FLIPAY - QR Code Based Payment System

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Abstract

Advancements in mobile technology, coupled with a marvelous market wide growth in mobile subscriber base, is encouraging financial, telecom and even the third party operators to offer mobile payment services. Mobile payment is a very important and critical mobile business solution. Although the existing mobile payment system based on NFC and RFID is able to solve much business problems, it requires a large number of updates to support NFC and RFID expensive hardware devices. This paper introduces a very innovative and efficient mobile payment system which is based on QR Code scanning for mobile phone users. Unlike other existing mobile payment systems, this proposed payment system has a competitive edge as it provides a more convenient and viable payment solution. The application provides a next generation payment system which could be used to make payments at retail stores by scanning a unique QR Code. All functionalities have been introduced providing maximum comfort to users without compromise in the security. Flipay is a QR Based payment solution which helps you pay at malls, theatres, retail stores and events. Flipay allows user to complete payments in less than 3 taps. The payment solution helps facilitate digitized payment solutions.

Keywords: Android, Java, Mobile application, Fintech, Payment, m-Commerce

I. INTRODUCTION

Mobile phones have become an inseparable companion for many users, serving much more than just communication tools. Smartphones give an amazing opportunity for banks to engage with customers like never before. In developing countries, the number of mobile phone users exceeds the number of those having bank accounts. In this busy world everything needs to be completed at a very fast rate. Similarly, the payment sector is also undergoing heavy reforms to provide better service to customers. The payment needs to be completed fast without compromising on the security. At present, payment can be done through either liquid cash or via Credit card swiping. Flipay provides an alternative next generation payment system through which payments can be made at retail stores via the mobile phones by scanning a QR Code placed at the stores.

II. DESCRIPTION

The emergence of new retail channels such as the mobile commerce creates requirements for new payment instruments to enable feasible and convenient transactions through this channel. Flipay offering a seamless transactional experience adds a social dimension to money. There are many payment apps available in the market. Examples are: Paytm, Freecharge, Mobikwik, Scan ‘N’ pay, Zapper. These apps provide methods to make payments like recharging mobile phones or paying bills. But, there is no system which can help complete payments at retail stores. At present liquid cash and Credit card swiped transactions are the methods of payment at retail stores.

The main advantage of Flipay over existing system

- Secure and easy way to make payments
- Payments are now on mobile
- Facilitate reliable payments to merchants
- Hassle free cashless transactions
- Quick and instant processing

Flipay helps the users to make payments at retail stores from kirana stores to 5 Star hotels. Flipay can be used as a payment aggregator for the registered users. Merchants need to register with the Flipay payment space so as to receive payments from the customers using Flipay as the payment media. Flipay has an edge over payments made via card swiping at POS Terminals. Cost of implementation and service of POS system is pretty high. It also helps in mitigating the security risks possible while executing transactions from ATM counters.
III. **FLIPAY AND ITS SYSTEM DESIGN**

Users prefer to use digital money and hence acquiring that capital market we can enhance our offerings and achieve the vision of a digital economy. From a detailed study on the existing applications in the market, we found that most payment applications help in making online payments like mobile recharges or paying for bills. But there is no efficient system which could be used to make payment at the retail stores. Hence, FLIPAY is developed as a payment application which helps in facilitating payments from small Kirana Stores to 5 Star Hotels.

**A. Registration**

In order to make payments via FLIPAY, the customer must install the app and register himself with the system. The registration is a 2 step process. Once registered, the customer can create his profile and manage his account as per his needs. The customer is sent an OTP which needs to be entered inorder to complete the registration process.

FLIPAY requires two parameters for registering the user:

1) Mobile No.
2) Bank Account No.

Similar to customer registration, Merchants also needs to be registered with the system. Once they are registered they are provided with a QR Code which is embedded with the credentials containing the unique merchant ID which is used to process the payments.

**B. QR Code Design**

Quick Response (QR) codes are two-dimensional (2-D) barcodes that can contain all types of data, such as numeric and alphabetic characters, Kanji, Kana, Hiragana, symbols, binary and control codes. Up to 7,089 characters can be encoded in one code. These square pattern codes consist of black modules on a white background. The main features of QR codes are: high capacity data storage, small printout size, Kanji and Kana character set capability, dirt and damage resistant (QR codes have an error correction capability), readable from any direction in 360 degrees and with a structured appending feature. One QR code can be divided into up to 16 smaller QR symbols. Information stored in multiple QR code symbols can be reconstructed as a single data symbol.

**C. Payment Procedure**

Customer scans the QR code hoarded at respective merchant site, followed by entering amount. Then asked to choose the payment method to process the transaction. Customers can choose among Debit/Credit card or internet banking for payment. There is a provision for storing the card details thus, irradiating the need of entering the details second time. This also makes him free from carrying wallets, long queue at ATM’s and swiping of cards.

The QR Codes can be of 2 Types:

1) Static: In this the user has to type in the amount. No external hardware required by the merchant
2) Dynamic: In this type the QR Code is generated dynamically containing the amount to be received as well. But this system calls for hardware updations.

**D. Notifications**

Merchants get instantaneous SMS and Email notifications as soon as the payment is completed. Notification includes receipt number, name of the corresponding customer and amount of the bill. An online portal is maintained for every on-boarded merchant to have a live monitoring of the transactions. Flipay can be used as a method to track the customer payment patterns. Credit score based discounts could be provided upon evaluation of payments. Logging helps in tracking flaws. Proper methods of reconciliation are followed

Some features of FLIPAY:

- Provides an easy method of payment for Delivery service incorporated companies by just sending a QR Code with the delivery boy to receive the payment without any flaw.
- Gives complete logging of the past transactions.
- Credit score based discount offers on the basis of payment patterns.
- Sub QR Code can be implemented at stores to enable payment to be made at the same time at different counters within the same store.
IV. IMPLEMENTATION

We developed the prototype for FLIPAY using Android Studio. Android Studio is the official IDE for Android app development, based on IntelliJ IDEA. The payment gateway Pay U is integrated so as to act as a medium for processing the payments. We used Cherrypy framework in python for the backend works. PostgreSQL was used for maintaining the databases.

V. CONCLUSION AND FUTURE WORK

We propose the Flipay as a next generation payment application on native Android OS. Flipay offers hassle free user experience design which helps to complete the transactions much faster and simpler. Flipay unlike from competitors gives great value to merchants providing better transaction fee, promotional pushes and faster settlement. Flipay helps you find competitive merchants and helps getting your purchases pocket friendly. The proposed system provides Confidentiality, authentication and integrity.
In future we intend to integrate a ‘Find my Shop’ feature which helps in identifying the nearby Flipay enabled stores.

REFERENCES