A

PROJECT REPORT

ON

“FOCUSED BANKING SOLUTIONS”

SUBMITTED

To

CENTRE FOR ONLINE LEARNING

Dr. D. Y. PATIL VIDYADEETH, PUNE

IN PARTIAL FULFILMENT OF DEGREE OF

MASTER OF BUSINESS ADMISTRATION

BY

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CERTIFICATE

Dr. D.Y. Patil Vidyapeeth's
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This is to certify that Mr. **ATISH KUMAR PACHAURI**

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has completed his/her internship at **QOLLAB EDUTECH PRIVATE LIMITED**

starting from **22-05-2022** to **17-07-2022**.

His / Her project work was a part of the MBA (ONLINE LEARNING)

The project is on **BANKING MANAGEMENT**.

Which includes research as well as industry practices. He/ She was very sincere and committed in all tasks.

Course Coordinator Director

_____ _____

Date -

COMPANY LETTER

(TO BE PROVIDED BY THE COMPANY WHERE THE PROJECT WILL BE CARRIED OUT)

To whomsoever it may concern

This is to certify that Mr./Ms. _____

PRN - _____

has completed his/her internship at _____

starting from_____ to _____.

His / Her project work was a part of the MBA (ONLINE LEARNING)

The project is on _____

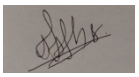
Which includes research as well as industry practices. He/ She was very sincere and committed in all tasks.

Signature & Seal of Industry Guide

DECLARATION BY STUDENT

The purpose of this document is to declare that I have completed this work myself for the M.B.A Program of Institute of Dr. D.Y. Patil Vidyapeeth, Centre for Online Learning Pune – 411018

The work is original, has not been copied from anywhere else, and has not been submitted to any other University / Institute for an award of any degree / diploma.

Date: - 20/07/2022 Signature: 

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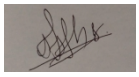
This is to acknowledge with thanks the help, guidance and support that I have received during the project.

I have no words to express a deep sense of gratitude to Mrs. Vandana Sivaraj for her able guidance and supervision as well as providing information related the project and also for her support to complete project. I would also thankful to the management of Qollabs for giving me an opportunity to pursue my project.

I must also thank Mentor of DPU for his/her valuable support.

I also place on record my appreciation of the support provided by my project colleagues and other colleagues during my dissertation work.

Signature: 

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- **ABSTRACT & BACKGROUND**

The Focused Banking Solutions project is a program that keeps track of a client's bank account. This project demonstrates the operation of a banking account system and covers the essential functions of bank management software. It is a project for resolving a customer's financial applications in a banking environment to meet the needs of an end banking user by providing multiple ways to complete banking chores. Additionally, this project provides additional features to the user's workspace that are not available in a traditional banking project. This project's main goal is to create a software for a bank account management system. This project was designed to make it simpler and quicker to complete previously impossible processes with manual systems.

- **PROJECT SUMMARY**

Banking management system can be considered as a most important thing in economic world. In the present scenario, the banking sector is a common need in everyday life. In day-to-day life, problems are faced like changing the location (branch) of the account which requires filling the application and waiting for the bank process to be completed. However, the process requires a lot of time and manual work as well. To add on, nowadays, Aadhar Card must be linked to the bank account. Though this is possible through by going to an ATM, in case of an emergency, it isn't always easy to locate an ATM and link the card. This problem is, however, rectified in our project i.e. Focused Banking Solutions

The Focused Banking Solutions project emphasize on resolving Customer's Banking Management needs using latest software programming language such as Python with Django framework. Python is one of the best programming languages for app development because it is easy to use and it is flexible. Programmers also find it easy because there are easy solutions for every glitch and coding errors.

Django is an MVT web framework used to build web applications. The Django web-framework is huge and comes with so many "batteries included". The principle behind adding so many batteries is to have common web functionalities in the framework itself instead of adding latter as a separate library.

Django is designed in such a way that it encourages developers to develop websites fast, clean and with practical design. Django's practical approach to getting things done is where it stands out from the crowd.

We planned on building a highly customizable app, such as Banking Management website. Django is one of the best frameworks to consider. Django strength lies in its interaction between users or its ability to share different types of user interfaces and interactions. One of the great advantages of Django is its ability to utilize large community-based support which gives us highly customizable, third-party, ready-to-use plugins in our applications.

SQL stands for Structured Query Language and is used to delete, insert, update, and retrieve data from databases. MySQL database has been utilized to store and track all transactions within the system.

Visual Studio IDE is a comprehensive development platform for cloud, web and multiple operating systems. It provides users with a smooth interface that is easy to navigate, allowing for faster and more accurate coding. Developers will have access to a range of debugging tools which facilitates in diagnosing and profiling bugs. This would give programmers the confidence of deploying their applications because they know that they've got a set of tools which monitors any troubles that might cause performance errors. Furthermore, Visual Studio IDE functions as a testing platform too. The IDE can be used to simulate how applications will run in their selected environments. This is for ensuring that once the application is deployed, it will run smoothly as tested. After understanding benefits of Visual Studio IDE, we have utilized it for our coding, development and testing purpose.

Bootstrap is the most popular CSS Framework for developing responsive and mobile-first websites. Bootstrap has the advantage of being Twitter's product, an American technology firm with an excellent reputation. The reason we have used Bootstrap is because it prioritizes mobiles, is time-saving, easy to use, and is consistent in the experience provided to developers and users, which is also widely adopted by best-in-class company such as Apple.

Agile Methodology and DevOps Methodology have been utilized for the software design, development and testing during this project. Agile Methodology has ensured Superior Product Quality, Higher Customer Satisfaction, Better Quality Control, Improved Project Predictability, Increased Flexibility, Continuous Improvement, More Execution, Less Administrative Work, Improved Team Morale and Higher ROI From Project Management or Product Development.

DevOps Methodology has been used for testing of application due to collaboration and trust between development and operations team, release faster and work smarter, accelerate time-to-resolution and better manage unplanned work.

Our Focused Banking Solutions Application is developed with facilities such as Dashboard, Account, Transfer and Miscellaneous banking services using the latest software technologies mentioned above which are available in the market.

In summary, Focused Banking Solutions in Django with Source Code can be useful to students or professional who want to learn python programming language. This project can be further modified to fit your personal requirements.

1 INTRODUCTION

1.1 INDUSTRY PROFILE

In today's scenario, user friendly approach is necessary in all sectors. Banking sectors are in competition among themselves trying to develop software solutions and products making it more user-friendly for customers. This broadside proposes one such idea of solutions for banking sector. This approach provides more user–friendliness with its wide-ranging method.

Banking is defined as the business activity of accepting and upkeep money owned by other individuals and entities, and then lending out this money in order to conduct economic activities such as making profit or simply covering operating expenses.

Bank is the place where customers feel the sense of safety for their assets. In the bank, customers deposit and withdraw their money. Transaction of money also is a part where customer takes lodging of the bank. Now to keep the belief and trust of customers, there is the positive need for management of the bank, which can handle all this with comfort and ease. Smooth and well-organized management affects the satisfaction of the customers and staff members, indirectly. And of course, it inspires management committee in taking some needed decision for future improvement of the bank. Now a days, managing a bank is a tedious job up to certain limit. Therefore, a software that reduces the work is essential. Also, today's world is a genuine computer world and is getting faster and faster day-by-day. Thus, considering above necessities, the software for bank management has become necessary which would be useful in managing the bank more professionally.

In the recent years, computers are a part of the job for almost everyone. The availability of software for almost every process or every system has taken the world in its top-gear and makes day-to-day life easier. Hence, we have developed a software program, i.e. Focused Banking Solutions, where the management of a bank is done easily and efficiently. It manages all the transactions including new account entry, deposit, withdraw entry, transaction of money for various processes, loan entry, managing bills cash or cheque, etc. Thus, the above features of this software will save transaction time and therefore increase the efficiency of the system. Requirements definition and management is recognized as a necessary step in the delivery of successful system. Creating and managing requirements is a challenge for IT. Organization needs to effectively define and manage requirements to ensure they are meeting needs of the customer, while proving compliance and staying on the schedule and within budget. The impact of a poorly expressed requirement can bring a business out of compliance or even cause injury or death. Requirements definition and management is an activity that can deliver a high and fast return on investment.

Focused Banking Solutions is accepted as a project and is based on relevant technologies. The main aim of this project is to develop software for bank management system. This project develops a software for bank management system. This project has been developed to carry out the processes easily and quickly, which is not possible with the manual system. This

project is developed using Django language. Hence, it provides a complete solution for the current management system.

1.2 BRIEF STATEMENT OF THE PROBLEM

During the past several decades, internet banking function has been transformed from a relatively doubtful record-keeping system to central and top-level management function related to customer's banking requirements. There are many factors that have influenced this transformation including technological advances, expertise, and even general appreciation of human beings.

A computer-based banking management system is designed to handle all the primary information required to calculate monthly statements of customer account including monthly statement of any month, dashboard, multiple account handling, fund transfer requirements and customer profile management. A separate database is maintained to handle all the details required for the correct statement calculation and generation within banking management system.

This project intends to introduce more user friendliness in various activities such as record updating, maintenance, and searching of customer bank accounts. The searching of record has been made quite simple as all the details of the customer can be obtained by simply keying in the identification or account number of that customer. Similarly, record maintenance and updating can also be accomplished by using the account number with all the details being automatically generated. These details are also being promptly automatically updated in the master file thus keeping the record absolutely up-to-date.

The entire information has been maintained in the database or Files and only authorized users can access the file. This system provides fast, efficient, reliable and User-friendly interfaces in banking and has no chance of losing data while processing the user data i.e., customer account transactions. This software also provides a good user interface such that a user with basic computer knowledge can operate the application. Furthermore, it reduces the work done by the accountant and also reduces the load of real-time computation. This software enables faster transaction like new account creation, withdrawal of cash from the account, deposit of cash to the account, checking account balance of the account holder even if there is a large amount of data in the system database.

1.3 IMPORTANCE OF THE PROBLEM

Technology has changed the way many tech-savvy customers do their banking. The onset of online banks has made it possible for customers to conduct all banking virtually, without ever having to visit a brick-and-mortar location. Choosing between online banking and traditional banking is mainly a matter of preference, but the latter does offer plenty of features many customers would consider a major disadvantage.

Accessibility in traditional banks is limited, as you can only conduct business at their brick-and-mortar locations. If you're traveling or unable to make it into the location during

standard hours of operation, you won't be able to do business. Moreover, during COVID-19, customers realized importance of online banking and digital transactions.
Getting in the car, driving to a bank and waiting in line to be served takes up your valuable time. It is more efficient to do your banking online, where you can open new accounts, set up auto bill pay, check account balances and transfer funds all from your own computer.

1.4 SCOPE OF THE PROJECT

Depending on the bank's policies, bank personnel and/or customers can utilize the Banking Management System. It can be utilized by multiple employees at the same time if they have the necessary permissions. Any web browser with a graphical interface can be used to access it.

The main objective of our project is providing the different typed of customers facility. The main objective of this system is to find out the actual customer service offered by the bank.

- It should fulfill almost all the process requirements of any Bank customer.
- It should also reduce time taken by customer for any transactions with user-friendliness feature of the system.

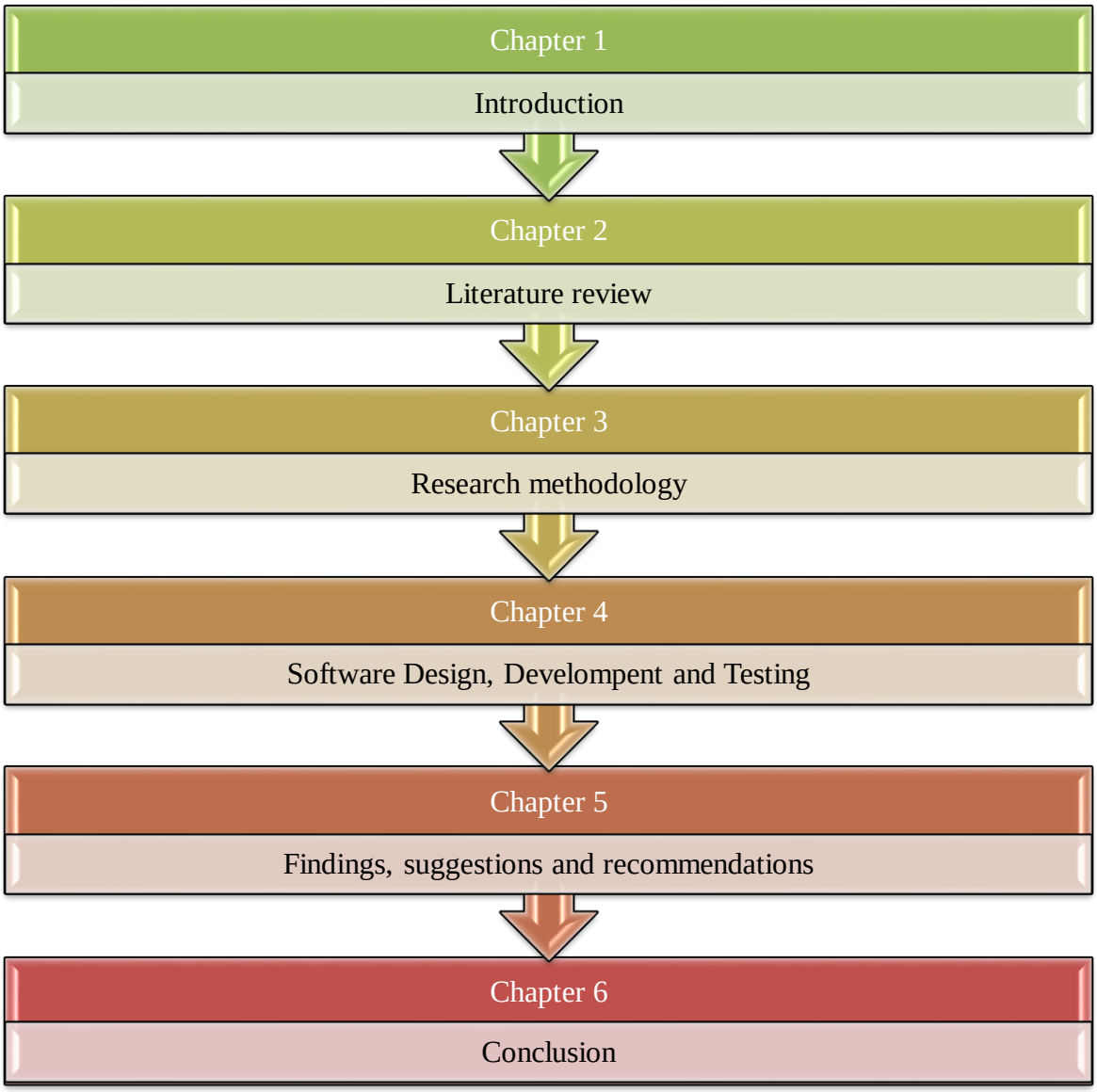
This project includes the entire upgraded feature required for the banking system. This system is very easy to use, so that any user can use it without needing previous knowledge on this. It's very much user friendly and meet almost all daily working process requirements for customer's account management. This system is completely web based and can be accessed by any platform such as computer, mobile, tablet, etc. This system is melded in such a way that has got all features to upgrade without making much change in existing components.

The goal of the bank management system project is to create an organic and optimal software of interaction between the various banking components. This is to maximize the profit of the banking mechanism. The implementation of competent bank management procedures is significantly responsible for the successful optimization of the bank's productivity and activities.
The project's main goal is to create an online banking system for banks. To withdraw or deposit money, the user must go to the bank. Today, it is also hard to find account information for people who have accounts in the banking system.

1.5 PROJECT REPORT STRUCTURE

This project report includes 6 chapters along with cover page, acknowledgement, declaration by the student, table of contents, executive summary, bibliography, references and appendices.

Following is a schematic overview of the chapters followed in this research project report.



Schematic view of the chapters in Project Report

This thesis includes 6 chapters and can be further segregated into few parts. The first part, formed by Chapter 1 and Chapter 2, gives an introduction and overview of this research. The context and necessity of this research are explained in this part. Part II is the main body of this thesis. It comprises of Chapter 3 and 4. Research Methodology will be described in the Chapter 3 followed by Data Analysis in Chapter 4. Part III introduces the Findings, Suggestions and Recommendations part and provides the summarization of this research. The conclusion, is also provided in the last part.

Chapter 1, Introduction, explains the backgrounds and objectives of this research. The general structure of this thesis is introduced in the final section of this chapter.

Chapter 2, Literature Review, provides with an overview of the related topics of Banking Management System

Chapter 3, Research Methodology, introduces the Research Methodology and provides with the Project Methodology overview.

Chapter 4, Software Design, Development and Testing, develops the Conceptual Framework and introduces the main arguments precedent to the development of the research model.

Chapter 5, Findings, suggestions and recommendations, examines the Findings and presents the results of the research performed in the banking industry. The answers of some objective questions are also analyzed.

Chapter 6, Conclusion, provides Results and Discussions on the results achieved. A discussion on the best practices of Banking Management System is provided. Finally, the practical meaning of this research is reviewed.

2 LITERATURE REVIEW

E-banking is an innovation when new information technologies merge into traditional banking services. Operating costs minimization and revenue maximization are the major drivers that boost e-banking services. E-banking service is basically a self-service by customers, so for banks, it requires less resources and lower transaction and production costs. A study about the e-banking over 1999–2006 shows that the application of e-banking can improve banks' performance in terms of the growth in assets, reduction in operating expenses and portfolio enhancement. Even in 1990s, Sraeel (1996) emphasizes that creating virtual banking will not only create a new service delivery channel, but also lead to value creation to both banks and customers. AmatoMcCoy (2005) further argues that customers will be attracted to e-banking when the advanced e-banking services like e-transfer and e-bill options are available. Through interviewing banks in a small island and examining their e-banking websites from 2004 to 2006, Jenkins (2007) indicates that those banks were using e-banking as an assurance to their customers to maintain a competitive quality of service. To continually improve the performance of e-banking services, several core-capacities are critical:

- Planning new IT infrastructure
- Enhancing transaction security
- Providing value-added content
- Delivering differentiated services
- Managing customer relationships
- The retention and expansion of relationships with relative older and lower IT awareness customers (Wu et al., 2006).

Consumers today are much selective in choosing banking services in terms of their demands and preferences. To be competitive, banks must develop services to satisfy customers as well as delight them at the same time. Liao and Cheung (2002) indicate that the most important quality attributes underlying perceived usefulness of e-banking are expectations of accuracy, security, network speed, user-friendliness, user involvement and convenience. A basic Electronic Service Quality standard is developed with four dimensions: efficiency, fulfilment, system availability and privacy (Parasuraman et al.,2005; Ibrahim et al., 2006). Herington and Weaven (2007) indicate that online service quality has no direct impact on customer delight, e-trust or the development of stronger relationships with customers, but it does have a relationship to e-loyalty. Their research also indirectly explains the change of households of using online banking service. For example, in 2003, 91% of US households held bank accounts and 93% of those used at least one electronic transfer of funds option with their account (Kolodinsky and Hogarth, 2004).

However, Fest (2007) points out that only 40% of US households took advantage of e-banking service, whereas over 50% of households that had not been attracted yet to e-banking because those customers might have had a bad experience on a self-service site (Swann, 2008). The winners in e-banking industry are those banks that are able to successfully enhance their offerings while simultaneously enhancing security measures and getting

customers to believe in them (Rombel, 2006). In addition, for all e-banking customers, customer satisfaction is affected not only by banks' service quality, but also by their cultural features (Levesque and McDougall, 1996).

The end users are numerous as well and include mainly conveniency of the service (time saved and E-banking in developing countries grows rapidly in the past decade (Akinci et al., 2004). Their research indicates that for consumers' attitudes and adoption towards e-banking, there were significant differences between the two groups, e-banking users and non-e-banking users, with respect to demographic profiles, attitudinal properties and preferences for service delivery channels. For instance, in China, there were only 6000 computers connected to the internet with 40,000 internet users in 1995, but there were 10.2 million internet-connected computers and 26.5 million internet users nationwide by the end of June 2001 (Zhao, 2002). Lu et al. (2005) reveals that one of the key strategic responses of banks in China before joining WTO was to develop e-banking to a more competitive environment, even under the current condition of lack of practical customer credit system.

In another research, Laforet and Li (2005) examine the extent of e-banking and m-banking in China by investigating its market status, identifying the target customers, the demographic characteristics of users and non- users, and comparing their attitudes towards e-banking adoption. They conclude that there was a low awareness of such services in China, owing to security concerns, perceived risks, low computer skills and a Chinese tradition of cash-carry banking. The rise of Internet Banking is also due to its number of benefits for both the provider and the customer as well. From the bank's perspective these are mainly related to cost savings (Sathye, 1999; Robinson, 2000) and internet banking remain one of the cheapest and more efficient delivery channels (see Pikkarainen et al, 2004). Other rationales for the adoption of such services are also related to competition as internet banking strategy has been an interesting way to retain existing customers and attract new ones (Robinson, 2000) and to the numerous advantages to banks for instance, mass customization, more effective marketing and communication at lower costs amongst others (Tuchila, 2000). Benefits for globally accessible service, lower cost of transaction and more frequent monitoring of accounts among others (Pikkarainen et al, 2004). However, it should also be noted that there are still customers who fear to make use of Internet banking, as they are concerned with security aspects of such a system. Centeno (2004) argues that speed, the convenience of remote access, 24/7 availability and price incentives are the main motivation factors for the consumers to use internet banking. Durkin et al. (2008) notes that the simplicity of the products offered via internet banking facilitates the adoption of internet banking by consumers. Calisir and Gumussoy (2008) compare the consumer perception of internet banking and other banking channels and report that internet banking, ATM and phone banking substitute each other. Maenpaa et.al. (2008) examine the consumer perceptions of internet banking in Finland and their findings indicate that familiarity has a moderating role in the perception. Guerrero et al. (2007) examine the usage of internet banking by Europeans and their results indicate that ownership of diverse financial products and services, attitude towards finances and trust in the internet as a banking channel influence client‟ usage of internet banking. Confirming other papers, Sohail and Shanmugham (2003) document

accessibility of internet, awareness of e-banking and resistance to change are found to be influencing Malaysians use of internet banking. Another factor that promotes client's usage of internet banking is seller support (Nilsson, 2007).

The rapid expansion of internet banking is most noticeable in the developed countries such as the USA where the availability of computers and easy access to the internet has made it easier for banks to adopt internet banking. Adoption of internet banking services in developing countries appears to be taking place at a slower pace. In recent years however, banks in developing countries are increasingly offering internet banking services despite the limitations they face. Polatoglu and Ekin (2001) reported that, since 1997 several leading Turkish banks have offered online banking services successfully. According to the Turkey banks association, 27 out of a total of 47 banks, in other words 58% of all banks in Turkey were offering internet banking services in 2006 (Banks Association of Turkey, 2006). Joseph and Stone (2003) investigated the customer perception of the impact of technology on service delivery in the banking sector. According to the findings of this research, high scores on the ability to deliver service via technology appear to be correlated with high satisfaction with services deemed most important to customers. Hence, availability of internet banking services appears to be very important for banks for customer satisfaction and retention. However, availability of internet banking services itself is not a sufficient factor to increase customer satisfaction. User friendliness of the internet banking services appears to be an important factor for customers to use these services. In a similar study, Lang and Colgate (2003) found that customers who do not have IT gap, find it easier to use internet banking services therefore they have higher satisfaction levels than the ones who do not have IT skills. The empirical study by Broderick and Vachirapornpuk (2002) also show that the level and nature of customer participation in using internet banking services has the greatest impact on the perception of service quality.

The importance of bank efficiency in academia and industry is reflected in the abundance of literature on the subject.

Frontier markets tend to liberalize and enable foreign entrants as they develop, hence increasing competitive forces (Arshad et al., 2019). In competitive marketplaces, increased efficiency and productivity are bank aims, and they constitute additional sources of information on bank performance. By identifying performance restrictions, efficiency assessments aid in the establishment of realistic targets during the development of an organization (Kamau, 2011). Dr. Geeta Sharma discussed about role and benefits about internet banking in Indian banking sector. She also discussed the services obtained through internet banking are statements, online fund transfer, online payment services, online requests and intimations and maintaining demat account.

Ebubeogu Amarachukwu Felix developed software for banking management system using ASP.NET. This project performs the following operations, opening an account, deposits, withdraws, fund transfers and updating the details.

The expansion of banks and other financial institutions is directly dependent on the fundamental banking systems as the banking industry and information technology evolve. Software development, testing, and application of key banking systems are becoming increasingly important aspects in the banking industry's growth. As client needs have grown more complex, conventional banking software has become more complicated, and many parts of the conventional banking software application are steadily emerging research hotspots. Nevertheless, the core banking system's software has been tested in conjunction with the banking business and the banking data system. Software testing is carried out at every stage of the construction process in core banking industry initiatives, and it is what propels the project forward.

The banking management system sector has seen some greatest expansion in the past year and with the number of customer interactions increasing the day it has totally all the records in the database.

When it comes to managing the money or valuable assets it automatically becomes a crucial matter for the service provider and the client as well for the trustworthiness. The banking management system is one of the most complex systems because the things it covered under the roof for transparency among the customers.

From managing the customer information, account information to the transaction happening every minute or second. It does not only preserve the details of the transaction and other information but generates the report to further banking functions. In this Focused Banking Solutions, there are many operations that are automated which ease the work for the working of the bank.

This reduces the requirement for manual labor and the automated tasks will be error-free as they will only work as they are programmed whereas doing work manually there is always a possibility of human error.

The major modules of this system are as follows:

- Branch (Bank)
- Customer
- Accounts
- Transactions
- Employees (Bank)

As it simplifies most of the manual tasks for the bank but there is a major concern over the security of the data and assets of the customer so it is very important to keep up with security features and tested each module carefully while deploying. This digitization of the bank will help the bank in every aspect of its growth.

It will not only make the work easy but significantly improve the speed of work as there are no physical files or data sheets will be there to manage everything will be managed logically with the system and machine. The information about the customer or if the customer wants to

know their information will be just some clicks away and with an increase in transparency between the customer and fast service it will automatically get the trust of customers.

2.1 BANKING MANAGEMENT SYSTEM

The existing bank system is slow as every task is being performed by the human being and comparing the computer task speed with a computer is not fair. The complexity of this system is increased when an increase in the number of customers and with that there will be a number of transactions will be performed now everything needs to log in to a file for reference in the future which is simply not the kind of scenario we need at this time.

Some other drawbacks of the existing system:

- Less security of customer and bank information.
- Require more physical work and manpower.
- All the manual entry and editing will take more time.
- No level of clearance for the different levels of employees.
- Safety of paper documents from the disaster.
- No backup of the information.

There by looking at disadvantages these are pretty serious for any banking system as they are capable of bringing down the whole system. By digitalization in the banking system, it will not only achieve its goals and also will give some benefits like less manual calculation will be required.

Some improvements by executing the proposed system:

- More secure information will give a layer of security of authentication and authorization.
- Required very little manpower.
- Simplify the problem of editing.
- Maintain the clearance level by the hierarchy.

The information will be secure from the different types of disasters as there will be an automatic backup system for the customer and bank information.

- Maintain data integrity Validate the manual calculations avoid calculation error.
- Safeguard the data accuracy.
- More reliable and efficient.
- More user-friendly interface.

2.2 MAJOR MODULES OF FOCUSED BANKING SOLUTIONS:

Bank Branch:

Almost all banks have multiple branches expanded over multiple cities. To manage those branches throughout the system we have this module it will keep the manageability of the branches and provide a unique identity to every branch. Every branch will have its unique identification number and a branch name.

From this module, we can easily identify the branch location and the other information like employees working at that branch. For communication purposes, there will a permanent phone number and then there is a manager who will manage the whole branch. All major decisions for the branch will be taken by the manager and the first point of contact person for the head office will be a manager.

The branch module will also help banks find out about their performance at a different location so they evaluate on this improve the customer service quality. There will always some kind of special benefit for the people of the home branch.

Customer:

These are the main source of business for the bank. The number of the customer will improve the position in the market. There are different types of customers from the common people to the businessman and everyone has an account on the priority of they require it.

- The different types of customers are:
- Individual Account holders
- Joint account holders
- Partnership firm holders
- Limited liability companies
- Clubs and Associations
- Trusts

These are the persons or group which can have the account on the bank for their individual or business or non-profit work.

Account:

Every person will become a customer when they open an account in the bank start depositing the money or take some other service. The account enables the customer to take advantage of the facilities provided by the bank. Every customer has their unique account number and the bank will identify you by only that account number.

The account number will be the same for all the branches of that particular bank. This will hold the balance in account, interest which is provided by the bank to that customer and if the customer is active this will be defined by the last transaction done by the customer forex. The saving account usually remains active for 6 months with no transaction after that it needs to be reactivated.

Further the types of account a customer can have been:

- Savings Accounts
- Current Account

- Checking Accounts

These are some types of accounts users can have according to their use and priority. All different types of accounts have their own benefit for the customer. Some other things a customer can opt for are a locker or fixed deposits.

Transactions:

Every time an account holder performs some activity on the account it will be updated through transactions this is like logs but only showing the required details. Any time a customer makes any changes in an account like pay or deposit it will be through transactions. This helps in keeping the track of cash flow in the bank.

Also, help in managing the correct information if there is some data loss to the bankside or if there is any query at the customer side.

Bank Employees:

Even after all the digitization of the bank, there will always be a requirement of an eligible employee for the correct management of events. Employees are the backbone of any bank and to manage the number of employees we have this module. Their information will be kept separately from the customers.

All the employees will get their unique employee ID similar through all branches of the bank. They will have a different level of clearance to get information. All will be provided with secret authentication details required to log in on their respective systems to work so no other person can interfere with their working ground.

It will give the idea in which department they working and what is their designation while working there.

2.3 SYSTEM ANALYSIS AND REQUIREMENTS

This Focused Banking Solutions Project is created using Django, html, python, CSS and Bootstrap. It is created using Python Django Framework on the backend and HTML, CSS, and JavaScript on the frontend.

2.3.1 PYTHON

Python has become one of the most popular programming languages in the world in recent years. It's used in everything from machine learning to building websites and software testing. It can be used by developers and non-developers alike.

Python is commonly used for developing websites and software, task automation, data analysis, and data visualization. Since it’s relatively easy to learn, Python has been adopted by many non-programmers such as accountants and scientists, for a variety of everyday tasks, like organizing finances.

Python has become a staple in data science, allowing data analysts and other professionals to use the language to conduct complex statistical calculations, create data visualizations, build

machine learning algorithms, manipulate and analyze data, and complete other data-related tasks.

Python is often used to develop the back end of a website or application—the parts that a user doesn't see. Python's role in web development can include sending data to and from servers, processing data and communicating with databases, URL routing, and ensuring security. Python offers several frameworks for web development. Commonly used ones include Django and Flask.

In software development, Python can aid in tasks like build control, bug tracking, and testing. With Python, software developers can automate testing for new products or features. Some Python tools used for software testing include Green and Requestium.

Python is a popular programming language. It was created by Guido van Rossum and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

Applications of Python:

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why Python is popular?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

The most recent major version of Python is Python 3, which we shall be using in this project. However, Python 2, although not being updated with anything other than security updates, is still quite popular.

Python will be written in a text editor. It is possible to write Python in an Integrated Development Environment, such as Jupyter, Thonny, Pycharm, Netbeans or Eclipse which are particularly useful when managing larger collections of Python files.

Python was designed for readability, and has some similarities to the English language with influence from mathematics.

Python uses new lines to complete a command, as opposed to other programming languages which often use semicolons or parentheses.

Python relies on indentation, using whitespace, to define scope; such as the scope of loops, functions and classes. Other programming languages often use curly-brackets for this purpose.

2.3.2 DJANGO

Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. Built by experienced developers, it takes care of much of the hassle of web development, so you can focus on writing your app without needing to reinvent the wheel. Django makes it easier to build web pages using Python. It is free and open source, has a thriving and active community, great documentation, and many options for free and paid-for support.

Based on the number of high-profile sites that use Django, the number of people contributing to the codebase, and the number of people providing both free and paid for support, then yes, Django is a popular framework!

Django helps you write software that is:

- Complete

Django follows the "Batteries included" philosophy and provides almost everything developers might want to do "out of the box". Because everything you need is part of the one "product", it all works seamlessly together, follows consistent design principles, and has extensive and up-to-date documentation.

- Versatile

Django can be used to build almost any type of website — from content management systems and wikis, through to social networks and news sites. It can work with any client-side framework, and can deliver content in almost any format (including HTML, RSS feeds, JSON, XML, etc.).

Internally, while it provides choices for almost any functionality you might want (e.g., several popular databases, templating engines, etc.), it can also be extended to use other components if needed.

- Secure

Django helps developers avoid many common security mistakes by providing a framework that has been engineered to "do the right things" to protect the website automatically. For example, Django provides a secure way to manage user accounts and passwords, avoiding common mistakes like putting session information in cookies where it is vulnerable (instead cookies just contain a key, and the actual data is stored in the database) or directly storing passwords rather than a password hash.

A password hash is a fixed-length value created by sending the password through a cryptographic hash function. Django can check if an entered password is correct by running it through the hash function and comparing the output to the stored hash value. However due to the "one-way" nature of the function, even if a stored hash value is compromised it is hard for an attacker to work out the original password.

Django enables protection against many vulnerabilities by default, including SQL injection, cross-site scripting, cross-site request forgery and clickjacking.

- Scalable

Django uses a component-based "shared-nothing" architecture (each part of the architecture is independent of the others, and can hence be replaced or changed if needed). Having a clear separation between the different parts means that it can scale for increased traffic by adding hardware at any level: caching servers, database servers, or application servers. Some of the busiest sites have successfully scaled Django to meet their demands (e.g., Instagram and Disqus, to name just two).

- Maintainable

Django code is written using design principles and patterns that encourage the creation of maintainable and reusable code. In particular, it makes use of the Don't Repeat Yourself principle so there is no unnecessary duplication, reducing the amount of code. Django also promotes the grouping of related functionality into reusable "applications" and, at a lower level, groups related code into modules (along the lines of the Model View Controller (MVC) pattern).

- Portable

Django is written in Python, which runs on many platforms. That means that you are not tied to any particular server platform, and can run your applications on many flavors of Linux, Windows, and macOS. Furthermore, Django is well-supported by many web hosting providers, who often provide specific infrastructure and documentation for hosting Django sites.

2.3.3 VISUAL STUDIO CODE

Visual Studio Code is a streamlined code editor with support for development operations like debugging, task running, and version control. It aims to provide just the tools a developer needs for a quick code-build-debug cycle and leaves more complex workflows to contained IDEs, such as Visual Studio IDE.

Visual Studio Code is a source-code editor that can be used with a variety of programming languages,including Java, JavaScript, Go, Node.js, Python, C++ and Fortran. It is based on the Electron framework, which is used to develop Node.js Web applications that run on the Blink layout engine. Visual Studio Code employs the same editor component (codenamed "Monaco") used in Azure DevOps (formerly called Visual Studio Online and Visual Studio Team Services).

Visual Studio Code includes basic support for most common programming languages. This basic support includes syntax highlighting, bracket matching, code folding, and configurable snippets. Visual Studio Code also ships with IntelliSense for JavaScript, TypeScript, JSON, CSS, and HTML, as well as debugging support for Node.js. Support for additional languages can be provided by freely available extensions on the VS Code Marketplace.

Visual Studio Code allows users to set the code page in which the active document is saved, the newline character, and the programming language of the active document. This allows it to be used on any platform, in any locale, and for any given programming language.

Visual Studio Code collects usage data and sends it to Microsoft, although this can be disabled. Due to the open-source nature of the application, the telemetry code is accessible to the public, who can see exactly what is collected.

2.3.4 MYSQL

SQLite is a programming language that is used to create embedded software for devices such as televisions, cell phones, and cameras. It can handle HTTP requests with low to medium traffic. SQLite has the ability to compress files into smaller bundles with less metadata. SQLite is a temporary dataset that is used within an application to process data.

MySQL is an open-source relational database management system. For WordPress sites, that means it helps you store all your blog posts, users, plugin information, etc. It stores that information in separate “tables” and connects it with “keys”, which is why it's relational

MySQL is ideal for both small and large applications. A relational database organizes data into one or more data tables in which data may be related to each other; these relations help structure the data. SQL is a language programmers use to create, modify and extract data from the relational database, as well as control user access to the database. In addition to relational databases and SQL, an RDBMS like. MySQL works with an operating system to implement a relational database in a computer's storage system, manages users, allows for network access and facilitates testing database integrity and creation of backups.

MySQL has stand-alone clients that allow users to interact directly with a MySQL database using SQL, but more often, MySQL is used with other programs to implement applications that need relational database capability. MySQL is a component of the LAMP web application software stack (and others), which is an acronym for Linux, Apache, MySQL, Perl/PHP/Python. MySQL is used by many database-driven web applications, including Drupal, Joomla, phpBB, and WordPress.

2.3.5 HTML

The HyperText Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript. Web browser receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags but use them to interpret the content of the page.

HTML can embed programs written in a scripting language such as JavaScript, which affects the behavior and content of web pages. Inclusion of CSS defines the look and layout of content. The World Wide Web Consortium (W3C), former maintainer of the HTML and current maintainer of the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997. A form of HTML, known as HTML5, is used to display video and audio, primarily using the <canvas> element, in collaboration with JavaScript.

2.3.6 BOOTSTRAP

It is a front-end framework used for easier and faster web development. It includes HTML and CSS based design templates for typography, forms, buttons, tables, navigation, modals, image carousels and many others. It can also use JavaScript plug-ins. It facilitates you to create responsive designs.

The primary purpose of adding it to a web project is to apply Bootstrap's choices of color, size, font and layout to that project. As such, the primary factor is whether the developers in charge find those choices to their liking. Once added to a project, Bootstrap provides basic style definitions for all HTML elements. The result is a uniform appearance for prose, tables and form elements across web browsers. In addition, developers can take advantage of CSS classes defined in Bootstrap to further customize the appearance of their contents. For example, Bootstrap has provisioned for light- and dark-colored tables, page headings, more prominent pull quotes, and text with a highlight.

Bootstrap also comes with several JavaScript components which do not require other libraries like jQuery. They provide additional user interface elements such as dialog boxes, tooltips, progress bars, navigation drop-downs, and carousels. Each Bootstrap component consists of an HTML structure, CSS declarations, and in some cases accompanying JavaScript code.

They also extend the functionality of some existing interface elements, including for example an auto-complete function for input fields.

The most prominent components of Bootstrap are its layout components, as they affect an entire web page. The basic layout component is called "Container", as every other element in the page is placed in it. Developers can choose between a fixed-width container and a fluid-width container. While the latter always fills the width of the web page, the former uses one of the five predefined fixed widths, depending on the size of the screen showing the page:

- Smaller than 576 pixels
- 576–768 pixels
- 768–992 pixels
- 992–1200 pixels
- Larger than 1200 pixels

3 RESEARCH METHODOLOGY

Research methodology simply refers to the practical "how" of any given piece of research. More specifically, it's about how a researcher systematically designs a study to ensure valid and reliable results that address the research aims and objectives.

For example, how did the researcher go about deciding:

- What data to collect (and what data to ignore)
- Who to collect it from (in research, this is called "sampling design")
- How to collect it (this is called "data collection methods")
- How to analyze it (this is called "data analysis methods")

A software development methodology is a framework that is used to structure, plan and control the process of developing information system, this include pre-definition of specific deliverable and artifacts that are created and completed by project team to develop and maintain an application.

Research methodology is important in order to map out the sequence of the research. All the techniques, procedures and methods involved in the research are included in this section. It also introduces the research methodology used in this research to validate the defined conceptual framework and the research flow of the business case study.

3.1 RESEARCH METHODOLOGY

Seven steps of the research procedure are proposed based on the conceptualized research process. The order in which these steps are conducted as below:

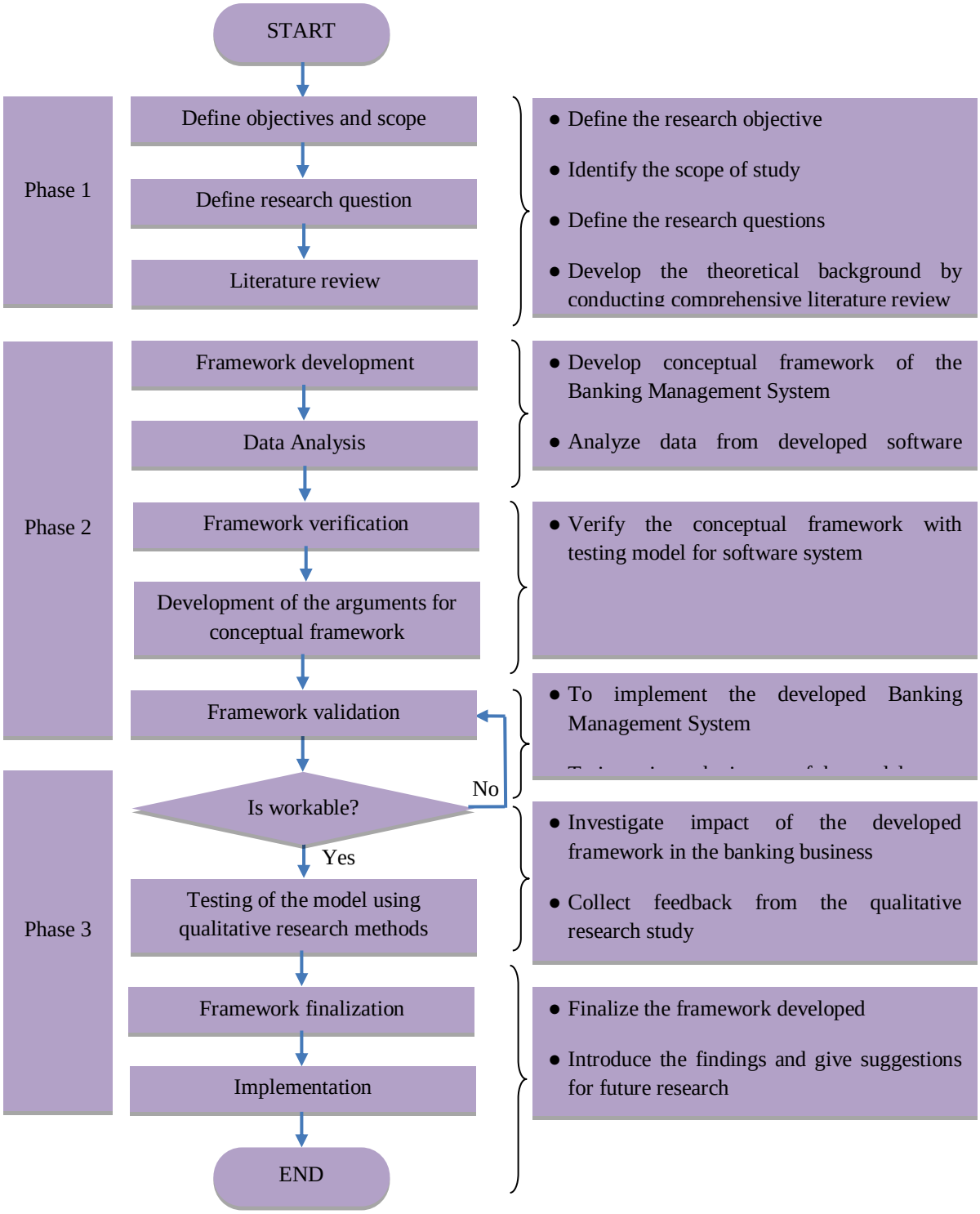
Step 1: Define the research objectives
Step 2: Identify the research design
Step 3: Define the information source and type
Step 4: Define the survey instrument
Step 5: Provide the sampling process
Step 6: Introduce the data collection process
Step 7: Data analysis

These seven steps are divided into 3 phases to address the research hypotheses. Brief summary of the phases is described below:

Phase 1: At the first stage the project objectives and scopes are defined. Furthermore, the research questions are clearly defined and the theoretical background of the study is examined in the literature review part.

Phase 2: At the second step of the project methodology proposed conceptual framework is developed and extended based on the study conducted by Prajogo and Sohal. This conceptual framework is tested using the single case study approach on the developed Banking Management System. To verify this research model author, support this development based on the literature.

Phase 3: After verification of the research framework, it is tested using qualitative research method tools. Data collected are analyzed in the data analysis tools and the finalized research framework is presented. Data analysis, report findings and suggestions for future research is presented at this phase. The illustration of seven steps in the form of flow chart is shown in below figure.



Steps in Research Methodology

3.2 RESEARCH DESIGN

Research design can be put into two main categories which are exploratory and conclusive. These design categories can be divided into causal and descriptive (Malhotra, 2010). Causal research design used in this research in order to come up with the cause and effects of the

interaction between the customer service quality, financial and innovation effects and the Banking Management System practices. The causal relationship is a formally and structurally constructed type of quantitative analysis. In helping with the success of the analysis, a big and representative amount of data is needed. The conclusive findings usually help with support in decision making at management level (Malhotra, 2010). This method, though complex, is used to obtain precise and useful data.

3.3 INFORMATION SOURCE AND TYPES

Data can be collected through primary and secondary sources. Primary sources are the sources initiated by the researcher for finding solutions to the research problem and secondary sources are those extra data collected to learn about other related problems. Primary data can be collected through interviews and surveys, experiments and observations and many other ways. Secondary data can be accessed by studying statistics, statements, academic journals and reports.

For the purpose of this research, the author has used the primary data source. A survey questionnaire is designed and distributed for the purpose of data collection among customer of banking industry.

Apart from these secondary sources of data are referred such as books, journals, research reports, research papers and e-journals available on internet related to Banking Management System and its impact on company performance.

3.4 DESIGN OF THE SURVEY INSTRUMENT

Qualitative, quantitative and mixed-methods are different types of methodologies, distinguished by whether they focus on words, numbers or both. This is a bit of an oversimplification, but it's a good starting point for understandings. Let's take a closer look.

Qualitative research refers to research which focuses on collecting and analyzing words (written or spoken) and textual data, whereas quantitative research focuses on measurement and testing using numerical data. Qualitative analysis can also focus on other "softer" data points, such as body language or visual elements.

It's quite common for a qualitative methodology to be used when the research aims and objectives are exploratory in nature. For example, a qualitative methodology might be used to understand peoples' perceptions about an event that took place, or a candidate running for president.

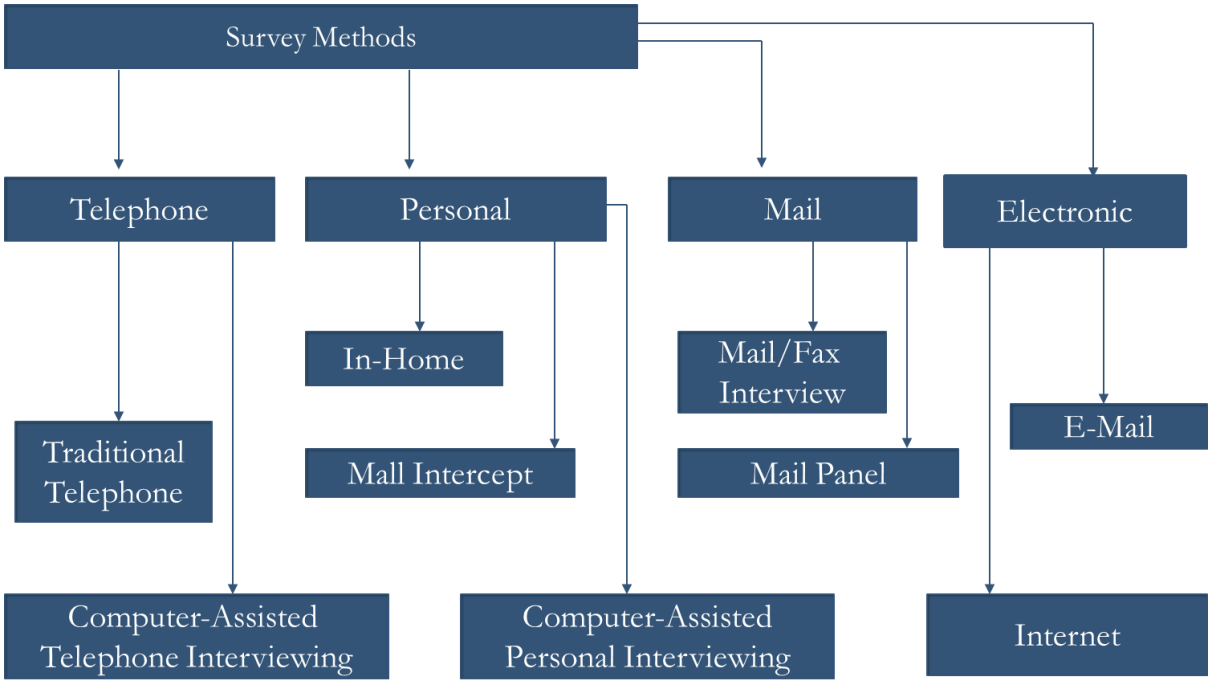
Contrasted to this, a quantitative methodology is typically used when the research aims and objectives are confirmatory in nature. For example, a quantitative methodology might be used to measure the relationship between two variables (e.g., personality type and likelihood to commit a crime) or to test a set of hypotheses.

As you've probably guessed, the mixed-method methodology attempts to combine the best of both qualitative and quantitative methodologies to integrate perspectives and create a rich picture.

The designing of the survey instrument is done with huge care as it is a very important aspect in collecting reliable data from the samples which can affect the results of the survey. In this research, questionnaires which consist of definite set of scaled questions are utilized to gather primary data. The Likert scale from strongly disagree to strongly agree and the measurement from 1 to 5 are applied in the questionnaire. A Likert scale is a psychometric scale commonly involved in research that employs questionnaires. It is the most widely used approach to scaling responses in survey research, such that the term is often used interchangeably with rating scale. According to the research plan this study adopted the qualitative research methods and use the questionnaire send via e-mails and through the LinkedIn profiles.

Research Approach	Research Instruments	Contact Methods	Sampling Plan
Survey	**Questionnaire**	**Mail Questionnaire**	**Sampling Unit**
Observation	Mechanical Instruments	Personal Interview	**Sampling Size**
Experiment		Telephonic Interview	**Sampling Procedure**
		Online Interview	

Research Plan (Source: Kotler at al., 2003)



Classification of survey methods

As we mentioned earlier, sampling design is about deciding who you're going to collect your data from (i.e., your sample). There are many sample options, but the two main categories of sampling design are probability sampling and non-probability sampling.

Probability sampling means that you use a completely random sample from the group of people you're interested in (this group is called the "population"). By using a completely random sample, the results of your study will be generalizable to the entire population. In other words, you can expect the same results across the entire group, without having to collect data from the entire group (which is often not possible for large groups).

Non-probability sampling, on the other hand, doesn't use a random sample. For example, it might involve using a convenience sample, which means you'd interview or survey people that you have access to (perhaps your friends, family or work colleagues), rather than a truly random sample (which might be difficult to achieve due to resource constraints). With non-probability sampling, the results are typically not generalizable.

3.5 DATA COLLECTION

There are many different options in terms of how you go about collecting data for your study. However, these options can be grouped into the following types:

- Interviews (which can be unstructured, semi-structured or structured)
- Focus groups and group interviews

- Surveys (online or physical surveys)
- Observations
- Documents and records
- Case studies

The choice of which data collection method to use depends on your overall research aims and objectives, as well as practicalities and resource constraints. For example, if your research is exploratory in nature, qualitative methods such as interviews and focus groups would likely be a good fit. Conversely, if your research aims to measure specific variables or test hypotheses, large-scale surveys that produce large volumes of numerical data would likely be a better fit.

In the collection of data, questionnaire developed and utilized to collect data related to Banking Management System from the customer.

In the collection of data, online questionnaire developed by the survey service provider. This is because there are many advantages of using online questionnaires such as:

a) Access to unique samples of populations:

- Individuals and groups who would be difficult to reach via other methods can be approached.

b) Time saving:

- The author can reach a large group of samples from different parts of the world in a short time.
- Author can obtain the results of the survey while they are at other parts of the research, this is because the results will be derived and sent directly to the author by various sources such as email and others. This way they can start working on the analysis while waiting for the whole set to come in.
- They do not have to key in data as the responses can be generated in the Statistical Package for Social Sciences (SPSS) program compatible file.

c) Cost saving:

- The reduction of paper usage saves a lot of cost when electronic medium is used.

- This is because there is no longer the need for printing, postage, drafts and data entry.

THEORY (SAMPLING METHOD)

- A compiler must first identify the population, or the set of all items of interest in a given study, before beginning any data gathering exercises.
- Under certain studies, a sample population must be established to work with because the total population may not be fully available.
- The terminology frame is sometimes used to describe to the actual equivalent of something like the target population.
- More crucially, the translator must state explicitly what elements identify as data.
- Under each information collection operation, the proportion of the sample or time span to deal with is determined by the providers.
- With data consistency or variance among separate categories, and how to keep the data consistent changeable frame with time and also change frequency.
- There are various types of questionnaires, which can be identified based on the sampling technique used in the questionnaire.
- The type of data gathered, frequency, complexity of deployment, availability of qualified reporters, and budgetary constraints for both suppliers and interpreters all influence the method of sampling chosen.
- Non-probability sampling procedure (or non-random sampling) and probability sampling methods are the two types of sampling techniques (random sampling).
- Non-probability sampling, in contrast to random sampling, places a greater focus on criteria such as ease of execution, surveyor judgement, and, in some cases, no effort to establish sample generalizability of the results to the population.

  (i) Accidental selection (or convenience sampling)

(ii) judgmental sampling

(iii) quota selection

(iv) Cut-off tail sampling (CoT): a technique extensively utilized in business questionnaires in the event of heavily skewed distributions.

Some sample questions that were included in the semi-structured questionnaire were the following:

- What do you think about the popularity of online Banking Services?
- What are online banking products and services that HSFC Bank offer to their customers?
- What have you done as an individual to choose certain online booking app for transaction of money, account detail, customer feedback? Were your activities efficient?
- What are the upcoming online banking products and services that HSFC Bank is going to offer their customers?
- What are the main problems and Challenges of popular current online banking app? What are the key advantages? What are these problems causing? Are they affecting their activities for promoting?
- What activities should be done for addressing the problems that the current app faces as?
- In your view, which are the improvements that should be made in order to increase its efficiency and for promoting more effectively?
- What do you think about the role of current users in promoting the app? Do you have any recommendation for improvement?
- Do you have experience of online banking in other countries? How they operate? What can we learn from them?
- How do you manage the feature offerings, except for marketing? Do you pay attention to sustainable ways? How do the city and residents benefit from you're the overall management practices?
- Marketing and Destination Marketing can help new online banking app to develop their offer more efficiently? With what actions and programs?

3.6 DATA ANALYSIS

Data analysis methods can be grouped according to whether the research is qualitative or quantitative.

Popular data analysis methods in qualitative research include:

- Qualitative content analysis
- Thematic analysis
- Discourse analysis
- Narrative analysis
- Grounded theory
- IPA

Qualitative data analysis all begins with data coding, after which one (or more) analysis technique is applied.

Popular data analysis methods in quantitative research include:

- Descriptive statistics (e.g., means, medians, modes)
- Inferential statistics (e.g., correlation, regression, structural equation modelling)

Again, the choice of which data collection method to use depends on your overall research aims and objectives, as well as practicalities and resource constraints.

There are many different important factors of having a computer within the banking sector. It makes life a lot quicker and easier and there will no longer have to be manual inputs of data on paper and within records, it can all be taken care of by the computer and be stored and sent on accordingly. Previous transactions of certain customers can be found in seconds as opposed to waiting for a long period of time, and therefore problems and issues can be dealt with a lot quicker as the information can be found instantly.

You can also see the importance of the computer within the banking sector as you can now make transactions from your home with the technology and keep an eye on what you have within your account when you are waiting for a statement to come through or want to buy something online.

Within the computer being used within the banking sector, the banking system will still be as long and as manual as it was many years ago and you would not be able to transfer money and stay ahead of statements successfully.

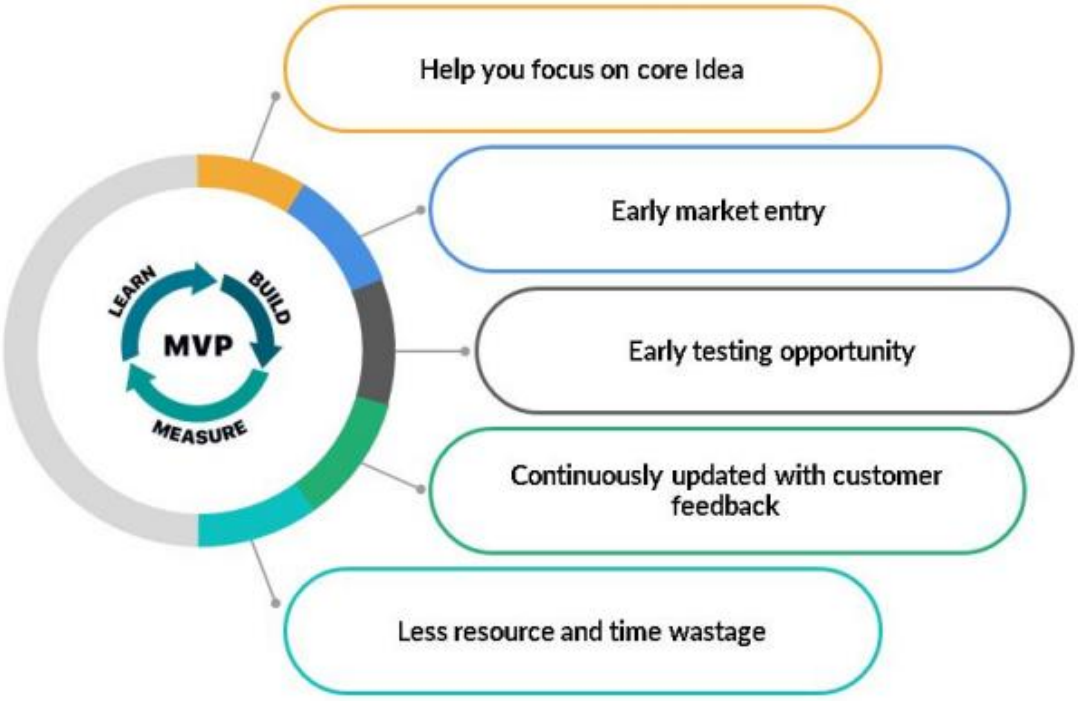
Electronic banking is now more popular than ever and this is due to the introduction of computers within the banking sector. Being able to communicate with different banks from all over the world is also possible due to the new injection of technology and there are much less problems with data imports and exports now that everything can be done by a few clicks of a button.

4 SOFTWARE DESIGN, DEVELOPMENT & TESTING

Implementation is the stage of the project where the theoretical design is turned into a working system. It can be considered to be the most crucial stage in achieving a successful new system gaining the users confidence that the new system will work and will be effective and accurate. It is primarily concerned with user training and documentation. Conversion usually takes place about the same time the user is being trained or later. Implementation simply means convening a new system design into operation, which is the process of converting a new revised system design into an operational one.

4.1 INTRODUCTION TO MINIMUM VIABLE PRODUCT (MVP)

MVP is a product that is launched with features that are sufficient to implement the core idea. The aim of an MVP is to test your hypothesis in the actual market. It enables you to know whether the people would purchase your product or not. An MVP helps you to reach the market early and learn continuously from the customers' feedback. It saves you from investing money in something that the users will not favor. The MVPs are built iteratively according to the customers' requirement. Thus, incorporating customer feedback will help you develop a culture of product evangelists. The people who are fans of your product, eagerly wait for updates and promote the product without charging any fee. Amazon, Facebook, Netflix and many other companies started from being quite basic websites and are now industry giants today.



4.2 SOFTWARE DEVELOPMENT LIFE CYCLE (SDLC)

SDLC is a well-defined path for a software development process, that ensures timely delivery of software under budget constraints while collaborating with multiple teams.

The different phases of SDLC are as follows:

- Stage 1: Requirement gathering and analysis
- Stage 2: Design
- Stage 3: Implementation or coding
- Stage 4: Testing
- Stage 5: Deployment Stage
- Stage 6: Maintenance

The software development life cycle (SDLC) explains the different stages of software development. This framework is important because it covers the planning, building, deployment, and maintenance of the software. The SDLC delivers high-quality software by creating it in a systematic manner.

Proper planning is an essential aspect of the software development life cycle. From there, team members develop and execute plans into the software.

- **Stages of the software development life cycle:**

The need for software development methodologies dates back to the 1950s. At that time, words like “framework” and “approach” really didn’t exist in the context of software development.

Since then, software engineers have sought to create and implement development methods to accelerate software development. Now, the SDLC is used to reduce time-to-market while building an intuitive software for clients.

Today’s SDLC promotes:

- Individuals over processes and tools
- Adapting to new needs
- Working software over comprehensive documentation
- Customer collaboration

All software development life cycle models involve various stages. Although these strategies can vary from model to model, the following SDLC sequence explained in details:

Stage 1: Requirement gathering and analysis

In this stage, teams should collect all relevant information from the client. They use this information to develop the product, ensuring that they meet client expectations. Typically, the business analysts and project managers meet with the client to gather information.

This information includes:

- A description of what they want the software to be
- The end-user
- The purpose

Once they've gathered and understood the information, they should produce the software requirement specification (SDS) document.

From there, the software development team should receive this document and ask any questions. They will then pass on the document to the client. This way, the client can verify that the project is well-understood by the team and can hold on to the document for future reference.

Stage 2: Design

At this point, the requirements from the SRS document are referenced to create the software architecture. The project manager will decide on the approach that the team will take and outline a pricing model.

Stage 3: Implementation or coding

This phase begins after the developer receives the design document. At this point, the design is translated into source code. This is when software developers go in and implement the code.

Stage 4: Testing

Once the development team has started coding, they release modules. These modules are then rigorously tested. Issues and bugs are detected, and software developers are assigned areas to test. Testers reference the SRS document to confirm that the software matches client expectations. This process continues until the software is perfected.

Stage 5: Deployment

At this point, the software is deployed into production. In some cases, the client may request that the software goes through user acceptance testing (UAT). Regardless of whether the client elects UAT, they will decide whether the software meets their expectations in this step.

Stage 6: Maintenance

Following production, the development team will maintain the product. Sometimes, issues might arise during testing. At this point, the software developers can fix these issues. In some cases, a client might request additional features, which can be added as enhancements during this phase

4.3 AGILE METHODOLOGIES

The Agile methodology is a way to manage a project by breaking it up into several phases. It involves constant collaboration with stakeholders and continuous improvement at every stage. Once the work begins, teams' cycle through a process of planning, executing, and evaluating. Continuous collaboration is vital, both with team members and project stakeholders.

'Agile' is an umbrella term for many modern methodologies focusing on iterative and incremental software development.

The Agile Manifesto of Software Development put forth a groundbreaking mindset on delivering value and collaborating with customers when it was created in 2001. Agile's four main values are:

- Individuals and interactions over processes and tools
- Working software over comprehensive documentation
- Customer collaboration over contract negotiation
- Responding to change over following a plan

So, what is Agile methodology in project management? It's a process for managing a project that involves constant collaboration and working in iterations. Agile project management works off the basis that a project can be continuously improved upon throughout its life cycle, with changes being made quickly and responsively.

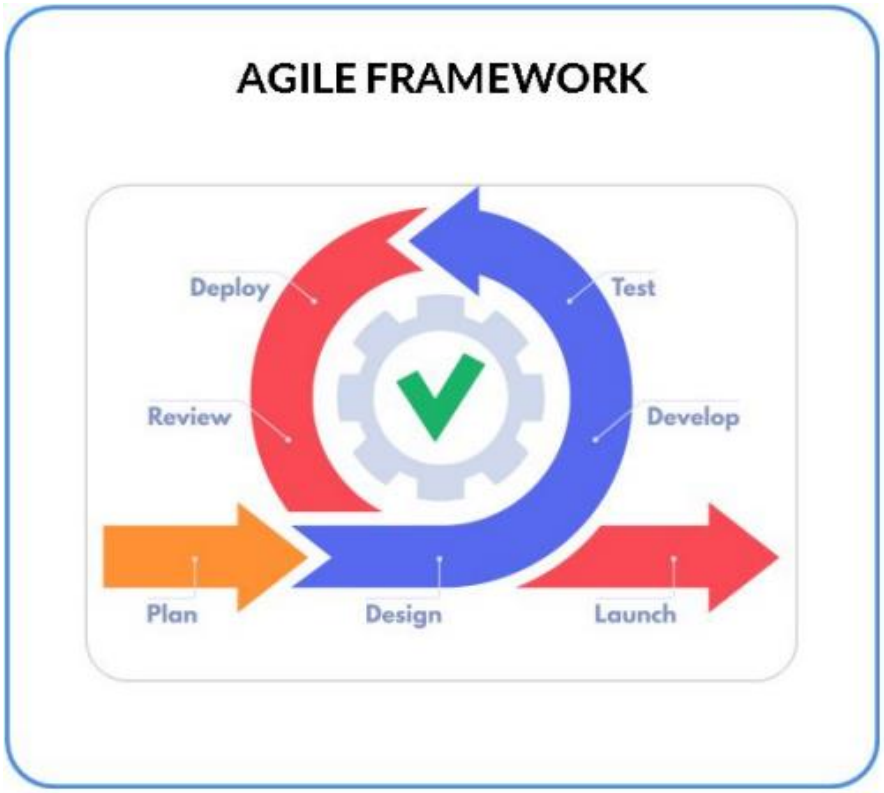
Agile is one of the most popular approaches to project management due to its flexibility, adaptability to change, and high level of customer input.

Agile project management can refer to terms including Scrum, Kanban, Extreme Programming (XP), and Adaptive Project Framework (APF).

Scrum is the most popular agile framework. In Scrum, members of a small cross-functional team work together to produce software in multiple short iterations of around 30 days, called a sprint. They start with a product backlog, a to-do list of items that need to be done to develop the product. Certain items are pulled from the product backlog for every sprint, known as a sprint backlog. At the end of every sprint, something deliverable is to be produced. This ensures that every sprint adds value to the customers.

Teams use the agile development methodology to minimize risk (such as bugs, cost overruns, and changing requirements) when adding new functionality. In all agile methods, teams

develop the software in iterations that contain mini-increments of the new functionality. There are many different forms of the agile development method, including scrum, crystal, extreme programming (XP), and feature-driven development (FDD).



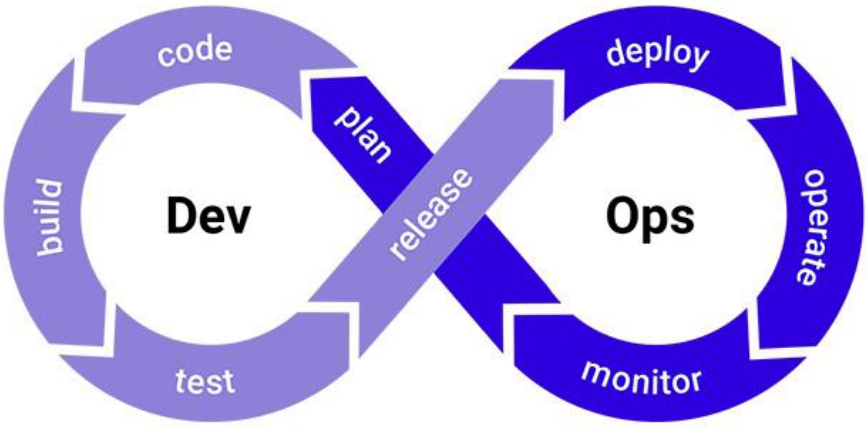
Pros: The primary benefit of agile software development is that it allows software to be released in iterations. Iterative releases improve efficiency by allowing teams to find and fix defects and align expectation early on. They also allow users to realize software benefits earlier, with frequent incremental improvements.

Cons: Agile development methods rely on real-time communication, so new users often lack the documentation they need to get up to speed. They require a huge time commitment from users and are labor intensive because developers must fully complete each feature within each iteration for user approval.

Agile development methods are similar to rapid application development (see below) and can be inefficient in large organizations. Programmers, managers, and organizations accustomed to the waterfall method (see below) may have difficulty adjusting to an agile SDLC. So, a hybrid approach often works well for them.

4.4 DEVOPS DEPLOYMENT METHODOLOGY

DevOps is not just a development methodology but also a set of practices that supports an organizational culture. DevOps deployment centers on organizational change that enhances collaboration between the departments responsible for different segments of the development life cycle, such as development, quality assurance, and operations.



Pros: DevOps is focused on improving time to market, lowering the failure rate of new releases, shortening the lead time between fixes, and minimizing disruption while maximizing reliability. To achieve this, DevOps organizations aim to automate continuous deployment to ensure everything happens smoothly and reliably. Companies that use DevOps methods benefit by significantly reducing time to market and improving customer satisfaction, product quality, and employee productivity and efficiency.

Cons: Even in light of its benefits, there are a few drawbacks to DevOps:

- Some customers don't want continuous updates to their systems.
- Some industries have regulations that require extensive testing before a project can move to the operations phase.
- If different departments use different environments, undetected issues can slip into production.
- Some quality attributes require human interaction, which slows down the delivery pipeline.

4.5 APPLICATION DESIGN

Design is the first step into the development phase for any engineered product or system. Design is a creative process. A good design is the key to effective system. The term "design" is defined as "the process of applying various techniques and principles for the purpose of defining a process or a system in sufficient detail to permit its physical realization". It may be defined as a process of applying various techniques and principles for the purpose of defining a device, a process or a system in sufficient detail to permit its physical realization. Software design sits at the technical kernel of the software engineering process and is applied regardless of the development paradigm that is used.

The system design develops the architectural detail required to build a system or product. As in the case of any systematic approach, this software too has undergone the best possible design phase fine tuning all efficiency, performance and accuracy levels. The design phase is a transition from a user-oriented document to a document to the programmers or database personnel.

MODULE DESIGN

The Administrator logs in using the admin login. In this module two operations are done. During login the Login and Password is verified with that in the database

INPUT DESIGN

The design of input focuses on controlling the amount of input required, controlling the errors, avoiding delay, avoiding extra steps and keeping the process simple. The input is designed in such a way so that it provides security and ease of use with retaining the privacy.
Input Design considered the following things:

- What data should be given as input?
- How the data should be arranged or coded?
- The dialog to guide the operating personnel in providing input.
- Methods for preparing input validations and steps to follow when error occur.

Input Design is the process of converting a user-oriented description of the input into a computer-based system. This design is important to avoid errors in the data input process and

show the correct direction to the management for getting correct information from the computerized system.

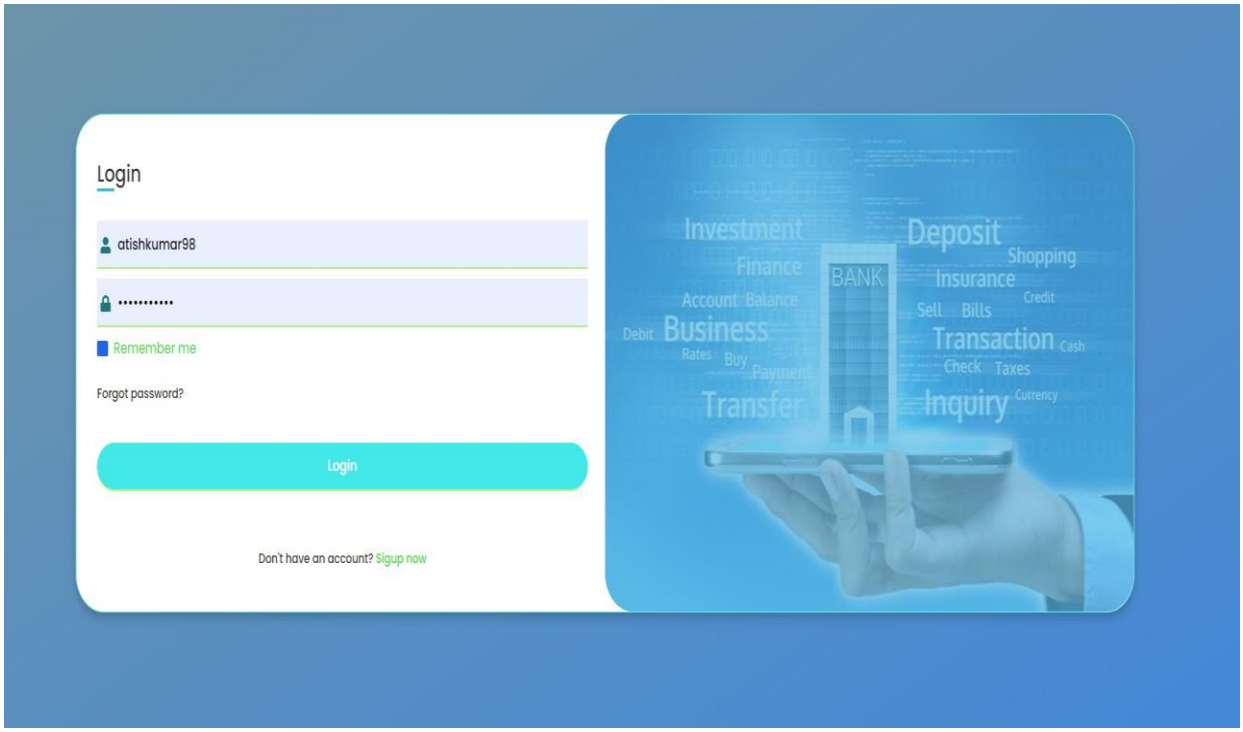
It is achieved by creating user-friendly screens for the data entry to handle large volume of data. The goal of designing input is to make data entry easier and to be free from errors. The data entry screen is designed in such a way that all the data manipulates can be performed. It also provides record viewing facilities.

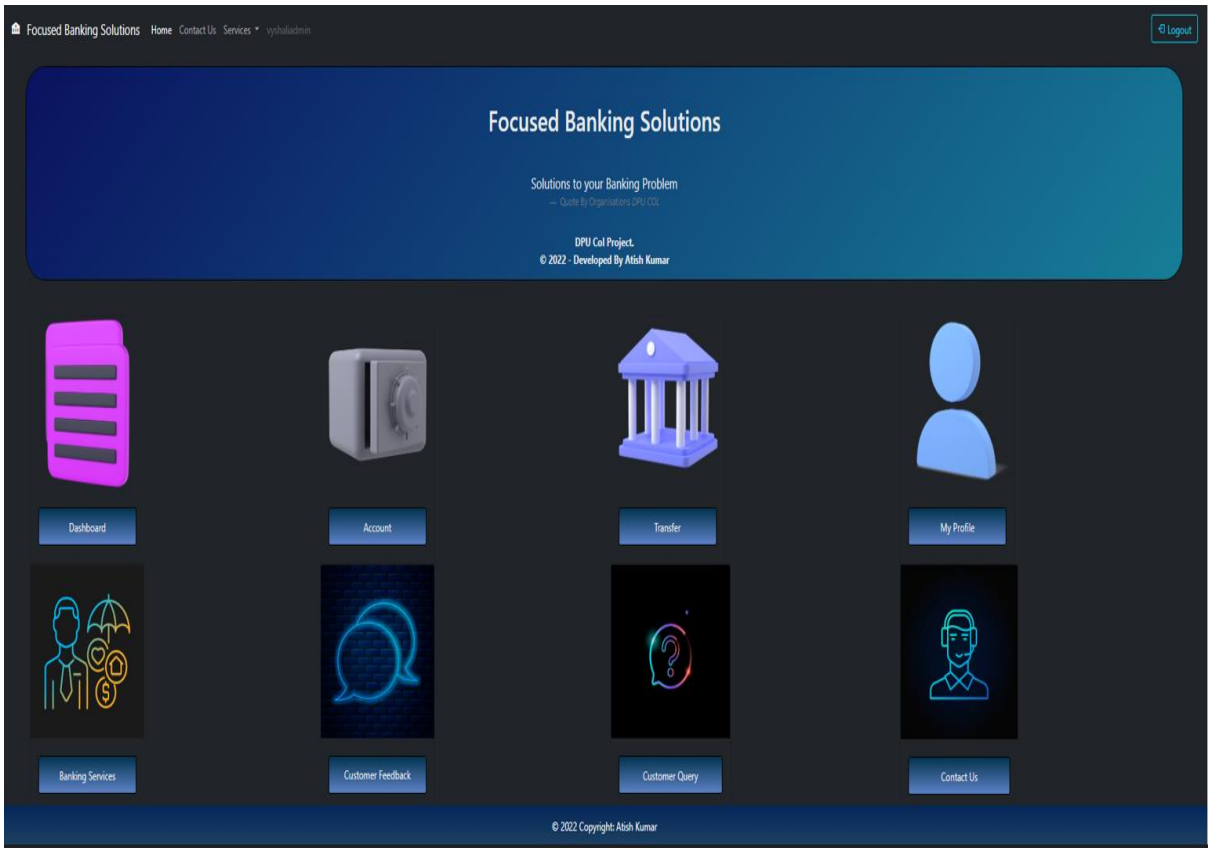
When the data is entered it will check for its validity. Data can be entered with the help of screens. Appropriate messages are provided as when needed so that the user will not be in a maze of instant. Thus, the objective of input design is to create an input layout that is easy to follow.

OUTPUT DESIGN

A quality output is one, which meets the requirements of the end user and presents the information clearly. In output design it is determined how the information is to be displaced for immediate need and also the hard copy output. It is the most important and direct source information to the user. Efficient and intelligent output design improves the system's relationship to help user decision-making. Designing computer output should proceed in an organized, well thought out manner; the right output must be developed while ensuring that each output element is designed so that people will find the system can use easily and effectively.

- When analysis design computer output, they should:
- Identify the specific output that is needed to meet the requirements.
- Select methods for presenting information.
- Create document, report, or other formats that contain information produced by the system.


Login
atishkumar98
Remember me
Forgot password?
Login
Don't have an account? Sigup now
Investment
Deposit
Shopping
Finance
BANK
Insurance
Account Balance
Credit
Sell Bills
Debit Business
Transaction
Cash
Rates Buy
Payment
Check Taxes
Transfer
Inquiry
Currency


Focused Banking Solutions
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Solutions to your Banking Problem
DPU CoI Project.
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Dashboard
Account
Transfer
My Profile
Banking Services
Customer Feedback
Customer Query
Contact Us
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- Dashboard

Dashboard is basically for bank user to update delete user and account. This interface helps the user to get all the details at one table. But this is limited to bank user only, Customer cannot see the dashboard once user login.

- Account

This section provides the account of customer, Customer's Account that has been created for customer. It also provides the statement of the account as well. For e.g., Credit and Debit of the amount.

- Transfer

This provides the transfer of amount from one to another. If amount is greater than balance. It doesn't proceed.

- Profile

This proves the details of the user that need to be entered for e.g., PAN, AADHAR etc. It helps the user to keep the account informative.

- Banking Services: -

  - Doorstep Banking Services

    Door Step Banking is a service by which customers can avail many of the banking transaction services through the Agent engaged by the Bank. It offers convenience to customers to access to different accounts from their Door Step.

- Customer Feedback

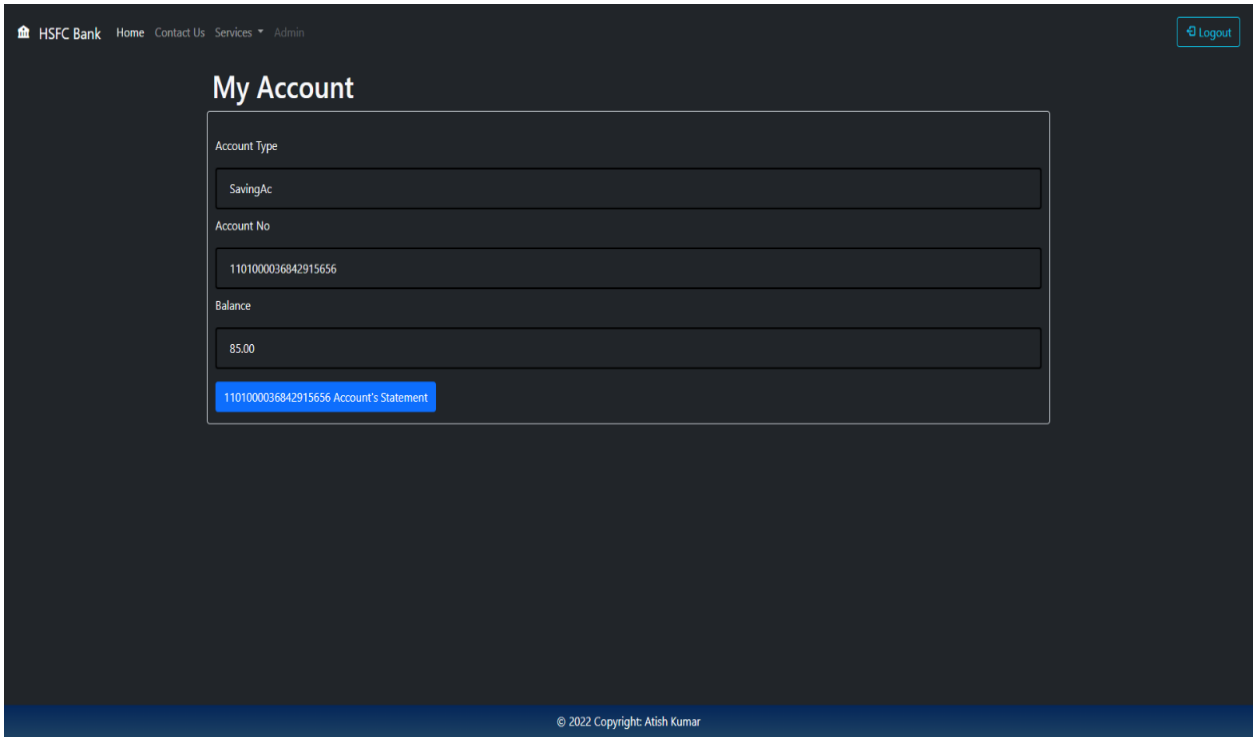
  Customer feedback is a form by which customers can provide information about their experience with our product or service. Its purpose is to reveal their level of satisfaction and help product, customer success, and marketing teams understand where there is room for improvement.

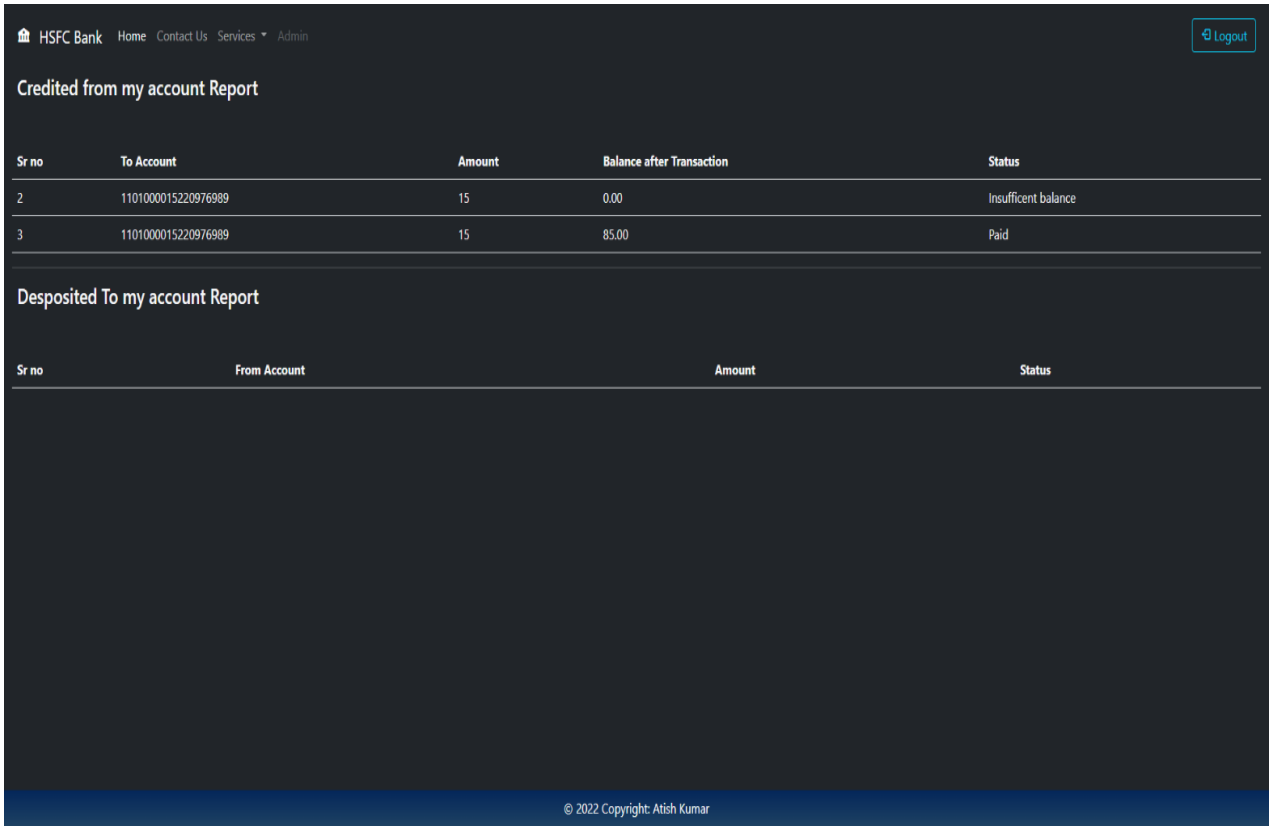
- Customer Query

  Customer Query is form by which customers can raise any queries for information regarding our products, services or related processes, or to carry out a transaction or action in relation to any such product or service.

- Contact Us

A contact us page is a common web page in our project for visitors to contact the organization or individual providing the website. The page contains an e-mail address. a telephone number and a postal address.




HSFC Bank
Home
Contact Us
Services
Admin
Logout
Credited from my account Report
Sr no
To Account
Amount
Balance after Transaction
Status
2
110100001522097698 9
15
0.00
Insufficent balance
3
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85.00
Paid
Desposited To my account Report
Sr no
From Account
Amount
Status
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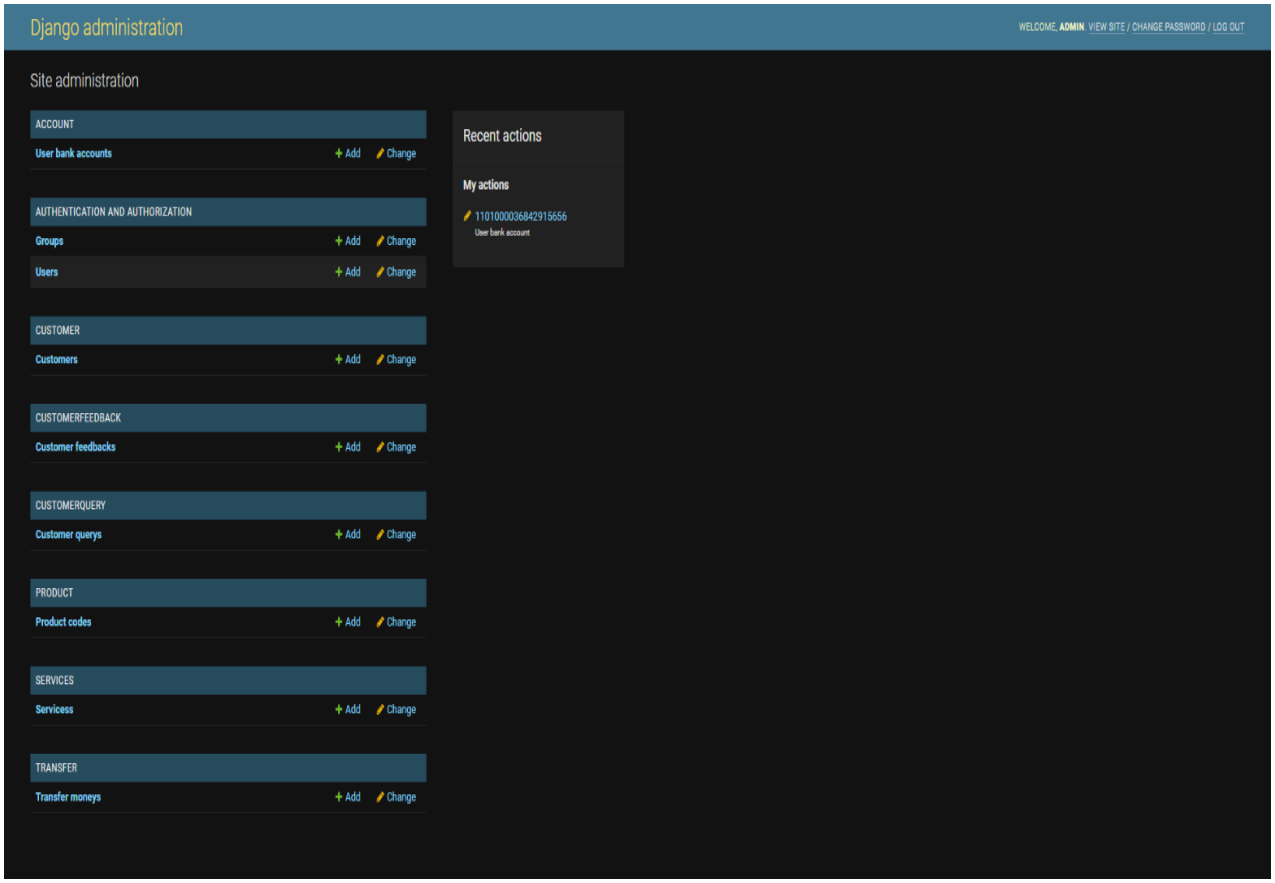
Django administration
WELCOME, ADMIN. VIEW SITE / CHANGE PASSWORD / LOG OUT
Site administration
ACCOUNT
User bank accounts
Add
Change
AUTHENTICATION AND AUTHORIZATION
Groups
Add
Change
Users
Add
Change
CUSTOMER
Customers
Add
Change
CUSTOMERFEEDBACK
Customer feedbacks
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CUSTOMERQUERY
Customer querys
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Recent actions
My actions
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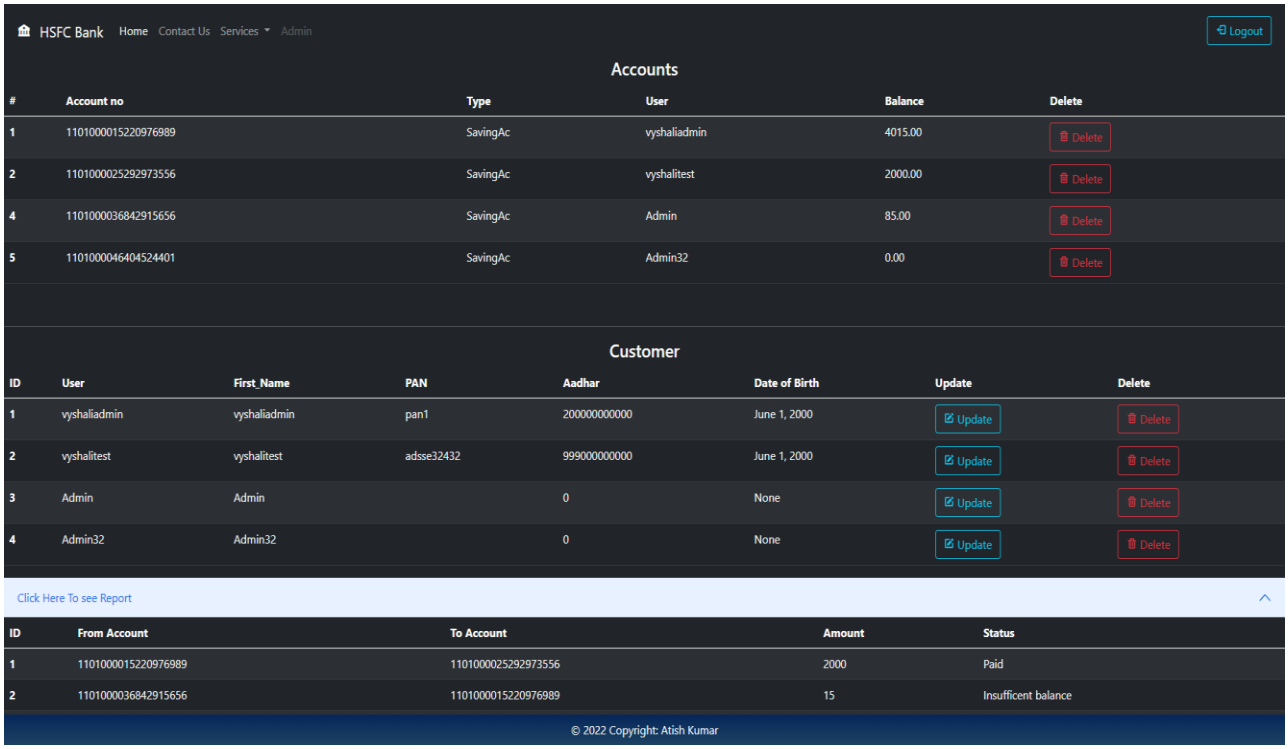
User bank account


HSFC Bank
Home
Contact Us
Services
Admin
Logout
Accounts
Account no Type User Balance Delete
1 110100001522097689 SavingAc vyshaliadmin 4015.00 Delete
2 110100002529297356 SavingAc vyshalitest 2000.00 Delete
4 110100003684291565 6 SavingAc Admin 85.00 Delete
5 110100004640452440 1 SavingAc Admin32 0.00 Delete
Customer
ID User First_Name PAN Aadhar Date of Birth Update Delete
1 vyshaliadmin vyshaliadmin pan1 200000000000 June 1, 2000 Update Delete
2 vyshalitest vyshalitest adsse32432 999000000000 June 1, 2000 Update Delete
3 Admin Admin 0 None Update Delete
4 Admin32 Admin32 0 None Update Delete
Click Here To see Report
ID From Account To Account Amount Status
1 110100001522097689 110100002529297356 2000 Paid
2 110100003684291565 6 110100001522097689 15 Insufficent balance
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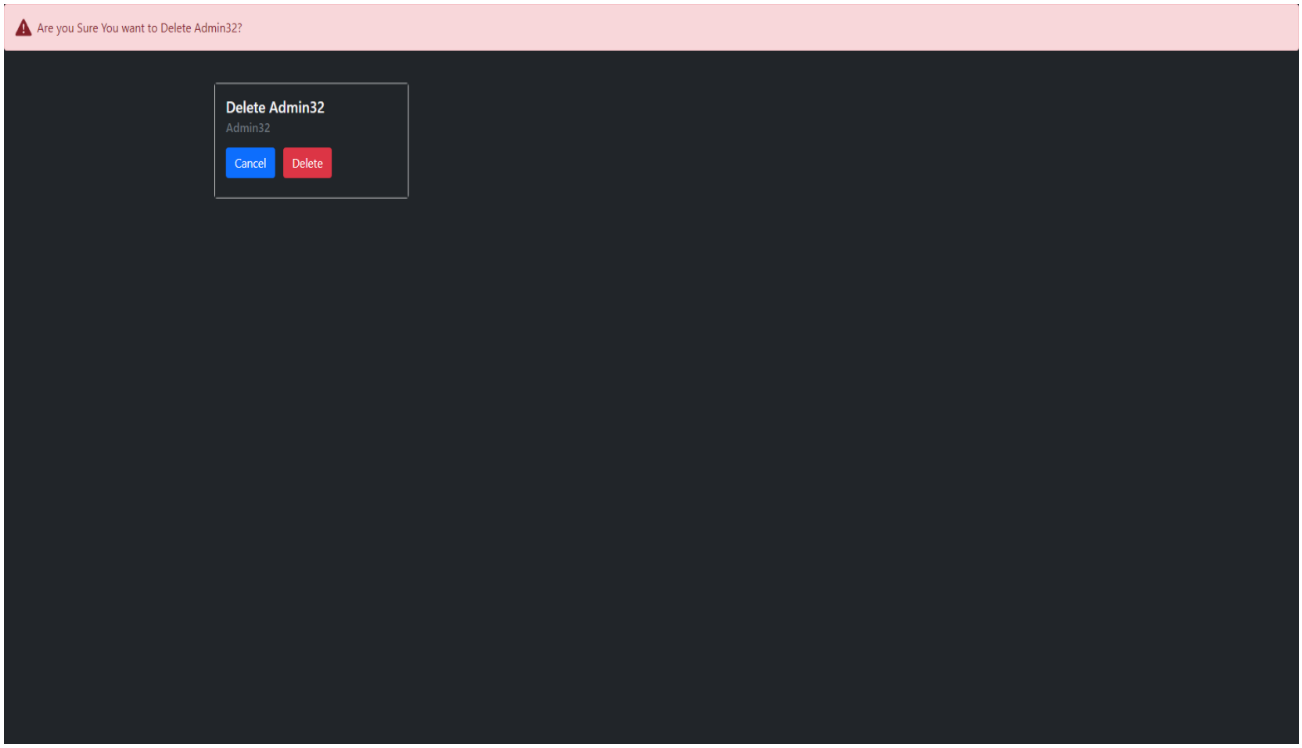
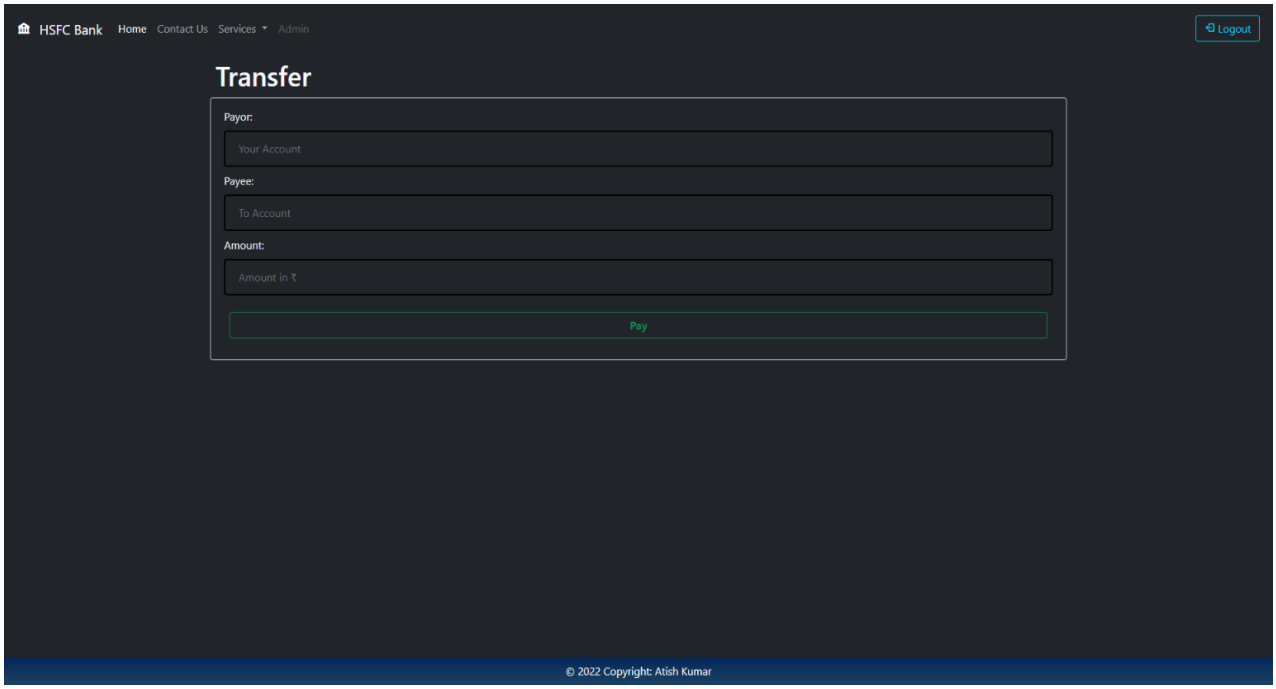

Are you Sure You want to Delete Admin32?
Delete Admin32
Admin32
Cancel
Delete


HSFC Bank
Home
Contact Us
Services
Admin
Logout
Transfer
Payor:
Your Account
Payee:
To Account
Amount:
Amount in ₹
Pay
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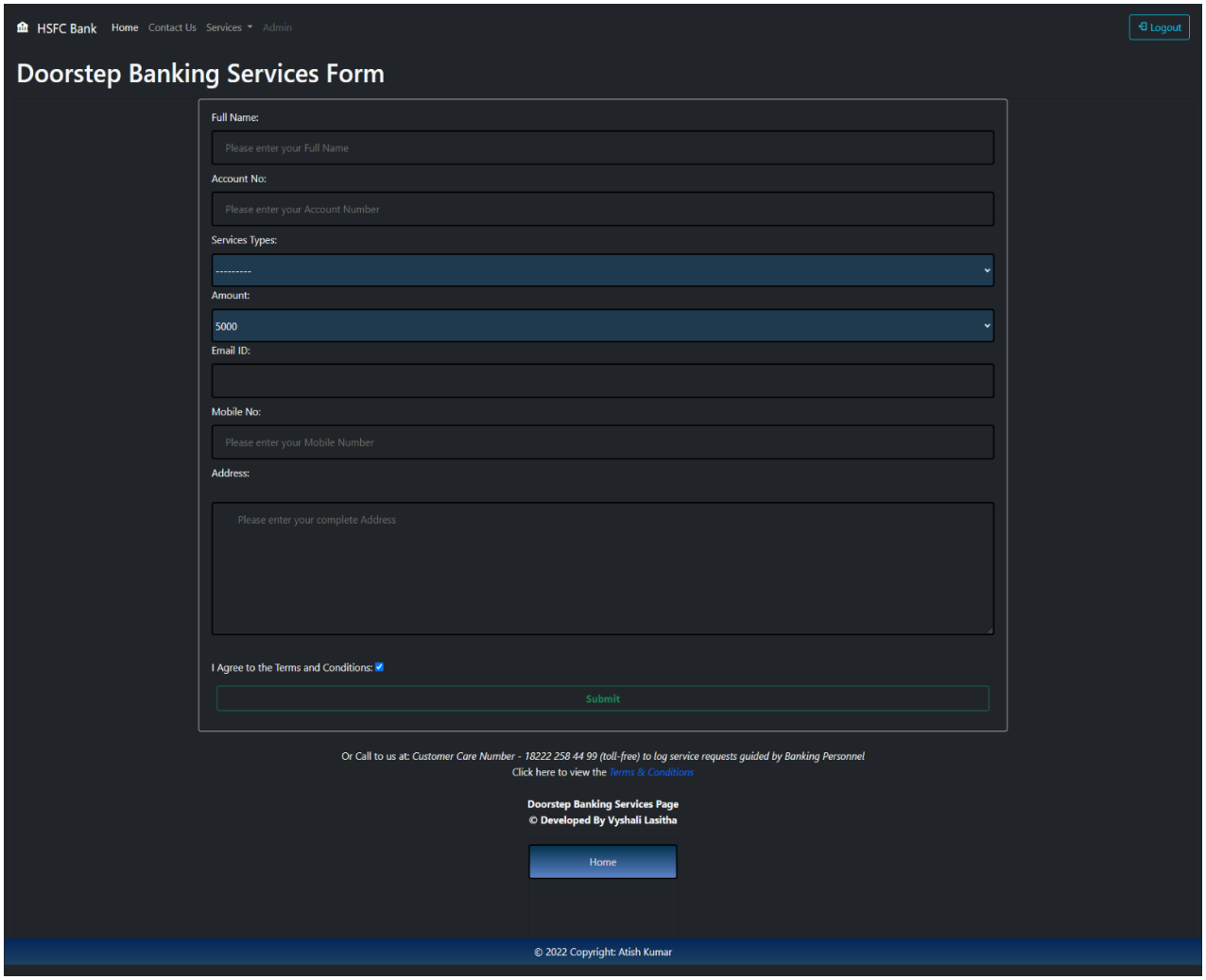
HSFC Bank
Home
Contact Us
Services
Admin
Logout
Doorstep Banking Services Form
Full Name:
Please enter your Full Name
Account No:
Please enter your Account Number
Services Types:

Amount:
5000
Email ID:
Mobile No:
Please enter your Mobile Number
Address:
Please enter your complete Address
I Agree to the Terms and Conditions:
Submit
Or Call to us at: Customer Care Number - 18222 258 44 99 (toll-free) to log service requests guided by Banking Personnel
Click here to view the Terms & Conditions
Doorstep Banking Services Page
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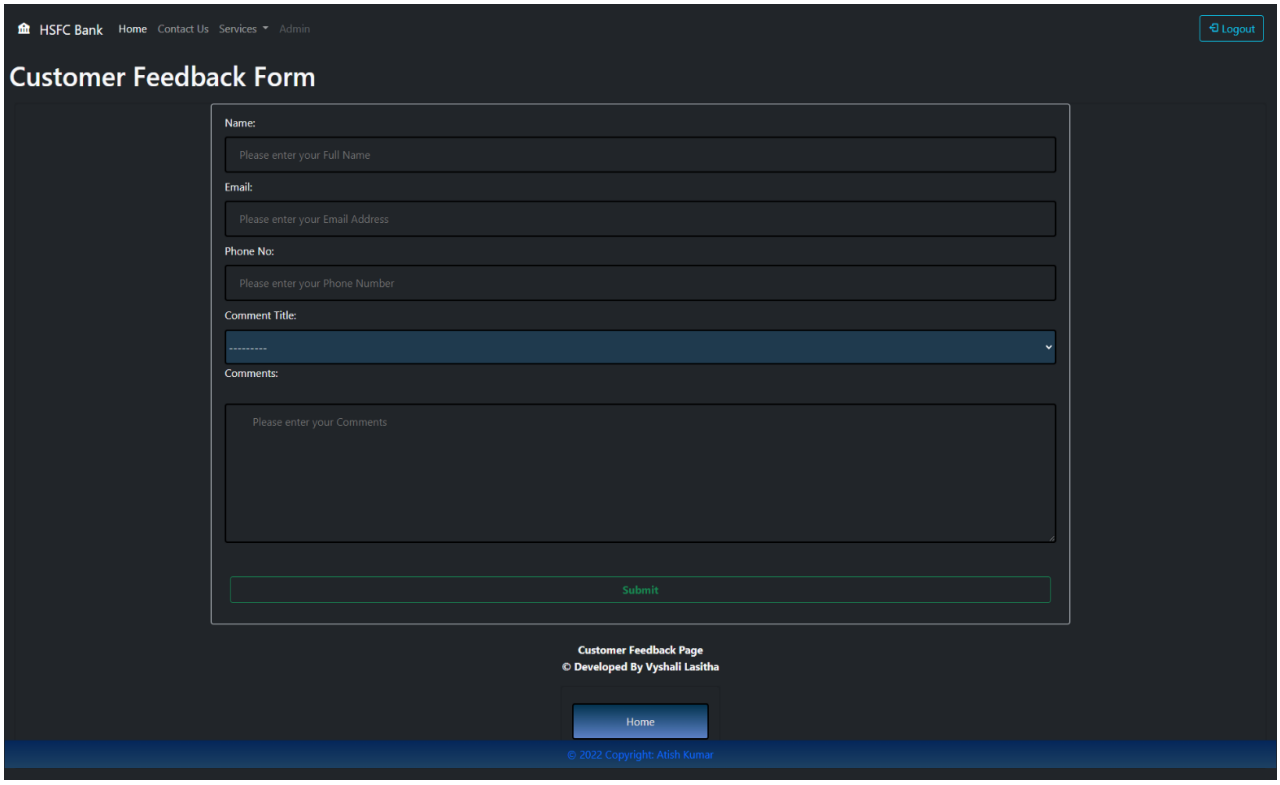
HSFC Bank
Home
Contact Us
Services
Admin
Logout
Customer Feedback Form
Name:
Please enter your Full Name
Email:
Please enter your Email Address
Phone No:
Please enter your Phone Number
Comment Title:

Comments:
Please enter your Comments
Submit
Customer Feedback Page
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Home
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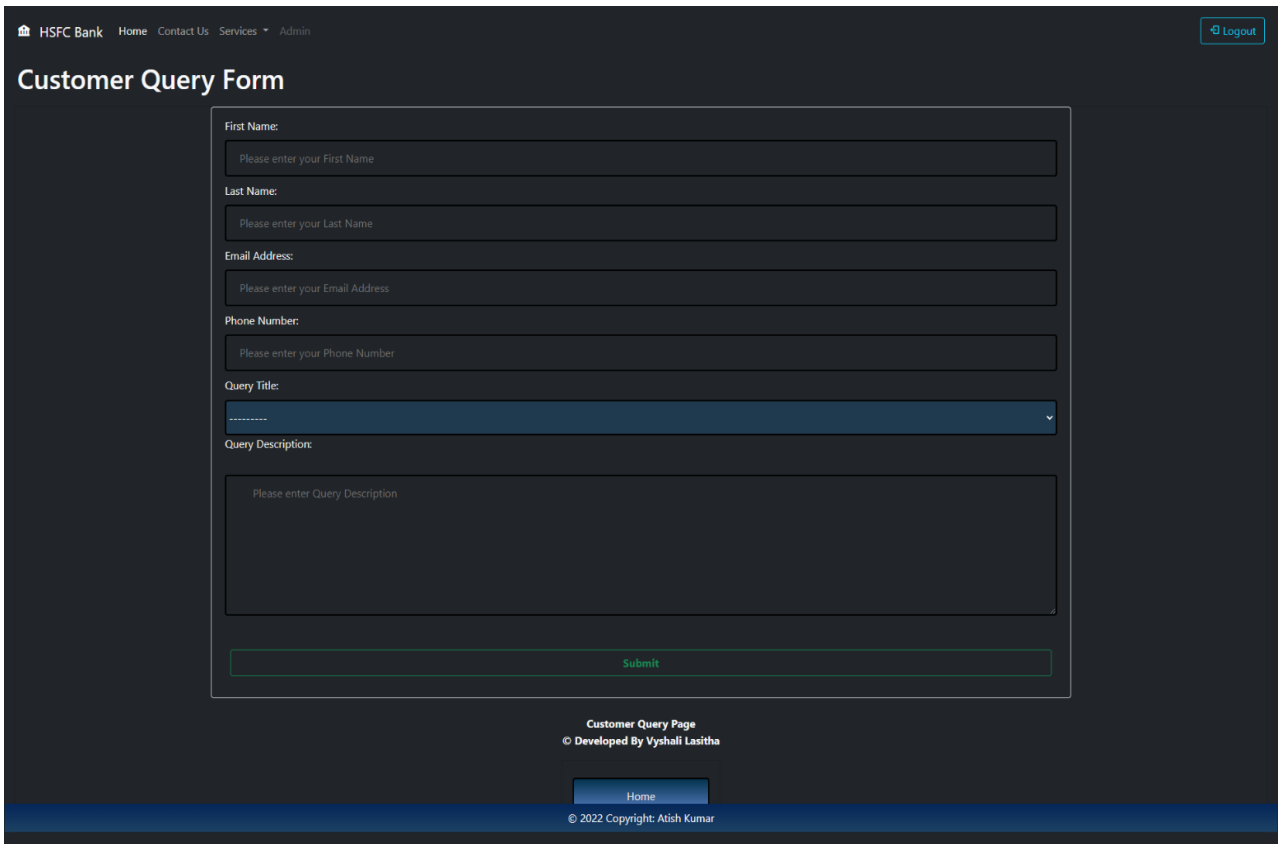
HSFC Bank
Home
Contact Us
Services
Admin
Logout
Customer Query Form
First Name:
Please enter your First Name
Last Name:
Please enter your Last Name
Email Address:
Please enter your Email Address
Phone Number:
Please enter your Phone Number
Query Title:

Query Description:
Please enter Query Description
Submit
Customer Query Page
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Home
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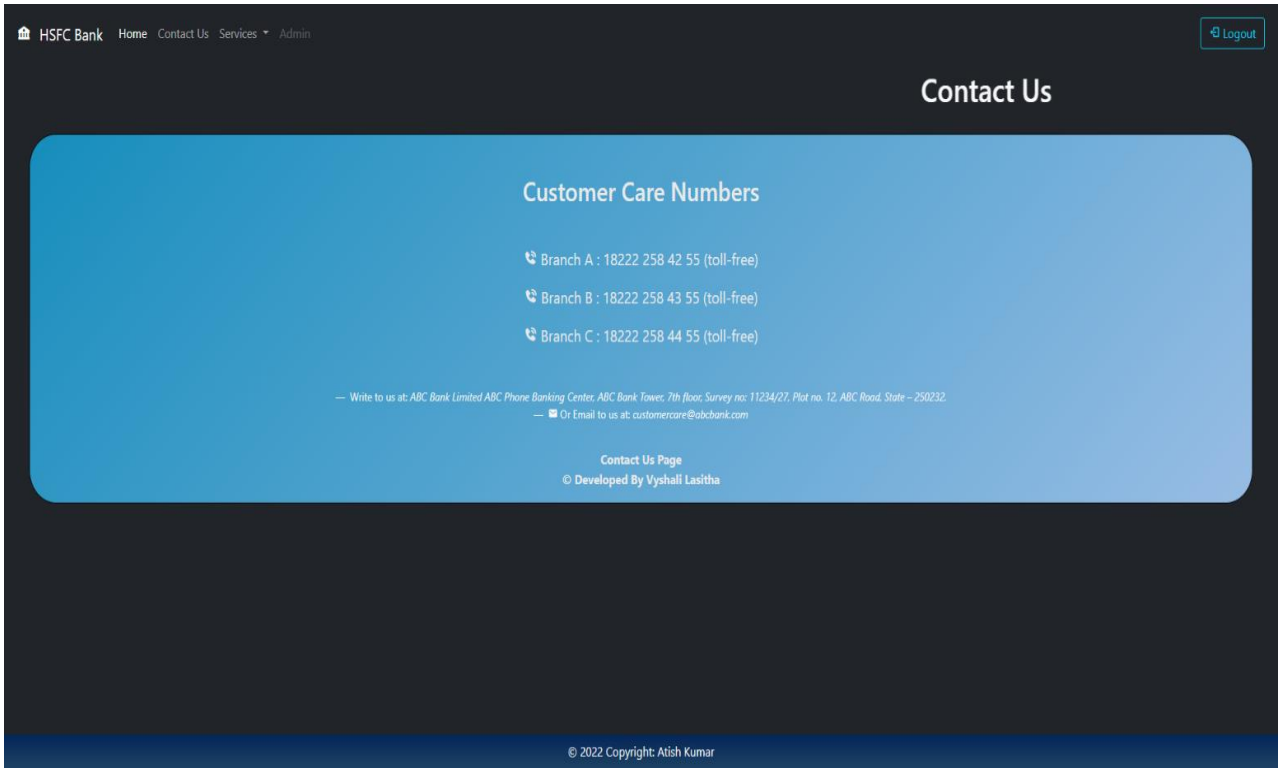
HSFC Bank
Home
Contact Us
Services
Admin
Logout
Contact Us
Customer Care Numbers
Branch A : 18222 258 42 55 (toll-free)
Branch B : 18222 258 43 55 (toll-free)
Branch C : 18222 258 44 55 (toll-free)
— Write to us at: ABC Bank Limited ABC Phone Banking Center, ABC Bank Tower, 7th floor, Survey no: 11234/27, Plot no. 12, ABC Road, State – 250232.
— Or Email to us at: customercare@abcbank.com
Contact Us Page
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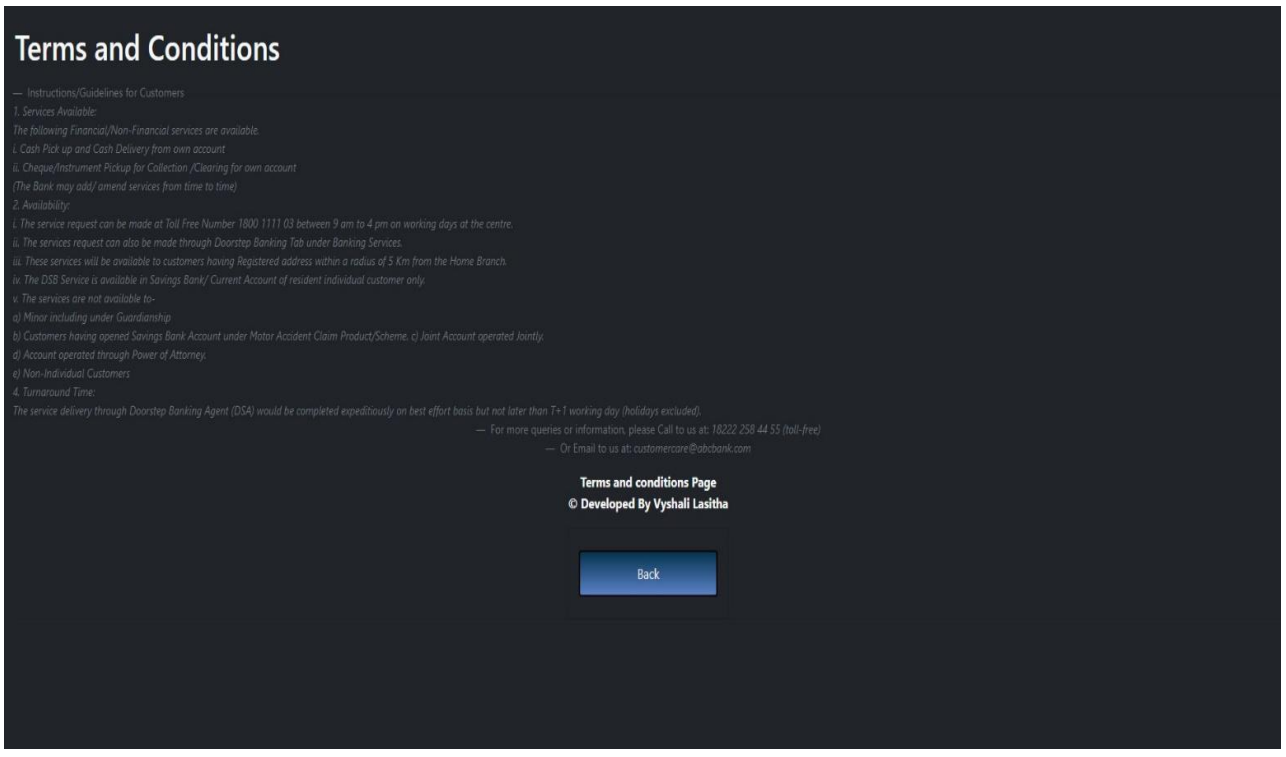
Terms and Conditions
— Instructions/Guidelines for Customers
1. Services Available:
The following Financial/Non-Financial services are available.
i. Cash Pick up and Cash Delivery from own account
ii. Cheque/Instrument Pickup for Collection /Clearing for own account
(The Bank may add/ amend services from time to time)
2. Availability:
i. The service request can be made at Toll Free Number 1800 1111 03 between 9 am to 4 pm on working days at the centre.
ii. The services request can also be made through Doorstep Banking Tab under Banking Services.
iii. These services will be available to customers having Registered address within a radius of 5 Km from the Home Branch.
iv. The DSB Service is available in Savings Bank/ Current Account of resident individual customer only.
v. The services are not available to-
a) Minor including under Guardianship
b) Customers having opened Savings Bank Account under Motor Accident Claim Product/Scheme. c) Joint Account operated Jointly.
d) Account operated through Power of Attorney.
e) Non-Individual Customers
4. Turnaround Time:
The service delivery through Doorstep Banking Agent (DSA) would be completed expeditiously on best effort basis but not later than T+1 working day (holidays excluded).
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— Or Email to us at: customercare@abcbank.com
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4.6 APPLICATION DEVELOPMENT

This Bank Management System Project in Django was created based on Django, HTML, python, CSS, and Bootstrap. A Bank Management System created using Python Django Framework on the backend and HTML, CSS, and JavaScript on the frontend. It is a Simple Bank Management System that allows User Create a new account and get a unique account number on sign-in, store, and edit their details. The user can transfer money from one bank account to another.

To start creating a Bank Management System Project in Python Django makes sure that you have PyCharm Professional IDE Installed on your computer.

```
from django.contrib import admin
from .models import *
# Register your models here.
admin.site.register(UserBankAccount)


# @admin.register(UserBankAccount)
# class BankAdmin(admin.ModelAdmin):
#     search_fields = ['user','account','account_type','balance',]
#     list_display = ['user','account_no','account_type','balance',]
```

```
from django.apps import AppConfig


class AccountConfig(AppConfig):
    default_auto_field = 'django.db.models.BigAutoField'
    name = 'Account'

    def ready(self):
        import Account.signals
```

```
from django import forms
from django.forms import ModelForm, fields
from .models import *



class AccountForm(ModelForm):
    class Meta:
        model = UserBankAccount
        fields = '__all__'
        exclude = ['account_no',]

from django.db import models
from Customer.models import Customer
from Product.models import *
import random
from django.contrib.auth.models import User
from .utils import *
from django.core.validators import (
    MinValueValidator,
    MaxValueValidator,
)

import string
from django.db.models  import Max
# Create your models here.
MALE = 'M'
FEMALE = 'F'
```

```
GENDER_CHOICE = (
    (MALE, "Male"),
    (FEMALE, "Female"),
)
class UserBankAccount(models.Model):
    Account_id = models.AutoField(primary_key=True,editable=False,unique=True)
    user = models.ForeignKey(
        User,
        related_name='account',
        on_delete=models.CASCADE,
    )
    account_type = models.ForeignKey(
        ProductCode,
        default=1,
        related_name='accounts',
        on_delete=models.CASCADE
    )
    period = models.DecimalField(max_digits=10, decimal_places=2, default=0)
    rate = models.DecimalField(max_digits=4, decimal_places=2, default=0)
    account_no = models.PositiveBigIntegerField(null=False,blank=True,unique=True)
    balance = models.DecimalField(
       max_digits=6, decimal_places=2, default=0, null=True, blank=True
    )
    interest_start_date = models.DateField(
        auto_now_add=True,
        help_text=(
            'The month number that interest calculation will start from'
        )
    )
```

```
initial_deposit_date = models.DateField(auto_now_add=True)

Referrence_Number = models.CharField(max_length = 10,
       blank=True,
       editable=False,
       unique=True,
       default=create_new_ref_number,
  )


def create_new_ref_number():
            not_unique = True
            while not_unique:
                unique_ref = random.randint(1000000000, 9999999999)
                if not UserBankAccount.objects.filter(Referrence_Number=unique_ref):
                    not_unique = False
            return str(unique_ref)

def save(self,*args, **kwargs):
    # if self.account_tid == "":
    #     self.account_tid = generate_code()
    # self.full_no = int(1001) if UserBankAccount.objects.count() == 0 else UserBankAccount.objects.aggregate(max=Max[int(self.ful
    # self.full_no =''.join(random.choices(string.digits, k=3))
    self.account_no = f"{self.account_type.code}0000{self.user.id}{self.Referrence_Number}"
    # .join(random.choices(string.digits, k=4))
    return super(UserBankAccount, self).save(*args,**kwargs)

def __str__(self):
    return str(self.account_no)
```

```
from django.db.models.signals import post_save
from django.contrib.auth.models import User
from Customer.models import Customer
from .models import UserBankAccount
from django.dispatch import receiver
# from .models import Profile
from django.contrib.auth.models import Group



def customer_profile(sender , instance, created , **kwargs):
    if created:

        UserBankAccount.objects.create(
            user=instance,
            )


post_save.connect(customer_profile,sender=User)
```

```
from django.test import TestCase

# Create your tests here.

from django.contrib import admin
from django.urls import path
from .views import *


urlpatterns = [
    path('', index,name='accounts_home' ),
    path('report/<int:pk>/', report,name='report' ),
]


import random
import uuid ,base64

def generate_code():

    code = str(uuid.uuid4())[:12]
    return code



def create_new_ref_number():
      return str(random.randint(1000000000, 9999999999))
```

```python
from http.client import HTTPResponse
from django.shortcuts import render
from .models import *
from Transfer.models import*
from .forms import *
# Create your views here.
def index(request):
    current_user = request.user.customer
    current_user_file = UserBankAccount.objects.filter(user = request.user)
    # bing = list(current_user_file.keys())
    # print(bing)

    # form = AccountForm ()
    form = AccountForm(instance=current_user)
    # acc_no = 1001 if UserBankAccount.objects.count() == 0 else UserBankAccount.objects.aggregate(max=Max['full_no'])["max"]+1
    if request.method=='POST':
        current_user = request.POST.get('username')
        form = AccountForm(request.POST)
        if form.is_valid():

            # username = form.cleaned_data['user']
            Account_type = form.cleaned_data['account_type']
            period = form.cleaned_data['period']
            rate = form.cleaned_data['rate']
            balance = form.cleaned_data['balance']
            data = UserBankAccount.objects.create(
                user = current_user,
                account_type=Account_type,
                period=period,
                rate=rate,
                balance=balance
                )
            data.save()
            form.save()
        else:
            return  HTTPResponse('Invalid Data')
    context = { 'form':form,'all_acc':current_user_file}
    return render(request, 'account.html', context)
```

```
def report(request,pk):
  current_user_file = UserBankAccount.objects.filter(user = request.user)
  transfer_report = UserBankAccount.objects.get(Account_id=pk)
  transfer_report2 = TransferMoney.objects.filter(From_accno=transfer_report)
  transfer_report3 = TransferMoney.objects.filter(To_accno=transfer_report)
  print(transfer_report3)
  # transfer_report = TransferMoney.objects.get()
  transfer_report1 = request.user.account.all()
  context= {
    'report2':transfer_report,
    'b':transfer_report2,
    'c':transfer_report3,
    }
  return render (request, 'report.html',context)
```

4.7 APPLICATION TESTING

Software Testing is the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? Software testing is often used in association with the term's verification and validation. Validation is the checking or testing of items, includes software, for conformance and consistency with an associated specification. Software testing is just one kind of verification, which also uses techniques such as reviews, analysis, inspections, and walkthroughs. Validation is the process of checking that what has been specified is what the user actually wanted.

Software testing should not be confused with debugging. Debugging is the process of analyzing and localizing bugs when software does not behave as expected. Although the identification of some bugs will be obvious from playing with the software, a methodical approach to software testing is a much more thorough means for identifying bugs. Debugging is therefore an activity which supports testing, but cannot replace testing. Other activities which are often associated with software testing are static analysis and dynamic analysis. Static analysis investigates the source code of software, looking for problems and gathering metrics without actually executing the code. Dynamic analysis looks at the behavior of software while it is executing, to provide information such as execution traces, timing profiles, and test coverage information.

Testing is a set of activity that can be planned in advanced and conducted systematically. Testing begins at the module level and work towards the integration of

entire computers-based system. Nothing is complete without testing, as its vital success of the system testing objectives, there are several rules that can serve as testing objectives. They are11 Testing is a process of executing a program with the intend of finding an error. A good test case is one that has high possibility of finding an undiscovered error. A successful test is one that uncovers an undiscovered error.

If a testing is conducted successfully according to the objectives as stated above, it would uncovered errors in the software also testing demonstrate that the software function appear to be working according to the specification, that performance requirement appears to have been met.

There are three ways to test program.

- For correctness
- For implementation efficiency
- For computational complexity

Test for correctness is supposed to verify that a program does exactly what it was designed to do. This is much more difficult than it may at first appear, especially for large programs.

- **Why Software Testing is Important?**

  Software Testing is Important because if there are any bugs or errors in the software, it can be identified early and can be solved before delivery of the software product. Properly tested software product ensures reliability, security and high performance which further results in time saving, cost effectiveness and customer satisfaction. Testing is important because software bugs could be expensive or even dangerous. Software bugs can potentially cause monetary and human loss.

- **What are the benefits of Software Testing?**

  Here are the benefits of using software testing:

  - **Cost-Effective:** It is one of the important advantages of software testing. Testing any IT project on time helps you to save your money for the long term. In case if the bugs caught in the earlier stage of software testing, it costs less to fix.
  - **Security:** It is the most vulnerable and sensitive benefit of software testing. People are looking for trusted products. It helps in removing risks and problems earlier.

- **Product quality:** It is an essential requirement of any software product. Testing ensures a quality product is delivered to customers.
- **Customer Satisfaction:** The main aim of any product is to give satisfaction to their customers. UI/UX Testing ensures the best user experience.

Software Testing can be broadly classified into two types:

- Manual Testing
- Automation Testing

Manual testing: -

Manual testing is a software testing process in which test cases are executed manually without using any automated tool. All test cases executed by the tester manually according to the end user's perspective. It ensures whether the application is working, as mentioned in the requirement document or not. Test cases are planned and implemented to complete almost 100 percent of the software application. Test case reports are also generated manually.

Manual Testing is one of the most fundamental testing processes as it can find both visible and hidden defects of the software. The difference between expected output and output, given by the software, is defined as a defect. The developer fixed the defects and handed it to the tester for retesting.

Manual testing is mandatory for every newly developed software before automated testing. This testing requires great efforts and time, but it gives the surety of bug-free software. Manual Testing requires knowledge of manual testing techniques but not of any automated testing tool.

Manual testing is essential because one of the software testing fundamentals is "100% automation is not possible."

- **Why we need manual testing**

Whenever an application comes into the market, and it is unstable or having a bug or issues or creating a problem while end-users are using it.

If we don't want to face these kinds of problems, we need to perform one round of testing to make the application bug free and stable and deliver a quality product to the client, because if the application is bug free, the end-user will use the application more conveniently.

If the test engineer does manual testing, he/she can test the application as an end-user perspective and get more familiar with the product, which helps them to write the correct test cases of the application and give the quick feedback of the application.

- **Types of Manual Testing**

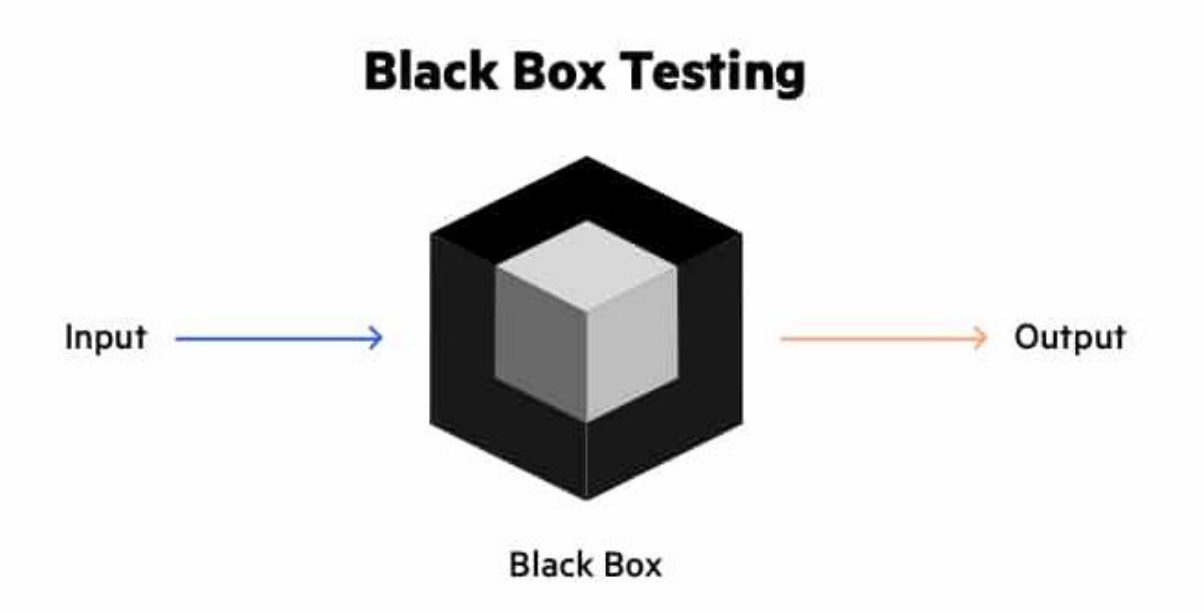
There are various methods used for manual testing. Each technique is used according to its testing criteria. Types of manual testing are given below:

✓ White Box Testing
✓ Black Box Testing
✓ Gray Box Testing

- **Black Box Testing: -**

Black box testing involves testing a system with no prior knowledge of its internal workings. A tester provides an input, and observes the output generated by the system under test. This makes it possible to identify how the system responds to expected and unexpected user actions, its response time, usability issues and reliability issues.

Black box testing is a powerful testing technique because it exercises a system end-to-end. Just like end-users "don't care" how a system is coded or architected, and expect to receive an appropriate response to their requests, a tester can simulate user activity and see if the system delivers on its promises. Along the way, a black box test evaluates all relevant subsystems, including UI/UX, web server or application server, database, dependencies, and integrated systems.



Advantages of Black Box Testing:

- The tester does not need to have more functional knowledge or programming skills to implement the Black Box Testing.
- It is efficient for implementing the tests in the larger system.
- Tests are executed from the user's or client's point of view.
- Test cases are easily reproducible.
- It is used in finding the ambiguity and contradictions in the functional specifications.

Disadvantages of Black Box Testing:

- There is a possibility of repeating the same tests while implementing the testing process.
- Without clear functional specifications, test cases are difficult to implement.
- It is difficult to execute the test cases because of complex inputs at different stages of testing.
- Sometimes, the reason for the test failure cannot be detected.
- Some programs in the application are not tested.
- It does not reveal the errors in the control structure.
- Working with a large sample space of inputs can be exhaustive and consumes a lot of time.

Here are the software testing types:

Typically Testing is classified into three categories.

- Functional Testing
- Non-Functional Testing or Performance Testing
- Maintenance (Regression and Maintenance)

Here are important strategies in software engineering:

- Unit Testing: This software testing basic approach is followed by the programmer to test the unit of the program. It helps developers to know whether the individual unit of the code is working properly or not.
- Integration testing: It focuses on the construction and design of the software. You need to see that the integrated units are working without errors or not.
- System testing: In this method, your software is compiled as a whole and then tested as a whole. This testing strategy checks the functionality, security, portability, amongst others.
- Program Testing: software testing is a method of executing an actual software program with the aim of testing program behavior and finding errors. The software program is executed with test case data to analyze the program behavior or response to the test data. A good program testing is one which has high chances of finding bugs.

TEST DESCRIPTION OF HSFC BANK

Test cases on HSFC Banking			BANKING MANAGEMENT PROJECT TESTING FOR HSFC BANK						
Sr. No.	est Case I	Test Case Name	Test Case Description	Test Steps	Test Data	Expected Result	Actual Result	ce/Scree	Status
1	T_001	Verify Login or Signup Button	Once the user clicks on the Login or Signup button hyperlink "http://127.0.0.1:8000/login/" Login page is displayed	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/". 3) Click on the Login or Signup	http://127.0.0.1:8000/.	Browser Should be Opened, Webpage should be Displayed & The webpage"http://127.0.0.1:8000/login/" should be opened.	positive		pass
2	T_002	Verify the login functionality for invalid username and invalid password	Verify if the login functionality is working when the user enters in invalid username and invalid password	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/" 3) Enter the invalid username 4)	Open the URL "http://127.0.0.1:8000/" Username-parikale PW-Sai@1234	1)The Home Screen/Main page should be displayed 2) User shoud be able to click on login 3) User should be able to enter cred and User should not	User unable to login		pass
3	T_003	Verify the REGISTER/SIGN IN Functionality	Once the user clicks on the REGISTER/SIGN IN hyperlink , the "http://127.0.0.1:8000/login/selfregistration" webpage is displayed	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/login/".3) Enter the valid Username, E mail ID and PW and	Open the URL "http://127.0.0.1:8000/login/	Browser Should be Opened, Webpage should be Displayed & The webpage"http://127.0.0.1:8000/login/" should be opened, and User should Be register for	User able to login		pass
4	T_004	Test "Support for HSFC Bank" helpline contact Us Link	Test the "Support for HSFC Bank" link at the top right corner	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/contactus/". 3) CLick on the "Support for HSFC bank" contact us	Open URL Banking	Browser Should be Opened, Webpage should be Displayed & The helpline "support for HSFC Bank" link should be displayed	User able to display contact Us button		pass
5	T_005	Verify the "Services" button.	Once the user clicks on the	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000. 3) CLick on the "Support for HSFC bank" Services Button.	Open URL Banking	Browser Should be Opened, Webpage should be Displayed & The helpline "support for HSFC Bank" Services Button should be displayed	User able to Displayed Service Button		Pass

6	T_006	Verify the link for Accounts	Once the user clicks on the ACCOUNTS hyperlink , the "http://127.0.0.1:8000/accounts/" webpage is displayed 2) User should be able to click on Account Statement button 3)Account Statement should be Displayed.3) User should be able to	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/accounts/". 3) CLick on the Accounts hyperlink at the top of the page 3) click on the valid Twelve digit Adhar card	open URL Banking	1)Browser Should be Opened, Webpage should be Displayed 2) The webpage"http://127.0.0.1:8000/accounts/" should be opened. 3) valid adhar card nuber should be accepted 4)Account statement Should Be Displayed Once click on Account statement Button.			Pass
7	T_007	Verify the link for Transfer	Once the user clicks on the TRANSFER hyperlink , the "http://127.0.0.1:8000/transfer/" webpage is displayed 2) User should be able to click on Text Box and pay button3) Pay button should be enable.	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/transfer/". 3) CLick on the Transfer hyperlink at the top of the page 3) Click On the Pay Button.	open URL Banking	1)Browser Should be Opened, Webpage should be Displayed 2) The webpage"http://127.0.0.1:8000/transfer/" should be opened. 3) User should Be able to click on Text box and Pay button. And transfer amount	User able to transfer amount after clicking pay button		Pass
8	T_008	Verify the link for Profile	Once the user clicks on the PROFILE hyperlink , the "http://127.0.0.1:8000/customer/" webpage is displayed 2) User should be able to click on Text Box , Radio button and dropdown button and Update button	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/customer/". 4) CLick on the Profile hyperlink at the top of the page) Click On the text box, Radio button, dropdown button	open URL http://127.0.0.1:8000/customer/	1)Browser Should be Opened, Webpage should be Displayed 2) The webpage"http://127.0.0.1:8000/customer/" should be opened. 3) User should Be able to click on Text box , Radio Button, Dropdown Button and Update Button	User able to click on all Text Box, Radio Button dropdown button and Update Button.		Pass

9	T_009	Verify the link for Banking Services	the http://127.0.0.1:8000/services/ hyperlink , the "Banking Services" webpage is displayed 2) User should be able to	browser. 2) Open the URL "127.0.0.1:8000/services/". 3) CLick on the Banking Services hyperlink	http://127.0.0.1:8000/services/	1)Browser Should be Opened, Webpage should be Displayed 2) The webpage"http://127.0.0.1:8000/services/" should be opened. 3) User should Be able to click	User not able to Submit Data when Click on Submit Button.		Fail
10	T_010	Verify the link for Customer Feedback	thehttp://127.0.0.1:8000/customerfeedback/ hyperlink , the "Customer feedback" webpage is displayed 2) User should be able to click on Text Box , dropdown button and submit Button. 3) User should be enter valid numeric 10 digit mobile	browser. 2) Open the URL "http://127.0.0.1:8000/customerfeedback/". 4) CLick on the Customer Feedback hyperlink at the top of the page) Click On the text box, , dropdown button	Banking	1)Browser Should be Opened, Webpage should be Displayed 2) The webpage"http://127.0.0.1:8000/customerfeedback/" should be opened. 3) User should Be able to click on Text box , Dropdown Button and Submit Button, submit button 4) User should be able to click numeric	User not able to click valid numeric 10 digit mobile number		Fail
11	T_011	Verify the link for Customer query	Once the user clicks on the http://127.0.0.1:8000/customerquery/ hyperlink , the "Customer Query" webpage is displayed 2) User should be able to click on Text Box , dropdown button and submit Button.	1) Launch the browser. 2) Open the URL "http://127.0.0.1:8000/customerquery/". 4) CLick on the Customer query hyperlink at the top of the page) Click On the text box, , dropdown button and Submit button.	Banking	1)Browser Should be Opened, Webpage should be Displayed 2) The webpage"http://127.0.0.1:8000/customerquery/" should be opened. 3) User should Be able to click on Text box , Dropdown Button and Submit Button, submit button	Positive		Pass

5 FINDINGS, SUGGESTIONS, RECOMMENDATION

5.1 INTRODUCTION

This chapter presents the findings based on the data analysis. Conclusions are based on findings and overall observations during the study. The flow of chapter has been maintained by schedule designed for research. In this section, the findings of the study are presented with a detailed description of the analysis on the techniques applied based on the research objectives. The data was then analyzed according to the knowledge acquired from the literature review. The chapter has divided in to three major sections- Findings, suggestions and Recommendation.

The important findings of the study generated through the interview schedule with the sample bank customers. The results, derived with a careful use of certain statistical tools, are also presented here. The interaction of the researcher with the bank customers and the bank officials about electronic banking with respect to services and features and with respect to different electronic channels of distribution enabled him to offer specific suggestions for the better servicing of the banks in the functioning of electronic banking services, which also find a place in this chapter. Thus, the concluding chapter becomes a fully packed structure of findings, statistical results and suggestion.

It is found that most of the people were using online banking services for time saving purpose and also to access from any ware any time. Internet banking is more frequently used, Online Service followed by Mobile Banking, Fund Transfer and Pay Bill. Mostly the online banking services are used in the form of internet banking, rest of the services are felt unsecured to the customers. It is found that server down is the major problem in online banking services. Customers prefer transactions through online banking services as far as possible. Most of the people used online banking services through their personal computer and also lap-Top. Those who are educated are using online banking services more. The online banking services mostly popular among the people for internet banking only. Online banking services help to reduce the cost of transactions, save time, they are user friendly, and they can be accessed from any place. All these feathers have positive impact on the people for using online banking services.

5.2 SUGGESTION

So, it is suggested that the bank officials may demonstrate the various operational and functional aspects of different e-banking services by demonstrating the same at a common

place or at the bank premises periodically. It may be intended to existing customers or prospective customers and enhance the awareness of the people / customers towards e-banking services effectively. This will be doubly beneficial. This will have two aspects; it will widen the scope of e-banking services and it will pave way for financial inclusion is reliably learnt from the bank branch manager that for carrying out e-banking transactions, huge investments on infrastructure and human resource necessary. With a heavy investment and with the employment of bank personnel, the e-banking services are provided for the comfort of the bank customers. This may be untailed so that the operational work may be reduced and profitability may be increased. A common premise may be shared by different banks to offer e-banking services so that with less infrastructure and with less human resource the e-banking services can be offered effectively. This will reduce further operational cost, ultimately leading to increased profitability for suitable services, consortium concept may be adopted for effective delivery of e-banking services.

5.3 RECOMMENDATION

Analysis shows that even though the online banking facility is having many advantages, it is not utilized by many people. It shows that younger generation people are more likely to use the internet banking facilities when compared to the middle age and old age people. It is due to the unawareness of the customers towards the internet banking facility. Also, the people are finding difficulties in using the internet banking websites which had created an aversion in them towards net banking. This can be overcome if the bank conduct sessions on the various features provided in their online banking websites. Even the younger generation people are feeling insecure to use the online transaction facilities provided by the bank. The internet banking technology should be made more secure so as it to eliminate the constraint among the customer.

6 CONCLUSION

Online banking services increase the customer's active involvement in the banking system. The banker must create more awareness about the different electronic banking services and the method of usage of services.

The concern of this study is the online banking services and the customer satisfaction. The results showed that there is a strong satisfaction about internet banking among all customers. Study has also shown that the overall customers' satisfaction regarding online banking services were found high due to cost effectiveness and user-friendliness. The HSBC must improve the customer satisfaction through customer relation management, online market research and business intelligence. Internet banking customers tend to be much more concerned with the security of their banking transactions and the privacy of their personal information. An online banking service has become important phenomenon in the banking industry and it will continue with progress in information communication technology. The financial industry thus is gradually experiencing and transforming from cash-based system to a cashless system that is more convenient and reliable, where online banking services are proved to be of immense importance.

Studies show that the mostly used online banking services are inter account transfer, payment to other personal account, transfer to credit card account, recharge mobile phones, standing order transactions, savings, current and fixed deposit account application and debit/ credit card. No doubt studies reveal that online banking reduces time in transactions as well as crowd in the banks. One can easily sit at home or at cyber to have transfer of money, recharge of vouchers, making FD's, etc. Few banks have offered full-service online banking successfully. Banks have not only provided e-banking facility to the customers but also increased the Prestige e-Journal of Management and Research Volume 2, Issue 2 (October, 2015) ISSN 2350-1316 26 satisfaction level of customers. In India, people are still not fully aware of advantages of online banking but those who are tech savvy are using online banking successfully. There was a time when customers used to go the bank, Insurance companies, and railway station for various purposes and used to stand in long queue for hours and hours but now many people prefer online banking to save time, energy, fuel, money etc. Important thing is that people need to be technically sound so that they can use online banking facility properly. Banks should also generate trust in the minds of customers that e-banking is safe.
Banking System keeps the day-by-day tally record as a complete banking. It can keep the information of Account type, account opening form, Deposit, Withdrawal, and Searching the transaction, Transaction report, Individual account opening form.

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