Scholar J **Research Article**

A Mobile Application for Comprehensive Business Financial Analysis Reporting

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Abstract

Introducing an innovative mobile solution for seamless business financial analysis that empowers entrepreneurs with comprehensive income insights at their fingertips. The aim of the project work is to develop an android application that in details deliver the financial status of all the owners' businesses at anytime, anywhere. The project employed the object oriented analysis and design methodology for the development of the application using technical tools such as Android Studio, Andriod JDK, Kotlin and Firebase. Results showed that the system exhibits efficiency is functionality, easy data saving algorithm, real-time monitoring of finance and financial status reporting.
Key words: *Business, Financial Transactions, Mobile Application, Status Reporting.*

Introduction

Entering the world of business generates earnings derived from the profits generated by products or services provided. The funds acquired through these channels are typically allocated towards business expansion or fulfilling various requirements. Most businesses are operated by individuals with expertise in the respective field. Due to its advantages, an inexperienced individual might quickly engage in trading activities without adequate formal knowledge or basic orientation. Such individuals often participate in local trade at home, aiming to make ends meet and earn a livelihood, a common scenario among those residing in underprivileged areas.

The urgency to generate income swiftly compels many individuals to participate in one or multiple entrepreneurial ventures. However, the absence of sound financial acumen in business operations poses a significant obstacle. Challenges arise in performing accurate calculations, maintaining comprehensive records, and distinctly identifying data by segregating various income streams within the business. Business is an organization that provides goods or services in order to earn profit. With this definition, business activity through the provision of goods and services aim to generate profit. [1]. Monitoring the financial gains and losses holds crucial importance in managing a business. [2] A profit and loss report illustrates the projected and real profits of your enterprise. Often, individuals possessing the necessary expertise are

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assigned to handle these computations. However, the average person usually struggles with keeping accurate financial records and precise calculations, whereas precise financial calculations are integral to effective record-keeping.

Record keeping is a systematic procedure by which the records of an organization are created, captured, maintained, and disposed of. This system also ensures their preservation for evidential purposes, accurate and efficient updating, timely availability, and control of access to them only by authorized personnel. Keeping accurate records and up-to-date records is vital to the success of any business. The business must realize that records kept will be one of the most important management tools it possesses and, therefore, it should be allocated due importance. The business owner is looking for the maximum return on investment and maintaining good records is part of that equation.

Every department in every business produces some kind of information that can be used by its manager to measure performance. [3] This may be related to operational considerations within the department, the financial condition of the entire company, or the performance of a company's suppliers and customers. Unfortunately, managers may not be aware of the multitude of measurements that can be used to track these different levels of performance or of the ways that these measurements can yield incorrect or misleading information.

Performing accurate calculations, proper storage of financial transactions and provision of explicit business streams of information is a gap that most business owners out there cannot bridge.

Everyone desires to engage in one business or another. This inclination has become increasingly personal, driven by the necessity to manage household expenses and decrease reliance on fixed salaries. Amidst the pursuit of any legitimate means to generate income, it becomes imperative to discern which ventures are truly profitable and which are not. As a result, the following are encountered. There is a lack of formal financial knowledge in tracking business growth, posing challenges in the proper storage of all financial transactions and resulting in forgetfulness due to the absence of a handy device to store records, leading to inefficiency in business operations and unreliable financial records. Additionally, improper calculations and misidentification of data across multiple business streams contribute to a deficient summary of the financial status.

Review of Related Works

Here are some of the works related to the project

A. Daily Expenses Application

Daily Expenses is an application designed to organize your income and expenses, your movements of money are recorded by date, you can review the reports daily, weekly, monthly or yearly. Organizing your expenses allow you to have a better control over your money. This poses some limitations such as the fact that it is an off-line application. For this project, the on-line application creates room for providing access to information anywhere and everywhere with internet connection.

This is a free software that is available on iOS meant for helping you save money and stick to your budget by keeping you motivated with a simple easy to use interface. The application asks for your income and recurring expenses. From there, it calculates how much money you have available to spend on a daily basis. As you make day to day purchases or get some unexpected income, simple add it from the home screen. This is a similarity with this project. Nevertheless, the project provides remote access for operating various businesses. This among various factors emphasize the validity of the work.

B. Profit and Loss Calculator

This is a calculator that helps to calculate profit and loss for a business. It is used when a person sells something to someone else. If the user sells if for more price than he purchased, then he makes profit, other than that, the user losses. The E-commerce calculator is specially designed for you to calculate your profit and loss but doesn't make provision of a database for keeping track of the moneys earned from selling business products. This project keeps an account of the profit gained or loss faced by the user. The profit/loss calculator is mostly used by the business persons and related entities, stock traders and stock investors who are in share market where as this project is fashioned towards the super market owners, mall and retail owners, wholesalers and farm business owners.

The project employs interaction by creating room for business heads to input into transaction details meanwhile profit/loss calculator does not focus on this particular feature. The project stands as an improvement on the related system. The profit and loss calculator only keeps tracks of the profits made from selling products, while this project is a compact system that possess to keep records safe and perform accurate calculations on those records.

InDinero

Is an accounting software and service company designed to help small businesses manage their finances. It is a pretty awesome android application which works with other applications like FreshBooks. Some call InDinero a financial dashboard. InDinero pulls your bank and credit card statements from all of your banks. Some of the distinct features that my be related to this project work is that it puts expenses in the proper categories for immediate use. InDinero prepares financial reports like profit and loss statements, including some financial forecasting. Tracks your spending habits every month and gives reports which allow you to set up and maintain a budget.

Methodology

The methodology employed for the development of this system is object-oriented analysis and design methodology (OOADM). Object-oriented analysis and design methodology is a technical approach used in the analysis and design of an application or system through the employment of the object-oriented paradigm and concepts including visual modelling. This is applied throughout the development life cycle of the application or system, fostering better product quality and even encouraging stakeholders participation in communication.

OOADM is best applied creatively since there is no clear process involved, but each aspect where OOADM is applied is refined as it is reused. This is because major portion of the design are based on the entire aspect of the system and on the entities rather than on individual functions and code. This enforces the modular approach to OOADM whose goal is to break down the problems or the system into smaller units, called objects that can stand on their own and be changed without affecting the ones around them too much. This makes is easy to add functionality and behaviours, allowing the system to accept change. It divides the development process into several stages or processes. After the completion of the on stage, it will logically move to another stage. Sometimes moving back to the previous stage is necessary due to failure that occurs in current stage. System design methods are a discipline within the software development industry which seeks to provide a framework for activity and the capture, storage, transportation and dissemination of information so as to enable the economic development of computer applications that are fit for this purpose [4].

Object oriented programming is a programming language model that allows users to create and organize Java applications on desktops. Writing object-oriented programs involves creating classes, objects and applications which are stand-alone executable programs that use those objects. It simplifies the software development and maintenance by providing some concepts.

Object oriented analysis and design methodology can be broken into two major areas; firstly, object oriented Analysis which is the procedure of identifying software engineering requirements and developing software specification in terms of software system object model, which comprises of interacting objects. Secondly, object oriented Design which involves implementation of the conceptual model produced during object-oriented analysis. In OOD, concepts in the classes, constraints are identified and interfaces are designed, resulting in a model for solution domain, that is, a detailed description of how the system is to be built on concrete technologies.

The implementation details generally include;

i. Restructuring the class data
ii. Implementation of methods, internal data structures and algorithms
iii. Implementation of control, and
iv. Implementation of associations.

Object oriented design as "a method of design encompasses the process of object-oriented decomposition and a notation for depicting both logical and physical as well as static and dynamic models of the system under design".

This project is developing a mobile platform that keeps track of an individual's business transactions. The specific features to take into consideration are:

i. to build a mobile application that can be used on mobile devices. This mobile application has an interface for capturing all financial transactions from multiple businesses and their related activities
ii. Storage of all financial transactions done by the user. This is only achieved when the user inputs the details of the transactions using a form
iii. Perform basic operations like determining profit and depict an income statement from its summaries
iv. Show account statements of all financial streams of the multiple businesses.

System Specification

The system is an internet-based application which can be accessed any time and anywhere at any time. It has three tier access models

i. Record keeping
ii. Calculations
iii. Third party usage

The goal of the on-line application is to have the small and medium scale entrepreneurs using this application on their android phones.

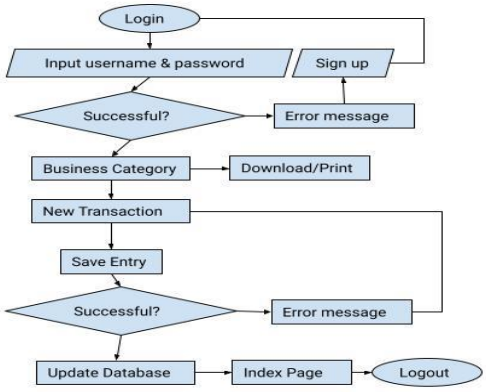

Figure 1: System Flowchart. It is a graphical representation that illustrates the sequence of steps or actions within the process. Typically, various shapes to represent different elements. Arrows are used to show the direction of the flow from one step to another. Flowcharts is to simplify complex processes and aid in identifying potential bottlenecks or inefficiencies.

Method of Data Collection

For this project we choose the two main source of data collection in carrying out the work. There are primary source and secondary source. The primary source refers to the source of collecting original data in which personal interviews with some individuals was carried out. The secondary source of data collection for this kind of project was obtained from journals and libraries on-line.

Hardware Requirements and Technologies Used

A smart phone with android version 8.0 or later is recommended. Technologies used were Kotlin, Java (JRE and JDK), SQLite and Android Studio.

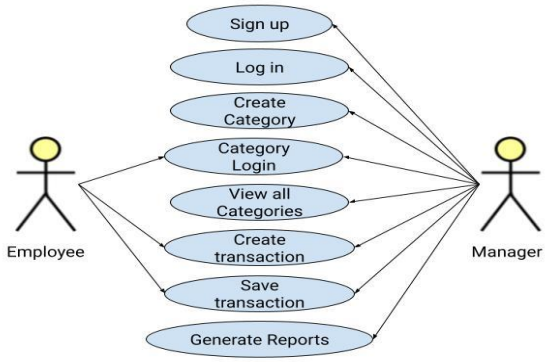

Figure 2: Use Case Diagram. Is a visual representation that describes the various ways a user might interact with a system. It illustrates the functionality provided by the system in terms of actors and the specific tasks to be performed.

Methodology Implementation

The on-line mobile platform is the collection of tiny on-line mobile based tools to analyse the financial performance, operating cost and earning of the business calculations. These are some of the basic tools, specifically designed to compute the values that can provide better assessment on financial performance of the organizations or to determine the small business commodity pricing strategies.

The standard of the design includes;

i. Design an input format that will enable to application to fill in all the necessary data requested from the user.
ii. Structure a database system that will store all the information using SQLite.
iii. Design a well formatted output that will present information to management in a meaningful format containing necessary information.

iv. Employ a top-down methodology in the design to enable a central control menu for accessing other sub systems.

Basically, the meta-data extraction software consists of one major module which serves as the interface of the application. The interface consists of several buttons which when clicked upon gives pop-up windows with several options to select from.

i. The sign up button enables a new user to create their account (name, sex, phone, location, email, password).
ii. The login button enables one to provide his or her personal data (login with email and password)
iii. The edit button enables the user to clear the displayed result and initializes the software for another extraction.
iv. The print/download button
v. The exits button (logout) terminates the operation of the software.

System Output and Results

Home page

The Home page provides an entry point into the application. Technically it is the first activity (main activity) launched by the android operating system. It contains a link to “about app”, a caption, a sign-up button and an alternative login button.

Link: This is captioned “About Nexbit” and provides a handle to a web page that contains the basic information one would need to know about the application.
Home Caption: Is a little write up which serves the purpose of giving the user a brief of the application.
Sign up: Navigates the user to the sign up form page where you will be able to input details required for creation of an account.
Login: A user who already has an account goes along with this option. Simply to input your account details and get logged on.

Figure 3: *Home page*

Sign up page

This is where the user creates an account. It is basically a form that authenticates and validates the inputs of the user that they are unique to the already saved data and are meaningful not just some random characters. They are input fields requesting for user’s first name, last name, email address, location, a unique user-name and password. The application operates a hierarchical account system where the user (here referred to as manager) has superior access to all business category accounts which can be operated by his/her employee. The business category accounts only have access to their individual accounts and not any other. To ensure authentication, the user (manager) is equally the one who creates an account for

the business category heads.

Figure 4: Sign up page

Manager Login

This is the first part of the login page which is the manger login. The manager logs in by inputting his user details. This gives him/her access to all the business categories and equally a summary of all the business categories. A caption is written above to designate the title of the page. At the bottom of the page is a navigation to the category head login.

Figure 5: Manager Log in

Business Category Head login

This is the second part of the login page. Here is where the business category head log's into a particular business category using the login details provided by the manager. At the bottom of the page is a navigation to the manager login. This achieves the objective of providing remote access of the system to an employee.

Figure 6: Category Head Log in

Create Business Category

The basic target of the application is to provide financial status of your business(s). this page requires you create a business or business category (as most times referred to). It's compulsory to have at least one business because that's what the entire operations of the application revolves around.

Figure 7: Create Business Category

In creating a business category, the user will need to input the name of the business category, the name of whomever will be in charge of the account (could be the user or third party), a user-name different from the users'(manager's user-name) and a corresponding password. With these details both the manager and the business category head can have access to that individual account.

All Business Categories

This page displays all the available categories that have been created by the user. It outputs them as rectangular bars each with a specific name. With a long tap on one item, options pop up for the user to either open, edit, or delete. At the bottom of the page is a button that navigates to the "Create Business Category" page to enable the user add up a new business category.

Figure 8: All Business Category

Transaction Section

The transaction page makes provision for the user to input the details of a transaction. For clarity and easy understanding, the form has the following fields.

Amount: the total amount of money involved in the transaction
Business Category: The business category that the transaction was made for.
Label: the caption that will be used by the user to remember what actually transpired and for what reason.
Money flow: Whether money came into the business of it went out.
Date: Date of the transaction.

Figure 9: New Transaction

Business Category page

This displays an array of all transactions done in a particular business category. As the transaction come in, the values automatically update prior to the calculations (increase or decrease) done on the current input. When money is leaving the business, the application does a reduction from the current status which is always designated at the top right corner. When money comes in, the reverse is the case.
For each transaction spelt out in this page, it contains the following attributes; a keyword (Credit - C or Debit - D), the label of the transaction, amount, and date. Should in-case the user performs a new transaction,

an “add transaction” button is at the bottom right corner of the page. Clicking on the plus button takes the user to add a new transaction form.

Figure 10: Business Category Page

Total Summary

This page displays the total summary of all the business category. By this, it provides the financial status of not only one business but the individual’s financial status with respect to the multiple business streams.

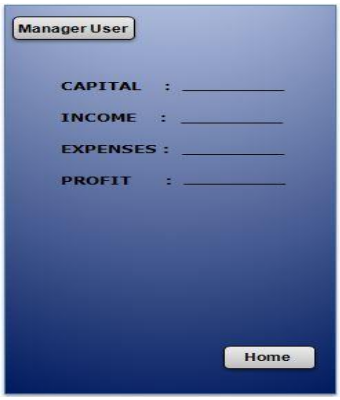

Figure 11: Total Summary

At the top is the title of the page which is designated “Total Summary”. Also contained in the page is the total capital that was used to start the business, the total income gotten from the operating the businesses, the total expenses incurred from business activities, debt if any was incurred and finally the profit which is calculated by subtracting the expenses and debts from the total income.

Conclusion and Recommendation

At the implementation of the project, amongst all testing approaches considered on building an android application that has an interface for capturing all financial transactions from multiple businesses, the system has proven to be efficient in functionality, provide user with a way to easily and conveniently save data, monitors and keep record of financial transactions, give quarterly report of financial status, provide business

details like profit and loss for each financial stream. The software will yield better results if maintained and kept running on a cloud rather than just a stand alone server. Future versions of the software should include an iOS application or hybrid so as to make the software equally available to Apple users.

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