Shopping Application System using NFC

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Abstract - The journey from physical India towards digital India is a long path which would be achieved by digitization of daily tasks. There are several technologies such as RFIDs, NFC, sensors, etc. which are used to transfer data effectively to the smartphones. By combining several innovative ideas and newer technologies we can ease some human processes. With the increase in living standards the shops are getting bigger and the queues are getting longer at the supermarkets, therefore there arises a need for some radical change in the shopping process to ease out consumer shopping process. Under the existing operation structure of supermarkets, this paper aims to propose a Smart Shopping System based on NFC Technology. This system includes mobile applications, and users will be able to conduct actions like product searching, pre-ordering and online payment on the mobile app. With NFC users can even pay the bills without queue which would simplify the purchasing process. This paper also proposed a corresponding management platform which aims to optimize the service and administration of the supermarket, which will increase the shift from offline to online market strategy.

Keywords – NFC, RFID, Smartphones, Mobile App, Supermarket, Smart Shopping.

I. INTRODUCTION

This paper is going to represent a peculiar method of shopping in a more comfortable way using an android based M-commerce application. The purpose of this application to overcome the problems of traditional shopping and provide more convenient and user-friendly shopping experience to the customer .With the enhancement in NFC technology the application is going to give customers a more handy experience. This paper will also give a brief idea on how this technology can further be used in future in our application for billing and security.

1.1 Scope of the paper

This paper aims at customers who frequently visits the store to buy products on weekly or monthly basis. The scope is to increase space and time efficiency. To make the store system more efficient and bring an ease on the customer side. Such as completely avoiding the use of trolleys which will be done by the NFC tags that is explained in the paper in detail.

1.2 Aims and Objectives

The system's ultimate aim would be consumer' Convenience and time efficiency. This goal could be achieved by using a M-Commerce system implemented using NFC technology. The use of NFC would benefit the system in many ways mainly with automation and security. The consumer for a regular shopping experience goes to the mall and roams around in the outlet for the search of their desired goods. They physically pick up the desired items, place them in a trolley/cart and then carry the trolley all around. Once done with the shopping they need to stand in queues to get the billing done, which is a time consuming process. And ultimately carry the shopping bags back home. Using M-commerce application this entire process could be simplified and made more user-friendly.

II. LITERATURE SURVEY

The entire shopping process could become a digitally immersive experience. Smart phones equipped with NFC can be paired with NFC tags which can be programmed by NFC apps to automate tasks. The user experience with NFC tags is generally better and in the instances where the additional cost of using an NFC tag is less relevant to the overall cost. The strongest argument in favour of NFC, over other forms of short range wireless communication, is that tags are incredibly cheap to make and maintain, but can still be used for a wide range of applications. With very simply circuitry

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and very few components, NFC tags can be produced on a mass level for very low unit costs.

III. SYSTEM DESIGN

Today's systems are traditional commerce or ecommerce System's of retail which have a lot of disadvantages in them like every commerce system has. The prototype application's aim is to remove as many inconsistencies as possible from these systems and to make a system which is consumer friendly and high performing. We will develop the system which consists of different modules. These modules are as follows:-

3.1 Personal Information Gathering

The work here starts during the first time installation of our application. It gathers the basic customer information like first name, last name, date of birth, city, state etc., and it will be stored into MySQL database. So every time when the user buys item , this customer information is also sent to the database for security purpose and used also in the QR generation.

3.2 Shopping Mail Server

To Add/Update product information, Generate QR Code for products, Set offer/discount, View daily/Monthly/Yearly reports, Connected to NFC Terminal..

3.3 Android Based Mobile Phone

To Scan QR Code, Add/Delete items, View item details.

IV. REQUIREMENT ANALYSIS

This phase started at the beginning of our paper, we had formed groups and modularized the paper. Important points of consideration were,

• Define and visualize all the objectives clearly.

• Gather requirements and evaluate them.

• Consider the technical requirements needed and then collect technical specifications of various peripheral components (hardware) required.

• Analyse the coding languages needed for the paper.

• Define the coding strategy.

• Analyse future risks/problems.

• Define strategies to avoid this risk else define alternate solutions to this risk.

• Check financial feasibility.

• Define Gantt charts and assign time span for each phase.

• By studying the paper extensively we developed

V. SYSTEM ARCHITECTURE

It consists of a user and a merchant when the user pays the amount through the e-wallet to the merchant, the merchant will confirm the amount and a receipt will be guaranteed. There will also be a record of the transaction on both the sides.

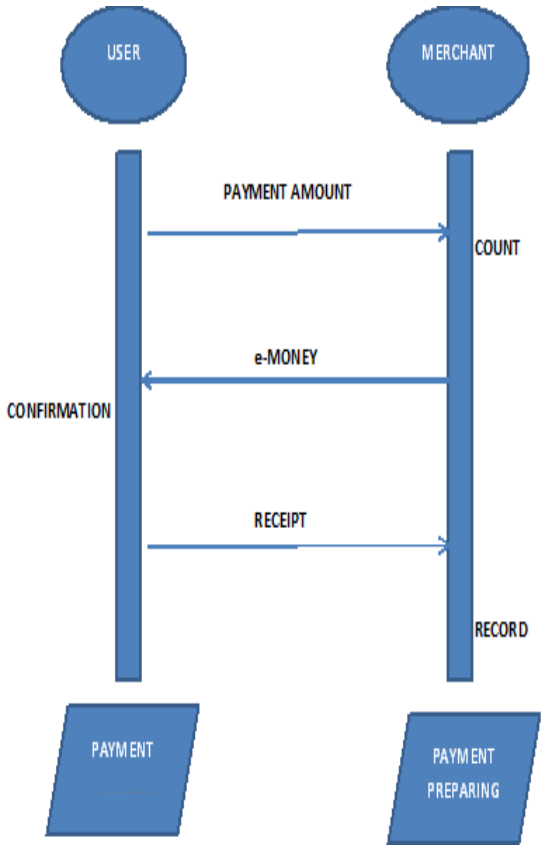

Fig 1 Flowchart for payment process

• NFC Proximity DDI provides the ability to directly exchange messages and transfer data from the NFC tags.

• Secure Element DDI allows secure elements to be exposed to the external readers.

• Smart Card DDI provides low level access for interacting with smart card and retrieving smart card information.

• Radio Management DDI provides access to the control panel to set states of proximity.

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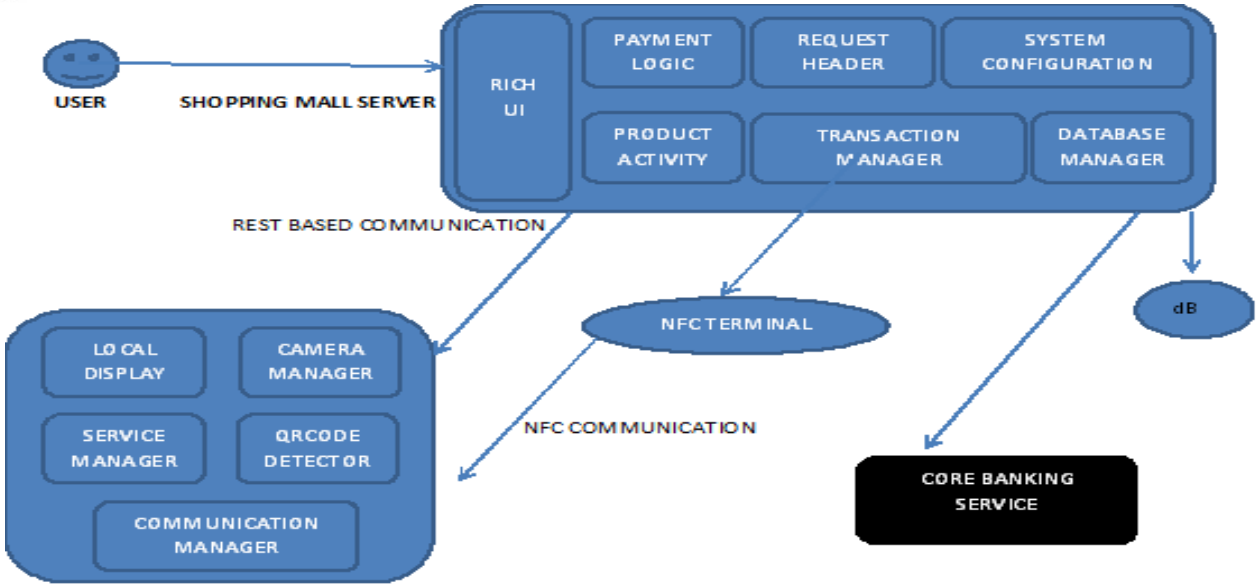

Fig 3 Architecture Diagram

The architecture consists of a user, a shopping mall server (market), NFC based mobile and a NFC card.

• User will buy the products using a NFC base mobile.

• Shopping Mall will keep the track of Products and Payment.

• NFC card will contain the data of the Products and its Prices.

• NFC based mobile can ADD, DELETE and UPDATE the product from the shopping bill.

VI. CONCLUSION

The paper uses contact less NFC tag technology for purchasing of all products all mall Centre's. Thus the time required for purchasing and billing will be reduced as the user can purchase the products directly from his android NFC enabled mobile. This paper aims at user who frequently visits mall to buy products on weekly or monthly basis. Our application is for mobile users who do not want to carry cash everywhere and want to do a trouble free shopping

VII. FUTURE WORK

In future with the development and advancements in NFC based payments, the same could be applied for the prototype application. NFC based payments could be used for the application. It's the same technology but whereas here it is about using NFC to transfer a web address or the essential data for payment purposes. we can enhance the application further by adding new products & updating the existing products information depending upon market scenario, in the application's database .Also can be well adapted for all kinds of situations ranging from bank cards to transit passes ,movie passes ,reward systems and even keys

REFERENCES

[1] Sanga Son, Yongtae Shin, "*Design of Smart Shopping Application Using Barcode Scanning and Location Based Coupon Service*", 8th International Conference on Grid and Distributed Computing, 2015.

[2] O. Wenxing, W. Lei, J. Zhipeng, and Y. Changhong, "*Implementation of Smart Shopping System based on NFC Technology*", Seventh International Conference on Measuring Technology and Mechatronics Automation, 2015.

[3] Mr. Jayesh B Mahajan, Mr. Bhagwat Kakde,Mr. Anurag Rishishwar, "*Mall Shopping System Using NFC*", International Journal of Scientific and Research Publications, 2015.

[4] Adarsh Borkar, Madhura Ansingkar, Monali Khobragade, Pooja Nashikkar,Arti Raut, "*Smart Shopping- An Android Based Shopping Application*", International Journal of Advanced Research in Computer Engineering & Technology, 2015.

[5] Phaisarn Sutheebanjard, Wichian Premchaiswadi, "*QR-Code Generator*", Eighth International Conference on ICT and Knowledge Engineering, 2010.

[6] Eisaku Ohbuchi, Hiroshi Hanaizumi, Lim Ah Hock, "*Barcode Readers using the Camera Device in Mobile Phones*", International Conference on Cyberworlds, 2004.

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