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Design Of Personal Finance Management Application Based On Mobile App (Case Study Of Students Of STMIK Mardira Indonesia)

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Abstract

Personal financial management presents considerable difficulty for students, primarily due to limited income and frequently inconsistent lifestyles. This research encompassed 60 students from STMIK Mardira Indonesia. The questionnaire results indicated that 61.4% of respondents found it challenging to monitor their accounts constantly, and 21.4% expressed concerns about having insufficient time for documentation. This research aims to develop a mobile application for personal money management specifically designed for students. The application was developed using the Agile research methodology, utilizing AppSheet, and linked with Google Drive to guarantee data security. The study utilized data collection techniques, including questionnaires, interviews, and literature reviews. The results demonstrate that this program is proficient in aiding students with transaction documentation, budget oversight, and improving their financial literacy. It is advisable to have functionalities for visualizing financial information and implementing automatic notifications when expenditures are near the established budget threshold.

Keywords : *Mobile Application, Financial Management, Agile, Student Finance*

INTRODUCTION

Effective personal financial management is essential in the digital age, particularly due to a contemporary, consumer-oriented lifestyle and insufficient financial literacy, which adversely affects individuals', including students', capacity to attain their financial objectives. Students, a demographic susceptible to financial challenges, are navigating the initial phases of life, whereby effective money management is crucial for achieving financial independence. (Handayani et al., 2023)

While many of their requirements continue to be met by their parents, students must start to assume the responsibility of managing their finances, which includes budgeting for allowances, tuition fees, and everyday expenses. Financial management poses considerable difficulty for them due to their restricted revenue. A questionnaire administered to 60 students at STMIK Mardira Indonesia revealed that only 8.3% (5 students) consistently monitor their funds, indicating a deficiency in awareness of the importance of financial management. Forty-three students (61.4%) cited inconsistencies in recording as the primary issue in financial management, whereas 21.4% expressed challenges in allocating time for recording. Supplementary challenges, such as a lack of knowledge regarding proper recording techniques and the use of ineffective recording instruments, further exacerbate the issue. This situation highlights the necessity for a system that enables students to manage their resources more effectively.

The progression of mobile technology provides an efficient means for financial management. Mobile financial applications

enable users to track their income and expenditures, as well as assess their financial behaviors instantly. A questionnaire administered to 60 students at STMIK Mardira Indonesia revealed that 88.3% utilize mobile applications daily, underscoring the considerable potential of this platform in aiding students with financial management.

Basic Concepts of Personal Money Management

Personal financial management encompasses the processes of planning, budgeting, evaluating, and managing to achieve financial objectives. It encompasses the utilization of financial theory in personal decision-making alongside practical competencies in budget management. Gitman asserts that financial management integrates both the scientific and artistic aspects of overseeing individual or household resources. Effective personal financial management necessitates a synthesis of theoretical knowledge and practical skills to attain financial goals.

Proficient personal financial management is essential in everyday life. Recognizing the significance of astute financial management enables individuals to avert monetary difficulties and guarantees the fulfillment of everyday necessities, emergency contingencies, and long-term objectives. Effective financial management mitigates stress, facilitates more composed future planning, and averts unregulated debt.

Mobile Application Technology

Mobile applications are internet-based tools that can be downloaded onto smartphones or tablets, providing solutions for various requirements, including communication, entertainment, education, and business. (Dewi & Rochmawati, 2020; Ozbayoglu et al., 2020) Their advantages encompass the instantaneous distribution of information, enhanced brand visibility, streamlined daily operations, the convenience of remote communication, and expedited corporate procedures. Their benefits encompass an appealing user interface, offline accessibility, and user-friendliness at all times. Mobile financial management software leverages these advantages to help users manage their finances effectively, providing flexible access both online and offline. (Larasati et al., 2021)

Agile Methods in Application Development

Definition of Agile Method

Agile Software Development is a methodology that prioritizes swift adaptability to change and the development of systems in short timeframes. (Chen & Metawa, 2020; Shabrina Ziha Fidela et al., 2023) This method is efficient and adaptable, devoid of unique protocols for each model, yet it provides direction to assist modelers in working efficiently according to project requirements. Agile emphasizes incremental development, ongoing enhancement, minimized procedural overhead, and direct customer engagement, facilitating the progressive deployment of high-quality software that adapts to input.

Agile Manifesto Principles

Here are the 12 key principles of Agile according to "The Agile Manifesto" (Shankar et al., 2022):

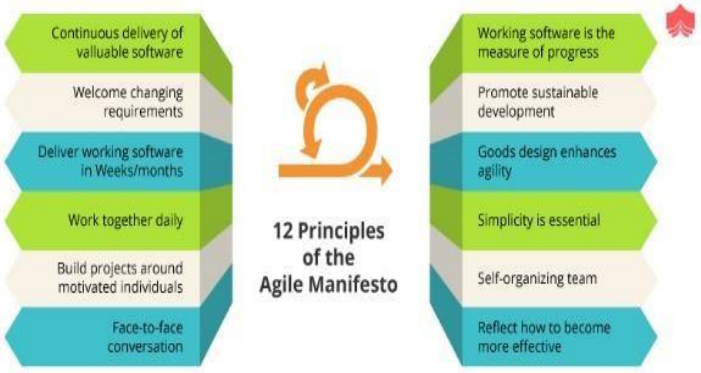

Figure 1. Agile Manifesto Principles

1. Client satisfaction is a priority, with a focus on delivering high-quality products quickly and sustainably.
2. Flexibility to change, even in the later stages of development.
3. Continuous product development, with short development cycles (2 weeks to 2 months).
4. Effective collaboration between developers and business stakeholders throughout the project.
5. A highly motivated work environment to enhance efficiency and effectiveness.
6. Direct communication is essential in the development process.
7. Ongoing support from sponsors, users, and developers.
8. Technical excellence is a priority in every development effort.
9. Simplicity to maximize existing resources.
10. Software architecture tailored to needs governed by team management.
11. Regular evaluations to improve work effectiveness.
12. Maximize resources, while maintaining simplicity.

The design of a financial management application prioritizes user satisfaction, adaptability, iterative development, a conducive work environment, and ongoing assessment and enhancement.

Agile Methodology Stages

The research for developing a financial management application utilizes the Agile Software Development methodology, deemed suitable and responsive to evolving requirements due to the dynamic nature of financial management. (Xiao & Tao, 2020) The development phases adhere to Agile principles, facilitating adaptability and response to alterations.

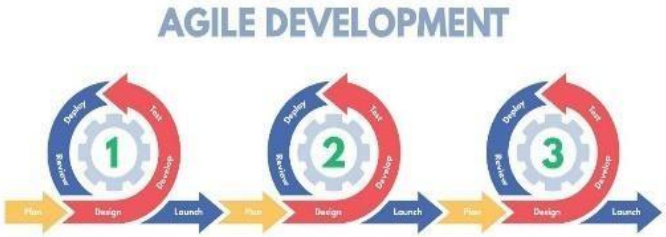

Figure 2. Agile Method Stages

1. Planning: Ascertain system requirements utilizing the Sprint methodology with a four-week iteration period.
2. Design: Develop the system architecture, database schema, and application interface by the analysis.
3. Analysis: Recognize business challenges or prospects and formulate solutions.
4. Implementation: Develop the application using the no-code platform AppSheet, leveraging Google Drive and Google Sheets for data storage.
5. Testing: Verify that the application operates according to business processes and identify any defects that may arise.
6. Review: Assess project outcomes, record testing procedures, and pinpoint supplementary features.
7. Release: Deploy the application after testing, incorporating any necessary enhancements in the subsequent sprint.

AppSheet Non-code Applications

Understanding the AppSheet Application

Figure 3. AppSheet

AppSheet is a no-code platform that enables the development of web applications using data sources such as Google Drive, Dropbox, and Microsoft 365. AppSheet enables non-technical users to create apps using a visual interface utilizing a declarative language akin to spreadsheets, eliminating the need for coding. This platform is ideal for financial management applications, including budgeting and reporting, and accommodates various data sources, such as Google Sheets, Excel, SQL Server, and PostgreSQL.

Google Drive

Google Drive is a widely-used online storage service that provides complimentary storage space and convenient accessibility. In this financial management application, Google Drive

functions as the principal repository for tables and columns within the spreadsheet.
The benefits comprise:

1. Financial Data Storage: Provides secure and centralized storage for financial data, ensuring easy retrieval at any time and from multiple locations.
2. Automatic Backup: Automatically secures spreadsheet data, safeguarding information in the event of device failure.
3. Device Synchronisation: Facilitates access to and modification of spreadsheets across various devices, mitigating the risk of data loss or version discrepancies.
4. Collaboration and Data Sharing: Enables the sharing of files and folders, thereby enhancing collaborative efficiency in financial management with partners or family members.
5. Integration with AppSheet: Facilitates integration with AppSheet, enabling the application to immediately read and write data from Google Drive, hence improving efficiency and usability.

Spreadsheet

Definition and uses of Spreadsheets

Google Sheets, a component of Google Workspace that includes Google Docs, Google Slides, and Google Forms, is a web application designed for creating tables, executing computations, and managing data. This program facilitates collaboration, is accessible at no cost on Android, iOS, and desktop platforms, and interacts with Google Drive.

According to (Marqués et al., 2020), the primary advantages of Google Sheets encompass:

1. Real-time Collaboration: Facilitates concurrent collaborating and modification of financial data from several locations with internet connectivity.
2. Expedited Insights with AI: Employs artificial intelligence for accelerated financial analysis.
3. Integration with Google Apps: Promotes effective collaboration with other Google applications, such as Excel, thereby improving data management precision.
4. Critical Data Connection: Consolidates data, including transactions and financial reports, for centralized and efficient management.

Advantages of using Spreadsheets

Zapier, as cited by (Trivaika & Senubekti, 2022), delineates the benefits of Google Sheets as follows:

1. Cloud-Based: Google Sheets is a cloud-based application that ensures data is automatically stored and protected from loss due to technical disruptions, such as power outages or internet disconnections.
2. Versatile: This application is compatible with multiple operating systems and platforms, including both desktop and mobile, enabling online access and collaboration.
3. Lightweight: Google Sheets is accessible via a browser, eliminating the need for additional application downloads and

thereby minimizing device strain, making it suitable for infrequent use.

4. Complimentary: This program is accessible without charge, necessitating merely a Google account for entry. Although premium features are available, the complementary solutions adequately fulfill data-capturing requirements in research.

Plant UML

PlantUML is an open-source application that utilizes text-based syntax to generate a range of UML and non-UML diagrams, facilitating the modeling and visualization of systems. The primary characteristics encompass:

1. Varied Diagrams: Facilitates the generation of diagrams, including class, sequence, and activity diagrams.
2. Non-UML Diagrams: In addition to UML, it is capable of generating flowcharts, network diagrams, ER diagrams, and other types.

The benefits of PlantUML encompass:

1. Elementary Syntax: Enables the construction and alteration of diagrams with minimal learning difficulty.
2. Consistency: Textual diagrams that are easily adjustable minimize modeling inaccuracies.
3. Flexibility: Accommodates diverse diagrammatic forms for varying requirements.
4. Tool Integration: Integrates with integrated development environments such as Visual Studio Code and IntelliJ IDEA, facilitating collaboration and enabling revisions to diagrams directly from code.

PlantUML is an efficient tool that streamlines visual modeling using straightforward syntax and accommodates various diagrams.

METHOD

Research methods

The research methodology employed in the development of this mobile-based financial management application is qualitative. This qualitative approach aims to gather more profound and significant insights. Meaningful data refers to authentic information that offers additional value beyond its apparent characteristics. Consequently, qualitative research prioritizes in-depth comprehension over-generalization.

This study will employ the subsequent data collection methodologies:

1. Questionnaires: The data obtained from this questionnaire will be utilized for system analysis prior to the creation of the application. The objective is to get insights and a comprehensive understanding of the needs, preferences, and experiences of STMIK Mardira Indonesia students about personal financial management.
2. Interviews: Interviews will be conducted for evaluative purposes to gather feedback from students after the application is created. Eight pupils who have utilized the application for 30 minutes will participate. The use of interviews in this research is advantageous for understanding student

input after they have completed their applications. The interviews will feature open-ended (semi-structured) questions enabling respondents to express their perspectives and experiences concerning the utilization of the developed application.

3. Literature Review: A literature review will be conducted to understand prior research relevant to personal financial management, mobile financial applications, and Agile development methodologies. This study will analyze multiple publications pertinent to the research topic. The literature evaluation enables researchers to identify significant concepts, practical methodologies, and potential challenges in developing a personal financial management application for students.

System Development Methods

This application will employ the Agile methodology in its design. Agile is a software development process founded on concepts of iterative system development, enabling developers to consistently modify the program in response to user feedback and evolving requirements. The Agile methodology encompasses the stages of planning, design, analysis, implementation, testing, review, and release. This methodology is anticipated to yield a final product that more effectively aligns with user expectations and requirements.

Usability Testing Methodology

The Usability approach is a qualitative analysis designed to evaluate the quality of information systems, specifically the user-friendliness of system interactions. Nielsen defines usability as the assessment of a system's interface in terms of its user-friendliness. An effectively built system will establish an intuitive and efficient interface.

Usability factors encompass learnability, efficiency, memorability, error management, and user happiness. Usability testing uses techniques such as interviews, observations, or think-aloud protocols to discern faults and enhancements in the system interface.

RESULT AND DISCUSSION

Current System Analysis

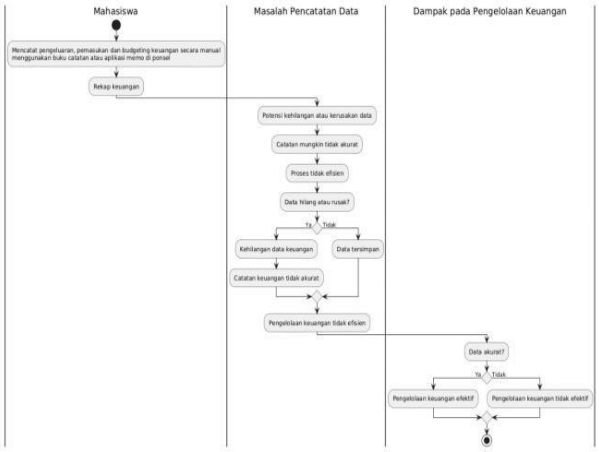

Figure 4. Analysis of the running system

Students at STMIK Mardira Indonesia continue to manually document their expenditures using either notebooks or basic applications, such as memo functions, on their mobile devices. This approach is frequently unproductive, as financial data is susceptible to loss or damage, leading to erroneous reports. The proposed solution is a financial application integrated with cloud storage, such as Google Drive, which enables automatic data recording and ensures data protection. Consequently, financial management becomes more effective and precise, enabling students to manage their finances more effectively.

System Requirements Analysis

Functional Requirements Analysis

Functional requirements delineate the specific capabilities that a system must possess to satisfy user needs.

Table 1. Functional Requirements

No.	Functional Requirements	Description
1.	Account creation and adding accounts	A system enabling users to establish and incorporate accounts utilized for transactions. Including cash, debit cards, and electronic wallets. Users can establish the initial balance for each added account based on their actual financial situation.
2.	Balance monitoring	Users can observe the alterations in balance following each revenue or expenditure transaction. Users can get comprehensive details regarding the final balance accrued from all transactions inside each account.
3.	Transaction Recording (Add Transaction)	A system enabling users to document income, expenses, and fund transfer transactions instantaneously. Users can input transaction details, including date, transaction type, account selection, category, amount, description, and photograph.

Non-Functional Needs Analysis

The analysis of non-functional requirements focuses on system attributes that are not directly tied to specific functions, instead emphasizing quality and characteristics such as performance, security, and usability.

Table 2. Non-Functional Requirements

No.	Non-Functional Needs	Description
1.	Utility	User-friendly interface for adding transactions and monitoring balances. The account creation, transaction recording, and budget monitoring processes should be efficient and straightforward.
2.	Reliability	A dependable method for documenting transactions and delivering precise balance information. Transaction data must be securely preserved and not readily susceptible to loss.

3.	Performance	An agile system capable of processing user input swiftly, minimizing wait periods.
4.	Portability	The system is accessible via multiple mobile devices, including those running Android and iOS. User data can be automatically synchronized across all utilized devices.
5.	Data Security	Only authorized users may access and modify their Transaction data. To safeguard user confidentiality.

Software Requirements Analysis

Table 3. Software Requirements

No.	Software Requirements	Description
1.	AppSheet	A request to access the developed application system.
2.	Google Drive	Cloud storage for documents and application data
3.	Google Spreadsheet	Database for the storage and management of transaction, balance, and budget data.
4.	Browser Web	Utilized the AppSheet Platform to develop no-code applications facilitating connectivity with Google Drive and Google Sheets.
5.	Sistem Operasi	Compatible with prominent mobile operating systems, including Android and iOS, as well as leading desktop operating systems such as Windows, macOS, and Linux.

Hardware Requirements Analysis

Table 4. Hardware Requirements

No.	Hardware Requirements	Description
1.	Mobile Devices	Compatible with primary mobile operating systems, including Android, utilizing the AppSheet application for financial data entry and oversight. Including iOS and prominent desktop operating systems, including Windows, macOS, and Linux.
2.	Desktop/Laptop Computers	Utilize a browser to access AppSheet for application design, data management, and system upgrades.
3.	Internet Connection	Facilitates access to AppSheet, Google Drive, and Google Sheets.

User Needs Analysis

Table 5. User Requirements

No.	User Requirements	Description
1.	Ease of Use	The application features an intuitive UI, facilitating ease of use for pupils. Users require no specialized training to utilize the application.
2.	Accessibility	The program is compatible with many mobile devices (Android and iOS) for added convenience in various scenarios.

3.	Security and Privacy	Personal financial data can safeguard the privacy and security of user information by designating specific individuals with access rights to their financial information.
4.	Flexibility and Customization	Users want to be able to customize their expense and income categories to suit their needs. The app should allow for adding, editing, and deleting categories.
5.	Updates and Maintenance	Updates customized to customer requirements, such as feature additions and the incorporation of new functionalities derived from user feedback.

Proposed System

The suggested system is a Mobile Personal Finance Management Application intended to assist students at STMIK Mardira Indonesia in managing their finances more effectively. This application will offer multiple functionalities for recording transactions, maintaining budgets, and creating reports from transaction tables categorized by income, expenses, and transfers. The application will be developed with the following benefits:

1. Streamlined Transaction Documentation: The system will facilitate the recording of financial transactions through features that guarantee structured data. Users may effortlessly record income, expenditures, and financial transfers with precise details.
2. User Authentication System and Account Administration: The user authentication system permits application access just if the user's Google account is present in the access list. Users can establish and oversee diverse account types (including cash, debit cards, and e-wallets) and designate initial balances as required.
3. Budget Management and Transaction Recording Features: Users can establish budgets for distinct spending categories (e.g., food, transportation, education) and track their budget utilization. The transaction recording functionality enables users to document transactions, including details such as date, kind, category, amount, remarks, and optional photographs.
4. Financial Reports: This system enables users to generate transaction record reports organized by transaction type.
5. Privacy Security: It safeguards user data by associating a Google account with the program, thereby preventing unauthorized access and ensuring the confidentiality of financial information.

Use Case Diagram

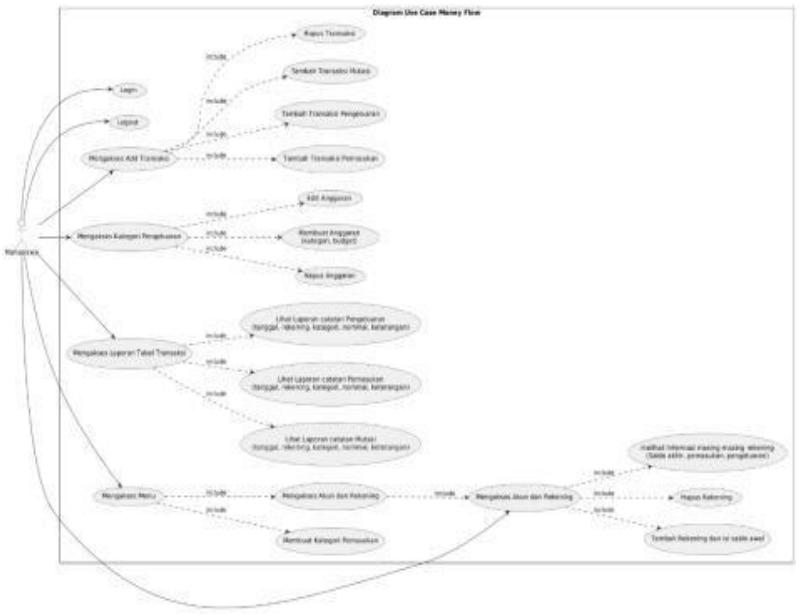

Figure 5. Use Case Diagram

Class Diagram

System Design

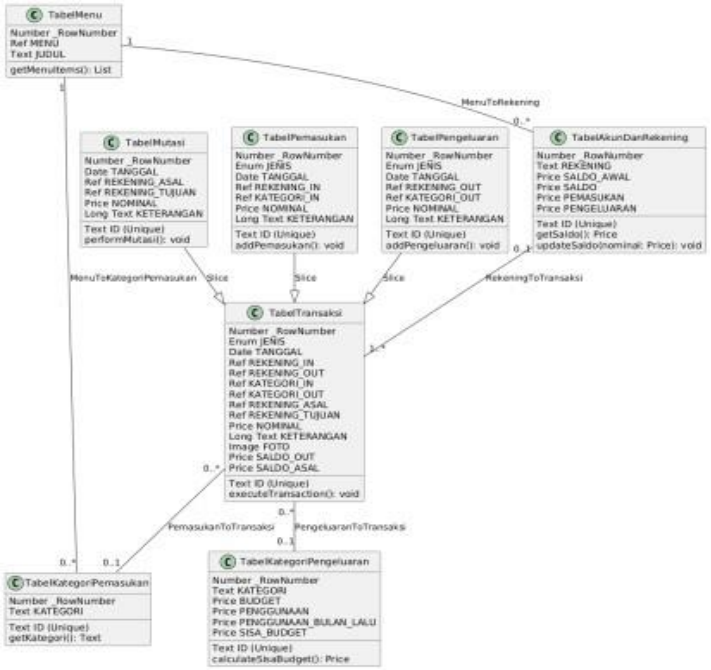

Figure 6. Class Diagram

The Class Diagram facilitates the visualization of a system's class structure and is the most prevalent sort of diagram. The Class Diagram illustrates the interrelations among classes and offers comprehensive descriptions of each class inside the system's design model. The following is the Class Diagram for the Money Flow Application.

Database Design **Account Table and Accounts**

Table 7. Accounts and Accounts

Field	Type	Primary
_RowNumber	Number	
ID (Unique)	Text	Key
ACCOUNT	Text	
BEGINNING BALANCE	Price	
BALANCE	Price	
INCOME	Price	
EXPENDITURE	Price	

Input Category Table

Table 8. Input Categories

Field	Type	Primary
_RowNumber	Number	
ID (Unique)	Text	Key
CATEGORY	Text	

Expenditure Category Table

Table 9. Expenditure Categories

Field	Type	*Primary*
_RowNumber	Number	
ID (Unique)	Text	*Key*
CATEGORY	Text	
BUDGET	Price	
USE	Price	
LAST MONTH USAGE	Price	
REMAINING BUDGET	Price	

Menu Table

Table 10. Menu

Field	Type	*Primary*
_RowNumber	Number	
MENU	Ref	*Key*
TITLE	Text	

Transaction Table

Table 11. Transactions

Field	Type	*Primary*
_RowNumber	Number	
ID (Unique)	Text	*Key*
TYPE	Enum	
DATE	Date	
REKENING IN	Ref	
REKENING OUT	Ref	
CATEGORY IN	Ref	
CATEGORY OUT	Ref	
ACCOUNT OF ORIGIN	Ref	
DESTINATION ACCOUNT	Ref	
NOMINAL	Price	
INFORMATION	Long Text	
PHOTO	Image	
SALDO OUT	Price	
ORIGINAL BALANCE	Price	

Mutation

Table 12. Mutations

Field	Type	*Primary*
_RowNumber	Number	
ID (Unique)	Text	*Key*
DATE	Date	
ACCOUNT OF ORIGIN	Ref	
DESTINATION ACCOUNT	Ref	
NOMINAL	Price	
INFORMATION	Long Text	

Income

Table 13. Income

Field	Type	*Primary*
_RowNumber	Number	
ID (Unique)	Text	*Key*
TYPE	Enum	
DATE	Date	
ACCOUNT IN	Ref	
CATEGORY IN	Ref	
NOMINAL	Price	

Expenditure

Table 14. Expenditure

Field	Type	*Primary*
_RowNumber	Number	
ID (Unique)	Text	*Key*
TYPE	Enum	
DATE	Date	
REKENING OUT	Ref	
CATEGORY IN	Ref	
CATEGORY OUT	Ref	
NOMINAL	Price	
INFORMATION	Long Text	

Coding Design

In the Money Flow application, each object is allocated a distinct ID for efficient identification and data management. The system automatically generates this ID to guarantee uniqueness and avert duplication

Figure 7. Coding Design

Menu Structure Design

The menu structure is a fundamental aspect of application design that helps users navigate the smartphone application. Consequently, customers encounter no challenges in selecting their preferred menus while utilizing the application.

System Implementation

The previously developed personal money management application solution is now functioning and ready for usage. At this juncture, various system components, including hardware, software, databases, and user interfaces, are installed and evaluated to ensure operation by the specified design criteria. The implementation encompasses system testing to verify that all components function effectively and are integrated.

Implementation Needs

Hardware Implementation

Table 15. Hardware Implementation

No.	Hardware	Spesifikasi
1.	Monitor	LCD 14 Inchi
2.	Processor	Intel Celeron N4020

3.	Harddisk	256GB SSD
4.	VGA	Onboard Intel UHD Graphics 600
5.	Keyboard	Standard
6.	Mouse	Standard
8.	Memory (RAM)	4GB DDR4

Software Implementation

Table 16. Software Implementation

No.	Software	Minimum Req	Recommended Req
1.	Operating System	Windows 7 (32bit)	Windows 10 (64bit)
2.	Browser	Google Chrome	Google Chrome
3.	Spreadsheet Editor	Google Sheets	Google Sheets
4.	Agile Editor	AppSheet Editor (Web)	AppSheet Editor (Web)
5.	Cloud Storage	Google Drive	Google Drive

System Implementation

Application View Implementation

The program interface includes a login menu for user access, a main menu with choices to add transactions and accounts, transaction tables, spending categories, and supplementary features. The "Add Transaction" area features a page for documenting new transactions, including income, expenses, and alterations. The "Accounts and Accounts" section outlines the accounts used by the user and includes a page for adding additional accounts. The transaction table has records of transactions categorized by kind. The expense categories section includes pages for several expense categories, accompanied by details of previously planned amounts. The menu page contains supplementary features not found in the main menu, including an income category function that offers a form for adding revenue categories, as well as accounts that, when selected, directly link to the relevant sections in the main menu. To enhance understanding, the subsequent interface is presented:

Login Page Display (Sign in)

Figure 8 illustrates the Login (Sign-in) page, which is used to select an account authorized to access the system.

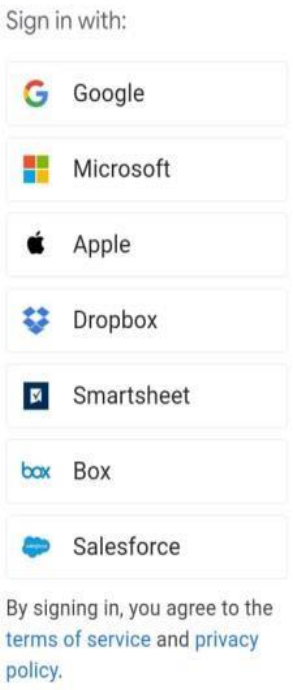

Figure 8. Login Page (Sign In)

Main Page View

Figure 9 illustrates the primary interface, wherein, upon successful login with a registered account, the system directs the user to the main page featuring the Money Flow application, which is accessible for user interaction.

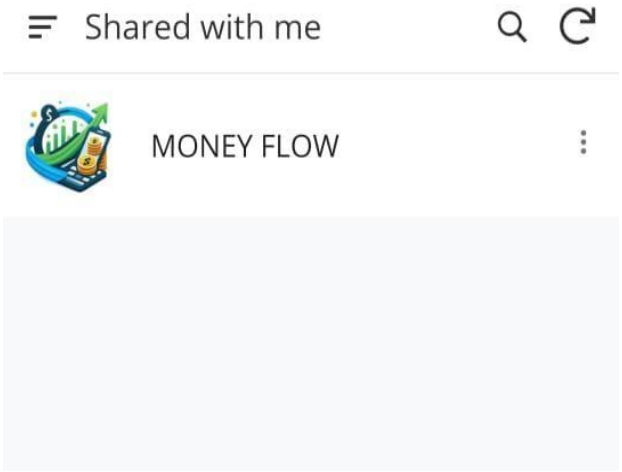

Figure 9. The Main Page appears

Dashboard Page

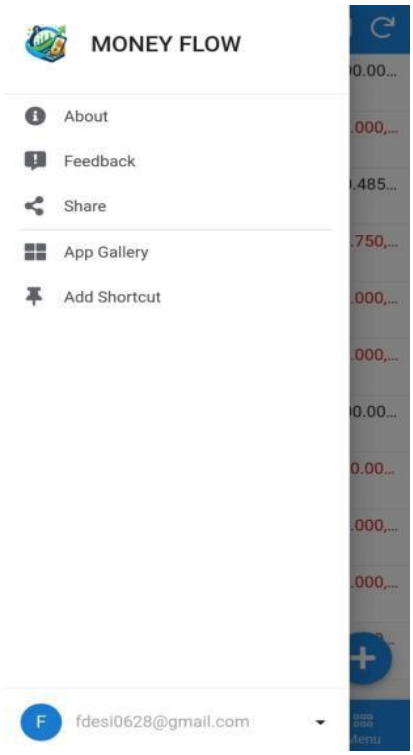

Figure 10. Transaction Table Page

Figure 10 illustrates the transaction table account page, which features transaction reports categorized by key transaction types: revenue, expenses, and mutations.

Expense Category Page

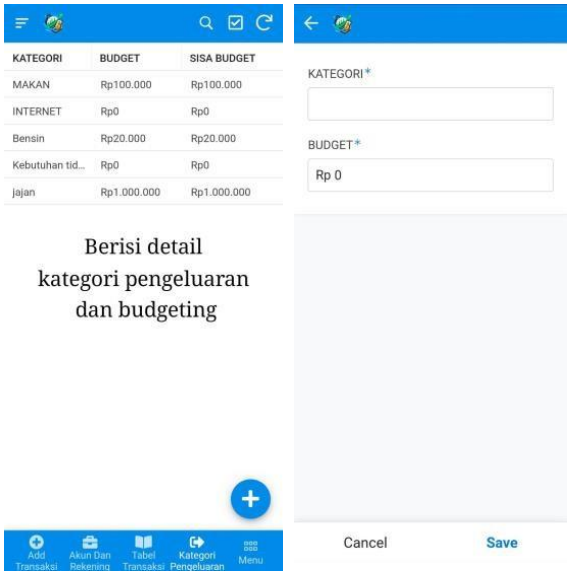

Figure 11. Expense Category Page

Figure 11 illustrates the expense category account page, which encompasses the budgeting allocation for each expense category. Furthermore, users may introduce new spending

categories in conjunction with the established budgeting.

Menu Page

Figure 12. Menu Page

Figure 12 illustrates the menu page, which features supplementary elements, including a section for creating new revenue categories and accounts that are directly linked to the accounts page.

Log Out

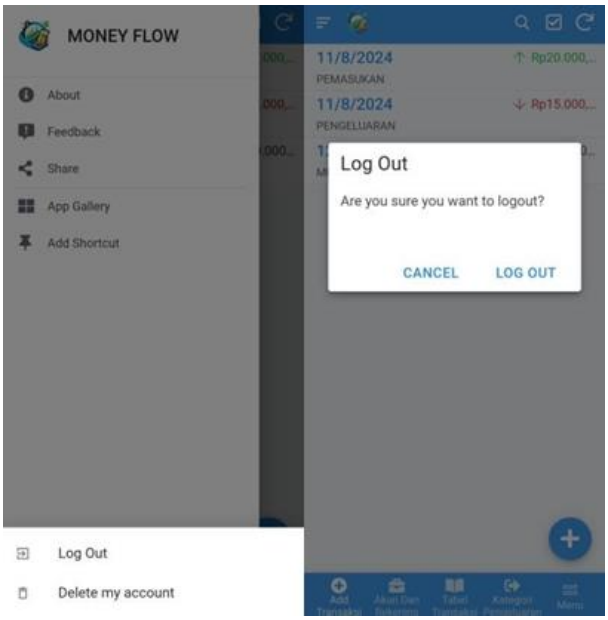

Figure 13. Application Logout

Figure 13 illustrates the logout option, which can be accessible on the Dashboard by clicking the account icon. Subsequently, you may pick out as depicted in the figure above. A confirmation pop-up message will then appear, asking if you are sure you want to log out of the program. Upon confirmation to exit the application, the user will terminate the application system.

Database Implementation

A database is an organized collection of information designed to facilitate the retrieval of specific facts or data. The subsequent databases are utilized in the execution of the Money Flow application.

Accounts and Accounts Table

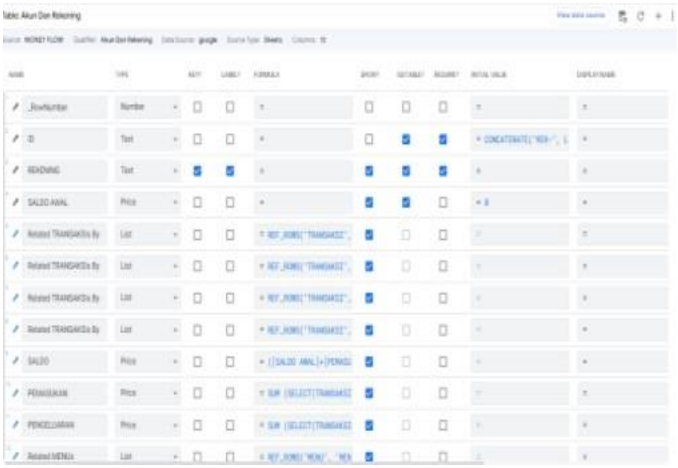

Figure 14. Implementation of Account Table and Accounts

Income Category Table

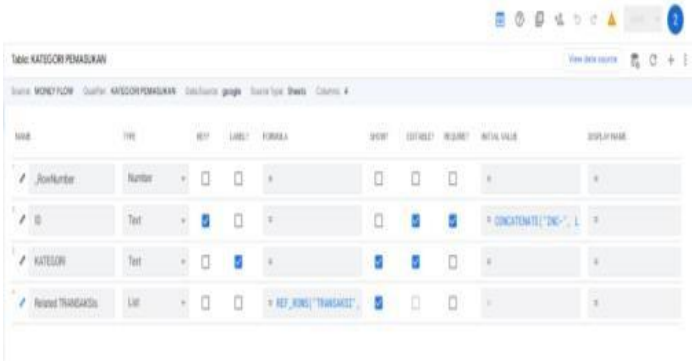

Figure 15. Implementation of Income Category Table

Expenditure category table

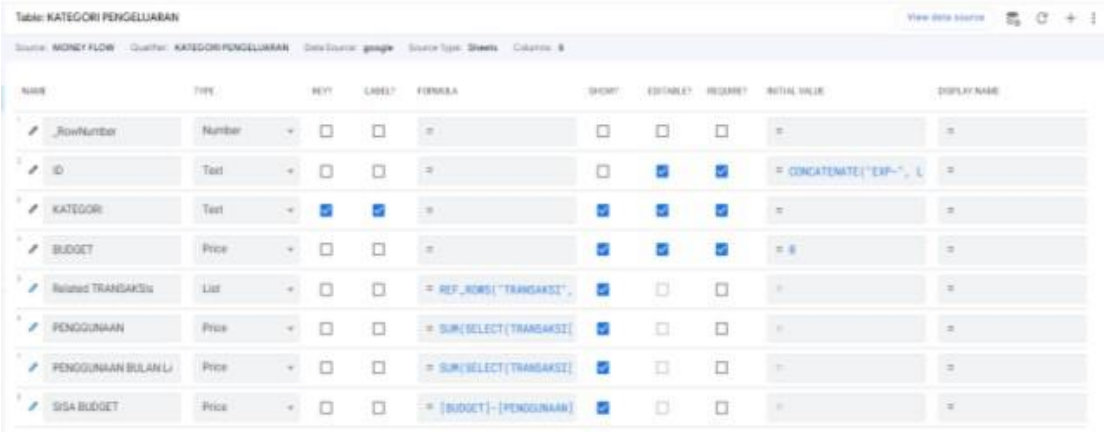

Figure 16. Implementation of the Expenditure Category Table

Menu Table

Figure 17. Menu Table Implementation

Transaction Table (Income, Expenses Mutations)

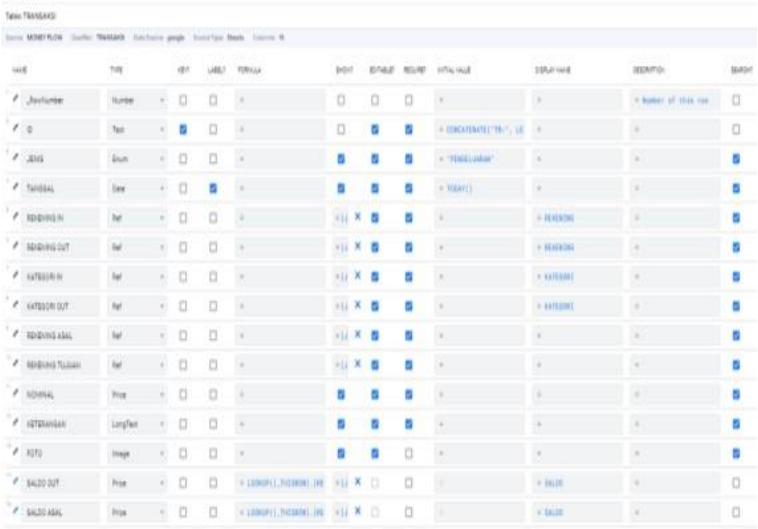

Figure 18. Transaction Table Implementation

System Testing

System testing is a crucial stage for verifying that the generated application adheres to the design specifications. This study will involve eight students testing the application for 30 minutes to evaluate its functionality and user requirements, with an emphasis on usability. Following the tests, responders will undergo a semi-structured interview, which will last 10 to 15 minutes. This approach enables the researcher to utilize a question guide while thoroughly exploring the respondents' experiences and feedback, leading to a deeper understanding of the application and user requirements.

Usability Testing Results

The results of the Money Flow application usability test were obtained through interviews with eight students from various study programs, batch 2021.

1. Initial Experience: The login procedure utilizing a Google account proceeded seamlessly, as corroborated by SHD and

HS, who indicated that the application was directly linked to the Google account on their device.

2. Navigation and Interface: All participants deemed the application navigation intuitive and the primary functions readily accessible, as indicated by SR.
3. Key Features: The process of adding transactions was deemed easy and suitable for requirements, with the account and transaction report functionalities offering substantial advantages, particularly in spending management and financial analysis, as noted by SHD and GJ.
4. Application Performance: The application was deemed to operate seamlessly and responsively, with minimal concerns surrounding potential internet network issues.
5. Design and Aesthetics: The application's design garnered favorable feedback; however, recommendations were made to standardize the icon sizes and enhance the visual appeal through color diversification.
6. Usability: Respondents found no aspect of the application to be perplexing, as each page provided clear information and assistance.
7. Satisfaction and Benefits: All participants perceived that this application enhanced their money management, particularly with the clarity of information provided by each feature.
8. Recommendations and Enhancements: Proposed enhancements include incorporating pie charts for transaction visualization, security verification through a PIN, and budgeting alert functionalities. Enhancements to the application's aesthetics, incorporating relevant design components, are also recommended.
9. Special Experience: LN deems the application highly appropriate for mobile device use.
10. Recommendations: All participants indicated their willingness to endorse the Money Flow application to others, citing its advantages in personal budget management.

CONCLUSION

This research accomplished its primary objective of creating the Money Flow program, specifically tailored to assist students in managing their funds. The application, emphasizing usability, feature efficacy, and user satisfaction, has demonstrated that essential functionalities, including transaction addition, interface navigation, and financial reporting, operate effectively and receive favorable user feedback.

The usability testing results indicate that the Money Flow program streamlines financial management for students through intuitive and user-friendly features. Users acknowledged satisfaction with the application's design and aesthetics. However, some recommendations for enhancement were proposed.

This study also successfully tackled the previously highlighted constraints. The program provides efficient solutions to the financial challenges faced by students, including the need for readily accessible resources on mobile devices and the ability to monitor and assess

spending in real time. The importance of these findings not only aids in the advancement of superior personal financial applications for students but also reveals substantial possibilities for creating analogous products for other user demographics. Through improvements in security measures, enhanced data visualization, and continuous assessment, this application has the potential to serve as a valuable resource for students, enabling them to manage their finances more effectively and efficiently.

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