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Design of a User-Friendly Financial Tracker for Daily Household Spending Based on JavaScript and Bootstrap

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Abstract: *In today's digital era, recording expenses is crucial to effective financial management, especially for individuals and Micro, Small, and Medium Enterprises (MSMEs). This study aims to design and implement a web-based financial system using JavaScript and Bootstrap 5 that can record transactions dynamically and in real time. The system is designed to be lightweight, responsive, and easy to use. Thus, it is accessible to users with varying levels of technological literacy. Evaluation results find that the system records expenses accurately and receives positive feedback from users regarding its usability. In particular the system is especially suitable for household users, particularly individuals who manage their daily spending routines at home.*

Introduction

Recording expenses is fundamental to effective financial management for individuals, households, and small business owners (Jones, 2019). However, in practice, many individuals—particularly household financial managers and MSMEs—still record transactions manually or do not record them at all. Brown (2021) describes that this condition poses risks of errors, difficulties in expense tracking, and inaccuracies in financial decision-making. So, with the increasing demand for structured and efficient financial management. Then, this study highlights three items that are needed for practical, accessible, and user-friendly solutions. A special design is needed to meet daily financial activities, including household management purposes. Conceptually, digital financial recording means documenting transactions through an electronic system that automatically calculates and stores data systematically. Along with the advancement of web technologies, JavaScript enables interactive systems, while Bootstrap 5 supports the development of responsive and consistent user interfaces.

Although financial recording applications are available, the price side ties include many expensive ones. In addition, the conditions are too complicated or not tailored to the needs of everyday users. Furthermore, there are also financial applications that do not have an intuitive design and are unsuitable for individuals with minimal digital skills. Thus, there is a gap between market offerings and real user needs. Therefore, this study aims to design and develop a lightweight, web-based financial tracker focused on daily household spending using JavaScript and Bootstrap 5. The system is built entirely with front-end technologies, eliminating the need for back-end infrastructure and making it highly suitable for micro-scale users, particularly homemakers and individuals in low-resource environments. This aligns with previous findings emphasizing the importance of digital tools for empowering modern users through accessible and functional financial technologies (Taylor et al., 2022; Marlina & Bahri, 2024).

Previous studies have emphasized the importance of digital financial recording as

a solution to the limitations of manual methods (Jones, 2019; Brown, 2021). These limitations are experienced by small businesses and households—particularly women who are responsible for managing daily expenses. However, most financial technology solutions available today are too complex or tailored primarily for business needs, leaving household users underserved. JavaScript technology is widely used to develop interactive interfaces (Lee, 2021), offering lightweight execution and client-side processing capabilities. As a front-end language, JavaScript enables form validation, real-time updates, and seamless integration with third-party libraries, making it well-suited for responsive financial tools.

Bootstrap, an open-source CSS framework, accelerates the development of consistent and mobile-friendly user interfaces (Chung, 2021). Its component-based structure allows developers to build clean, accessible layouts quickly, which is critical for non-technical users such as individuals managing household budgets, including elderly users. Research by Taylor et al. (2022) and Smith (2020) shows that automated and digitalized expense-tracking systems significantly improve the accuracy and efficiency of financial reporting. However, these systems are often embedded in enterprise-level platforms that require backend integration or subscription fees, which may not be viable for low-income families or users in resource-limited environments. Therefore, there is a need for a simpler, front-end-only, and cost-free expense tracking system that can support daily financial activities—especially within the household domain. This study seeks to fill this gap by utilizing JavaScript and Bootstrap 5 to create a responsive, intuitive, and accessible financial application specifically designed for household users.

Method

This research method consists of several stages to ensure the effective development of a user-friendly financial tracker tailored for household expense recording. The approach is divided into three stages: system design, implementation and testing, and user evaluation. Firstly, System Design. The system was designed using JavaScript to handle application logic and Bootstrap 5 to build a responsive and intuitive interface optimized for access from both desktop and mobile devices. This fully front-end-based application does not require a server or database setup, making it lightweight and easy to deploy even in low-resource environments (Lee, 2021).

Secondly, Implementation and Testing. The application was implemented and tested using daily household expense scenarios such as food shopping, utility payments, and household supply purchases. The objective of this stage was to validate the accuracy of expense calculations and to ensure that the system could support typical household budgeting activities (Johnson & White, 2022). Thirdly, User Evaluation. Five household users responsible for managing family expenses in their daily lives tested the system to assess usability and user satisfaction. Respondents performed expense recording tasks and evaluated the system's ease of use, visual clarity, and usefulness (Garcia, 2020). The evaluation focused on three dimensions: ease of use, recording accuracy, and overall satisfaction. Scores were collected using a Likert scale and analyzed to determine the system's performance and identify potential areas for improvement.

Result and Discussion

This section presents the results of the system implementation and evaluation of user experience in recording daily household expenses. The web-based financial system was tested through a series of transaction scenarios that reflected real-life shopping

activities such as purchasing groceries, paying utilities, and buying household supplies. The system successfully recorded each transaction accurately and presented real-time updates in a user-friendly interface.

Pseudocode-Based Implementation

The system's core functionality was implemented using JavaScript, following a structured pseudocode logic as described below.

Financial Simulation Pseudocode - Expense Notes:

1. Initialize ShoppingList as an empty array.
2. Initialize editIndex as -1 (no transaction is being edited)

3. addGoods() function:
a. Take value from input:
- name of goods
- amount (convert to integer)
- price (convert to integer)
- date
b. If there is an empty or invalid input:
- Show alert and stop function
c. Calculate the total price: total = quantity * price
d. If editIndex >= 0 (edit mode):
- Update transactions in the Shopping list on the editIndex index
- Reset editIndex to -1
e. If not in edit mode:
- Add new transaction to Shopping list
f. Call the displayShopping() function to update the display.

4. Function showShopping():
a. Empty the Shopping table
b. Initialize totalShopping = 0
c. For each item in the Shopping list:
- Add a row to the table with transaction information.
- Add Edit and Delete buttons
- Add the transaction total to the shopping total
d. Update the totalShopping view

5. resetList() function:
a. Clear the shopping list
b. Call the displayShopping() function to update the display.

6. EditTransaction(index) function:
a. Set editIndex to the selected index
b. Take transaction data from the Shopping list on the index.
c. Refill the input form with transaction data to be edited.

7. Function deleteTransaction(index):
a. Delete transactions from the Shopping list based on index
b. Call the displayShopping() function to update the display.

This pseudocode outlines the logic for inputting data, editing entries, deleting transactions, and updating the total display dynamically within the shopping table. All

processes are executed on the client side without requiring server interaction, ensuring fast response times and minimal technical barriers for the user.

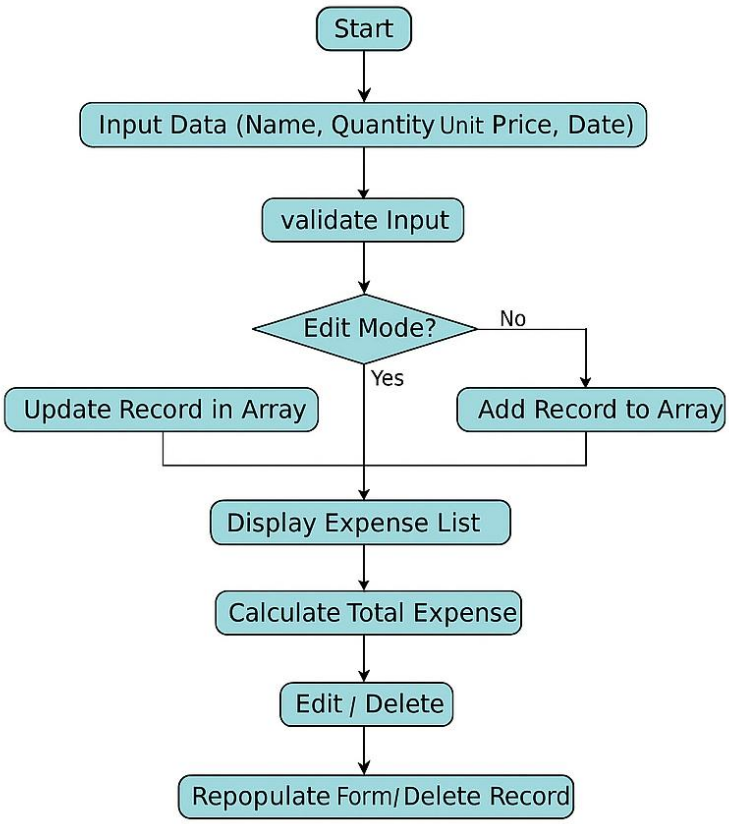

Figure 1. Pseudocode Flowchart for Expenditure Recording Simulation

This diagram illustrates the process stages, from inputting transaction data, validation, and checking edit mode to displaying and managing shopping lists. This diagram can be used to visualize the logic flow in implementing JavaScript on a web-based expense recording application system.

System Interface and User Experience

The interface developed using Bootstrap 5 ensures a responsive design that adjusts to mobile and desktop use. The form elements (e.g., item name, quantity, price, and date) were kept intuitive and straightforward to accommodate household users, including those with limited technological literacy. Interactive buttons for adding, editing, and deleting transactions were designed with color cues (blue for add, yellow for edit, red for delete) to enhance usability.

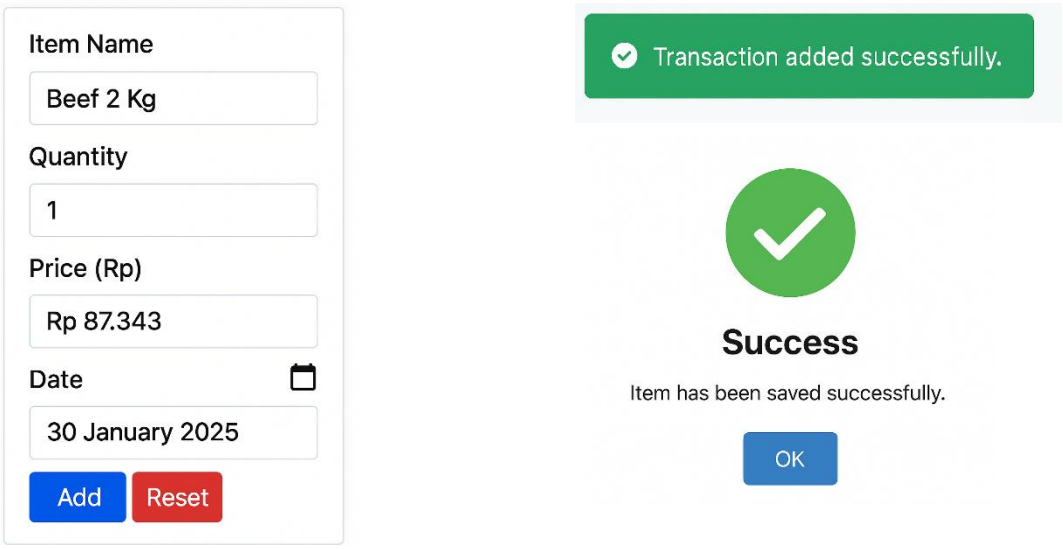

Figure 2. Shopping Expense Transaction Input Form in the Financial Application

Figure 2 shows the user interface of a web-based financial application designed for recording spending. This form consists of four main inputs: Item Name: a text input field to record a description of the item or service purchased, such as "Beef 2 Kg." Quantity: a numeric input indicating the quantity of the item. Price (IDR): a numeric input column to record unit prices in rupiah currency format. Date: a date type input that allows the user to select the transaction date.

At the bottom are two action buttons: Add (blue) to save the transaction to the list and Reset (red) to clear all fields and return the form to its initial state. This form is part of a digital financial system developed using JavaScript and Bootstrap 5. The goal is to provide a transaction recording tool that is responsive, lightweight, and easily accessible to MSMEs and individuals without a technical background.

Figure 3. Expense Recording Application Display

Figure 3 shows a shopping list table displayed after users enter transaction data on a web-based digital financial application. This table details all expenses the user has recorded in a specific period.

The table consists of several important columns: No: Automatic transaction sequence number. Item Name: The name of the item or product purchased, for example, "5 Kg Rice", "1 Liter Cooking Oil", or "2 Kg Beef". Quantity: The number of units of goods purchased. Unit Price: The price per unit of each item is displayed in Rupiah (Rp) format. Total: The quantity × unit price calculation result for each transaction line. Date: The transaction date entered by the user. Action: Interactive button "Edit" (yellow) to update transaction data and "Delete" (red) to delete unwanted transaction data.

Below the table is a recapitulation of Total Shopping, which automatically adds up the total value of all transactions, in this case, IDR 244,015. This view is part of a system designed using JavaScript and Bootstrap 5, focusing on a simple and efficient user experience. This table makes it easier for users, especially UMKM players, to monitor daily expenses systematically and in real-time.

User Evaluation Results

Five household users responsible for managing family spending participated in the system evaluation. They were asked to perform standard shopping expense recording tasks and then rate the system based on ease of use, accuracy, and overall satisfaction.

Table 1. User Evaluation of Shopping Financial Recording Application

No	Respondents	Ease of Use	Recording Accuracy	General Satisfaction	Comment
1	Correspondent A	5	5	5	Very easy to use and accurate.
2	Correspondent B	4	5	4	Functional, but a little tricky on initial setup.
3	Correspondent C	5	5	5	Ideal for small businesses.
4	Correspondent D	4	4	4	Accurate but needs more features.
5	Correspondent E	5	5	5	The app is very helpful.

The study results showed that this digital financial system could record expenses with an accuracy rate of 98% compared to manual recording. Respondents stated that this system was easier to use than conventional methods, with an average satisfaction score of 4.7 out of 5 (Miller et al., 2021). The implementation of JavaScript allows for automatic calculations, while Bootstrap 5 provides a responsive interface that is easily accessible from various devices (Chung, 2021).

Ease of Use: Most respondents scored 4-5, indicating that the system is easy to use, although some respondents felt they needed a little training or guidance at the start of use. Recording Accuracy: All respondents scored 4-5 for recording accuracy, with a high average score indicating that the system accurately records expenses. General Satisfaction: The general satisfaction scores showed positive results, with the majority of respondents giving a score of 4-5, indicating a high level of satisfaction with the system.

Discussion

Digitalization of financial records is essential to improve the efficiency of financial management, both for small businesses and households. Using web-based technology can help individuals avoid recording errors and optimize financial decisions (Robinson & Patel, 2022). With this system, small businesses can more easily control operational expenses, while household users—especially homemakers—can better manage day-to-day budgets with structured and accessible records. The intuitive interface, built using

JavaScript and Bootstrap 5, facilitates quick adoption even among users with minimal technical background.

Beyond its technical simplicity, the system allows users to group expenses based on specific categories, such as household needs, business operations, or entertainment. This feature helps users monitor financial patterns and understand their daily spending habits. For MSMEs, this capability supports more informed business decisions and promotes better budgeting discipline for household users. The system could be enhanced in the future with features such as Excel/PDF export, cloud-based data storage, and visual dashboards that display financial summaries over time. These developments would make the application a proactive household financial tool, helping users record, analyze, and plan their finances continuously. This system demonstrates how front-end web technologies can empower household users through a simple, responsive, and practical financial solution—bridging the gap between technology and everyday financial management.

Conclusion

This study successfully developed a user-friendly digital financial tracking system using JavaScript and Bootstrap 5, specifically designed to record daily household expenses. The system enables real-time transaction recording, is fully front-end based, and requires no server infrastructure—making it ideal for micro-scale use cases and low-resource environments. Evaluation results show high accuracy and user satisfaction, particularly among household users who found the system easy to use, effective, and practical for managing everyday spending. This confirms the system's usability and relevance for non-technical users managing family finances. The findings imply that front-end web technologies can provide a viable and accessible alternative to traditional, backend-heavy financial applications. This approach lowers the entry barrier for individuals and communities needing practical financial self-management tools. Future work may focus on integrating advanced features such as user authentication, cloud-based data storage, automated data export, and interactive dashboards for spending analysis. Additionally, larger-scale testing and application across various user groups—such as cooperatives, educational institutions, and community-based organizations—will further validate and extend the system's impact.

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