

# SCOUT THE IMPACT OF DIGITAL TRANSACTIONS ON PERSONAL FINANCE MANAGEMENT: A COMPREHENSIVE STUDY AND INNOVATIVE SOLUTION

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## ABSTRACT

Personal finance management is crucial for individuals' financial stability and well-being, particularly in today's digital age. This paper explores the significance of personal finance management across various domains and examines the evolving practices to meet modern financial challenges. Our project aims to revolutionize personal finance management by integrating machine learning and data analytics within the Flutter framework. This innovative solution provides insights into spending patterns and empowers users to make informed financial decisions. Additionally, the paper discusses future enhancements, including integration with AI assistants, blockchain technology, and gamification elements, to enhance user engagement and financial management. The project showcases the potential of technology to transform personal finance management, improve financial awareness, and facilitate better decision-making in an increasingly digital world.

**Keywords:** Personal Finance Management, Digital Transactions, Financial Well-being, Financial Stability, Financial Literacy.

## 1. INTRODUCTION

Personal finance management is a cornerstone of financial stability and well-being, influencing individuals' ability to achieve their goals and secure their futures. As the world transitions to digital transactions and cashless economies, the importance of effective personal finance management tools has become increasingly evident. This paper aims to explore the diverse domains where personal finance management is pertinent and how current practices are adapting to address modern financial challenges. Additionally, we introduce our innovative solution, poised to revolutionize personal finance management by empowering users to make informed and strategic financial decisions.

Personal finance management extends across a wide range of domains, including personal finance, business finance, education, banking, investment management, accounting, financial planning, insurance, tax planning, and economics. In each of these domains, effective management of finances is essential for individuals and organizations to achieve their financial goals, mitigate risks, and ensure financial stability.

**Personal Budgeting:** Personal budgeting is the process of creating a plan to manage income, expenses, and savings. Budgeting helps individuals allocate their financial resources effectively, ensuring that they can meet their financial goals and obligations. Personal budgeting tools, often available as apps or software, assist users in tracking their income sources, categorizing expenses, setting budget limits for different categories, and providing insights into spending habits. These tools empower individuals to make informed decisions about their finances, identify areas where they can save money, and prioritize their financial goals.

**Investment Platforms:** Investment platforms provide individuals with access to financial markets, allowing them to invest in a variety of assets such as stocks, bonds, mutual funds, and exchange-traded funds (ETFs). These platforms offer tools and resources to help users research investment options, monitor their investments, and make informed decisions. Some platforms also provide personalized investment recommendations based on users' financial goals, risk tolerance, and investment preferences. By using investment platforms, individuals can grow their wealth and achieve their long-term financial goals.

**Expense Tracking:** Expense tracking tools help individuals monitor their spending habits and track where their money is going. These tools categorize expenses, provide visualizations of spending patterns, and offer insights into areas where users can cut costs or save money. By tracking their expenses, individuals can identify unnecessary spending, set realistic budgets, and make informed decisions about their finances. This can lead to better financial management and improved savings habits over time.

**Financial Planning:** Financial planning involves creating a roadmap for an individual's financial future. It considers factors such as income, expenses, savings, investments, and financial goals to develop a personalized financial plan.

Financial planning services help individuals set achievable financial goals, create a budget, manage debt, save for retirement, and plan for major life events such as buying a home or starting a family. By engaging in financial planning, individuals can take control of their finances, reduce financial stress, and work towards achieving their long-term financial goals.

**Credit Score Monitoring:** Credit score monitoring services help individuals track their credit scores and understand how their financial behavior impacts their creditworthiness. These services provide regular updates on users' credit scores, as well as tips and recommendations for improving them. By monitoring their credit scores, individuals can identify areas for improvement, such as paying bills on time, reducing debt, and avoiding new credit inquiries. This can help individuals maintain or improve their credit scores over time, which is essential for obtaining favorable loan terms, renting an apartment, and even securing employment in some cases.

**Insurance Comparison:** Insurance comparison websites help individuals compare insurance policies and find the best coverage options for their needs and budget. These websites allow users to compare premiums, coverage limits, deductibles, and other features of insurance policies from multiple providers. By comparing insurance options, individuals can find the best coverage at the most affordable price, ensuring that they are adequately protected against unexpected expenses. Insurance comparison websites simplify the process of shopping for insurance, saving individuals time and money in the process.

**Debt Management:** Debt management services help individuals manage and pay off debt. These services offer strategies for reducing debt, consolidating loans, and improving credit scores. Debt management services may also negotiate with creditors on behalf of individuals to lower interest rates or reduce the total amount owed. By using debt management services, individuals can take control of their debt, reduce financial stress, and work towards becoming debt-free.

**Financial Education:** Financial education platforms provide resources and tools to help individuals improve their financial literacy. These platforms offer courses, articles, videos, and interactive tools that cover topics such as budgeting, saving, investing, and retirement planning. By improving their financial literacy, individuals can make more informed decisions about their finances, avoid common financial pitfalls, and work towards achieving their financial goals. Financial education platforms empower individuals to take control of their financial future and build a solid foundation for long-term financial success. Ultimately, financial education empowers individuals to take control of their financial future and make informed decisions that align with their goals and values. It helps them build a solid foundation for long-term financial success and security, enabling them to navigate life's financial challenges with confidence and resilience.

**Expense Sharing Apps:** Expense sharing apps help individuals split expenses with friends, family, or roommates. These apps allow users to track shared expenses, calculate each person's share, and settle balances easily. Expense sharing apps are useful for group activities, trips, or living arrangements where expenses are shared among multiple people. By using expense sharing apps, individuals can avoid misunderstandings about money, keep track of who owes what, and simplify the process of splitting expenses.

**Crowdfunding Platforms:** Crowdfunding platforms allow individuals to raise money for personal projects, causes, or business ventures by soliciting small contributions from a large number of people. These platforms provide a way for individuals to finance their projects without relying on traditional sources of funding, such as banks or investors. Crowdfunding platforms typically charge a fee for their services, which is deducted from the funds raised. By using crowdfunding platforms, individuals can access funding for their projects, gain exposure for their ideas, and build a community of supporters.

**Financial Aggregators:** Financial aggregators are tools that aggregate financial information from multiple sources, such as bank accounts, credit cards, loans, and investments. These tools provide users with a comprehensive view of their financial situation, allowing them to track their income, expenses, assets, and liabilities in one place. Financial aggregators can help users identify trends in their financial behavior, set financial goals, and make informed decisions about their finances. By using financial aggregators, individuals can simplify their financial management, save time, and gain a better understanding of their overall financial health.

**Estate Planning Services:** Estate planning services help individuals plan for the distribution of their assets after death. These services consider factors such as family dynamics, tax implications, and legal requirements to create a comprehensive estate plan. Estate planning services may include creating a will, establishing trusts, naming beneficiaries, and appointing guardians for minor children. By using estate planning services, individuals can ensure that their assets are distributed according to their wishes, minimize estate taxes, and provide for their loved ones after they are gone.

**Tax Preparation Software:** Tax preparation software helps individuals prepare and file their taxes. These software programs guide users through the tax preparation process, helping them identify tax deductions and credits that they may qualify for. Tax preparation software can also help users file their taxes electronically, which can speed up the tax filing process and reduce the risk of errors. By using tax preparation software, individuals can save time and money on tax preparation fees, ensure that they are claiming all available tax benefits, and file their taxes accurately and on time.

## 2. LITERATURE SURVEY

As part of the Literature Survey, we have referred few project papers and findings from them are:

The Design and Implementation of Personal Finance Management System Based on Android - Bhimasen N K, Kiran Poorna Vishnu M, Nandeesh - May 2023 [1]

Sly Spend is an AI-driven personal finance app that securely retrieves transactional data from users' bank accounts and provides personalized financial insights. Using advanced algorithms, it analyzes spending patterns, offers budgeting recommendations, and predicts future expenses or savings. Sly Spend empowers users to make informed financial decisions, optimize expenses, increase savings, diversify investments, and manage debt effectively. Future plans include refining AI algorithms, expanding features like investment diversification and language support, and addressing challenges such as AI model interpretability and privacy concerns. Overall, Sly Spend aims to enhance financial well-being and user satisfaction through innovative AI technologies.

Expense Tracker - Abhishek Dadhich, Siddhant Jain, Shreya Jain, Shreya Mathur - May 2023 [2]

The "Expense Tracker" is an Android app designed for efficient expense monitoring. It categorizes expenses, plans budgets, and generates spending reports. The app addresses the challenge of tracking expenses in modern society by providing a user-friendly solution. Developed using Agile methodology, it features a two-tier architecture with offline functionality for inputting expenses and receiving analytics. Future enhancements may include advanced analytics, machine learning integration, and improved security. However, the paper lacks thorough performance evaluation and user satisfaction assessment. Addressing privacy concerns and comparing with existing apps would enhance its value. The paper's focus on user-friendly features, expense categorization, and graphical reporting aligns with our goal of creating a comprehensive Finance Manager Application.

Personal Expenses Tracker - Prof. Pallavi Patil, Momin Maaz Ahmed, Rohan Kamble, Neha Gaikwad [3]

The "Personal Expenses Tracker" is a tool designed for managing finances by tracking daily expenses. It allows users to categorize expenses, set budgets, and generate reports. The app helps users understand their spending habits, set financial goals, and make informed decisions. It can be used for personal or professional purposes. The paper discusses the methodology for tracking expenses, system overview, resources used for development, advantages, and disadvantages. Overall, the expense tracker aims to empower users to take control of their finances and make wise financial decisions. This paper serves as a pertinent reference for our project by offering insights into the successful integration of OCR technology in a financial management application.

Mobile Bookkeeper: Personal Financial Management Application with Receipt Scanner Using Optical Character Recognition - Manuel B. Garcia, Julius P. Claour [4]

The paper presents the development and usability testing of "Mobile Bookkeeper," a personal financial management app with a focus on its OCR-based receipt scanning feature. Developed using the MASAM methodology and adhering to ISO standards for usability testing, the app allows users to scan receipts with their smartphone cameras for automatic transcription into digital records. Objective measures confirmed the app's effectiveness, efficiency, and user-friendly design. Future work includes enhancing OCR accuracy, refining the user interface based on feedback, and expanding features to include budget tracking and financial goal setting. Drawbacks include limited evaluation of OCR technology, a small sample size of participants, and lower satisfaction scores for technical support features, suggesting the need for improvement in documentation and user assistance. Addressing these limitations is essential for improving the application's functionality and user satisfaction.

Spending Tracker: A Smart Approach to Track Daily - Uday Pratap Singh - April 2021 [5]

The Spending Tracker app, developed by Uday Pratap Singh, Aakash Kumar Gupta, and Dr. B. Balamurugan, is designed for efficient day-to-day expense management. Developed using Java and MySQL Workbench, it offers compatibility with Windows and Android devices. The app features a well-structured database schema and modular architecture, including expense tracking, category management, and search functionalities. Future plans include integrating email and payment options, as well as implementing database backup for data security. While the paper provides a good overview, it could benefit from a deeper dive into technical challenges and a more thorough evaluation of performance and user interface. Addressing these aspects would enhance the paper's overall quality. This

paper serves as a valuable reference for our project by offering a detailed account of the development and features of a Spending Tracker application.

Expense Tracker Application-Velmurugan.R1, Mrs.P.Usha March 2021 [6]

The Expense Tracker Application is an Android-based app developed to help users manage their daily expenses efficiently. The application allows users to maintain a computerized diary of their expenses, categorize expenses, and track them on a day-to-day basis. It provides a category-wise distribution of expenses and enables users to track their expenses on a daily, weekly, and monthly basis. The app also helps users stay on budget by providing insights into their expenses. To create the app, the authors used Java, XML, and MySQL. The app has a two-tier architecture, with a database tier for storing data and a user interface for interacting with the system. The methodology includes establishing the scope of expenses to be tracked, selecting a tracking method (mobile app), organizing expenses into categories, tracking expenses, analyzing expenses, modifying the budget, and reviewing and updating the tracker regularly for accuracy and relevance. Overall, the app aims to provide users with a simple and effective tool for managing their finances and making informed financial decisions.

Expense Manager Application-Velmurugan A, Albert MayanJ, Niranjana P and Richard Francis – 2020 [7]

The "Expense Manager" is an Android application designed for finance management, accessible on devices above Android version 5.0, with a size of less than 10 MB and compatibility with low-end hardware. It aims to assist users in budget tracking, analysis, and optimization of spending. The app collects user data with authenticated permissions for expense pattern analysis using data mining techniques such as clustering, classification, and association. The paper addresses the lack of financial awareness and challenges in managing money effectively. It offers various features within a single application, including personal expense recording, group expense management, investment options, stock market viewing, authenticated financial news reading, and accessing ongoing promotions. The development process involves using Android Studio, Kotlin and Java programming languages, SQLite database, Android OS, and Figma Designing tool for user interface design. The architecture is designed to be user-friendly and efficient, capable of running on low-end devices, following industry best practices.

The Design and Implementation of Personal Finance Management System Based on Android - Yu Xie – January 2016 [8]

The abstract introduces a personal financial management system based on the Android mobile application platform, aiming to facilitate real-time recording of personal expenses, property management, and revenue and expenditure tracking on a daily, monthly, and annual basis. With the increasing popularity of Android smartphones, there is a growing demand for mobile applications that satisfy users' needs. The development of personal finance management apps has seen rapid growth, offering users the ability to track income, expenses, and fund flows in real-time. The system is designed to simplify financial management tasks, replacing traditional paper-and-pencil methods and complex PC software with a convenient and easy-to-use mobile application. The main objective is to provide users with a simple, efficient, and accessible tool for managing their finances.

Money Talks: Tracking Personal Finances - Joseph Kaye, Mary mccuiston, Rebecca - 2014 [9]

The study conducted a preliminary scoping study on how 14 individuals in the San Francisco Bay Area earn, save, spend, and understand money and their personal and family finances. The methodology involved sending a screener survey to potential participants, conducting in-home interviews with participants, and analyzing the interview data. The interviews were semi-structured, averaging 110 minutes each, and covered topics such as participants' financial practices, emotional aspects of their financial decisions, and the tools they used to manage their finances. The data analysis involved transcribing interviews, tagging and highlighting potential themes, and extracting meta-themes and design opportunities. The study aimed for diversity in participant demographics and financial situations and provided each participant with a \$150 gift card for their time.

Mobile finance management application - Dewi Suryani, Yedy Purnama - September 2019 [10]

The study introduces a mobile-based application called "Manage on Money (MoM)" designed to address financial management challenges such as recording, monitoring, and controlling individual financial activities. MoM offers three main features: "Add Income" and "Add Expense" allow users to record their income and expenses, with the option to input data manually or by scanning receipts using Google Cloud Vision API for Optical Character Recognition (OCR). The "Buy or Bye" feature helps users control expenses by implementing the 50/20/30 budgeting rule and providing recommendations based on the user's financial condition. Finally, the "Recurring Transaction" feature enables users to schedule periodic expenses and receive push notifications before their due dates, utilizing the

OneSignal API. Overall, respondents rated MoM positively, indicating its effectiveness and usefulness in managing finances.

Personal Expense Tracker Application - Sakthivel. M, Roshini. P, Roja. K, Maha Lakshmi. P, Keerthi. V – 2023 [11]

The provided text describes an Expense Tracker application designed to assist users in managing their finances more efficiently. The application aims to simplify expense tracking by allowing users to record income, set expense limits, and enter daily expenses. It provides analysis of expenses in various formats such as Excel, graphs, and PDFs, and offers features like automatic login, prediction of income and expenditure, and systematic budgeting. The application targets both individual users and organizations, offering benefits such as controlling expenses and smoother functioning. The proposed solution includes a discussion of the problem statement, idea description, uniqueness, social impact, business model, and scalability. Additionally, the requirement analysis covers functional aspects like user registration, login, dashboard, income, expenses update, and transaction alerts, as well as non-functional aspects like usability, security, reliability, performance, availability, and scalability. Overall, the personal expense tracker aims to simplify expense management, save time and energy, and reduce complexity for users.

EXPENDITURE MANAGEMENT SYSTEM - Dr. V. Geetha, G. Nikhitha, H. Sri Lasya, Dr. C. K. Gomath – May 2022 [12]

The paper presents an "Expense Tracker" web application designed to simplify daily expense management, with features such as income tracking, reminders, and budget analysis. While the application offers a user-friendly interface and basic functionalities, the paper lacks a comprehensive exploration of potential drawbacks, challenges, security considerations, and usability issues that users might encounter. Enhancing these aspects would provide a more complete evaluation for users considering the application for their expense management needs. To improve the paper's comprehensiveness, future work could focus on further streamlining expense tracking and offering advanced financial planning tools. Additionally, a more detailed discussion of the application's security measures, data privacy policies, and potential vulnerabilities would enhance its credibility and trustworthiness. Overall, while the "Expense Tracker" app shows promise in simplifying expense management, addressing these areas would make the paper more informative and beneficial for potential users.

### 3. COMPARISION ANALYSIS

The below table 1 summarizes the literature survey we carried out to learn about different existing systems and their methodologies highlighting the work done, performance analysis, future work and the drawbacks that we found.

**Table 1.** Comparison Analysis

S. No.	Title	Author	Year	Work Done	Performance Analysis	Future Work	Drawbacks
1	The Design and Implementation of Personal Finance Management System Based on Android	Bhimasen N K, Kiran Poorna Vishnu M, Nandeesh B K, Ninad	May 2023	AI-powered personal finance management app, advanced AI algorithms for spending pattern analysis, personalized budgeting and goal-setting, expense optimization suggestions.	Sly Spend effectively analyzes spending patterns, offers personalized recommendations, and assesses financial risks. Continuous adaptation to user needs ensures user satisfaction.	Refining AI algorithms, enhancing budgeting recommendations, advanced financial risk assessments, investment further language support, user education.	Interpretability of AI models, privacy concerns related to financial data, need for ongoing refinement.
2	Expense Tracker	Asst.Prof. Abhishek Dadhich , Siddhant Jain , Shreya Jain ,Shreya	May 2023	Android application for daily expense tracking, categorization, spending	The Expense Tracker app's performance is crucial for user satisfaction. It needs to be fast,	Integrating advanced analytics, machine learning for forecasting,	Lack of performance evaluation, privacy concerns, comparison

		Mathur		pattern analysis, graphical reports.	reliable, and scalable.	integration with smart devices and financial institutions.	with existing apps.
3	Personal Expenses Tracker	Prof. Pallavi Patil, Momin Maaz Ahmed, Rohan Kamble, Neha Gaikwad	Mar 2023	Overview of a Personal Expenses Tracker, expense tracking methodology, system overview.	The Personal Expenses Tracker project integrates machine learning for predictive analysis and automated categorization, enhancing user interaction.	Integration of machine learning for predictive analysis, automated categorization, compatibility with more devices.	Time-consuming manual tracking, reliance on technology, user education for efficient tracking.
4	Mobile Bookkeeper: Personal Financial Management Application with Receipt Scanner Using OCR	Manuel B. Garcia, Julius P. Claour	Dec 2021	Receipt scanning with OCR, usability testing, application development with MASAM, receipt transcription.	Mobile Bookkeeper, integrating OCR for receipt scanning, showed positive usability and user satisfaction in tasks like data entry and receipt conversion.	Improving OCR accuracy, refining user interface, feature expansion with budget tracking, financial goal setting.	Limited OCR evaluation, small sample size, need for improved support documentation.
5	Spending Tracker: A Smart Approach to Track Daily	Uday Pratap Singh, Aakash Kumar Gupta, Dr. B. Balamurugan	Apr 2021	Spending Tracker application for daily expense management, Java and MySQL development, modular system design.	The "Spending Tracker" application aims to efficiently manage daily expenses through a user-friendly interface, supporting both Windows and Android platforms.	Incorporating email and payment modes, implementing backup details, improving statistics preparation.	Lack of technical challenge discussion, performance evaluation, and limitations discussion.
6	Expense Tracker Application	Velmurugan .R1, Mrs.P.Usha2	Mar 2021	Android-based Expense Tracker, user-friendly interface, categorization, expense tracking, graphical reports	Expense Tracker is an Android app for tracking daily expenses, offering category-wise distribution and budget tracking.	Support for upcoming Android versions, view details after data deletion, file-sharing capabilities, reminders, synchronization with	Lack of portable device management, absence of reminders, challenges in data maintenance.

						email/social accounts.	
7	Expense Manager Application	Velmurugan A, Albert Mayan J, Niranjana P and Richard Francis	2020	Android Expense Manager, personal and group expense management, investment planning, stock market tracking.	Performance analysis of the Expense Manager Application includes tracking daily expenses, managing investments, and providing stock market insights.	Trend analysis, improved data security, data mining integration, market trend analysis.	Privacy concerns, lack of comprehensive evaluation, reliance on SMS read permissions.
8	The Design and Implementation of Personal Finance Management System Based on Android	Yu Xie	Jan 2016	Android-based Personal Finance Management System, real-time recording of income and expenditures, property management, financial insights.	The Personal Finance Management System offers real-time income and expenditure tracking, property management, and financial insights on Android.	Advanced features like budget planning, investment tracking, improved user interface, integration with financial services.	Lack of detailed performance evaluation, security measures discussion.

#### 4. FUTURE SCOPE

In its future trajectory, we could metamorphose into a comprehensive financial ecosystem, seamlessly integrating with AI assistants like Siri, Google Assistant, or Alexa. This integration would enable users to manage their finances through simple voice commands, revolutionizing the user experience. Additionally, leveraging blockchain technology could fortify the security and transparency of financial transactions within the application, instilling trust among users and enhancing data security. These advancements would not only simplify financial management but also set new standards for security and convenience in the digital finance space.

Moreover, incorporating gamification elements into the application could transform financial management into an engaging and rewarding experience. By gamifying tasks such as budgeting and savings, users could be incentivized to develop better financial habits and achieve their financial goals. This approach could significantly enhance user engagement and motivation, making financial management more enjoyable and sustainable for users of all ages. Additionally, the application could provide personalized financial advice based on machine learning algorithms, offering users actionable insights tailored to their specific financial situations and goals.

Furthermore, the application could enable users to compare their financial habits with peers and share their achievements, fostering a sense of community and collaboration. Integration with wearable devices could further enhance user convenience by allowing them to track their spending and receive real-time alerts and insights on their financial health. Our idea can empower individuals to take control of their financial futures, transcending traditional notions of personal finance management. In conclusion, by incorporating AI, blockchain, gamification, and social elements, while prioritizing user experience and education, "Transforming Touch to Truth" has the potential to revolutionize personal finance management and empower users to achieve financial well-being in the digital age.

#### 5. CONCLUSION

In conclusion, our project "Transforming Touch to Truth: A Journey Towards Smart Money Moves" presents a comprehensive solution for personalized financial decisionmaking. By leveraging machine learning algorithms, we have developed a system that analyzes users' transaction history to provide insightful categorization and predict budget deviations. The integration of Flutter for the frontend and Python for the backend has enabled us to create a userfriendly interface with robust backend functionality.

Through this project, we have demonstrated the potential of technology in enhancing individual financial management. Our system not only categorizes expenses accurately but also helps users make informed decisions about their budgets. The results obtained from our implementation showcase the effectiveness of our approach in improving financial awareness and decision-making.

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