To address these challenges, Finguard is designed as a personal budget planner that simplifies budget management by providing an intuitive and user-friendly platform. The name Finguard signifies financial protection. The system allows users to record their income, track daily expenses, and track savings to ensure financial

discipline. By offering a clear and organized view of financial transactions, Finguard helps individuals gain better insight into their spending behaviours, enabling them to make informed financial decisions. Finguard's features focus on financial awareness and goal-setting, allowing users to plan and achieve their financial objectives efficiently. The system provides detailed expense tracking, budgeting tools, and visual summaries that help users understand their financial status at a glance. Use of Finguard, individuals can cultivate better financial habits, reduce unnecessary expenses, and work toward their long-term financial stability. This paper discusses Finguard's structure, functionality, and key benefits, highlighting its role in helping every user manage their personal finances. By providing a simple and effective budgeting solution, Finguard aims to promote financial awareness and encourage responsible money management practices among users. Financial literacy plays a vital role that ensures, the individuals can manage their money wisely and make informed financial decisions. However, a lack of financial knowledge often leads to poor budgeting, excessive debt, and financial instability. Many people struggle with understanding key financial concepts such as budgeting, saving, and expense tracking, which can impact their ability to achieve financial security. Without proper financial literacy, individuals may find it difficult to differentiate between essential and non-essential spending, resulting in financial stress and difficulties in meeting long-term financial goals. Since financial literacy is not widespread, personal budget planner apps like Finguard are designed to bridge this gap by providing users with essential financial tools in an easy-to-use format. These apps help users develop responsible spending habits by offering insights into their financial behavior and encouraging better money management. By simplifying the budgeting process, personal finance apps empower individuals to take charge of their financial well-being, improve their savings, and work toward financial independence. Finguard, in particular, serves as a practical solution to help users track their expenses, set realistic financial goals, and gain greater control over their finances.

2.EASE OF USE

One of the key aspects of Finguard is its user-friendly design, ensuring that users can easily navigate and utilize its features. Managing personal finances can be overwhelming, especially for those unfamiliar with budgeting tools. To address this challenge, Finguard provides a simple and intuitive interface. It allows users to record their income, track expenses, add savings, set financial goals, and information about investment and insurance with minimal effort. The Finguard is designed with a clean layout, enabling users to input transactions quickly without unnecessary complexity. Features such as categorized expense and saving tracking, visual summaries, and goal-setting tools are structured in an easy-to-understand manner, making financial management accessible to all users.

3.BACKGROUND AND RELATED WORK

As mentioned in the introduction of this paper, our objective is to identify existing research gaps and conduct a distinctive analysis of relevant literature reviews. This approach allows us to explore areas that have not been extensively studied. It helps us learn new things and provides new insights into the development and effectiveness of personal budget planner applications.

3.1 Literature Review

The proposed innovative project “FinGuard” is based on detailed background research, supported by a literature review that cites a wide range of sources. It includes books, journals, research papers, and articles. Authorship, publication year, methodology, results, and future directions highlighted in Table 1 to provide a comprehensive overview and understanding of existing research and identify gaps in financial management solutions.

Table -1: Literature Review

Year and Author	Methods	Conclusion	Future Scope
2021, Goyal, et.al [1]	Bibliometric analysis	Financial literacy influences financial behavior.	Need standardized measures
2022, Wong, Ashley and Singh,	Behavioral Insights	The FCAC Budget Planner is valuable but requires	To implement AI bots.

et.al [2]		better usability, personalization, engagement, and guidance	
2022, Cao, Longbing [3]	Data-driven, survey, analytical, comparative, review	AI enhances financial services efficiency.	Requires addressing ethical, regulatory challenges.
2022, Decan, et.al [4]	Empirical analysis of GitHub Actions.	GitHub Actions improve CI/CD efficiency.	Investigate security implications and best practices for GitHub Actions.
2023, Lusardi, et.al [5]	Objective and subjective financial literacy assessments	Financial literacy is crucial for effective personal financial management and well-being.	Integrating financial education in school curricula to improve financial literacy
2023, Robert C. Higgins, et.al [6]	Practical, intuitive approach to financial management techniques	Emphasizes informed financial decision-making using financial statements.	Prepares readers for evolving financial challenges in professional careers.
2023, Xuetao Li, et.al [7]	Optimized Backpropagation Neural Network (BPNN)	Effective in predicting financial distress with over 80 percent accuracy.	Needs validation across industries and economic conditions.
2023, Whiteside, et.al [8]	the 50/30/20 budgeting system	The 50/30/20 rule balances finances, covering needs, wants, and savings in a simple approach.	The 50/30/20 rule lacks flexibility for high debt, cost-of-living differences, and diverse financial needs.

2024, Khurram Rehman, et.al [9]	2024, Khurram Rehman, et.al [9]	Financial literacy is influenced by seven key factors— demographic, socio-economic, psychological, financial, societal, Islamic, and technological.	Further research on digital financial literacy is recommended .
2025, Archeet, et.al [10]	Development of PHPbased financial application.	Simplifies financial management for users.	Lacks empirical evaluation, user feedback.

The analysis of 10 literature publications from diverse sources serves as the foundation for our research on Finguard: The Personal Budget Planner. Through a methodical examination of authors, study periods, methodologies, results, and real-world applications, we identified significant research gaps that highlight the distinctiveness of our work. It provides fresh perspectives for personal budget management and finance management using digital solutions. To sum up, our research is a noteworthy and unique addition to the evolving fields of financial planning and technology.

3.2 Research Gap

Our project study is enhanced by the gaps in research identified by the literature evaluation. We came across that Financial Literacy is essential for every individual. With proper financial literacy every individual will be able to manage their finances [1]. Implementing AI bots in Finance management apps may give rise to good finance management platforms [3]. Security and privacy concerns in AI-based Finance apps are mandatory. 50/30/20 rule implementation can give birth to good finance managing applications [8]. There is Need of a User-Centric Finance Management Platform. Personalized Budgeting solutions can improve the performance of Finance managing platforms. Finally, we decided to design for user friendly personal budget planner web application.

4.METHODOLOGY

In this section, we have mentioned various methodologies that we learned and used to build our project. The project is a software-based personal finance manager with a simple and user-friendly interface. It includes a secure login system and a dashboard. It provides an overview of income, expenses, savings, and goals. Users can track their income,

track expenses with categories, and set goals. This web application also offers visual reports like charts and graphs to help users analyze spending patterns and monitor savings progress.

4.1 Finguard Flowchart

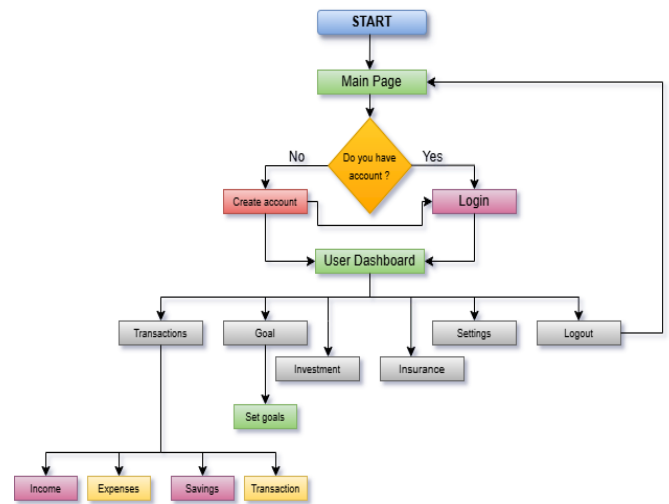


Fig. 1. Finguard Flowchart

4.2 Process Analysis

1) User Registration and Login:

Input for User Registration: Username, Email, DOB, Password and Confirm Password (hashed for security).

Input for User Login: Email, Password (hashed for security).

Process: During registration, store the username, email, DOB and hashed password in the database. During login, validate credentials by comparing the entered password (after hashing) with the stored password.

Output: Login success or failure message.

2) Dashboard:

Process: Displays investment and insurance plans, as well as user data like total income, total expenses, savings, and remaining budgets, and recommends the amount to spend as per the 50/30/20 budgeting rule. It shows insights, bar charts, and pie charts. It also shows the history of recent transactions and sets goals.

Compute the Remaining Budget as:

$$\text{Remaining Budget} = \text{Income} - \text{Expenses} - \text{Savings} \quad (1)$$

3) Income:

Input: Amount, Income Source, Note(Optional).

Process: Store the amount in existing income amount.

Compute the total income as:

Total Income = Total Income + Amount (2)

Output: Store total income for the user.

4) Set Expense:

Input: Amount, Expense Source, note(Optional)

Process: Allow the user to set a budget for each category.

Store each category with its respective budget amount.

Compute the total expense as:

Total Expense = Total Expense + Amount (3)

Output: Budget plan for the user.

5) Track Expenses:

Process: Subtract the entered expense amount from the corresponding category budget. Update the total expenses for that category. If the expense amount exceeds the category budget, trigger an alert.

Output: Updated expenses and remaining budget in each category.

6) Set Goals:

Input: Set goal description, Target amount, Target date (optional), Contribute Amount.

Process: Store the goal description, target amount, and track progress as the user saves money. Update the progress of the goal each time money is added to savings.

Compute the Goal Completion as:

Goal Completion = (Targeted Amount / Contributed Amount) * 100 (4)

Output: Progress toward the savings goal.

7) Goal Recommendation:

Process: We are going to recommend plan for achieving goals like how many amounts should contribute per month.

Compute the recommended amount as:

Recommended Amount 1 =

Targeted Amount/Time(monthly) (5)

Recommended Amount 2 =

(Targeted Amount - Contributed Amount) / Time(monthly)

(6)

Output: Recommendation of plan to achieve goal

This process analysis provides insights into what users need and expect from a budget planning application. It helps identify key features, functionalities, and security aspects that will enhance user experience and improve financial management. By analyzing these requirements, we can ensure that Finguard is designed user-friendly, efficient, and secure. Additionally, this analysis outlines the core components of Finguard, explaining how each element will function and interact within the application. It ensures that the development process remains aligned with user expectations, offering a well-structured system for income tracking, expense management, budgeting, and goal setting. Ultimately, this analysis serves as the foundation for building a reliable, intuitive, and effective personal finance management tool.

4.3 Database Structure

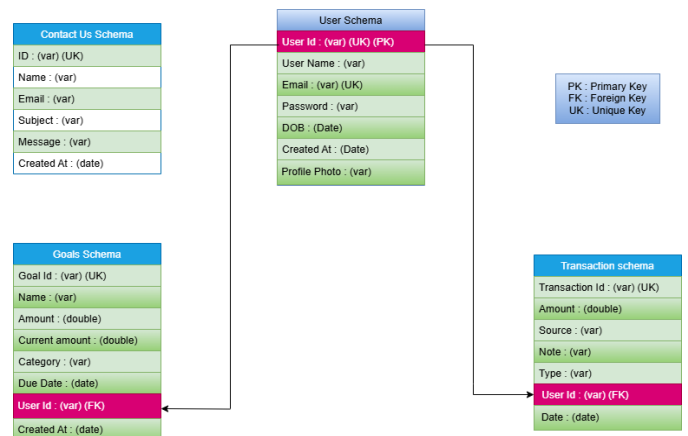


Fig. 1. Database Structure

4.4 Finguard Design

1) Architecture: As per the process analysis, workflow, and Database structure, we have used an architecture for our project. It includes UI, backend, and database.

2) Software Setup: We have used the following software tools and technologies to build our project:

1. Development Environment: Visual Studio Code (VS Code) as the primary text editor.
2. Project Dependencies: Node.js with npm as the package manager for managing dependencies.
3. Front-end technologies: We have used React (typescript) and tailwind CSS for UI development. TypeScriptJSX for dynamic user interfaces.
4. Middleware: For the front-end and backend integration, we have used Node JS.

5. Back-end Technologies: Node.js with Express.js for handling server-side operations.

6. Database: MongoDB is the primary database for storing financial data.

3) Hardware Setup: The Finguard system is developed and tested on the following hardware specifications:

1. Processor: Multi-core processor (Intel i5/i7 or equivalent).

2. Memory (RAM): Minimum 8 GB (16 GB recommended for better performance).

3. Storage: SSD with at least 256 GB capacity for faster execution.

4. Operating System: Windows OS for compatibility and stability.

5. EXPERIMENTAL SETUP AND IMPLEMENTATION

5.1 Basic User Inputs

It provides a structured approach to personal budget management. It begins with the registration and login process. After login, the user can insert their income and income sources. It allows the system to calculate total earnings. To facilitate expense management, users categorize their expenditures into sections like groceries, housing, food, transportation, entertainment, etc. This structured categorization helps to organize financial data efficiently. When adding expenses, users enter their expenditures along with the expenditure category. It allows for real-time comparison to ensure that the user can track their financial habits effectively. The system also includes a savings goal feature, enabling users to define financial objectives. Users can specify a goal description, such as "Vacation Fund" or "Emergency Savings," set a target amount, and choose a due date for achieving the goal. The system continuously tracks the progress of each savings goal and provides insights and recommendations on how close the user is to achieving their financial targets. This feature encourages financial discipline and helps users allocate their resources wisely.

5.2 Basic Features

The system includes a user-friendly dashboard that provides an overview of financial activities, including total income, total expenses, and total savings with the remaining budget. It shows bar charts to compare income, expenses and savings, also provides pie charts for tracking expenditure of expenses and savings. It helps user to track their financial progress effectively and understand their expenditure and saving state. Additionally, there is a transaction section where the user gets overall transactions with options such as monthly, yearly, and overall income. Our project provides information about investment and insurance. In insurance we mainly focus on Health

Insurance, Life Insurance, Home Insurance, Car Insurance, Bike Insurance, and Travel Insurance. In investment we provide information about 10 plans such as Bonds, Mutual Funds (SIP), Stocks, ETFs, PPF, Fixed Deposit (FD), Commodity, Savings Account, Sukanya Samruddhi Yojana, and Real Estate. We also provide links for more information.

5.3 User Experience Considerations

The application must be designed with an intuitive interface. It should ensure a clean, user-friendly, and easy-to-navigate experience, making financial management seamless for users. Along with usability, data security should be a top priority.

6. CONCLUSIONS

In conclusion, after researching the need for personal budget planning in India, we realize there is a lack of awareness about insurance and investment, as well as financial literacy and finance management tools accessible for effective budgeting. Due to the lack of financial literacy, it gets difficult for individual to manage their expenses. It is mandatory to find a solution to this issue. Make finance management easy.

Financial literacy is needed to make informed decisions about earnings, savings, and expenses. Due to a lack of financial literacy and tools, people often struggle with overspending and unsatisfactory savings. This gap led us to develop Finguard, a personal budget planner designed to empower individuals by providing them with an intuitive and efficient way to manage their finances. To build Finguard, we carefully selected technologies that ensure a smooth and scalable user experience. In the front-end we choose React JS with Typescript and Tailwind CSS to create a dynamic and responsive user interface. React JS allows for reusable components, improving development efficiency and maintaining a modular structure. For the back-end, we opted for Express JS and Node JS, which provide a robust and scalable environment for handling server-side operations, ensuring seamless communication between the front-end and the database. MongoDB is selected as the database to store user data securely, allowing for efficient management and retrieval of financial records. We started the project by planning the flow and designing flowcharts to outline how the website would function. It helped us visualize user interactions and ensure a streamlined experience. Following this, we mapped out the website's layout, defining how each page would look and function. Based on this structure, we built the webpages using React JS, ensuring an interactive and user-friendly interface. Simultaneously, we developed a well-structured database schema to manage financial data effectively. We also installed all necessary dependencies and tools to support the development process. For decision-making regarding our finance management, Financial Literacy is mandatory. 50/30/20 budgeting rule for budget management is well efficient for budget management. AI technology can also lead to efficient budget planning

platform implementation. We can use AI Bots in such applications for a better experience. Beyond the technical aspects, Finguard aims to promote better financial decision-making.

Providing real-time insights into their income, expenses, and savings helps them develop better spending habits and financial discipline. The integration of React JS and Node JS ensures a fast, responsive, and scalable platform. It makes finance management more accessible and more effective. This structured, step-by-step development approach enabled us to bring Finguard to life, bridging the gap in financial literacy and empowering users to take control of their financial future.

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