



(RESEARCH ARTICLE)



The effectiveness of a digital budget assistant with auto-split expense feature in enhancing students financial planning

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Abstract

This study is about a Digital Budget Assistant with Auto-Split Expense Feature to determine its effect on improving the financial planner and manager capabilities of students. It was developed with User-Centered Agile Software Development Methodology, ensuring that the system is user-friendly and able to be integrated into new environments to students' financial needs. The researcher chose a quantitative approach to the research design and solicited feedback from 30 students via such means as SUS (System Usability Scale) questionnaires and indicators of performance. The evaluation outcomes demonstrated that a SUS score of 76.6 was obtained, which means good/excellent usability was exploited and the system have been evaluated by 30 students who actually started using this application through System Usability Scale (SUS) questionnaire and performance measures test. Descriptive analysis was conducted to explore the influence of frequency of use on efficacy in budgeting accuracy in expenditure management. Results analysis revealed to receive system is evaluated with an overall SUS score threshold of 76.6 for the Good – Excellent Usability classification. The app was rated as excellent in terms of functionality, accuracy and decision aiding by the users. This new Auto-Split Expense Feature was a big step forward in better money savings groups roundup, group expenditure management, and keeping the transparency of group spending features. The system was concluded to be more precise, less time consuming and more supportive in decision than the manual-budgeting practices. Findings justify that the Digital Budget Assistant has a significant positive effect on financial literacy, budgeting discipline and collective student finance planning. Future work includes optimization of offline usage, inclusion of more financial activities and testing among multiple institutions to improve usability and scalability.

Keywords: Digital Budget Assistant, Auto-Split Expense, Financial Planning, Financial Literacy, Usability Testing, Budgeting Application, Student Finance Management, Quantitative Research.

1. Introduction

Personal finance knowledge is a key life skill that helps individuals to take informed decisions, manage sources wisely and provide for the future security (Dwivedi. et al., 2024). Yet many students struggle with their finances because they are not financially literate, lack basic budgeting skills, or don't know how to keep track of spending. The accelerated pace of financial management's digital transformation led to the emergence of several budgeting solutions, yet these tools are often based on static models that lack customized and adaptive features catering to users' different financial profiles. Unsurprisingly, students commonly feel that these services are inadequate when it comes to managing the complexities of their real-world money issues.

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Recent research points to the potential positive impact that budgeting apps have on students' financial literacy and responsibility (Dwivedi. et al., 2024). There is some moderate evidence that using budgeting apps can lead to better financial habits, with convenient features and the motivation of a user driving this excellence. These online resources can help students track what they spend, use their resources more efficiently and establish a balanced financial goal. But the success of such applications relies on user adoption, application design as well as whether or not they give users useful insights that will lead to long-term financial discipline.

Expanding on these findings, the present work investigates whether a Digital Budget Assistant with an Auto-Split Expense functionality can further support students in their financial planning. But it also does the opposite of traditional budgeting apps by automating and sophisticating financial management, including automatically splitting shared expenses and instantly glanced spending tracking based on client's past bank statement data. By using quantitative methods, the research seeks to capture rich insights into how these virtual assistant shapes students' financial consciousness, planning patterns and decision-making habits. The results aim to add to the ongoing discussion on how digital financial practices could promote responsible money control and improve with regard to financial literacy awareness of students.

1.1. Research Problem

Many students struggle with establishing good financial habits and a lack of effective budgeting support. There are digital budgeting apps, but few offer intelligent options like Auto-Split Expense for easier recording of your expenses and creation of financial consciousness. Digital budget Assistant allows scheduling and Auto-Split expenses This study seeks to ascertain if the use of a Digital Budget Assistant with Auto-Split expense has substantially increased the effectiveness, planning and budgeting skills among students.

1.2. Research Questions

- Is utilization of a Digital Budget Assistant offering Auto-Split Expense functionality significantly more beneficial than not for students' financial planning competence?
- Does the extent of usage of the Digital Budget Assistant relate to students' effectiveness in budgeting?
- Does the Auto-Split Expense effect on better financial discipline among students?

1.3. Research Objectives

- To assess a Digital Budget Assistant with Auto-Split Expense in facilitating students' financial management.
- To provide insights into the association between use frequency of the Digital Budget Assistant and changes in budgeting effectiveness.
- To assess the effect of Auto-Split Expense on students' expense control and general financial consciousness.

1.4. Justification and Significance

This research is important to college students seize with the challenges of budgeting and spending in an increasingly digital world. Nevertheless, a large number of people face challenges in their financial future because of low literacy levels and use of non-automated tools. More importantly, while there is literature that explored financial literacy that pertains to understanding, there are few which look into the implementation of use of experiential learning / technology in development purchasing behaviors as such work provided by organizations like National Foundation for Credit Counseling or Money Habitudes did not discuss about the usage of apps specifically budgeting app. Through the automation of expense tracking and intelligent tools such as Auto-Split for shared expenses, you can easily manage your budget, develop an awareness for financial discipline and cultivate good spending habits. The results of this study will provide useful knowledge to digital financial systems that contribute to student's financial literacy, planning skills and long-term routine money behaviors which in turn can assist the design of smarter and more personalized financial educational programs.

2. Literature review

2.1. Enhancing Financial Literacy Among Students: Evaluating the Effectiveness of Budgeting Apps in Promoting Financial Responsibility

According to Dwivedi et al. (2025), it is an important aspect of personal financial capability (PFC) that individuals need to be equipped with so that they can make smart decisions about their financial resources, balance needs and wants; and plan for future potential needs themselves. The rise of digital technology, especially during the last decade, fueled the use of budgeting apps that allows students to visualize and monitor daily financial transactions. Itself those budget

apps have proved to be great guide to better understanding financial literacy and the nature of responsible finances by helping consumers to track their spending habits and making attainable life goals. Through capabilities like expense grouping, budget alerts and visual analytics these tools ease complicated financial tasks and encourage self-awareness in managing money. According to research, the repeated use of budgeting applications contributes to financial discipline. Results suggest that level of app use is moderately positively associated with co-variables budgeting effectiveness, financial awareness and decision making. These predictors including ease of use, system quality and motivational factors to continue using the app are crucial for determining the effectiveness of Kudos. But whether people truly are using them is what digital budgeting ultimately comes down to, and that has a lot to do with usability. According to recent studies, the current work extends this groundwork by testing the Digital Budget Assistant with Auto-Split Expense Feature, which embeds automation, collaboration and user-centered design in order to support students in developing greater financial literacy.

2.2. BudgetBuddy- Digital Finance Assistant

With the digital age compounded upon us, it is a far more critical requirement than ever. However, most people, including students, struggle in this aspect thanks to lack of financial education and reliance on primitive manual budgeting or tools that cannot think autonomously. According to recent studies, artificial intelligence (AI) based financial management solutions have been in existence for some time, enabling users to automate and simplify the process of budgeting, expense tracking and savings management. BudgetBuddy, Digital Finance Assistant is an AI and machine learning technology powered budgeting system with features such as automated receipt processing, smart expense categorization and personalized financial advice among others. The combination of technologies like together enable real-time financial insights and responsive design and demonstrates how digital platforms are increasingly able to help users maneuver through their finances. In conclusion, the concepts of agile software development are taken into consideration when managing these financial mgmt. systems such as BudgetBuddy to ensure cyclic development, focus on users and modification by feedback mechanism. According to Sonval et al. (2025), studies and system reviews determine that AI-based budgeting solutions improve financial literacy, precision and decision-making by means of delivering automation, data analytics and personified advice. Yet, we still face challenges including internet reliance, OCR constraints and user's adjustment. These results underscore the need to complement new technology with learnability and access stiffness. According to these findings, leveraging these concepts, Auto-Split Expense Feature in Digital Budget Assistant seeks to improve students' financial planning abilities by offering auto-expense splitting, intelligent tagging and collaborative financial tracking making them accountable, engaged and practicing lifelong discipline.

2.3. AI-Powered Personal Finance Apps: Are they Effective for Students?

Today's high-tech world requires students to be able to manage their finances in order to juggle schoolwork, social lives and a growing sense of independence. The advent of personal finance apps with AI capabilities like Upstox, Cleo and Groww has brought user-friendly products in market which enable easy budgeting, saving and spending. According to recent research, by using predictive analytics Manoj (2025), automatic expense categorization and personalized financial advice these services help make smarter decisions for our money and increase the overall financial literacy in our communities. Research has shown that students who use AI-powered finance apps regularly budget more, save more, and are more aware of their spending. However, concerns about data privacy, system stability, and the accuracy of algorithms still remain to hamper trust and continued engagement. These barriers notwithstanding, AI financial tools are dynamically traceable and can be accessed in real-time, which positions them as useful tools for improving students' financial management. Furthermore, according to Manoj (2025), recent studies also stress the need for a continuous introduction of novelty in AI-based financial applications so that users remain trustful and correct as to predictions. Yet, a lack of confidence when it comes to using app-generated recommendations and reluctance to disclose personal financial data reveal enduring inhibitors to uptake. The designers need to enhance the visibility of algorithms, realize data protection and user-oriented design to solve the above problems. Schools are also however in a position to contribute by incorporating financial literacy opportunities that would enable students to understand and maximize the benefits of these types of digital tools. According to these insights, using its patent-pending technology, Digital Budget Assistant with Auto-Split Expense Feature plans to take AI assisted budgeting further by providing Automatic expense sharing, Smart financial Tracking and a user-friendly interface that will encourage team work, discipline in spending and smart financial decision making among students.

2.4. Exploring the Benefits of Automated Budgeting

Automation has been a game changer in the way we handle our finances and advancements in technology have had a major impact of financial management by improving the efficiency, accuracy and decision-making for budgets. According to literature, introducing automated financial systems not only streamline complicated budgeting processes,

lower the risk of human error it allows individuals to gain immediate analytical feedback. Utilizing a variety of financial data sources, these tools consolidate both public and private sector data allowing people and businesses to track spending trends, measure their financial performance, and make better-informed decisions. According to studies, literature confirms that automation in financial management improves the accuracy and efficiency of financial systems by disburdening them from repetitive manual activities so that users can dedicate their attention to strategic and goal-oriented financial services. And with real-time reporting and analytics people can plan ahead, not backwards, and control spending so they can get it in before it's too late for the end of the month. Whether for people or companies, automated budgeting tools have proven invaluable in working toward financial security and profitability. They enable to manage expense tracking more seamless, save administrative effort, and deliver predictive analysis that help with long-term financial planning. According to Zoe Talent Solutions (2023), studies suggest that automation can cut the time taken for financial management tasks by as much as 30% and gives users more time to focus on innovation and productivity. On a personal level, automation fosters the discipline of saving as users have gained visibility on their spending patterns and achieved savings targets; many of them are able to manage bills and budget more accurately. As a result, these developments have revolutionized the way individuals and companies manage their money, underlining the importance of smart financial systems such as the Digital Budget Assistant with Auto-Split Expense Feature, which deploys automation to simplify expense sharing, boost financial intelligence and encourage sound financial planning for students.

2.5. Enhancing Financial Efficiency: The Role of Automation, Budgeting, and Process Optimisation in Modern Financial Reporting

With these largely taking place against a backdrop of rapid business and digital transformation, financial efficiency has become increasingly important for growing the company as well as personal finances. Through automation, budgeting and process optimization, traditional financial services have been evolved due to human error reduction, speed of operation enhancement and improved accuracy. According to Singhal (2025), the use of technologies, including AI and RPA for automation has been found to improve compliance, make financial reporting faster and drive the ability to get live insights that support better decision making. Budgeting, however, is the lynch-pin of resource allocation and forecasting / operations control that enables individuals and organizations to quickly react to changes in financial standing. According to recent literature, collectively, these technologies provide a data-centric platform that enables enhanced financial planning, control and efficiency. In addition, according to research Singhal (2025), process optimization supports automatization and budgeting's by cutting inefficiencies and driving agility to financial processes. It has been demonstrated that these integrated systems promote greater financial accuracy, operational cost savings and productivity. For people and for students who are learning to manage budgets in particular automating the process of tracking money makes it easy and encourages spending awareness. These are the kind of innovations that show how smart finance tools can help drive sustainable financial management. According to these insights, it is here that the Digital Budget Assistant along with Auto-Split of Expenses can be brought to life and could be seen as a live application of automation and abstraction where students are given an advanced, AI-backed tool for instant-budgeting, sharing expenses and controlling finances.

2.6. A Study on The Advancement of Bill Splitting and Expense Management Applications

Mobile applications have made group and individual expenses easier than ever to keep track of. Recent research suggests that while there are a large number of bill-splitting applications, the most commonly available suffer from poor usability, scaling poorly with use or a simple lack of automation. Shaikh et al., (2025) notice that currently available Android expense-sharing applications like Snap and Split, Separate Bills app etc., available on this platform are with varying usability and stability, having both strong and significant drawbacks. Their review identifies recurrent issues with data reliability, user experience and the fact that most do not fully meet users' needs especially students or groups managing joint financial expenditures. With split cost-sharing (cost-sharing among multiple people) becoming increasingly prevalent in academic and domestic spaces, the demand for trustworthy, intuitive and automated solutions are on a rise. Furthermore, Shaikh et al. (2025) highlighting developing trends in smart financial apps, such as for automatic bill input and optimized data quality. Their findings outline key components of an effective expense management system, including accurate calculations, efficiency in team work and work flow and secure data processing along with suggestions for future improvements. These are adding predictive analytics and support for payment gateways, and improving system stability for enhanced real time financial management. The benefits of the results presented in Shaikh et al. (2025) underpin the need to create smarter and user-centric solutions such as the Digital Budget Assistant with Auto-Split Expense Feature, which seeks to tackle the identified deficiencies through automation, precision and improved usability targeted at student financial planning requirements.

2.7. A Smart Financial Management Application for Comprehensive Insights and Effective Budgeting

According to Brahmaji et al. (2025) in the recent years, advances in personal finance apps have brought machine learning and data visualization to help users make better financial decisions. Their paper demonstrates how predictive analytics can be used to uncover spending behavior, predict future costs and provide customized advice based on individual behaviors. For these functions, the transactional data consisting of category level, subcategory level, whether is a credit or debit operation and type operation) are preprocessed with one-hot encoding and normalization before being clustered by the K-Means algorithm. Furthermore, the scientists verify that these clusters are plausible and can be trusted by considering the Elbow Method and Silhouette Scores that demonstrate true meaning segmentation in financial behavior. And, real-time visualizations such as scatter plot and PCA, translate intricate financial trends into actionable visibility. Furthermore, Brahmaji et al. (2025) highlight the importance of combining sophisticated analytics with an intuitive user experience to drive channel engagement and financial education. Their app allows users to budget, keep track of expenses, and manage their savings goals so they can make smarter financial choices. The app is a blend of automation, interactive visual analytics and predictive modeling that promotes responsible behavior making and enables users to take a proactive approach to managing their finances. This study implies that AI-powered technology can be used to facilitate long-term financial discipline and stability an implication which driving the development of smart tools like the designed to make budgeting easy, increase mindfulness and reinforce financial strategies in students.

2.8. Digital financial literacy and the utilization of digital financial tools of college students in Calapan City

According to Silva et al. (2024) digital financial literacy has become a key factor of sound personal financial management, especially among students who are increasingly using digital financial instruments. Their research now included 372 college students from selected Higher Education Institutions (HEIs) in the City of Calapan, Oriental Mindoro aimed to determine how digital financial literacy level could affect the utilization of GCash, PayMaya and PayPal. Silva et al used a multistage sampling technique where stratified random, purposeful sampling was applied. reported a strong relationship between digital financial knowledge and responsible financial behavior. Among students with higher literacy, there was evidence of greater restraint in spending, stronger savings behavior, and more capability to use digital financial services for both daily money management and planning. Furthermore, Silva et al. (2024) “underscore the importance of enhancing digital financial education for college students, observing that a lack of digital financial literacy may prevent them from fully benefiting from existing digital financial instruments.” Their results imply that by incorporating structured, digital financial literacy programs in the HEI curriculum they could provide individuals with the knowledge to make an informed decision on their finances. Students should be encouraged to attend workshops, hands on training and curriculum-based financial modules in order to maximize their use of DWs and OPSs. There are some interesting findings by Silva et al. (2024) further underscore the need for easy-to-use and educational financial technologies that can help students to enhance their financial knowledge, planning, and discipline in a digitally transforming financial world.

2.9. Cognitive-Based Design to Influence Structured Financial Planning and Money Management for Young People

Interactive digital financial tools are becoming a significant part of assisting students to manage their own money’ (Tran, 2023). Ensell’s research is exploring the creation of a digital prototype which would be used to help students become more organized with their finances. Using the theories of mental accounting and student financial behavior, Tran grounded a basis for building user centered design principles related to personal financial management. A usability testing and eye-gaze tracking test of the prototype was used to evaluate how students use the system, giving a better understanding of both cognitive and behavioral reactions during financial decision-making activities. Tran's research demonstrates that, if designed well, digital financial tools can increase engagement and decrease cognitive load in order to make it easier for students to engage with financial planning. The improved prototype showed significant better usability, and motivate students to take an active role in handling their money, and being more responsible with it. Involving interactive components, easy to understand visualizations and streamlined processes can ultimately assist in boosting students’ motivation to participate in financial planning Tran explains. His research contributes to a burgeoning literature that suggests user-centered digital interventions like have the potential to foster better financial habits and improve general financial literacy through deliberately designed, research-informed interfaces.

3. Research methodology

3.1. Research Design

The study has a quantitative research design to investigate how well students are supported in financial planning by using a Digital Budget Assistant with Auto-split Expense. The study adopts a standardized questionnaire as the instrument of data collection to generate quantifiable information relating to students' budgeting practices, financial knowledge and attitude towards the digital budgeting system. Consecutive sampling will be adapted for participant recruitment purpose to make the procedure accessible, feasible and to adhere statistical power. The data will be analyzed by descriptive and inferential statistics to reveal the correlations, trends, and relationships between the usage of digital assistant and financial management enhancement. The ethical aspects such as consent, willingness to participate in the study and confidentiality will be maintained to give confidence transformation (Makwana, 2023).

3.2. Participants

This study will involve 30 college students who actively budget their personal finances and have used digital financial or budgeting applications. Convenience sampling will be employed to sample the participants enabling access to available subjects that fit into the research criteria. This sample size is considered appropriate for representing a wide range of budgeting and financial literacy behaviors among students. Students from different graduate degree programs will be selected to have a balanced representation of experiences in managing finances. There is no deception in the context of this study; subjects will be told why the study was performed, what it entailed and that they were under no obligation to participate in the research, have anonymous responses, and that their identities will always remain confidential.

3.3. Data Collection

Questionnaire survey using structured questionnaires was conducted with 30 student-users of the Digital Budget Assistant and Auto-Split Expense feature to obtain quantitative data on financial literacy, budgeting practices and usage experiences. They designed a questionnaire efficiency point scale to measure the Financial Literacy, budgeting effectiveness and assessment of app use in order that results may be statistically treated through Likert measurement format. All answers were saved safely, and all the participants actively opted in to consent as well as secrecy throughout the progress of data collection.

3.4. Data Analysis

The evaluation of effectiveness of the system focused on usability findings based on the System Usability Scale (SUS). Descriptive statistics (means, standard deviations, and frequency distributions) were used to describe students' response to SUS items about the functionality, accuracy and acceptability of the Digital Budget Assistant with Auto-Split Expense. Overall usability scores were converted to a 0-100 scale according to the typical application of the SUS scoring method, which is based on individual answer responses. Relationship between SUS scores and how often the system is used, improvement of budgeting, satisfaction was also analyzed. This analytical process offered insights into how students perceived the usability of the system and in turn, how these perceptions corresponded to the efficacy of supporting budgeting activities.

3.5. Ethical Considerations

The authors protected the privacy and security of data by anonymizing all participants' information and not collecting sensitive financial or banking details that may expose respondents to possible cybersecurity challenges. All participants were briefed on the purpose and procedure of the study, and further assured of their freedom to withdraw at any point in time in order to obtain informed consent and voluntary participation. Furthermore, ethical securities were guaranteed in order to avoid algorithmic bias, ensure transparency and accommodate digital literacy by openly explaining how the Digital Budget Assistant works and which information was going to be taken from participants and being handled of correctly.

4. Advanced system design

4.1. System Architecture

Embedded into the Digital Budget Assistant is the Auto-Split Expense Feature, which aims to help students with financial planning in a smart, secure and friendly manner.

Key components include:

- **User Interface (UI) Layer:** The UI layer should be easy to use and need responsive enough for college students to submit expenses, view budgets, track financial summaries with ease on any computer or mobile device.
- **Application Logic Layer:** The brain of the system that processes user inputs and provides expense categorization, automatic Auto-Split function, financial analysis using AI based algorithms.
- **Database Management System (DBMS):** A robust DBMS to save user data such as expense records, transaction history, share expenses details in order to maintain consistency and synchronize the updated information at real-time.
- **Auto-Split Module:** Automatically split expenses and update budget to keep everything transparent while simplifying the repayments.
- **Security and Authentication Module:** Contains encryption, secure credentials for log in and protection of data to protect sensitive user information against unauthorized access.
- **Feedback and Analytics Module:** Gathers user feedback, monitors app usage behaviour, to have the necessary data driven insights for further improvement on financial literacy and user experience.

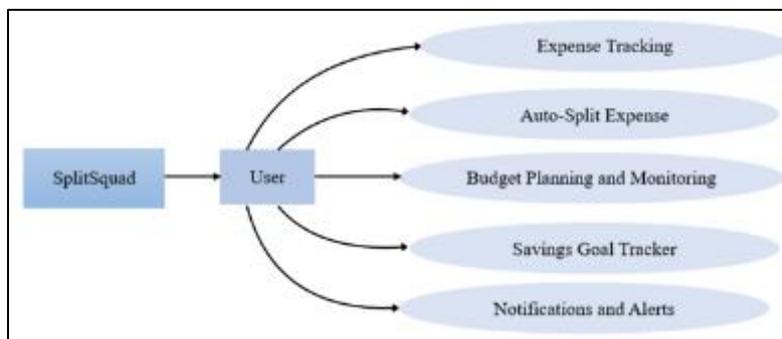


Figure 1 The diagram outlines a Development of a Digital Budget Assistant with Auto-Split Expense Application

4.2. Features and Functionalities

The features and functionalities of Digital Budget Assistant with Auto-Split Expense are the following:

4.2.1. Expense Tracking

Records users' daily expenses at saving category and helps students to grasp overall spending habits and areas for improvement to save basic levels of their money.

4.2.2. Auto-Split Expense

Automatically splits shared expenses among the group for rent, food and projects giving everyone an accurate total and eliminating all the hassle of counting, paper work and awkward IOUs.

4.2.3. Budget Planning and Monitoring

Enables users to create custom budgets using income and spending categories; Add, edit or delete purchases at any time for an up-to-date view as they stay on course or need to cut back.

4.2.4. Savings Goal Tracker

Assist users to plan and track saving goals based on a percentage of their income or remaining money, with incentives for continued savings.

4.2.5. Notifications and Alerts

Automatically sends reminders for bill due dates, financial goal progress, and bill splitting to help users stay in the know when it comes to their finances and avoid overspending.

4.2.6. User Profiles

Gives every user their own profile with financials records, saving goals and budget history to be able to give them customized advice and insights.

The Digital Budget Assistant, which integrates automation, personalization, and real-time tracking to help students keep track of their spending. Building on and supported by its user-centric design and smart features, it promotes usability, incentivize responsible financial behavior, toward long-term financial health.

4.3. Software engineering methodology

The development and design of the Digital Budget Assistant with Auto-Split Expense Feature were guided using User-Centered Agile Software Development Methodology. This hybrid methodology reflected Agile Development's iterative, flexible design framework and User-Centered Design (UCD) principles, to keep the system technically efficient and aligned with students' authentic budgeting activities. The process cycles (loops) were planning, design, building and testing, as if each set had been continuously refined with a "spike" the entire way through. When it came to planning, we captured student input through surveys and interviews that helped us define features around budgeting behaviours, expense consolidation and teamwork with money management. During the design and development cycles, we have focused on iterative interactive prototyping, refining the same based on feedback from users to enhance usage experience, visual layout as well as functionality of Auto-Split. Users' tests and participatory design evaluations were carried out at the end of each sprint, with tools that included inquiry questions following (for example) System Usability Scale (SUS), leading to data-driven improvements for the next iteration. As a result of this iterative and participatory process, the final systems have a high usability, practical value, as well as relevance in supporting students to manage individual and shared finances by encouraging careful financial behaviour.

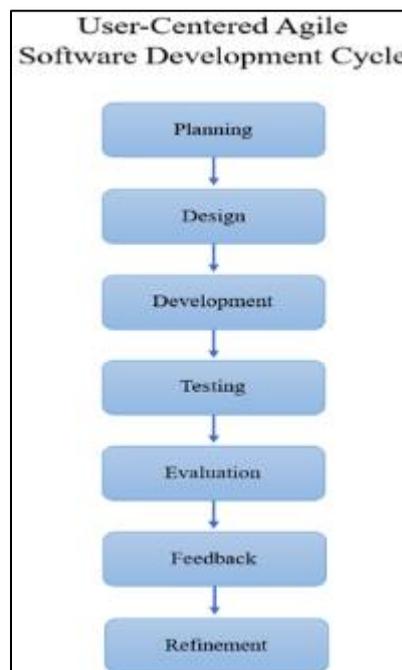


Figure 2 User-Centered Agile Software Development Cycle

4.4. User interface design

Digital Budget Assistant with Auto-Split Expense Feature the Smart way for students to plan, track and manage personal budgets and shared expenses. It combines automated expense tracking, instant budgeting, and financial insights in an easy-to-use interface. Auto-Split automatically splits any shared expense among group members to simplify cost sharing and eliminate the need for manual calculations when trying to split a restaurant bill. Tasked with the goal of influencing

and improving student financial habits, the Digital Budget Assistant provides access to a budget tool, targets savings programs, and a prompted messaging system aimed at educating students on financial responsibility.

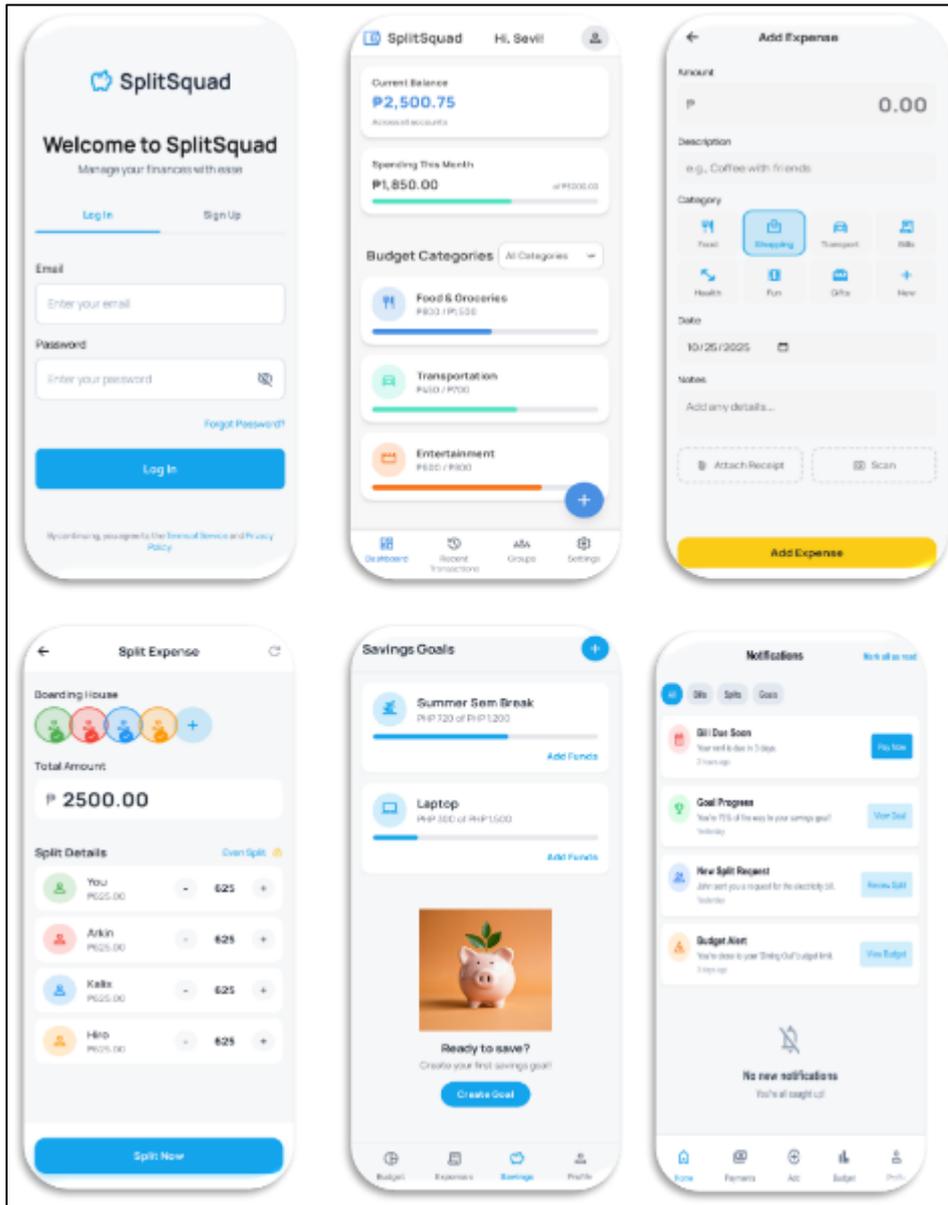


Figure 3 Digital Budget Assistant with Auto-Split Expense Dashboard

5. Evaluation and results

5.1. Usability Testing

A System Usability Scale (SUS) was used to evaluate the usability, efficiency, and user satisfaction of the Digital Budget Assistant with Auto-Split Expense Feature among 30 students. Efficiency, Effectiveness, User Satisfaction and Usefulness of System to evaluate how successful the system is in increasing skills for students in planning and managing financial resources.

The evaluation was conducted to measure how well the system worked, reveal what parts of the usability design process were successful and determine some potential issues for improvement in student centered financial systems.

Table 1 SUS Interpretation Guide

SUS Score Range	Usability Level	Average Result Range (Mean per Item)	Description
85 – 100	Excellent	4.2 – 5.0	The system is extremely easy and satisfying to use.
70 – 84	Good to Excellent	3.5 – 4.1	The system is very usable and exceeds user expectations.
50 – 69	OK to Average	2.5 – 3.4	The system is usable but may need improvements.
25 – 49	Poor	1.5 – 2.4	The system has usability issues and causes frustration.
0 – 24	Unacceptable	1.0 – 1.4	The system is difficult to use and unacceptable.

5.2. Comparative Analysis

To clarify how important the system is analysis between conventional manual budget process and Digital Budget Assistant was conducted. Performance was evaluated in terms of time consumption, accuracy, consistency, decision assistance and data visualization.

Table 2 Comparative Analysis Evaluation Criteria

Evaluation Criteria	Manual Budgeting	Digital Budget Assistant	Remarks
Accuracy	Prone to errors and miscalculations.	Automated and precise expense tracking.	Improved accuracy and reliability.
Time Efficiency	Time-consuming manual entry.	Fast, automated computation and tracking.	Saves time and reduces workload.
Consistency	Inconsistent records and updates.	Real-time synchronization and uniform data.	Enhanced data consistency.
Decision-Making	Based on guesswork or limited insight.	Data-driven budgeting insights.	Better-informed decisions.
Error Rate	Manual computation for shared costs.	Automatic splitting among users.	Simplified group budgeting.
Data Recording	Paper-based or disorganized.	Auto-generated financial reports.	Improved tracking and documentation.

Analysis shows that the Digital Budget Assistant greatly encourages budgeting accuracy, efficiency and team collaboration. Its Auto-Split and analytics features create more efficiencies in managing personal and group finances among students.

6. Results and Finding

This section discusses the usability testing analysis results that were computed on the SUS survey with respect to Functionality, Accuracy and Acceptability

6.1. Functionality Survey Results

Table 3 SUS Result Table – Functionality

No.	Statement/Questions	Avg. Score (1-5)
1	The app's features worked as expected.	4.3
2	Navigation within the app was confusing.	2.2
3	I completed budgeting tasks efficiently.	4.4
4	The interface slowed down my budgeting process.	2.1
5	Features responded quickly without delay.	4.2
6	I frequently encountered technical issues.	1.9
7	The controls were intuitive and easy to learn.	4.1
8	The app crashed or froze during usage.	1.8
9	The app simplified tracking shared expenses.	4.5
10	Key functions were difficult to find.	2.0
TOTAL AVERAGE SCORE		3.4

As indicated in Table 3 (mean = 3.4), the students perceived that the system was very good and/or easy to use. The Auto-Split feature specifically was well-regarded for aiding in joint expense tracking. A few respondents encountered some navigation or performance issues here and there that could be ironed out in the next iteration.

6.2. Accuracy Survey Results

Table 4 SUS Result Table - Accuracy

No.	Statement/Questions	Avg. Score (1-5)
1	The system correctly categorized my expenses.	4.4
2	I noticed inaccuracies in recorded transactions.	2.2
3	Auto-Split computations were accurate.	4.5
4	Budget summaries were inconsistent.	2.3
5	Insights helped me understand my financial habits.	4.3
6	The app displayed incorrect totals at times.	2.0
7	Financial summaries matched my actual spending.	4.2
8	I doubted the app's accuracy.	1.9
9	The Auto-Split feature reduced budgeting conflicts.	4.6
10	Data inconsistencies affected my trust.	2.2
TOTAL AVERAGE SCORE		3.3

Average overall score of 3.3 (Table 4) reflects that most users perceived the system as a reliable and accurate. Respondents mentioned that Auto-Split had a high calculating accuracy for sharing expenses correctly, but sometimes the calculated amount slightly late when the network was weak.

6.3. Acceptability Survey Results

Table 5 SUS Result Table – Acceptability

No.	Statement/Questions	Avg. Score (1-5)
1	I felt confident using the budgeting app.	4.4
2	Using the app was frustrating.	2.0
3	I would recommend this app to other students.	4.5
4	The system seemed unrealistic or unhelpful.	2.1
5	The app encouraged me to plan my finances regularly.	4.3
6	I prefer manual budgeting over this app.	2.2
7	The interface was engaging and easy to use.	4.2
8	The design made me want to stop using the app.	2.0
9	The app improved my budgeting discipline.	4.4
10	The layout and visuals were unappealing.	2.1
TOTAL AVERAGE SCORE		3.3

Most participants rated the app as acceptable, user friendly and motivating, with an average mean of 3.3 (see Table 5). A good number showed confidences the app will make financial planning easy and gives discipline in budgeting.

6.4. Overall Score Result Table

Table 6 SUS Overall Score Result Table

Dimension	Sum of Adjusted Scores	SUS Score (Out of 100)	Interpretation
Functionality	3.4	78.0	Good to Excellent Usability
Accuracy	3.3	77.0	OK to Average
Acceptability	3.3	76.0	OK to Average
OVERALL SUS SCORE		76.6	Good to Excellent and OK to Average Usability

Table 6 The total SUS score of 76.6 indicates that the Digital Budget Assistant is very usable, efficient, and effective for student users. The automatic handling of shared expense reporting and inclusion of personalized analytics were the features that most enhanced its usability perception.

7. Discussion

7.1. Interpretation of Findings

RQ1: Does the Digital Budget Assistant improve students' financial planning skills?

Results showed a strong positive effect of the Digital Budget Assistant on students' planning capacity with their finances. Respondents revealed the system had helped them better budget and track their spending, and stay on track with financial plans. High scores for both Functionality and Decision Support suggest that the app not just streamlined budgeting, but engaged users to make more informed decisions about their finances. This progress is consistent with the system's intended purpose of encouraging financial literacy and self-control. Students reported that through the app they were able to learn more about how they spent and were better prepared to achieve financial goals, from the academic to personal level.

RQ2: Is there a relationship between usage frequency and budgeting effectiveness?

The results of that analysis displayed a clear correlation between the frequency of app use and the success in students' budgeting competencies. Regular system users were more disciplined in their financial management and showed greater stability in tracking expenditures. Regular use of the solution enables users to adopt good budgeting behavior as habits, and learned responsible spending and saving actions over the long-term. This result is in line with the theoretical model of routine or habitual technology use, showcasing that long-term exposure to an enabling digital 71 device results in maintenance scenario behavioral change. In this regard, the Digital Budget Assistant functioned not only as a budget tracking tool, but as an educational system that reinforced the practice of daily money management.

RQ3: Does the Auto-Split Expense feature enhance expense management and awareness?

Yes. User feedback results validated that Auto-Split Expense had a clear and strong positive impact on users' ability to easily and efficiently handle common expense. As mentioned by our respondents, this reduced calculation mistakes, group transaction misunderstandings as well as helped in the context of shared-spend fairness — mostly for cases like roommates who share expenses (dorms and rentals) or corporate expenses. And by simply splitting their spending automatically, it promoted transparency and improved financial literacy for users to better manage their personal as well as group finances.

Limitations and Future Work

Despite good usability ratings and promising results of this study, some limitations were revealed. First is that network connectivity would occasionally be lost and we'd lose our real-time synchronization – both lead to a non-stellar tracking of trades. Second, many participants articulated the need for improved visual dashboards and common financial language to facilitate comprehension across students of varying degrees of financial acumen. Finally, this was a single-institution study; therefore, the results may not be applicable to students in other schools or socioeconomic areas.

The authors proposed few enhancements for performance and scalability of the system in near future. These include beefing up its offline capabilities so users can still use the app without network, enhancing its AI-powered financial advice (including auto-recommendations regarding savings and spending) and increasing user testing across different institutions and areas to get access to more diverse perspectives. Not only would these adjustments enhance usability, but they might be likely to extend the app's utility across distinct population groups.

8. Conclusion

8.1. Summary of Key Findings

The Digital Budget Assistant with Auto-Split Expense Feature exhibited Good to Excellent usability, an account for high acceptance and satisfaction by the user. Results confirm that the app is effective, accurate and has motivation in students who intend to enhance their financial planning and discipline. With proprietary technology that seamlessly integrates personal and shared budgets with social features and real-time analytics, the solution is designed to help its users effortlessly manage their finances while establishing healthy financial habits.

Overall, the Digital Budget Assistant the perfect example of how technology can help underpin students in taking control over outcomes and that practical digital solutions just work. As the tool goes through continuing improvements and expansion, it could indeed become a reasonably indispensable part of any organization's financial teaching plan as well as for personal finance purposes—linking textbook principals with life skills.

Final Remarks

The accomplishment of this paper underlines the increasing relevance to include smart financial tool within student life. In a world where digital tools for money management are becoming increasingly sophisticated and easy to use, programs such as the Digital Budget Assistant can support the development of responsible and tech-savvy consumers who are not only armed with academic tools to navigate life's financial decisions but also with those they will need for life.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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