Personal Expense Tracker

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Introduction :

In this application the Personal finance entails all the financial decisions and activities that a Finance app makes your life easier by helping you to manage your finances efficiently. A personal finance app will not only help you with budgeting and accounting but also give you helpful insights about money management.

Personal finance applications will ask users to add their expenses and based on their expenses wallet balance will be updated which will be visible to the user. Also, users can get an analysis of their expenditure in graphical forms. They have an option to set a limit for the amount to be used for that particular month if the limit is exceeded the user will be notified with an email alert.

Literature Review :

1)

A.User Registration and Creation : This application like the vast majority of the applications will have a user login screen and alternatives for enlistment. The user should enlist in this application when the person in question is using it for the first time. Nonetheless, the client who is now enlisted can login to the application utilizing their login accreditations that are made by the user at the hour of enrolment.

B. Adding Income and Expenses : This application will provide to choose the categories or type of income or expenses. Every user of the application has the option to add incomes and expenses accordingly. Each record should have details of the date of occurrence of item, details of items etc.

C. Category Master :

This module fundamentally relies upon the SQLite for putting away classification details and expense subtleties and income. The class exchange is put away in a SQLite database. **D. Management View- Date Wise**

The Expenses are recorded dependent on the Predetermined date insightful in this module. By

recovering all the income and expense subtleties are seen as a rundown of exchange classes by our various costs. The income and expenses are recovered by utilizing SQLite queries and saw in advanced cells.

E. Management View- Category Wise: The Expenses are recorded dependent on the Predetermined classification astute in this module. By retrieving all the income and expense subtleties are seen as a rundown of exchange classifications by our various expenses. The income and expenses are recovered by utilizing SQLite queries and saw in advanced cells.

F. Remainder: The Rest of is a caution generator module, for user recognition the alert/ready will review the user to add the Income or Expenses at day by day or Certain Period based on user need.

2)

A. Intelligent Online Budget Tracker : The development of this application has been conducted in a stepwise manner using the well-defined methodology, RUP, customized according to the requirements of the system. Most of the goals set at the start of the development phase have been met. Security problems like web security or network security have also been treated in the design and development of the system, thus increasing the reliability of the system. Quality management issues have also been handled satisfactorily.

B. Online Income and Expense Tracker: This project is more efficient than the other income and expense tracker. The project successfully avoids the manual

calculation for calculating the income and expense per month. The modules are developed efficiently and also in an attractive manner.

C. Family Expense Manager Application: As a result, the user can make use of this application in his/her daily life. After being used it can be a part of daily life to update and view daily expenses and family expenses. This helps to keep track of expenses & manage it for the user as they are busy in their daily routine, they are not able to keep track of their incomes & expenses.

D. Personalized Expense Managing Assistant Using Android : Some of the features are enabling users to register to the application using an existing email or social network account, it will synchronize the user's profile information to the application. Apart from this, the application can be used to gather samples of data related to the user's expenses with consents and use those sample data as parameters to assess patterns of spending. Using some data mining techniques expenses can be classified and can be used in market analysis and planning

E. Mobikwik Expense Tracking Application : Mobikwik came up with a new feature in their app called Expense Manager. With this feature, you can track and manage your expenditures(expenses), savings, reminders and bill payments. This is a personal budget management app that tracks your expenditures and income and gives you recommendations to make you economically strong. The main idea of developing this feature is to give users a clear picture of how much they are spending and where they are spending and when. We remind them to pay their utilities and card bills before the due date by using the same platform in just one tap, instead of going any other way. Also serving them by giving saving tips for their good future investment.

3)
An exhaustive literature survey on related topics suggests that earlier tracking was performed manually. These things were done in an old school way you can say more likely in a notebook or copybook these things were written as per the willingness of a person in simple words you can call it as “The quiet manually stuff”. Then after that they have calculated the entire expenditure at the end of the

month or week and a report is generated against the expenditure in comparison to the previous month or information related to that. So, they face a certain problem that time:

- Data is not accurate
- Reports in not up to the mark
- A single mistake in a manual calculation and actually cost you much
- It's time consuming boring and most of the time insufficient
- Going through all the data back then rewriting them off actually makes way fussier
- It can be easily stolen or loss as well your information is not safe there

(Babad and Balachandran, 1993) states that traditional cost accounting systems maintain all overheads in one pool and give equal weight to all activities and costs in it We always have known that “pen is mightier than sword” but that thing doesn’t fit with every specific tasks it varies from need-to-need or tasks-to-tasks these days when the amount data is quite enormous. It becomes way more difficult to handle them off. Soon excel also became a way to maintain a record of expenses and analysis. Though excel was an effective software to handle such stuff but still lacks in many things so some of the researchers even started using excel with certain tools designed by them. A research at university on Tennessee on expense tracker of by (Dan Underwood, 2011): In which using excel accounting team designed a Cost Allocation tool 1 in which a spreadsheet is used to allocate the product category both by site and the cooperation and a Cost allocation tool 2 which is a developed to further integrate and allocate cost to identify which manufacturer is profitable or which is not. This research used excel and designed this CAT tool in which both the spreadsheets are required to use to identify where we could reduce expenses or better manage it. (Girish Bekaroo, 2007) did a research on intelligent online budget that manages the expenses and used to give the graphical analysis of data.it uses a Rational Unified Method (RUP) which was way more efficient and advantageous in the way it used to promote code reuse and encapsulation.in which CSS and xml technologies has been used. Students of Sikkim Manipal University an income expense for housewives which not just counts the amount but also maintains date and calendar record of the person as well they used the clustering technique to maintain their data storage. (Stephan snow and Dhayal Vyas, 2015) mentioned in his paper. “Managing finances is a practice carried out daily in homes across the world. Despite this, the practice is not yet a

strong focus for HCI work in the home". Researchers of Nandha and Anna university (2016) created an android version of expense manager in which they used post and remark techniques for underlining the expenses and some of the data mining features for analyzing the market value well. (R N Rajprabha, 2017) created an android version of family budget manager which later evolved in PDA and tablet features. (Ravi Sharma, 2017) stated users sometimes feel uncomfortable in sharing their personal information with an app and he suggested security and usability are two major concerns. Even the advanced UI needs to maintain retention. Researchers of Mother Terresa university, Andhra Pradesh (2019) also stated an online income and budget tracker in a website mode but that project using csv mode to store data but that project had a drawback in its existing model as it can't handle the data efficiently in addition to that it wasn't user-friendly and an unpopulated data project. All these researches above suggest some of the modern ways of dealing with expense tracking. Many of the researches like these actually represent the evolution in ideas with time "evolution is not a necessity it's more like change in thinking and time" in which we analyze, estimate and evaluate the things according to new requirements. But still the kind of technology used in it is the kind of projects that were used in previous days. There are certain android apps as well still they too also have different consequences as well as drawbacks in itself. And I also feel like these should be way easier to handle to a desktop device. As sometimes android apps will provide accurate results if the information is incorrect and many of the times, we almost forget to enter details too and most of them don't even provide notification for that as well. Based on the literature review. This study shows the evolution as well as the comparison from selected researches according to the adopted knowledge in it. This paper suggests some effective changes that are still needed and why the transition is necessary.

4)

Expense is an outflow of money to another person or group to pay for an item or service, or for a category of costs. It is a cost that is "paid“, usually in exchange for something of value (Carvalho and Basso, 2014).

Examples of our daily expenses include buying recharge cards, buying food, junks, provision, fruits,subscriptions, clothing and so on. According to Kim (2012), expense management refers to the system deployed by a person or business to process, pay, and audit personal or employee-initiated expenses. Expense
management includes the policies and procedures that govern such spending, as well as the technologies and services utilized to process and analyze the data associated with it.In Expense management automation, there are four main factors that drive a person or business organization to automate their expense management processes (Turpin, 2017):

i. Compliance focus: 57% have poor visibility into spend and compliance so they do not know how much they are spending and they cannot ensure that all of those costs remain within the boundaries of the company's handbook or policies regarding expense reporting
ii. Cost reduction: 38% need to reduce expense processing costs
iii. More control: 35% have no control over total spending
iv. Improved productivity: 20% need to eliminate manual and paper processes to improve productivity and satisfaction.

Below are identified strategies tailored towards expense management systems
i. Spreadsheets: Spreadsheets can be an easy, cheap way to keep track of expenses, but they still have
paper receipts that go along with them that can be lost or damaged. This can also be a labor-intensive
method and it can be confusing if employees are not good at using spreadsheets (Wild, 2010)
ii. Paper forms: Paper forms work well with paper receipts. This is also an inexpensive way to manage
expense reports. However, this can amount to a lot of manual work of logging and tracking these
reports for both employees, approvers, and the people who need to pay the bills in the accounting
department (Peijiang, 2012)

5)

Before a business can begin to lower its costs, it must first identify and connect them to a cost center. It must also determine if the expenses are necessary. WFC currently has a basic accounting system where expenses are aggregated to give one large expense pool. WFC management wants to take the costs incurred in everyday operations and associate them to specific business segments. This is a new concept for a business this size and is similar to a manufacturing costing system called activity based costing (ABC). According to Babad and Balachandran (1993), ABC is a superior method for obtaining more accurate product costs, and is a means of better factory management. ABC also allows a business to analyze which practices, customers, and vendors are more or less profitable (Babad and Balachandran, 1993). ABC emerged early in the 1980s and had initial success as it was recognized as a new and valuable costing system. ABC measures the cost drivers and resource usage of the various processes it takes to produce a product or service (Ramasamy, 2004). Cost drivers are factors that cause the cost of an activity to change (Ramasamy, 2004). ABC was designed, in the beginning, for large manufacturing companies that had many different processes or steps required to produce a product. The steps involved in activity based costing as explained by Ramasamy (2004) are:

- Identify the major activities that take place in an organization:
- Assign costs to that activity
- Select appropriate cost drivers
- Assign the cost of the activities to products

Traditional cost-accounting systems maintain all overhead costs in one pool and give equal weight to all activities and costs in that pool (Babad and Balachandran, 1993). Some firms can track every activity while others group everything together. Each firm must find the most efficient and optimal number of cost drivers. Ittner et al. (2002) identified both strategic benefits and operational benefits to adopting an ABC system. The strategic benefits occur from improved information on make versus buy, product mix, outsourcing, and other strategic decisions. On the other hand, the operational benefits arise from a better understanding of the production

economics and cost drivers, which include lower costs, improved quality, and reduced manufacturing time (Ittner et al., 2002). An ABC system can help identify areas of improvement by distinguishing value added, non-value added processes and the cost associated with these activities. By identifying these activities the ABC system can indicate where improvements can be made and how many resources to allocate for the improvements (Ittner et al., 2002). Datar and Gupta (1994) acknowledge that there are many studies written that focus on ABC, but they argue that there has been little analysis as to why an ABC system leads to more accurate product costs. Multiple cost pools and cost drivers may better illustrate a cause and effect relationship between resource consumption and product cost but more detailed costing systems such as ABC may lead to other errors, thus making its adoption less than beneficial (Datar and Gupta, 1994). When dealing with ABC, it may be helpful to define aggregation and specification. Aggregation is defined as a group or mass of distinct or varied things; collection into an unorganized whole, and the state of being so collected (Datar and Gupta, 1994). Specification is defined as an act of making specific. Cost allocation includes both aggregation and specification. Costs are first aggregated into an unorganized group of things such as rent, property taxes, building maintenance, utilities. The costs are then divided into more specific groups

Estimation, in the simplest form, is an educated prediction or guess. Because it is subjective, estimation is subject to errors. ABC systems are no exception. There are three types of errors in ABC: specification errors, aggregation errors, and measurement errors. Specification errors occur when methods that classify costs to products fail to reveal the demands placed on resources by individual products. Costing systems have typically allocated overhead costs to products on the basis of volume-based drivers. If the resources to produce a product do not vary with the volume of products produced, allocating costs in this manner will not accurately portray the demands an individual product's production may have on the overhead resources (Datar and Gupta, 1994).

Aggregation errors transpire when a resource's units and costs derive a single allocation rate after being aggregated over heterogeneous activities (Datar and Gupta, 1994). This essentially means that if costs of a similar type, such as tear down costs, are put into one cost pool and then assigned to each product there is an

opportunity for error to occur. Look at three different products (product 1, product 2, and product 3) and assume each takes the same amount of time to tear down, but product 1 costs $12/hour, product 2 costs $15/hour, and product 3 costs $10/hour. If each product requires three hours for teardown, then under aggregation, the total teardown cost for each individual product will be an average of the three tear down costs and will not be a true reflection of what the tear down costs actually are.

Many firms would like to adopt more detailed costing systems to try and reduce specification and aggregation errors; however there may be a tradeoff that leads to an increased ‐ 9 ‐ number of measurement errors (Datar and Gupta, 1994). It is possible that measurement errors arise due to the lack of measurement guidelines or lack of information on the requirements of certain duties. Accounting personnel may not be informed of how long it takes to set up a certain production line; therefore they cannot make an accurate decision on where costs are allocated and how much of the costs are allocated to a product. A firm's product cost information does not necessarily improve because it refines its costing system (Datar and Gupta, 1994). According to Ittner et al. (2002), ABC adoption is associated with higher quality and manufacturing efficiency while reducing manufacturing costs, but there is no significant association with return on assets. The objectives of costing systems sometimes require different approaches, techniques, and philosophies (Beckett, 1951). Many companies realize that their cost systems are inadequate for today's competition (Kaplan, 1998). Cost systems now need to concentrate on three different functions (Kaplan, 1998):
Inventory valuation for financial and tax statements
Operational control - providing managers information on labor and resources used in a production period
Individual product cost measurement

Activity-based costing is an effective cost allocating method that has been expanded to a practice called activity-based management. Most ABC information available is from the manufacturing or government sectors, but most of the principles cross over to retail businesses. Rather than examining the resources it takes to produce a product, the goal of using an ABC type system in a retail setting would be to measure the resources needed to sell a product or group of products. Tracking every product in a retail business would be impossible, thus it would be

necessary to group the products into similar groups. In the case of WFC, the groups are seed, - 10 - chemicals, fertilizer, and feed. These groups make up a majority of sales for WFC and require most of the resources used throughout the year. Sales of other items make up too small of a percentage of sales and resources used to warrant any added cost to identify and control any problems

6)

* Thanapal proposed an expense tracker to prevent having to calculate income and expenses, as well as to remind someone to keep their expenses in track and also to add some details on how much money comes from other people and what expenses or payments the user have to make on a given date or month, User have categories in the expenditure tracker such as add expense, monthly expenses,add new expense, see categories of spending, export expenses in a date range, remove export files, and view expenses by category.

* Chandini proposed an expense tracker that will maintain all the expenses record of users and manage them efficiently. The user can choose an expense category and
provide additional information such as a photo, a location, and the amount of the expense, among other things. This will save the information to the local database. The user can examine and sort expenses on a weekly, monthly, or annual basis. By utilizing this, they reduced the quantity of manual calculations for their expenses and maintained track of their spending. The user can enter his income to compute his total daily expenses, and the data will be saved for each individual user. This tracker could be useful for people who frequently go on trips or to the theater with their buddies.
This tracker will make it easier for them to disburse the bill.This will show the graph in the chosen view.

* Karim proposed an expense tracker to create a system for recording expenses and income that is simple, quick,and easy to use. This project also includes features that will assist the user in maintaining all financial operations, such as a digital automatic diary. So, in order to create a better expense tracking system, they created a project that will greatly benefit the users. Most people are unable to track their expenses and income, resulting in financial difficulties. In this scenario, a daily cost tracker can assist people in tracking their income and expenses on a daily basis, allowing them to live a stress-free life.

7)

Daily Expense Tracker can be accessed from a web browser, such as Google Chrome or Mozilla Firefox, allowing for a portable work environment. The application contains all the features of digitally maintaining the records with some eye-catching visual representation and graphics of your spending and even eliminating the need of physical entries by providing voice instructions. This web application usually is developed using React Js as the framework and also uses its libraries like material Ui, chart.js to add and create the functionalities. ReactJS is a declarative, efficient, and flexible JavaScript frontend library for building reusable UI components. It is a component-based front-end library and is available freely to everyone which is responsible only for how the application looks or the view layer of the application. The aim of ReactJS is to make it feasible for developers to develop User Interfaces (UI) easily by dividing it into various components and also to develop fast systems. It uses virtual DOM (JavaScript object), which enhances

efficiency and the performance of the app. The JavaScript virtual DOM is faster than the conventional DOM. We can use ReactJS on both client and server-side as well as with other available frameworks. It uses components and data patterns that improve readability and helps to maintain and regulate larger apps. Component based development allows us to break the system into various components and develop them separately, test them separately and then integrate them to make up the system. Also, the concept of virtual DOM improves the performance of the system as the component on which the change is made is re rendered and the whole application is not re rendered again. Our application is divided into three major components that are income, expense and create transaction section. The transaction component controls the rest of the system. It allows users to choose from two categories whether it is an Expense or an Income and also choose from a list of types of income or expense, enter the amount and date and create an entry. After the creation of a transaction pie charts are created in the income or expense section based on the type of transaction in real time showing the distribution of your income and expense respectively. All these features of creating and deleting transactions are also implemented by voice commands using Speechly voice engine which is an AI powered engine providing voice recognition to implement in our system. The application makes use of advanced react concepts of context apis and hooks. With Hooks, you can extract stateful logic from a component so it can be tested independently and reused. Hooks ensure and allow you to reuse stateful logic without changing your component hierarchy. This makes it easy to share and use Hooks among many components or with the community. Styled components are used to style the web application and make it responsive for all the devices. Ultimately the best possible use of a stack of technology is done to make sure that the user experience is unmatched and inimitable.

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