A PROJECT REPORT

ON

"DISCOUNT CARD MANAGEMENT AND HIERARCHY BUSINESS"

Submitted to

UNIVERSITY OF MUMBAI

In Partial Fulfillment of the Requirement for the Award of

BACHELOR'S DEGREE IN
COMPUTER ENGINEERING

BY

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UNDER THE GUIDANCE OF
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DEPARTMENT OF COMPUTER ENGINEERING
Anjuman-I-Islam's Kalsekar Technical Campus
SCHOOL OF ENGINEERING & TECHNOLOGY
Plot No. 2 3, Sector - 16, Near Thana Naka,
Khandagaon, New Panvel - 410206

2017-2018

AFFILIATED TO

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CERTIFICATE

This is certify that the project entitled

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submitted by

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SAYED FIRDAUS SARFUDDIN	**12CO08**

is a record of bonafide work carried out by them, in the partial fulfilment of the requirement for the award of Degree of Bachelor of Engineering (Computer Engineering) at ***Anjuman-I-Islam's Kalsekar Technical Campus, Navi Mumbai*** under the University of MUMBAI. This work is done during year 2017-2018, under our guidance.

Date: / /

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I am grateful to him/her for his timely feedback which helped me track and schedule the process effectively. His/her time, ideas and encouragement that he gave is help me to complete my project efficiently.

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At last we must express our sincere heartfelt gratitude to all the staff members of Computer Engineering Department who helped me directly or indirectly during this course of work.

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Project I Approval for Bachelor of Engineering

This project entitled ***ÏDISCOUNT CARD MANAGEMENT AND HIERARCHY BUSINESS¨*** by ***Shaikh Farhan Mohd. Farid, Mulla Shamiya Abdul Gani, Sayed Firdaus Sarfuddin*** is approved for the degree of ***Bachelor of Engineering in Department of Computer Engineering.***

Examiners

1. .....
2. .....

Supervisors

1. .....
2. .....

Chairman

.....

Declaration

I declare that this written submission represents my ideas in my own words and where others ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission. I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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ABSTRACT

In current world hierarchical business is the new market of earning and supporting for promoting new business ideas. In this paper we are promoting such business with technical support of android application. A Discount Card is a card, that allows the individual to avail discounts on the prices of some products or services. It intends the conditions agreed upon between the business companies for a specific series of coupons regarding the validation and redemption.

This system proposes an easiest solution for more profit making business for Discount Card Management. A method of QR Code is introduced where the information of the customer will be encoded in the QR (Quick Response) Code in the encrypted form. The Merchant on the other hand will have a scanner to scan this QR code available with the customer.

This management application will help the business company to keep a track of a where about of the coupons where they are redeemed, who has redeemed and various other Statistics. Let us consider a person XYZ, an authorized owner of the said discount card wants to use this app. The customer goes to a specific shop which has a tie up with the business group and has agreed to avail the discount to its customers. The shop owner will scan the QR code available with the customer to validate the personal. This scanning will be visible to our business group and help them to keep a track of all the Statistical Analysis.

Keywords: QR Code Generator, QR Scanner, Statistical Analysis, Zxing Library.

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Chapter 1

Introduction

Nowadays, due to advent of technology in all fields it has become necessary to have a proper utilization of technology for business management where in not only vendors but all the stake holders avail the benefits from transactions with an ease to use GUI. Discounts don't only help your shoppers; they also help your business. From increased sales, discounts may be that one ingredient that can bring business succes

1.1 Purpose

A Discount card is a card that entitles the holder to discounts on the prices of some products or services. Discount card management system allows the marketing team to keep a track and report on a variety of valuable products. By monitoring the statistics in real time, you can de- termine which coupons appeals to your audience. Offering potential customers discounts on purchases is a way to quickly draw people into your store. Anytime you tell a customer that he can save money, you're likely to get his attention.

1.2 Project Scope

Discount Card Management offers enhanced visibility into which suppliers are taking discounts. With this information, your users can refine their processes to encourage more suppliers to sign on. Evaluate the best discount price to still make a profit. This will help to create a marketing plan to encourage new customers and bring inactive customers back. Review your accounts for any regular times of the week, month or year. Attract new customers without a large marketing campaign

1.2.1 Goals

To have a healthy and successful business, it is necessary to develop good customer relation- ships. So, by using Discount Cards you can ensure to develop a healthy and better customer relationship as it allows you to offer your customers an exceptional experience, which will further keep your customer loyal and connected to your business.

1.2.2 Objectives

The first objective is the generation of the QR Code for every particular user. The merchant on the other hand will have the QR scanner to scan this QR code. Statistical analysis will be generated about the usage of the discount cards. A redeem report will be made available to the merchants so that they will have a overview about the discounts granted and made available.

1.3 Organization of Report

In Chapter 2: We have discussed about various paper that we have referred for our project. We have mentioned the description , pros and cons and how the overcome the problem under every paper. A total of two paper have been referred.

In Chapter 3: We have discussed about the requirement analysis under it we have consider about the requirement the platform requirement supporting the OS of the software and hardware requirement along with the feasible study.

In Chapter 4: This chapter is basically the diagrammatic representation of the modules. We can see system design and various other modules

In Chapter 5: we have seen the methodology here we have explain the project in detail by dividing into module.Various module of discount card and hierarchy business are explained with the help of few diagram.

In Chapter 6: we have discussed about the implementation details the assumption and dependencies this part contains details of the implementation of methodology that we discuss earlier.

In Chapter 7: we have shown the test cases and result along with analytic discussion this part contained the result of the output of the project.

In Chapter 8: we have concluded the whole project and future scope along with the limitation followed up by reference and chapter 9 with Appendix.

Chapter 2

Literature Survey

2.1 Privilege Discount Card

Discount Card offers/deals from most sought after restaurants, night clubs, health clubs,beauty chains, spas, health care chains, tattoo studios and much more in various city and across India. Privilege Card covers all range of people, big and small vendors of entire market. There are discounts and privileges for everyone. It provides you discounts and offers at over 3,500 locations across India and our discounts range from 10 to as much as 80percent.

2.1.1 Advantages of Paper

a. Statistical Analysis of the usage

2.1.2 Disadvantages of Paper

a. Carry your privilege card every-time and ever where

b. 7-10 working days of subscription date to deliver the card

2.1.3 How to overcome the problems mentioned in Paper

a. QR Code is introduced.

2.2 Miya-Miya Privilege Card

Miyamiya Privilege Card is a special privilege and guaranteed discount facility, created and managed by Sways Trading and Marketing Pvt Ltd. Miyamiya Privilege Card ensures a guar- anteed discount for our card holders from our registered merchants as well as service providers. Miyamiya discount card is a prepaid card widely accepted over more than 25,000 leading out- lets in Kerala and in affiliated web store. Miyamiya Privilege Card offers more privileges and extra discounts ranging from 3 to 20 while purchasing for not less than Rs.100 rupees at any of our registered outlets or renting services from our registered service providers or by affili- ated web store.

2.2.1 Advantages of Paper

a. ITEM 1

b. ITEM 2

c. ITEM 3

2.2.2 Disadvantages of Paper

a. Present your card at the billing counter each time you make a purchase

b. Valid only for one year

2.2.3 How to overcome the problems mentioned in Paper

a. Latest offers notification

b. Analysis of every discount coupon used on every transaction done.

2.3 Technical Review

The technologies that we are using in our project are as follows:-
1.Android, 2. QR Code, 3. MySQL, 4.XML

2.3.1 Advantages of Technology

a. Access apps from anywhere. Compatible with all the Android versions from Jelly Beans in ANDROID.

b. A merchant can scan the QR code and this allows them to store the information for future reference.

c. QR codes acts as the link and it eases the use of storing data or saving knowledge.

2.3.2 Reasons to use this Technology

a. Android creates an App in Efficient way which is easy to use.

b. MySQL provides dynamic database for analysis,authentication and storage.

c. QR Code is use to store large data in small format and encrypted form.

Chapter 3

Project Planning

3.1 Members and Capabilities

Table 3.1: Table of Capabilities

SR. No	Name of Member	Capabilities
1	Mulla Shamiya	Android Programming
2	Shaikh Farhan	Documentation, UI Design
3	Sayed Firdaus	Presentation

3.2 Roles and Responsibilities

Table 3.2: Table of Responsibilities

SR. No	Name of Member	Role	Responsibilities
1	Mulla Shamiya	Team Leader	Android Programming
2	Farhan Shaikh	Team Member	Documentation, UI Design
3	Sayed Firdaus	Team Leader	Presentation

3.3 Assumptions and Constraints

3.3.1 Assumptions

As the user registers QR Code is Generated and when the user or the customer wants to avail the offer the QR Scanner will help to validate the customer based on the registration. Based on the usage of the discount cards a report of Statistical USage will be generated.

3.3.2 Constraints

We make schedule for our project to complete it on time based on different aspects that are required in our project. T he cost of the project that is required for completing the project. Different quality attributes in projects and resources required in project. No risk tolerance is present in our project.

3.4 Project Management Approach

In our project we had used Spiral Model for implementing all the phases successfully. This model involves strategies, which is a combination of incremental and prototype models. This model is suitable for planning and implementing to achieve the goal of the project. It maintains a systematic step wise approach.

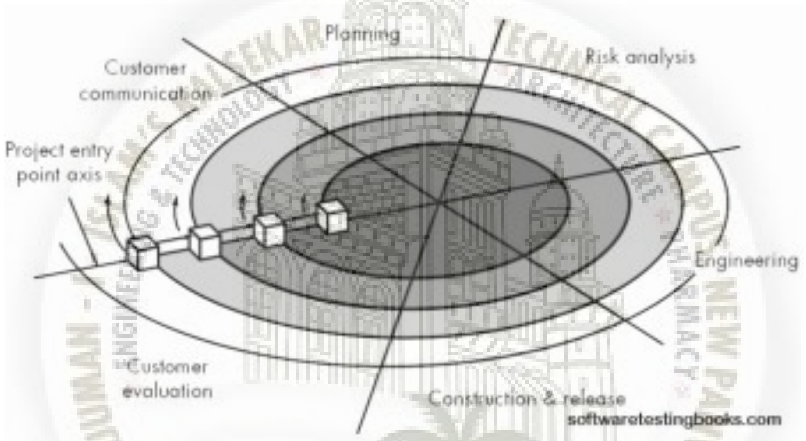


Figure 3.1: Spiral Model

3.4.1 Planning

The initial phase of any project is the requirement gathering. We need to gather proper information about our project. Analyze and understand the requirement and plan accordingly. We had visited various discount card applications and analyzed many Hierarchy Business.

3.4.2 Risk Analysis

Requirements are studied and brain storming sessions are done to identify the potential risks. Once the risks are identified , risk mitigation strategy is planned and finalized. If our application is not giving expected results we can make the changes accordingly.

3.4.3 Engineering

Actual development and testing of the application is done in this phase. Test cases and test results are made out of which report is generated accordingly. Any defects in the test cases are rectified and changes in the code are made. The main phase of the application building is done in this phase. It can be modified according to the requirement and changed if required.

3.4.4 Evaluation

Customer evaluates the application and the feedback about the same is noted and further changes are made according to the needs.

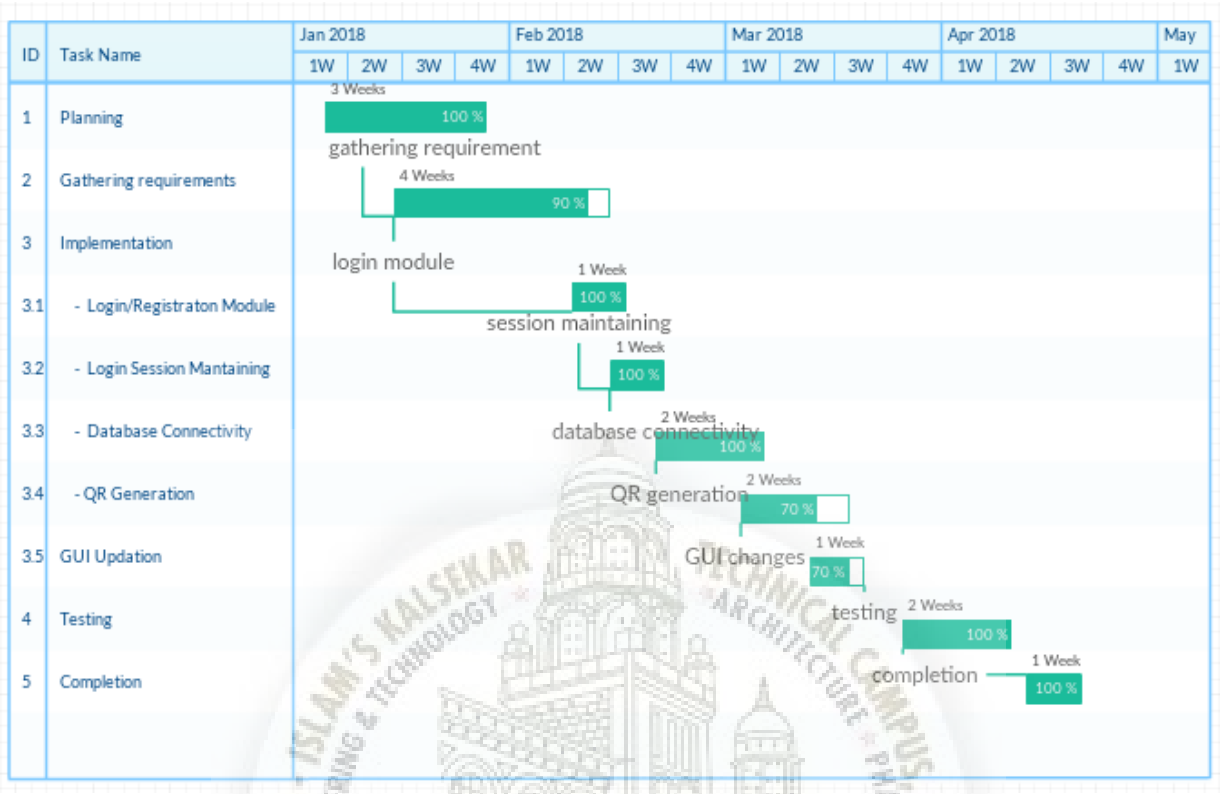
3.5 Ground Rules for the Project

1. We treat each other with respect.
2. We intend to develop personal relationships to enhance trust and open communication.
3. We value constructive feedback. We will avoid being defensive and give feedback in a constructive manner.
4. As team members, we will pitch in to help where necessary to help solve problems and catch-up on behind schedule work.
5. Additional meetings can be scheduled to discuss critical issues or tabled items upon discussion and agreement with the team leader.
6. One person talks at a time; there are no side discussions.
7. When we pose an issue or a problem, we will also try to present a solution.

3.6 Project Budget

1. Operating System: Linux Mint (Open Source)
2. IDE: Android Studio: (Open Source)

3.7 Project Timeline



Chapter 4

Software Requirements Specification

4.1 Overall Description

4.1.1 Product Perspective

The perspective of the project is to create a better UI of an existing company M-Power Enterprises in the form of an app which is quite convenient and will help in the better functioning and expansion of its business. It will be useful to those type of users who like to purchase products, use a particular service at discount rates.

4.1.2 Product Features

The major feature of this app is that once the customer or the merchant is registered ;QR code for the same is generated and on the basis of this code all the information about customer and merchant including the discount allocated to customer and the membership of Customer and Merchant with M-Power can be accessed through it.

4.1.3 User Classes and Characteristics

Different user will use the product differently because there are three different apps for Customer, Merchant and M-Power.Hence the pertinent characteristics of the apps will be a bit different from one another. Customer will interact with this two classes of product i.e. Registration module, QR Scanner and Merchant Locator. Merchant will interact with Merchant Manager and Recorder class and M-Power will interact with Profit Analyzer class.

4.1.4 Operating Environment

The environment in which the software will operate is Android And the hardware platform on which the software will run will be any Android based Smart Phone with GPS enabled.The Android Version should be Greater that 5.1

4.1.5 Design and Implementation Constraints

The major challenge that will hurdle the development of the system is the failure of the server,if the server does not connect properly and responds quickly than whole system is of no use.Another constraint would be the internet connectivity,if there is no internet connection available than all the services will not be provided to the user.Also if the mysql data connectivity is lost with the application than the system will fail to authenticate the user.

4.2 System Features

The main feature of our system is to provide an ease of use to the discount card holders. QR code is introduced for the recognition of particular customer and merchant along with its details such as membership,discount card allocation etc.Also if the customer decides to be a part of business then he can distribute this discount cards(now called seller)further.Likewise the business expands in Hierarchical format and hence a Hierarchical Manager comes into picture.In order to keep a track of Discount Cards Redeemed a module called as Recorder or Statistical Analyzer which consists of Statistics and cards utilization is used.

4.2.1 System Feature

1.Statistical Analysis
2.QR Scanner
3.Hierarchical Manager

Description and Priority

1.Statistical Analysis
This feature provides a Statistics about the number of cards redeemed,when,where and from which outlet.In general it forms the Recorder module.
2.QR Scanner
QR Scanner is responsible for QR Code generation which is used to identify the customer and merchant.Also it is used in Profit Computation Engine,Profit Analyzer and Utilization.
3.Hierarchical Manager
Hierarchical Manager keeps a record of the newly added subordinates and calculates the profit at each level.

Stimulus/Response Sequences

1.User will login into the system.User can either be a Customer or a Merchant.
2.After login unique QR code is generated for each user.
3.Customer will get proper location of Merchant.
4.Customer Profit Analyzer will allocate the gift cards for regular customers.
5.At the end Merchant will get a Redeem Report.

Functional Requirements

1.The user should be able to login into the system.
2.When the buyer becomes a seller it should be able to access Merchant Location and Profit Computation Engine.
3.M-Power and Merchant should have access to details of customer.
4.M-Power has access to Profit Analyzer.
5.The server should respond quickly.

4.3 External Interface Requirements

4.3.1 User Interfaces

1. User will be able to register and login to the system.
2. After the login is done session is maintained.
3. The user will get a unique QR Code for ease of use.
4. The merchant will have the Statistical Analysis of the usage.
5. The user will have the Analysis of the Hierarchy maintained.

4.3.2 Hardware Interfaces

Andriod enabled device:The andriod enabled device should have andriod version above 5.0.Inorder for the smooth functioning of the application the andriod device must have atleast 512mb of ram and atleast 500mb of free storage on device. The application can also function on a tablet device.

4.3.3 Software Interfaces

Operating System:Andriod above 4.4.
Databaes:MySQL.
tools:andriod studio IDE.

4.3.4 Communications Interfaces

1.The major communication for location purposes will be done by google api,the data is accessed by the google by using the google apis.
2.The interface between the firebaseDB and the system will be done by using http protocol

4.4 Nonfunctional Requirements

4.4.1 Performance Requirements

1. Statistical Analysis
The performance for this feature depends on the usage of the discount cards. An analysis of the usage of the cards is generated
2. Authentication
The performance for this feature is mainly dependent on the QR Code generated for the user. In order to verify the user's valdiity and authentication QR Code is used as an unique identity.

4.4.2 Safety Requirements

The database should be periodically maintained and have to keep upon it.
The data which is updated by the user should be commited in the database.

4.4.3 Security Requirements

The major security requirements for the system will be the safeguarding of the user data from any kind of exploit. In order to protect the user identity and authentication it will be encoded in the QR Code which only the QR Scanner will be able to scan.

Chapter 5

System Design

5.1 System Requirements Definition

Our system is an Andriod application on a mobile device, that functions according to the usage of the discount card holders. QR code is the backbone of the system which will authenticate the user and will be used to avail offers. The Level profit calculator will calculate hierarchy on the bases of levels and provide profits to the same. The analysis of the usage will be done through statistical analysis to provide a brief usage about the offers.

5.1.1 Functional requirements

1.The customers must register for create the account and login using username and password to use function in the application.
2. View the offers to avail latest discounts.
3. Confirm the offer to avail discount and scan QR Code.

Use-case Diagram

- M-Power
  Use case diagram is use to show the overall flow of the system. The profit analysis will be generated from the customer profit and merchant profit respectively which will include the analyzer of the respective modules.

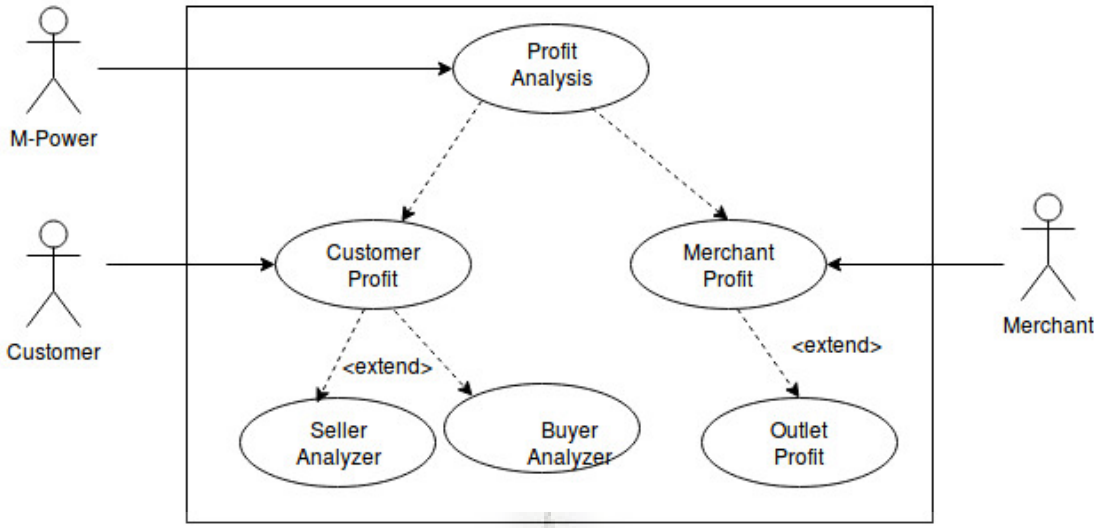


Figure 5.1: Use case of M-Power

- Merchant
  The outlet will have its individual QR scanner which will record the statistics of the discount cards and their usage at that particular outlet

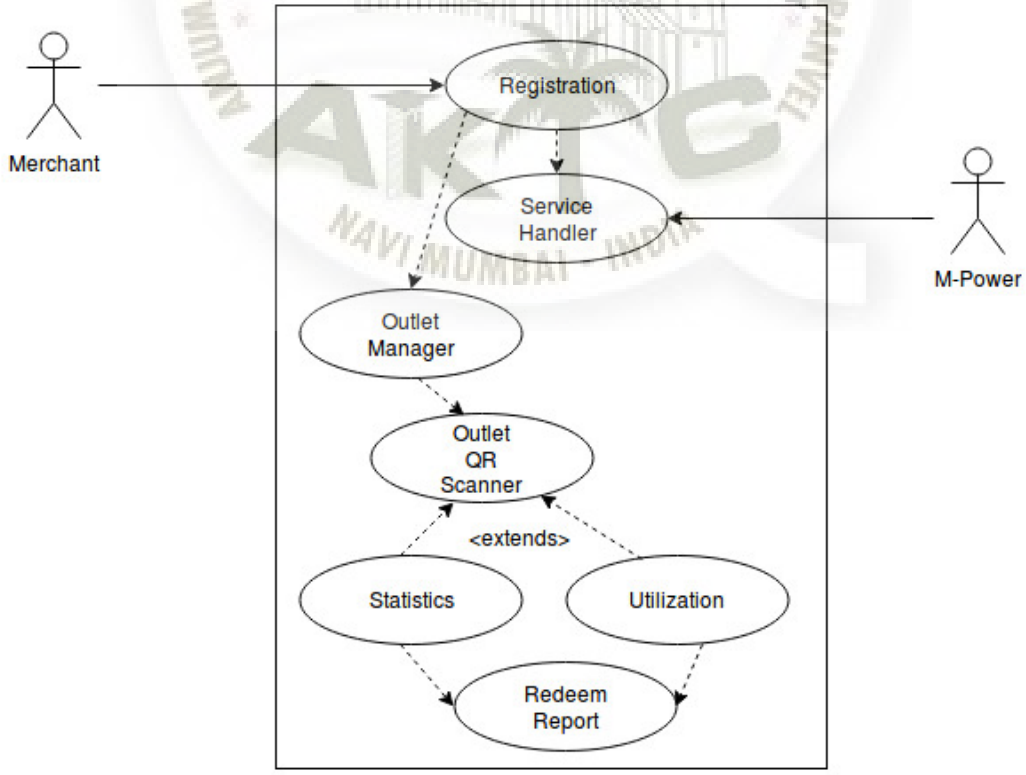


Figure 5.2: Use case of Merchant

- Customer
  The customer are basically of two types ie the buyers and the discount card sellers. The buyer are individuals which are registered users and the sellers are the ones which sell the discount cards. The profit will be calculated on the bases of hierarchy

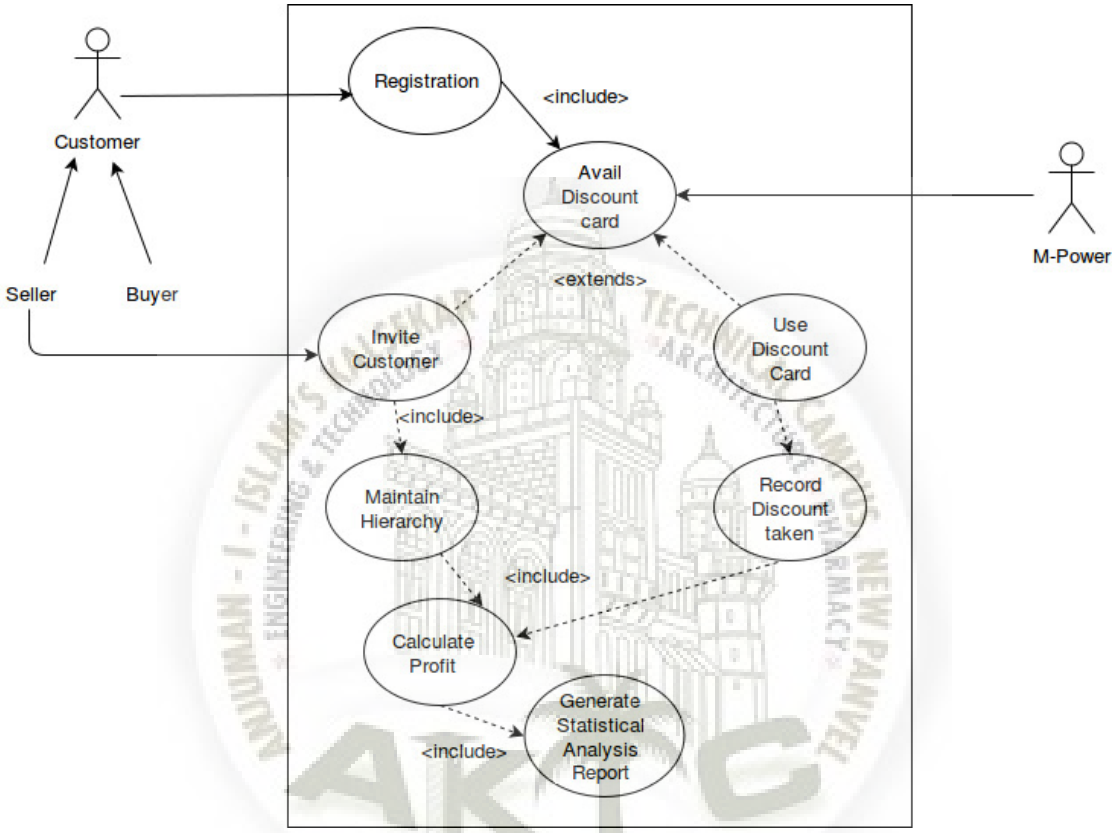


Figure 5.3: Use case of Customer

5.1.2 System requirements (non-functional requirements)

Performance requirement

Since we are providing Hierarchy business, it is necessary to ensure that proper hierarchy is maintained and each level gets its valid benefit.

Security

To provide a safe usage of the system authentication and validation of a user is done through QR Code.

Safety Requirements

To provide the system from unauthorized user we are using QR Code for authentication and as a basic requirement to validate the user which will provide a better safety feature .The database of the system is done using MySQL which is ease and also safe to implement.

Database Schema/ E-R Diagram

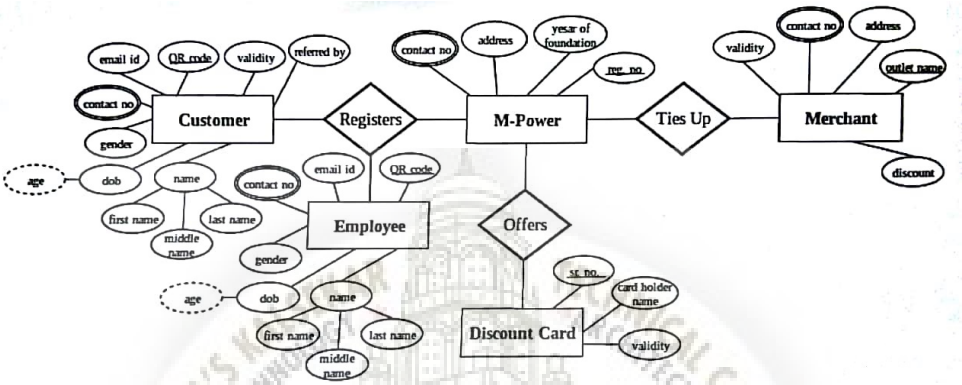


Figure 5.4: E-R Diagram

5.2 System Architecture Design

Our system architecture consists of the following views:

- M-Power Architecture
- Merchant Architecture
- Customer Architecture

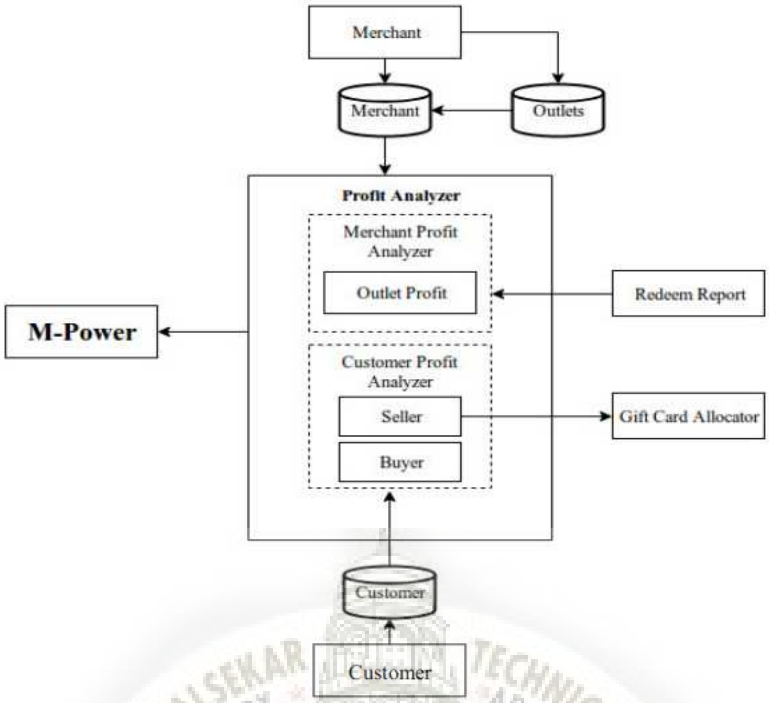


Figure 5.5: System Architecture of M-Power

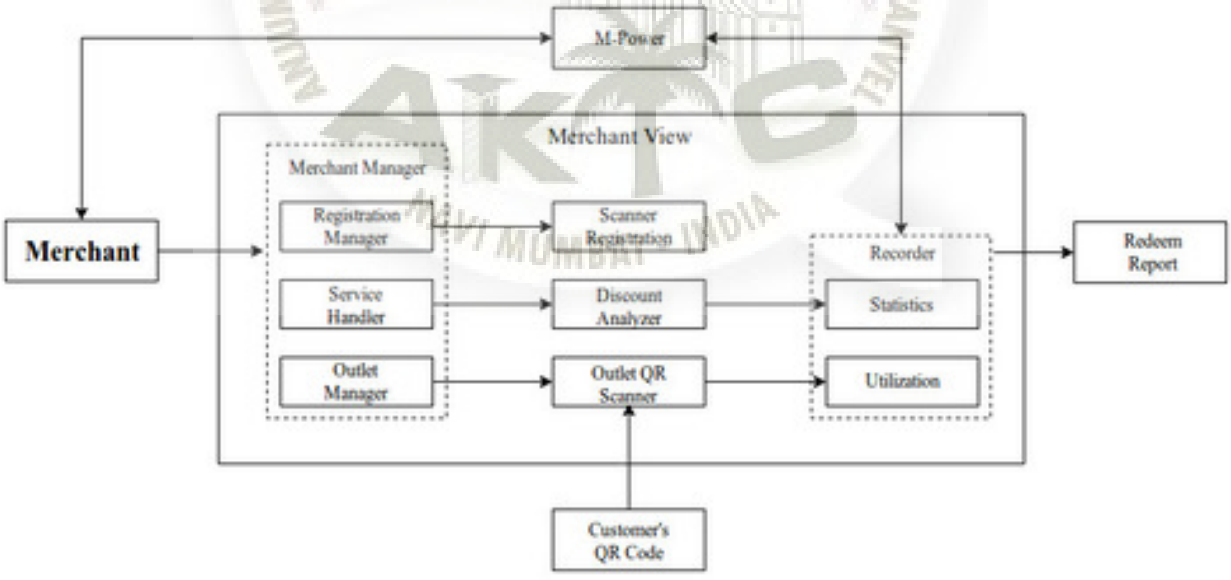


Figure 5.6: System Architecture of Merchant

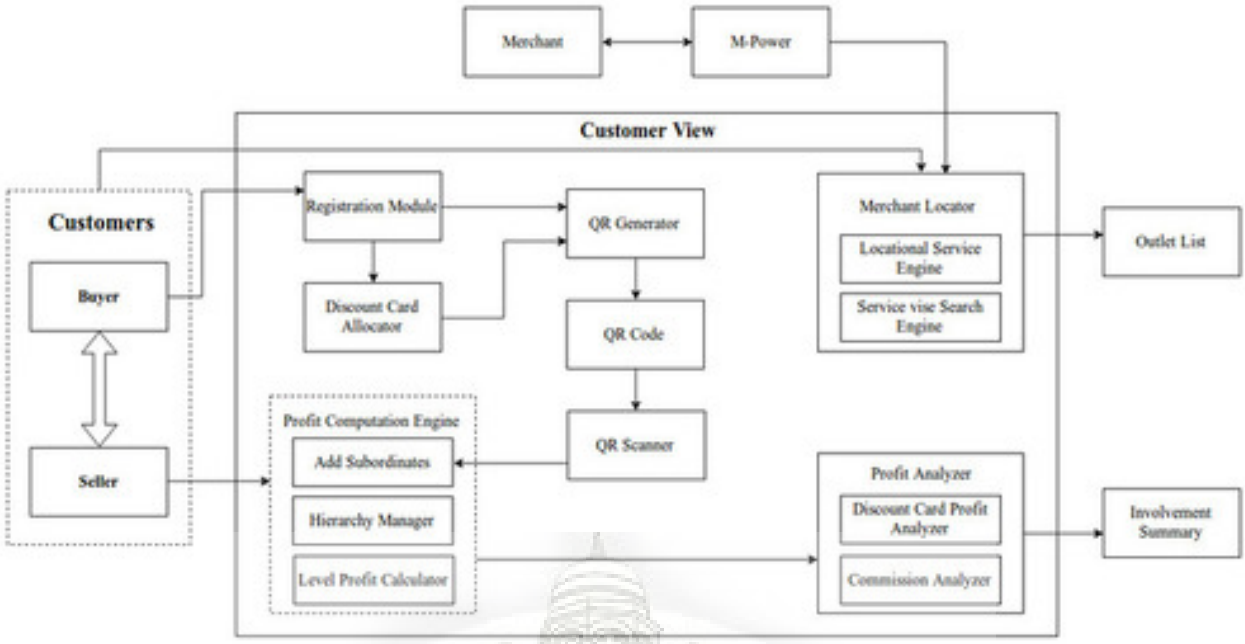


Figure 5.7: System Architecture of Customer

5.3 Sub-system Development

Our system basically has three modules namely the Merchant Module, the M-Power Module and the Customer Module.

5.3.1 M-Power Module

Flow diagram is used for representing a flow or set of relationships in a system. The M-power will receive statistics from the merchant and customer database and calculate the Profit Analysis accordingly. A report will be generated based on the same, which will help the organization to keep a track of the usage and Statistical Analysis

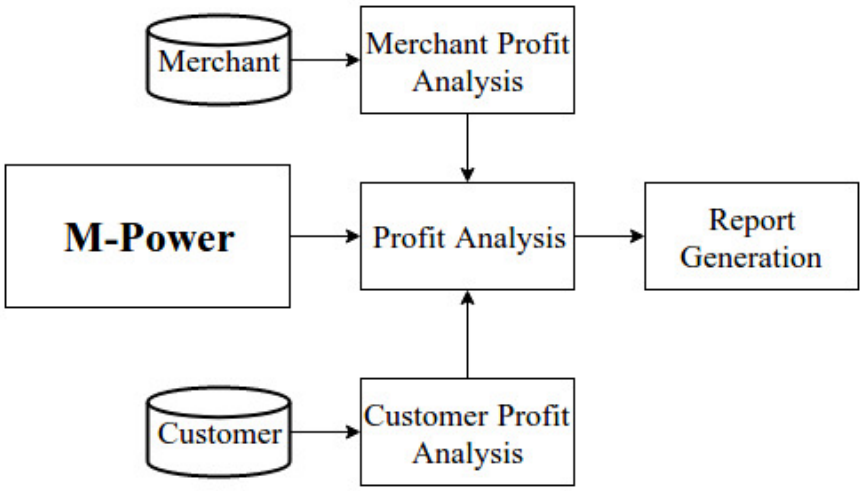


Figure 5.8: Flow Diagram of M-Power

5.3.2 Merchant Module

The merchants will have and individual QR scanner for the particular outlet and discount analysis will be calculated according to the statistics and the utilization of the coupons and a report will be generated for the same

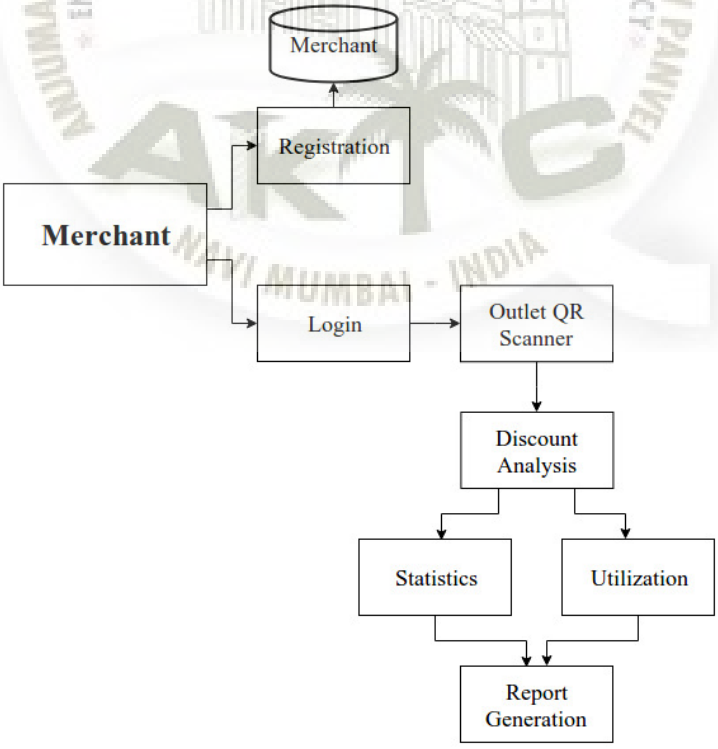


Figure 5.9: Flow Diagram of Merchant

5.3.3 Customer Module

The Customer will login either as a seller or a buyer. Profit analysis of the individual will be calculated accordingly. The customer being a seller will get profit based on the hierarchy of the same.

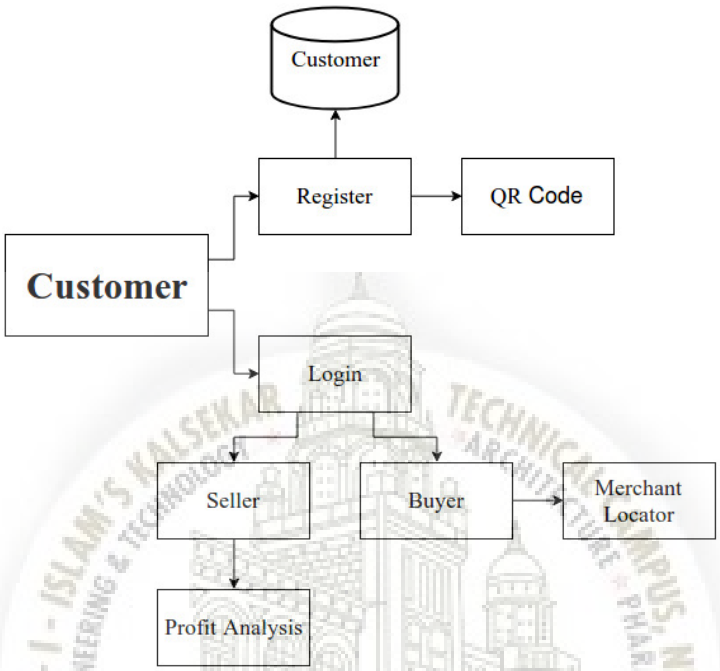


Figure 5.10: Flow Diagram of Customer

5.4 Systems Integration

First module of our system is Login activity in Android. Second module is the QR Code which will be used for authentication and validation. Third is the statistical analysis which will generate an analysis of the usage of the cards at which merchant location and which outlet.

5.4.1 Class Diagram

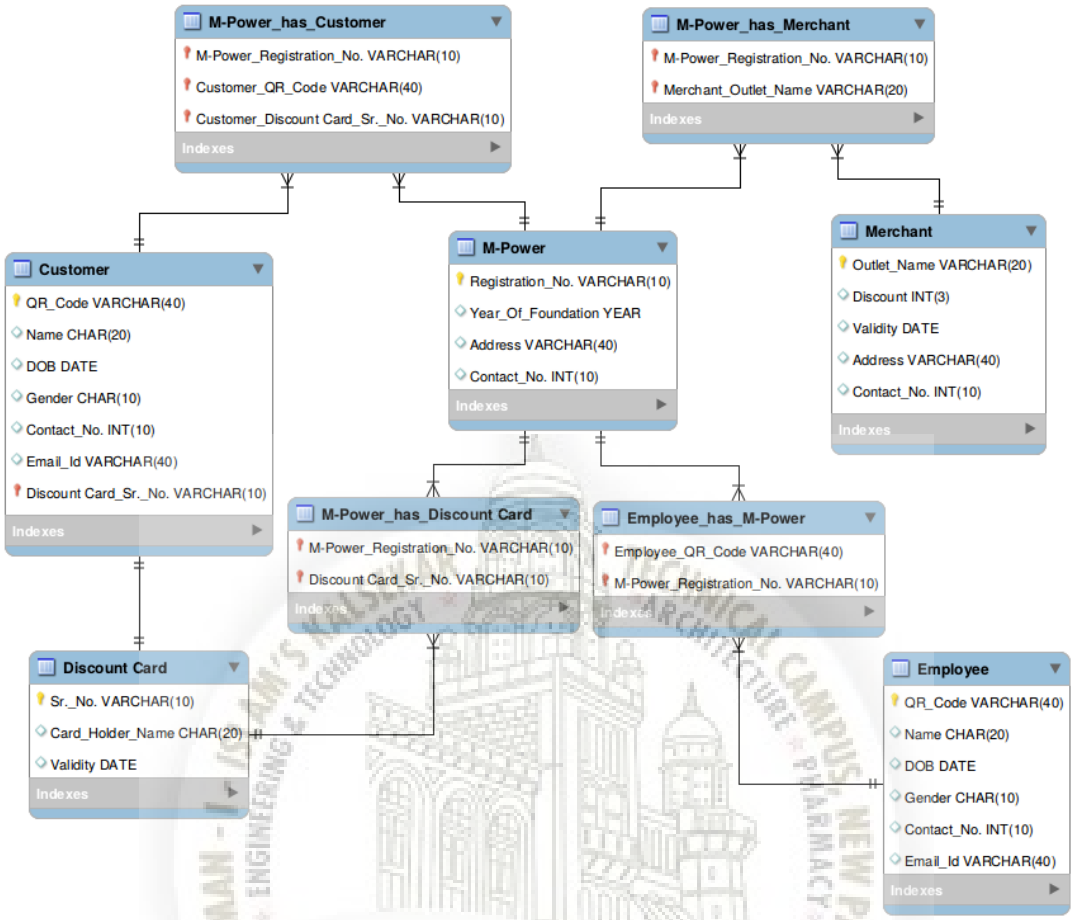


Figure 5.11: Class Diagram

This is the Class diagram of the system in which the modules which will be there after the deployment are shown . M-power has customer and M-power has merchants. The customers have discount cards and discount cards are allocated by the m-power. The employee is also a part of m-power.

5.4.2 Sequence Diagram

- M-Power Sequence:
  Here in M-Power sequence diagram;all the details from customer and and merchant databases is shared with Customer and Merchant Profit Analyzers in order to calculate their respective profits. Further this information is shared with M-Power so as to keep a record.

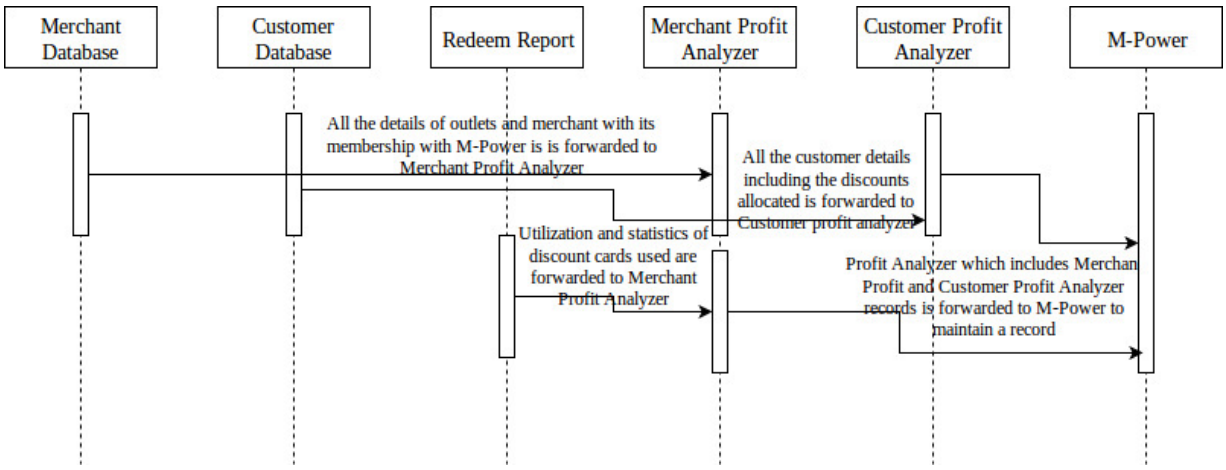


Figure 5.12: Sequence Diagram of M-Power

- Customer Sequence:
  Here once the Customer has registered itself as a seller; a QR code for the same is generated and each time during login its identity is verified by QR Scanner.Some of the information that M-Power has can be accessed by Merchant and vice-versa.

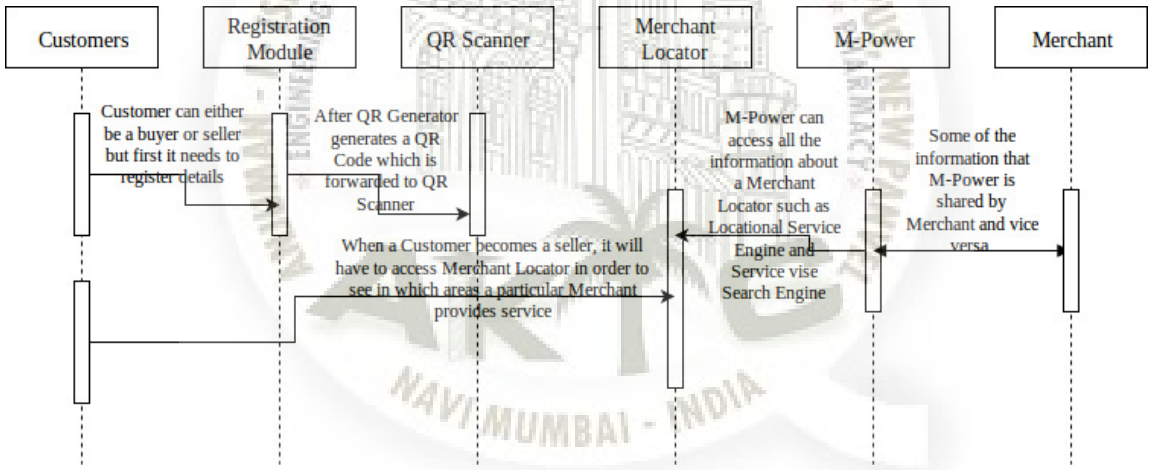


Figure 5.13: Sequence Diagram of Customer

- Merchant Sequence:
  When the Merchant has registered itself via QR Scanner then details of each of its outlets will be forwarded to Recorder along with the Utilization Report of discount cards. Then further this Recorder information will be shared with M-Power and also any new changes will be updated in both the systems(M-Power and Recorder).

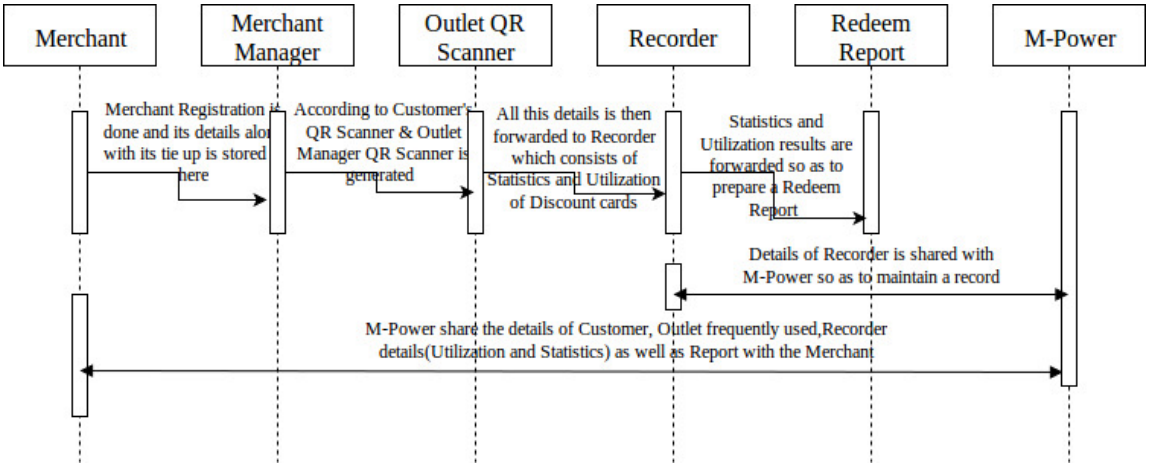


Figure 5.14: Sequence Diagram of Merchant

5.4.3 Component Diagram

- M-Power

The Component diagram basically describes the main highlighted components of the system. Here the main modules are Profit analysis which is generated from the Customer and Merchant detailed analysis.

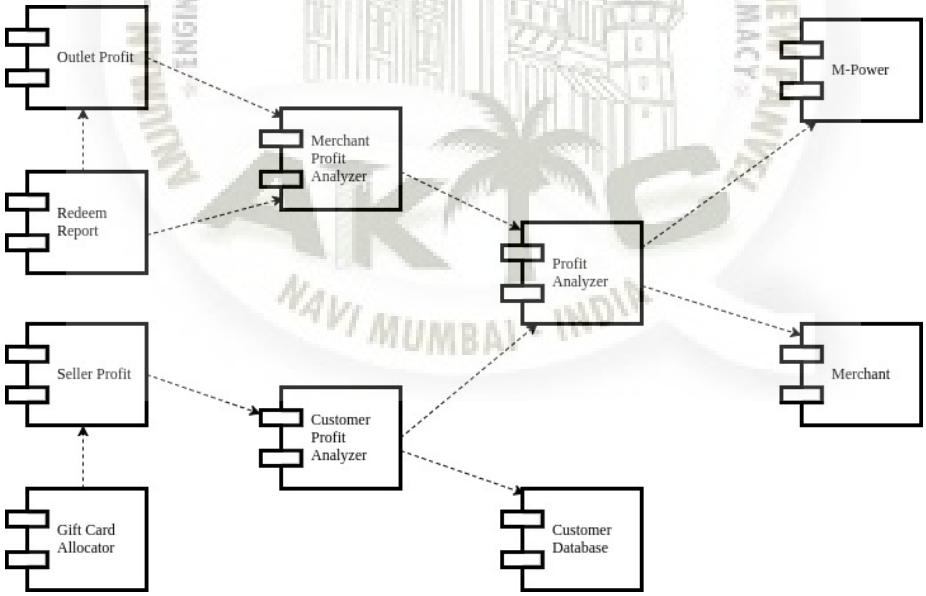


Figure 5.15: Component Diagram of M-Power

- Merchant

The Component diagram of the merchant will have the Merchant manager which consists of service handler and the outlet manager which gives a

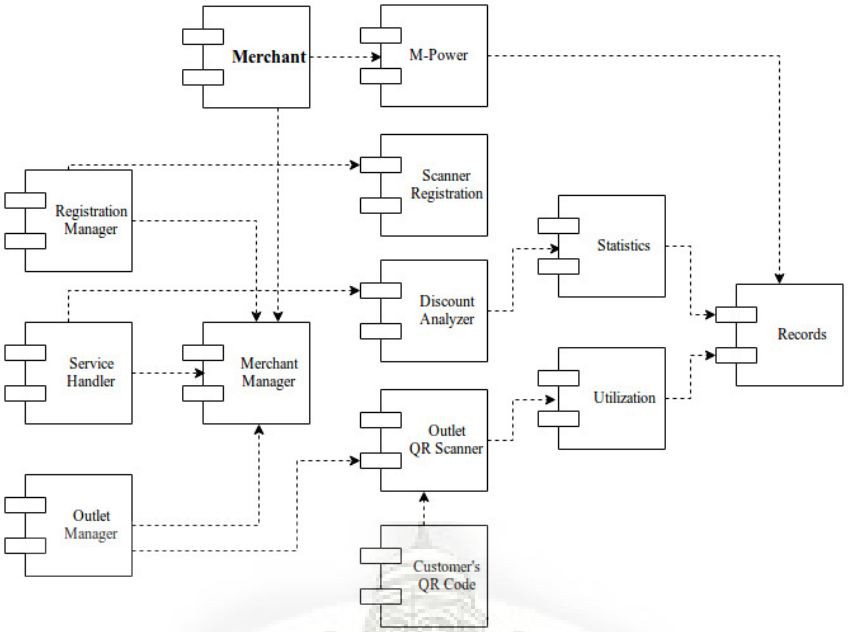


Figure 5.16: Component Diagram of Merchant

- Customer

The Component diagram basically describes the main highlighted components of the system. Here the main modules are Profit analysis which is generated from the Customer and Merchant detailed analysis.

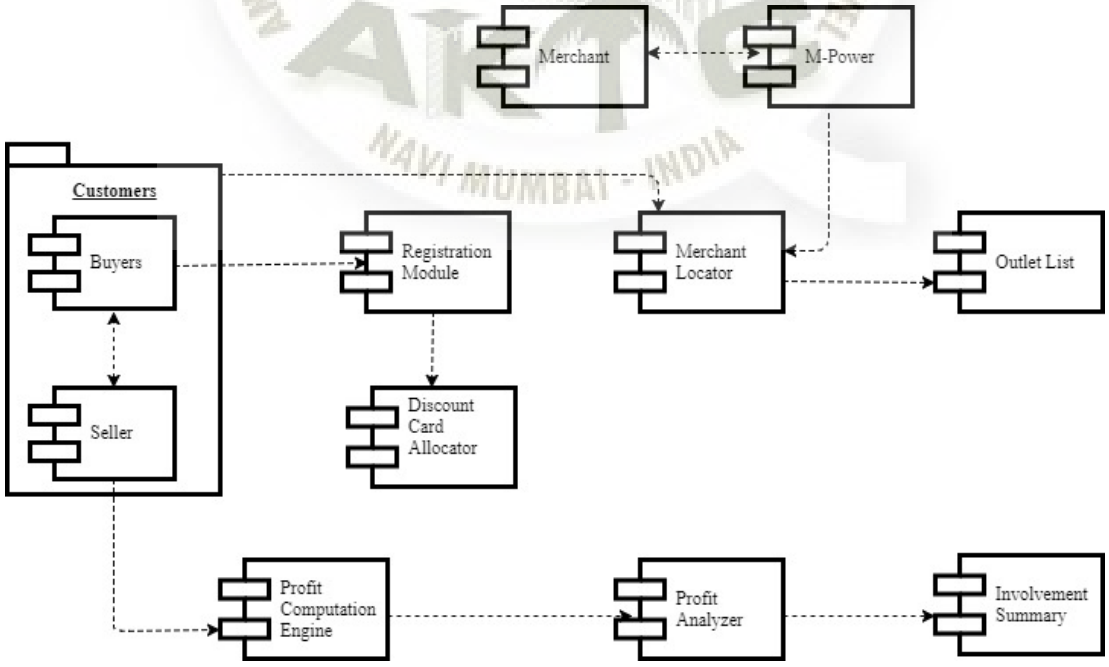


Figure 5.17: Component Diagram of Customer

5.4.4 Deployment Diagram

- M-Power

  Deployment diagram is a structure diagram which shows architecture of the system as deployment of software artifacts to deployment targets. Here the main modules are Profit analysis which is generated from the Customer and Merchant detailed analysis.

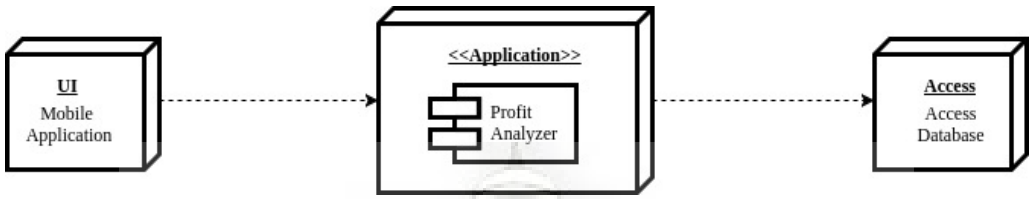


Figure 5.18: Deployment Diagram of M-Power

- Merchant

  The Deployment diagram of the merchant will have the Merchant manager which consists of service handler and the outlet manager which gives a

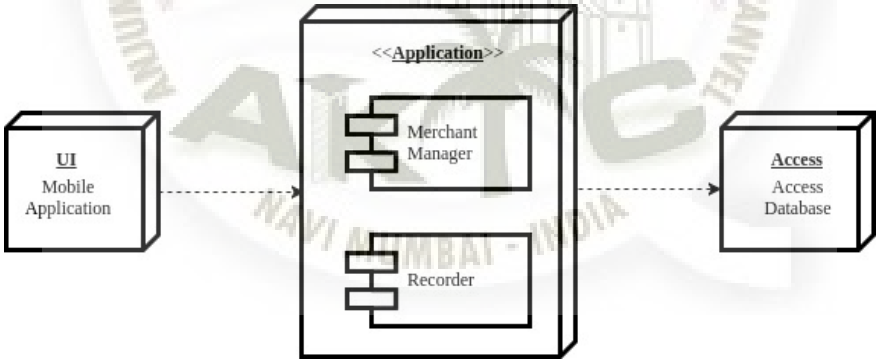


Figure 5.19: Deployment Diagram of Merchant

- Customer

  The Deployment diagram basically describes the main highlighted components of the system. Here the main modules are Profit analysis which is generated from the Customer and Merchant detailed analysis.

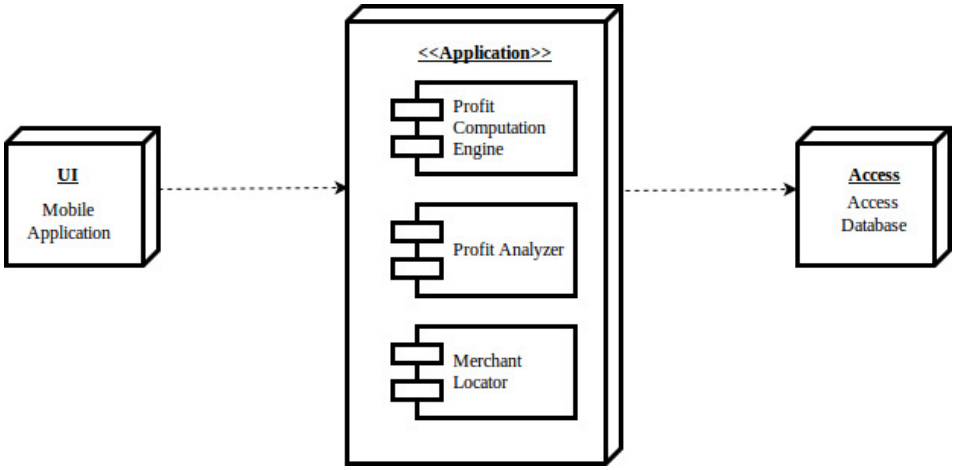


Figure 5.20: Deployment Diagram of Customer

Chapter 6

Implementation

6.1 Login Module

The Login module is the first module of the App and which give access to the other modules of the app.The login is provide through manually entering the details and verifying through the MySQL database is used as a database for the Login module.if the User is successfully loggedin then it can access the other modules of the App .

Figure 6.1: Login page

```
import android.app.ProgressDialog;
import android.content.Intent;
import android.os.AsyncTask;
import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.text.TextUtils;
```

```
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.util.HashMap;

public class Login extends AppCompatActivity {
    EditText email, password;
    Button button_signin;
    String PasswordHolder, EmailHolder;
    String finalResult;
    String HttpURL = "http://192.168.43.114:80/M-Power/login.php";
    Boolean CheckEditText;
    ProgressDialog progressDialog;
    SessionManager session;
    HashMap<String,String> hashMap = new HashMap<>();
    App httpParse = new App();
    public static final String UserEmail = "";

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_login);
        session = new SessionManager(getApplicationContext());
        email = (EditText) findViewById(R.id.email);
        password = (EditText) findViewById(R.id.password);
        button_signin = (Button) findViewById(R.id.button_signin);
        button_signin.setOnClickListener(new View.OnClickListener() {

            public void onClick(View view) {
                CheckEditTextIsEmptyOrNot();
                if (CheckEditText) {
                    UserLoginFunction(EmailHolder, PasswordHolder);
                } else {
                    if (TextUtils.isEmpty(EmailHolder)) {
                        email.setError("Enter your Email Id");
                        email.requestFocus();
                        return;
                    }
                    if (TextUtils.isEmpty(PasswordHolder)) {
                        password.setError("Enter your Password");
                        password.requestFocus();
                        return;
                    }
                }
            }
        });
    }

    public void CheckEditTextIsEmptyOrNot() {
        EmailHolder = email.getText().toString();
        PasswordHolder = password.getText().toString();
        if(TextUtils.isEmpty(EmailHolder) || TextUtils.isEmpty(PasswordHolder))
            {
            CheckEditText = false;
        }
        else {
            CheckEditText = true ;
        }
    }
```

6.2 QR Scanner Module

Once the user is registered, we will provide them with a unique QR Code which will help them during their transactions for the offers. This QR code will contain all the required information for the user.

Figure 6.2: QR Generated

```
  import android.app.Fragment;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.graphics.Bitmap;
import android.widget.ImageView;
import com.google.zxing.WriterException;
import com.google.zxing.BarcodeFormat;
import com.google.zxing.common.BitMatrix;
import com.google.zxing.MultiFormatWriter;

public class MyQR extends Fragment {
    public final static int QRcodeWidth = 500;
    Bitmap bitmap ;

    public View onCreateView(LayoutInflater inflater, ViewGroup container,
        Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.myqr,container,false);
        ImageView imageView = (ImageView) view.findViewById(R.id.imageView);
        try {
            bitmap= TextToImageEncode("M-Power");
        } catch (WriterException e) {
```

```
            e.printStackTrace();
        }
        imageView.setImageBitmap(bitmap);
        return view;
    }

    public void onViewCreated(View view, Bundle savedInstanceState) {
        super.onViewCreated(view, savedInstanceState);
        getActivity().setTitle("My QR");
    }

    Bitmap TextToImageEncode(String Value) throws WriterException {
        BitMatrix bitMatrix;
        try {
            bitMatrix = new MultiFormatWriter().encode(Value, BarcodeFormat.
                DATA_MATRIX.QR_CODE,
                    QRcodeWidth, QRcodeWidth, null);
        } catch (IllegalArgumentException Illegalargumentexception) {
            return null;
        }
        int bitMatrixWidth = bitMatrix.getWidth();
        int bitMatrixHeight = bitMatrix.getHeight();
        int[] pixels = new int[bitMatrixWidth * bitMatrixHeight];
        for (int y = 0; y < bitMatrixHeight; y++) {
            int offset = y * bitMatrixWidth;
            for (int x = 0; x < bitMatrixWidth; x++) {
                pixels[offset + x] = bitMatrix.get(x, y) ?
                    getResources().getColor(R.color.QR1):getResources().
                        getColor(R.color.QR2);
            }
        }
        Bitmap bitmap = Bitmap.createBitmap(bitMatrixWidth, bitMatrixHeight,
            Bitmap.Config.ARGB_4444);
        bitmap.setPixels(pixels, 0, 500, 0, 0, bitMatrixWidth, bitMatrixHeight);
        return bitmap;
    }
}
```

6.3 QR Scanner Module

When a merchant ties up with the company it will have the QR scanner for scanning the QR code of the customers who come to their outlet for availing an offer. This help help then generate an analysis of the products sold.

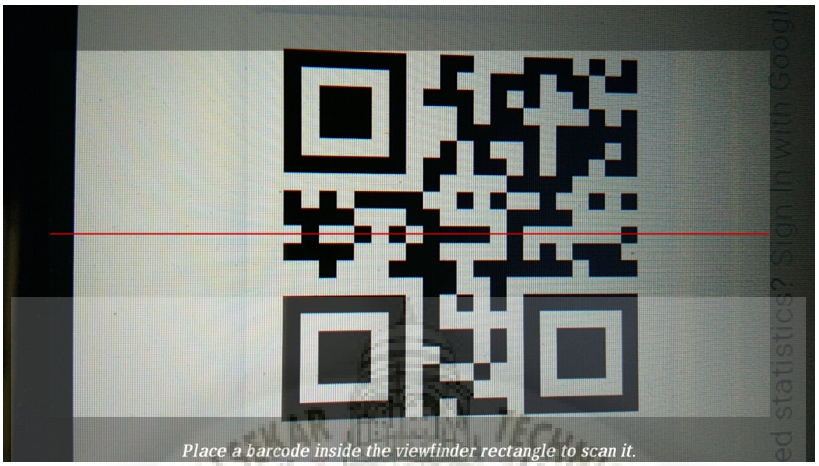


Figure 6.3: QR Scanner

```
  import android.app.Fragment;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Toast;
import android.widget.Button;
import android.content.Intent;
import com.google.zxing.integration.android.IntentIntegrator;
import com.google.zxing.integration.android.IntentResult;
import android.util.Log;

public class ScanQR extends Fragment {
    private String toast;

    public ScanQR() {
    }

    public void onActivityCreated(Bundle savedInstanceState) {
        super.onActivityCreated(savedInstanceState);
        displayToast();
    }

    private void displayToast() {
        if(getActivity() != null && toast != null) {
            Toast.makeText(getActivity(), toast, Toast.LENGTH_LONG).show();
            toast = null;
        }
    }

    public View onCreateView(LayoutInflater inflater, ViewGroup container,
       Bundle savedInstanceState) {
        final View view = inflater.inflate(R.layout.scanqr, container, false);
        Button scan = (Button) view.findViewById(R.id.scan);
        final ScanQR activity = this;
```

```
35          scan.setOnClickListener(new View.OnClickListener() {
36              @Override
37              public void onClick(View v) {
38                  IntentIntegrator integrator=new IntentIntegrator(getActivity());
39                  integrator.setDesiredBarcodeFormats(IntentIntegrator.
                        ALL_CODE_TYPES);
40                  integrator.setPrompt("Scan a QR Code");
41                  integrator.setCameraId(0);
42                  integrator.setBeepEnabled(false);
43                  integrator.setBarcodeImageEnabled(false);
44                  IntentIntegrator.forFragment(ScanQR.this).initiateScan();
45              }
46          });
47          return view;
48      }
49
50      public void onActivityResult(int requestCode, int resultCode, Intent data) {
51          IntentResult result = IntentIntegrator.parseActivityResult(requestCode,
                resultCode, data);
52          if(result != null) {
53              if(result.getContents() == null) {
54                  Log.d("ScanQR", "Scanning Cancelled");
55                  Toast.makeText(getActivity(), "Scanning Cancelled",Toast.
                        LENGTH_LONG).show();
56              } else {Log.d("ScanQR", "Scanned");
57                  Toast.makeText(getActivity(),"Scanned: " + result.getContents(),
                        Toast.LENGTH_LONG).show();
58              }
59              displayToast();
60          }
61          else {
62              super.onActivityResult(requestCode,resultCode,data);
63          }
64      }
65
66      public void onViewCreated(View view, Bundle savedInstanceState) {
67          super.onViewCreated(view, savedInstanceState);
68          getActivity().setTitle("Scan QR");
69      }
70  }
```

6.4 Offers Page

As the merchants registers, the offers will be displayed in the Home page of the customers. The customers can then avail discounts using this offers.

Figure 6.4: Offer page

```
import android.app.FragmentManager;
import android.content.DialogInterface;
import android.content.Intent;
import android.os.Bundle;
import android.support.design.widget.NavigationView;
import android.support.v4.view.GravityCompat;
import android.support.v4.widget.DrawerLayout;
import android.support.v7.app.ActionBarDrawerToggle;
import android.support.v7.app.AlertDialog;
import android.support.v7.app.AppCompatActivity;
import android.support.v7.widget.Toolbar;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.TextView;
import android.widget.Toast;

public class Profile extends AppCompatActivity
        implements NavigationView.OnNavigationItemSelectedListener {
    SessionManager session;

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_profile);
        FragmentManager fragmentManager= getFragmentManager();
        fragmentManager.beginTransaction()
```

```
                .replace(R.id.content_frame
                        ,new Home())
                .commit();
        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
        session = new SessionManager(getApplicationContext());
        Toast.makeText(getApplicationContext(), "Welcome to M Power... " ,Toast.
            LENGTH_LONG).show();
        if (!session.isLoggedIn()) {
            session.logoutUser();
        }
        DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
        ActionBarDrawerToggle toggle = new ActionBarDrawerToggle(
                this, drawer, toolbar, R.string.navigation_drawer_open, R.string
                    .navigation_drawer_close);
        drawer.addDrawerListener(toggle);
        toggle.syncState();
        NavigationView navigationView = (NavigationView) findViewById(R.id.
            nav_view);
        navigationView.setNavigationItemSelectedListener(this);
        TextView email=(TextView) navigationView.getHeaderView(0).findViewById(R
            .id.email);
        Intent intent = getIntent();
        String EmailHolder = session.getUserDetails().toString();
        email.setText(EmailHolder);
    }

    public void onBackPressed() {
        DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
        if (drawer.isDrawerOpen(GravityCompat.START)) {
            drawer.closeDrawer(GravityCompat.START);
        } else {
            AlertDialog.Builder alertDialogBuilder = new AlertDialog.Builder(
                this);
            alertDialogBuilder.setTitle("Exit Application?");
            alertDialogBuilder
                    .setMessage("Click Yes to Exit!")
                    .setCancelable(false)
                    .setPositiveButton("Yes",
                            new DialogInterface.OnClickListener() {
                                public void onClick(DialogInterface dialog, int
                                    id) {
                                    moveTaskToBack(true);
                                    android.os.Process.killProcess(android.os.
                                        Process.myPid());
                                    System.exit(1);
                                }
                            })
                    .setNegativeButton("No", new DialogInterface.OnClickListener
                        () {
                        public void onClick(DialogInterface dialog, int id) {

                            dialog.cancel();
                        }
                    });
            AlertDialog alertDialog = alertDialogBuilder.create();
            alertDialog.show();
        }
    }

    public boolean onCreateOptionsMenu(Menu menu) {
```

```
79          getMenuInflater().inflate(R.menu.profile, menu);
80          return true;
81      }
82
83      public boolean onOptionsItemSelected(MenuItem item) {
84          int id = item.getItemId();
85
86          if (id == R.id.logout) {
87              session.logoutUser();
88              finish();
89              Intent login = new Intent(Profile.this, Login.class);
90              startActivity(login);
91              Toast.makeText(Profile.this,"We would like to see u soon...",Toast.
                    LENGTH_LONG).show();
92              return true;
93          }
94          if (id == R.id.setting) {
95              startActivity(new Intent(Profile.this, Setting.class));
96              return true;
97          }
98
99
100         return super.onOptionsItemSelected(item);
101     }
102
103     public boolean onNavigationItemSelected(MenuItem item) {
104         int id = item.getItemId();
105         FragmentManager fragmentManager = getFragmentManager();
106         if (id==R.id.home) {
107             fragmentManager.beginTransaction().replace(R.id.content_frame,new
                    Home()).commit();
108         } else
109         if (id == R.id.qr) {
110             fragmentManager.beginTransaction().replace(R.id.content_frame, new
                    MyQR()).commit();
111         } else if (id == R.id.account) {
112             fragmentManager.beginTransaction().replace(R.id.content_frame,new
                    Accounts()).commit();
113         } else if (id == R.id.share) {
114             fragmentManager.beginTransaction().replace(R.id.content_frame,new
                    Share()).commit();
115         }
116         DrawerLayout drawer = (DrawerLayout) findViewById(R.id.drawer_layout);
117         drawer.closeDrawer(GravityCompat.START);
118         return true;
119     }
120 }
```

Chapter 7

System Testing

In This Chapter the System is being tested to find out the accuracy of the system.The Tested result is shown in the Table and the Result image is shown below.Testing is used to find the error rate and to find the loop holes in the System.It gives the clear idea about the working of the system and the problems in the System

7.1 Test Cases and Test Results

Test ID	Test Case Title	Test Condition	System Behavior	Expected Result
T01	Login	Should be register user	Will connect to MySQL	Should login into system
T02	Login Session	should be able to maintain login session	Maintain session once we login	Login session maintain
T03	Generate QR code	should be able to generate QR code	Individual QR code display	QR code of individual

7.2 Sample of a Test Case

Title: Login Page – Authenticate Successfully
Description: A registered customer should be able to successfully login in the app .

Precondition: the user must already be registered with an email address and password.

Assumption: a supported application is being used.

Test Steps:

1. Navigate to app and click on register button

2. In the 'username' field, enter the username of the registered user.
3. Click the 'Next' button.
4. Enter the password of the registered user
5. Click 'Sign In'
6. If not registered click on Signup button

Expected Result: A page displaying the homepage should load, showing navigation menu at the top of the page.

Actual Result: After successful login through MySQL, home-page is displayed containing various offers

Figure 7.1: Login Page

Title: Login Session.

Description: Once the user log ins the session should be maintained until he/she logs out.

Precondition: the user must already be registered with an email address and password and should be a holder of discount card and should be logged into the app

Assumption: session is maintained

Test Steps:

1. Login with the registered username and password
2. Home page is displayed with offers

Expected Result: A page displaying the homepage should load, showing navigation menu at the top of the page and the login session is maintained.

Actual Result: After successful login through MySQL, homepage is displayed containing various offers and the session is maintaied until we log out.

Figure 7.2: Home page

Title: Generation of QR Code.

Description: A registered customer should have a unique QR Code.

Precondition: the user must already be registered with an email address and password and should be a holder of discount card.

Assumption: zing library

Test Steps:

1. Navigate to app and click on My QR button
2. It will display the QR code of the individual user

Expected Result: A page displaying the homepage should load, showing navigation menu at the top of the page.

Actual Result: After successful login through MySQL, home-page is displayed containing various offers

Figure 7.3: QR Code

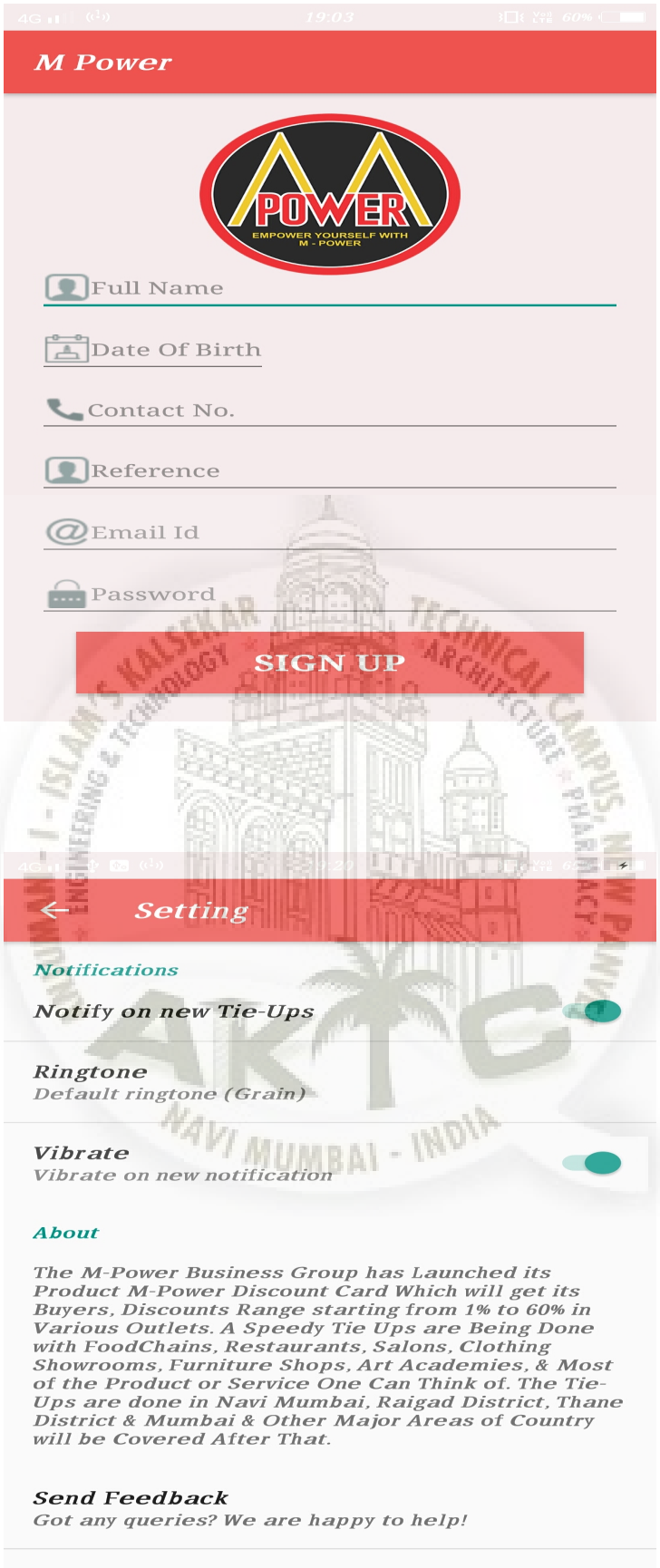
7.2.1 Software Quality Attributes

1. AVAILABILITY: The system should not be down,whenever the user use the system the specific data should be available to the user.
2. CORRECTNESS: As per the user search the correct data should be shown to the user like at time for searching the near by place the system should show only the places around the user.
3. MAINTAINABILITY: The administrators of the system will maintain the system with effective updates though on air update if needed.
4. Extensibility: The system is capable to be modified by changing some modules or by adding some features to the existing system

Chapter 8

Screenshots of Project

8.1 SECTION NAME


M Power
POWER
EMPOWER YOURSELF WITH M - POWER
Full Name
Date Of Birth
Contact No.
Reference
Email Id
Password
SIGN UP
Setting
Notifications
Notify on new Tie-Ups
Ringtone
Default ringtone (Grain)
Vibrate
Vibrate on new notification
About
The M-Power Business Group has Launched its Product M-Power Discount Card Which will get its Buyers, Discounts Range starting from 1% to 60% in Various Outlets. A Speedy Tie Ups are Being Done with FoodChains, Restaurants, Salons, Clothing Showrooms, Furniture Shops, Art Academies, & Most of the Product or Service One Can Think of. The Tie-Ups are done in Navi Mumbai, Raigad District, Thane District & Mumbai & Other Major Areas of Country will be Covered After That.
Send Feedback
Got any queries? We are happy to help!


My QR
Home
Kajri Boutique
30
702, Sector 9, Vashi Navi Mumbai 400703
9876543210
kajri@gmail.com
Merwans
20
101, Hill View, Sector 12, Nerul (East) Navi Mumbai
9876543210
mer@gmail.com
Welcome to M Power...

Chapter 9

Conclusion and Future Scope

9.1 Conclusion

Nowadays, due to advent of technology in all fields it has become necessary to have a proper utilization of technology for business management where in not only vendors but all the stake holders avail the benefits from transactions with an ease to use GUI.

9.2 Future Scope

- In future we are planning to provide automated notifications for latest offers, so that the customers stay up to date about the trending festive offers.
- E-wallet or money wallet payment method will be introduces so that the user can use self built in payment gateway.

References

[1] http://www.primoprivilege.com.

[2] http://miyamiya.in/privilegecard

[3] ww.mysamplecode.com/2012/09/android-generate-qr-code-using-zxing.html

Achievements

1. Publications

   (a) *Analysis of discount card management and hierarchy business*; Shaikh Farhan, Mulla Shamiya, Sayed Firdaus,IJISRT, February – 2018
   (https://ijisrt.com)

2. Project Competitions

   (a) *Analysis of discount card management and hierarchy business*; Shaikh Farhan, Mulla Shamiya, Sayed Firdaus, 4th National Level Project Exhibition Cum Poster Presentation , March - 2018 (Venue : Universal College of Engineering)

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Analysis of Discount Card Management System and Hierarchy Business

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Abstract: **In current world hierarchical business is the new market of earning and supporting for promoting new business ideas. In this paper we are promoting such business with technical support of android application.**

A Discount Card is a card, that allows the individual to avail discounts on the prices of some products or services. It intends the conditions agreed upon between the business companies for a specific series of coupons regarding the validation and redemption.

This system proposes an easiest solution for more profit-making business for Discount Card Management. A method of QR Code is introduced where the information of the customer will be encoded in the QR (Quick Response) Code in the encrypted form. The Merchant on the other hand will have a scanner to scan this QR code available with the customer.

This management application will help the business company to keep a track of a where about of the coupons where they are redeemed, who has redeemed and various other Statistics. Let us consider a person XYZ, an authorized owner of the said discount card wants to use this app. The customer goes to a specific shop which has a tie up with the business group and has agreed to avail the discount to its customers. The shop owner will scan the QR code available with the customer to validate the personal. This scanning will be visible to our business group and help them to keep a track of all the Statistical Analysis.

Keywords: QR Code Generator, QR Scanner, Statistical Analysis, Zxing Library.

I. INTRODUCTION

When it comes to E-Commerce shopping and pricing of the products, discounts play an important role in determining the value of the product. Anytime you tell a customer that he can save money, you're likely to get his attention. The larger the percentage of discount the more it attracts the customer and benefits the organization which in turn creates more revenue if used in proper and intelligent way. It will also become easier for the organization to meet the specific demands of the customer by keep an overview on their purchasing behavior and by ensuring to develop better customer relationship.

II. WHY IS THERE A NEED OF DISCOUNT CARD MANAGEMENT

A. Ease of use

To have a healthy and successful business, it is necessary to develop good customer relationships. So, by using Discount Cards you can ensure to develop a healthy and better customer relationship as it allows you to offer your customers an exceptional experience, which will further keep your customer loyal and connected to your business. Discount Card Management offers enhanced visibility into which suppliers are taking discounts. With this information, your users can refine their processes to encourage more suppliers to sign on. Evaluate the best discount price to still make a profit. This will help to create a marketing plan to encourage new customers and bring inactive customers back. Review your accounts for any regular times of the week, month or year. Attract new customers without a large marketing campaign.

III. LITERATURE SURVEY

A. Privilege discount card[1]

This discount Card offers/deals from most sought-after restaurants, night clubs, health clubs, beauty chains, spas, health care chains, tattoo studios and much more in various city and across India. Privilege Card covers all range of people, big and small vendors of entire market. There are discounts and privileges for everyone. It provides you discounts and offers at over 3,500 locations across India and our discounts range from 10 to as much as 80percent. The Major drawback of this discount card it's You would need to carry your privilege card every-time and ever where you need to avail discounts. It takes 7-10 working days of subscription date to deliver the card to your resident.

B. Miya Miya privilege Card [2]:

Miya Miya Privilege Card ensures a guaranteed discount for our card holders from our registered merchants as well as service providers. Members can enjoy their privileges not only for shopping but also for dining, medical services, hotels, tickets, tours travels, theme parks, mobile recharges etc. Distribution of cards would be by various channels such as newspaper subscription, Business Partners, associate shops and direct selling agents. The cons of this card are you need to present the card at the billing counter each time you make a purchase before billing at any registered outlet. The privilege card will be valid for 1 year from the date of activation. No statistical analysis of usage of the card and no notification for latest offers.

IV. MULTI LEVEL MARKETING BUSINESS

The main advantage of MLM Program is that there is a small risk to get started. if used in proper and intelligent way and it gives you an opportunity to enjoy residual income. When the initial effort of getting a new customer is completed, you can enjoy the residual part of that business relationship. The skills set is key. As long as you have the skills set of a trained network marketer, you make whatever income based on your stamina, dedication, and your willingness to help others. The other members of this networking chain will be their own boss and will work according to their convenience.

V. PROPSED SYSTEM AND MODULES

Our System basically has three views namely the Customer view, Merchant view and the Organization view.

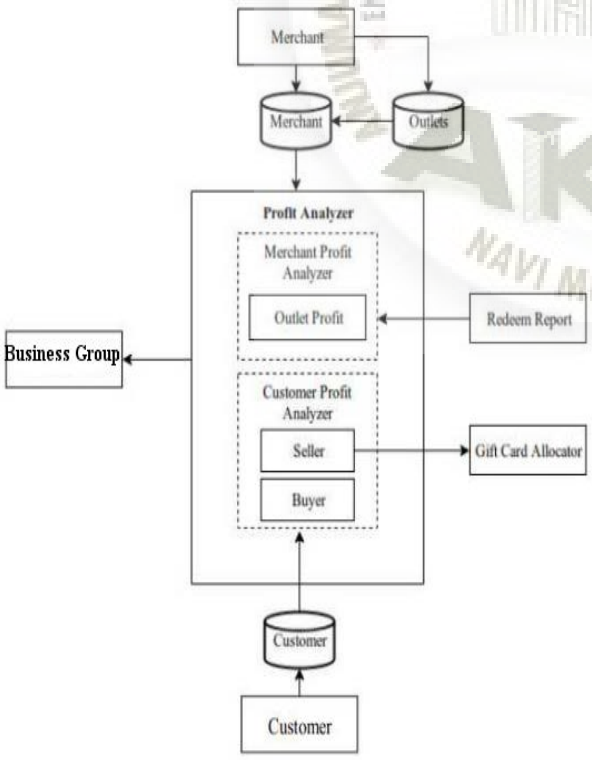

Figure 1. Business Group Architecture

- Business Group view

This consists the information from the merchant DB and the customer db. Utilizing the resources made available to it, it generates a Profit analyzer for the business which in turn is beneficial for it.

A. Profit Analysis.

Profit analysis is something organization use to figure out how changes in costs and quantity affect their actual expenses and net income. It works by comparing various aspects such as the cost of operating and producing goods, the amount of goods sold, and profits generated from the sale of those goods. Here the customer and merchant profit analyzer are different giving the organization a detailed information of the redemption.

B. Statistical Analysis.

Statistical Analysis [4] deals with the collection, analysis, presentation, and organization of data. Once you have collected chunk data, you will have a lot and lots of numbers and data. Statistical analysis is done to make sense of, and draw some inferences from, your data. The Initial level is to group the raw data into categories and visualize it. Graphs, line chart, histogram can be used for summarizing the data.

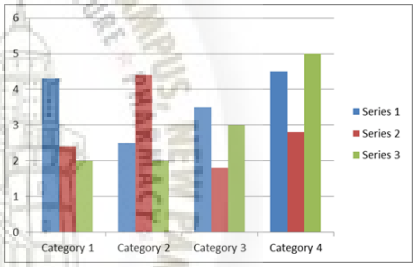

Figure 2. Graphical Representation of Statistics.

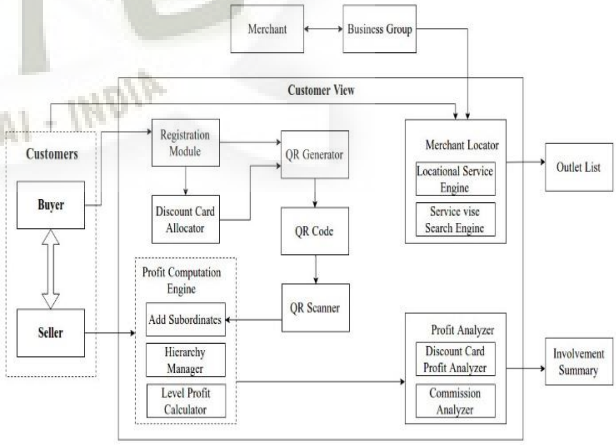

Figure 3. Customer View

- Customer view

Customer are usually the buyers or the Sellers. The customer when registers with the organization, a Quick Response Code QR Code is generated for the same to avail the services and for personal identification. This QR Code is unique for all and

makes the ease of process. The Sellers on the other hand are the ones which sells these discount cards for profit making business, this follows the hierarchy scheme that is the Level profit calculator and adding of subordinates. These reports are then sent to the Organizational view for the Profit analyser.

A. Quick Response (QR) Code.

A QR code consists of black squares arranged in a square grid on a white background, which can be read by an imaging device such as a camera or a scanner. The required data is then extracted from patterns that are present in both horizontal and vertical components of the image. We will be using Zxing library [3] for generating QR code. It is very easy and QR code can be generated within a few lines of code. First, add the dependencies in the build .gradle file of app directory. After that, you can create an Image View in your layout file and generate the QR code.

Figure 4. QR Code

A. Profit Computation Engine.

The profit computation engine works on the subordinates and calculating the hierarchy in which the customers are joining the organization. The profit computation of the individual will be done on the bases of level profit calculator. The higher the level the greater the income and the commission. This works on the principle of multilevel marketing business.

B. Merchant Locator.

With various number of outlets for a particular merchant, choosing from a list of places nearby is made available so that the user can choose from a variety of options available. The use of this GPS based technology, the customers can get information about the shops or merchants offering discounts nearby so that they can fly in and avail discounts.

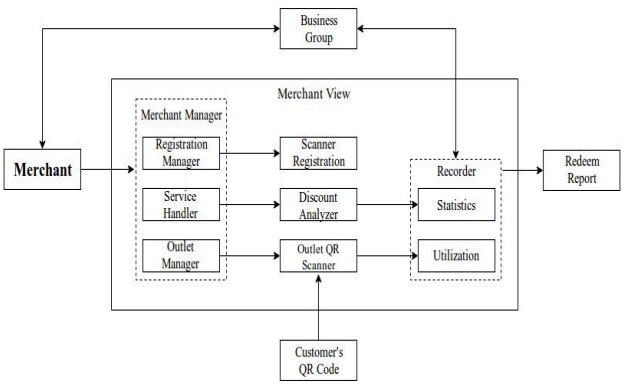

Figure 5. Merchant View

- Merchant View

The merchants are the shop owners or the stake holders who are entitled to give discounts to the customers. These merchants have a tie-up with the organization to give discounts to the card holder. The percentage of discount is decided upon and the period for the same. The customer when wants to avail the discount, he/she displays the QR Code which is scanned by the QR Scanner available with the merchant.

A. Merchant Manager.

The merchant manager consists of registration of the merchant, the services that are offered and the outlet details of the merchant. The merchant manager also distinguishes and separates the various outlets a particular merchant owns. It will help to create a detailed report about all the outlets

A. Recorder:

Recorder summarizes all the utilization and redemption of the coupons in the particular outlet and using these statistics a report will be generated which will help the outlets and organization keep a track of whereabouts of the coupons and their usage. This will help to analyse the popular coupons and their demands among customers.

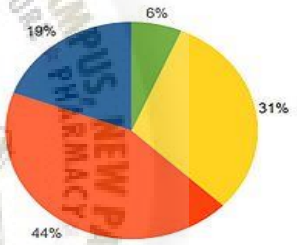

Figure 6. Statistic Recorder

VI. CONCLUSION

Nowadays, due to advent of technology in all fields it has become necessary to have a proper utilization of technology for business management wherein not only vendors but all the stakeholders avail benefits from transactions with an easy to use GUI. With the growing business of e-commerce and the usage of coupons it has become mandatory to manage the utilization and statistics of the coupons

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[1] http://www.privilegecard.in

[2] http://miyamiya.in/privilegecard/

[3] https://www.codeproject.com/Tips/1005081/Basic-with-QR-Code-using-Zxing-Library

[4] http://www.android-graphview.org/

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