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APPLICATION OF INTERACTIVE QR CODE BASED ONLINE SHOPPING SYSTEM

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ABSTRACT
Online shopping is a part of life today. It saves time and travelling cost. It elaborately is a solution for busy life style of the people to convert their waiting time into the shopping time without going to any shopping mall.
In this work we have presented a technique of carrying out online shopping by using QR codes. A 'QR' code is used to provide a solution. This can generate new business opportunities by providing the capabilities, automated prediction of trends and the discovery of previously unknown patterns. This could be achieved by combination of Image Processing with Data Mining techniques to provide encoding and decoding data into QR for providing various services. Due to the advantage that this system has over other systems it will be readily accepted.

Keywords: Online shopping, QR codes, online transactions, Interactive, consumer supply.

Introduction

In the Quick Response (QR) code based Interactive online shopping scheme the waiting moment of people is transformed to a shopping instant, sometimes even a travel time. In this structure, the variety of QR codes will be generated for the everyday used household goods. These QR code are posted all along with its advertisement at diverse locations like Railway stations, Cinema Halls, Bus stops, & public places. That means structure is bringing shopping malls close to people. An individual who needs to buy a product, subsequent to looking in the hoardings, will straight away scan the QR code by his/her smart phone, having a QR camera. He/she will get all the information about that merchandise along with cost and thereafter an end user should put the order for the product along with the quantity he requires. As this system takes online commands from customers, accommodating their payments, providing information about the order verification, and many more actions being mixed up as a functionality of our structure from placing of order to the delivery of the order to the customer. People will feel contented with this system instead of visiting a mall to shop by taking their time from their busy timetable. In addition, there will also be reduction in investments of the shopping mall and the travel to reach there.
As this system can create online transactions with all the necessary credentials also with appropriate security, the dispensation of shopping service will be speedy. Based on every day shopping demand from community, the data mining technique will be implemented to obtain various types of data for study and future improvement.
The main objective of this work is to implement an Interactive advance & real time capturing system for consumer supplies using QR code in an Android smart phone which is used by the mass public to do shopping but for that they do not need to visit a shopping mall. This will pursue them in public places to transfer their

waiting time into the shopping time. At present a whatsoever study, research & implementation made of QR codes particularly states it is successful for marketing at low cost and is worldwide applicable. It is targeted for cellular phone users. QR Codes help to attain people at any instance and place. Apart from the Smartphone, no extraordinary equipment is required, and there are no mediators between the users. The notion of QR code billing system for shop request is fashioned using android and the verification is done during the scanning of QR-Code through the mobile phone scanner application. The client login has to be registered by means of the application and the QR-Code will provide successful connection. On scanning the QR-Code, the transaction will be asked for the password. Once the authentication is done, the buying is made by proceeding with the shopping process

The proposed Smart Shopping methodology, presents a novel method of collaborating ease in smart shopping and the sense of security money wise as well as for customer satisfaction while doing shopping offline.

In shopping mode, the customer needs to physically pick up a purchase, carry cash along and wait in the long queue to make a payment. The application mentioned here would read the QR codes of the products and add it to the shopping cart in the application. It provides methods to change the quantity of product/s purchased and edit the list. The customer would then be informed about the on-going offers in the store. Payment could be cash on delivery.

In our work, a the user is set to scan the QR code by the side of the item, which he wants to purchase with the help of a scanner. After scanning of the item, a web service will get called which will create a connection with the database of the shop. As the connection is established, the user is now synched with the database and information related to that item which is then provided to him. The customer will buy the product, add it to cart, pay the bill and the product will reach his doorsteps.

Literature Review

To generate QR code different methods are implemented in various applications. Somdip Dey et al [1] proposed a system, based on the various methods of encryption. One of the methods is encrypted message is treated as a large string and the reverse of the string is generated. This would generate a new encrypted message and that is converted into QR Code. Sankara Narayanan et al. [2] offered a security solution for QR code. The assault method used in the QR code was that whilst a consumer scans the code he is headed towards a website and a malicious file was downloaded in the user's gadget without the information of the user. S Ambareesh et al. [3] presented a QR-Maps tool that was used in Smartphone's to obtain accurate indoor user locations. A user that arrived at an indoor location and wished to know where he/she was just needed to locate a QR-Code and decode it with the QR-Maps application in the smartphone. Ji-Hong Chen et al. [4] presented the QR code into two parts, visible and invisible, and then embedded them into cover images. The visible part directly provided users with related information and the invisible watermark that could protect copyright information. M.G.Harish et al. [5] presented an android app for justification of tickets through QR code. Voucher checkers scanned the QR code of the user, before the user entered or left the station. This app automatically detected the passenger's fare according to the distance travelled as well as detected the passenger's identification. Neha Yadav et al. [6] implement a cashless college campus using QR code expertise. The structure was used to create all the transactions within the campus devoid of cash. The user had to scan the QR code to proceed to payment. If the QR code was valid, purchase amount would be debited from the account. Kinjal H. Pandya1 et al. [7] presented the different areas in which researchers had experimented with QR codes. Some of these were improving data capacity: color barcodes, use of multiplexing to increase information and scratch removal technique. Iranna Shettar et.al.[8] presented a paper which was a Quick Response (QR) Codes in Libraries. It was a case study on the use of QR codes in the Central Library of NITK. He showed the method of generating QR codes and QR codes in modern libraries. Phaisarn Sutheebanjard et

al. [9] presented his work, which was based on QR code generator. QR code is a method of encoding additional information than a traditional bar code. He showed the method of creating QR codes via the web browser that facilitated a user to easily create their own QR codes for websites, emails, business cards, print ads and so on. Donny Jacob Ohana et al. [10] presented QR codes generation using Google API (Google Chart Application Programming Interface). Several common ways to decode QR code symbols were to upload the symbol to a website and scanning the symbol with a camera-equipped cell phone. Hussain Abo Surrah et al. [11] presented a paper, which is the importance of using google API chart as a content of QR code. They discussed about the charts, which are related to google API where Charts were the content of QR Code also, they described about customization chart and methods to encode it in a QR code. They also elaborated on the method to Customize the size of QR code and Customize the color of QR code, the type of Google API chart and the number of variables represented in charts. Ji Qianyu et al. [12] presented a book, which was based on exploring the concept of QR code and benefits of QR code for companies in which there were different topics related to QR code. That were QR methodologies, types of QR codes, QR characteristics, new technologies and their solutions. Abhishek Mehta et al. [13] presented his work which was based on the QR code recognition from images which was a challenging problem due to differences in size, style, orientation, and alignment, as well as low image contrast and complex background. Many algorithms have been proposed for recognizing QR Code Recognizing an image. Mohammad Zainuddin et al. [14] presented work based on Generating SMS in the form of QR Code where he showed generation of QR-codes for ready-to-send SMS was focused. The future work could be generating QR-codes for contacts in phonebook for a mobile device. László Várallyai et al. [15] presented his work in which information about QR code storage was presented. The amount of data that could be stored in the QR Code symbol depended on the data type, version and error correction level. Devinder Kumar et al. [16] presented work based on emerging threat to mobile security and protective system. In this work, they specified that if there was increase in usage of QR code then the threat posed by them to mobile security was also increasing , this work presented different kinds of possible attacks that QR code user could be subjected to for future trends. Sayantan Majumdar et al. [17] worked onr, Advanced Security Algorithms Using QR Code Implemented for an Android Smartphone System. Elliptic curve cryptography (ECC), ECDSA (Elliptic Curve Digital Signature Algorithm) was an approach to public key cryptography based on the algebraic structure of elliptic curves over finite fields.

Methodology:

The main objective of this presented system is to provide the solution for problems faced by the customers while physically shopping. This will be done by introducing Shop codes: QR codes such that it makes things convenient for the customers to scan the QR code of products they want to purchase, at any time and from anywhere.

A electronic wall will be provided at various public places in which all the products will be displayed and QR code will be provided for scanning the products as well as for the order for the purchase. Once the products are ordered the ordered products will be delivered to a customer’s doorstep

The system we have developed uses the following sequence of order for work.

User Registration

Verifying user with ID and OTP

QR code Generation to generate codes for various products

Publishing QR codes to People

2nd verification & Accepting orders online

Processing Payment

Forwarding order to the Packaging Department

Confirmation of Order delivery by Customer

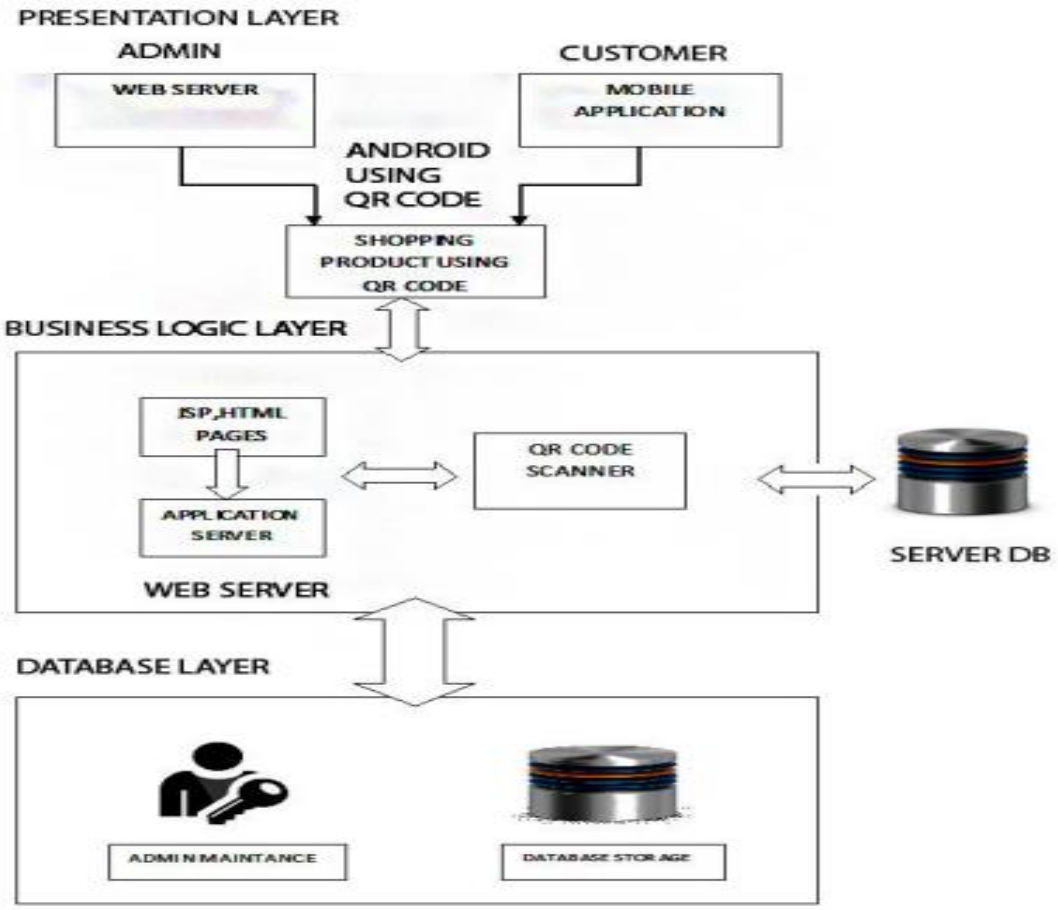

Fig.1 System Architecture

Fig. 1 exhibits the system architecture. In the Presentation layer, Admin will login in web server for product and billing system. The list of the products will be displayed to the customer after scanning the QR code of products. In Business layer, the application server will collect scan QR codes and will give to the database layer. In the Database layer, the Admin can maintain and update changes in the database server.

In the registration mode shown in Fig.2, the customer will first register if he is new; the details of the customer will be sent to the cloud server after registration. The Admin panel will then do the authentication, and the customer data will be stored in database.

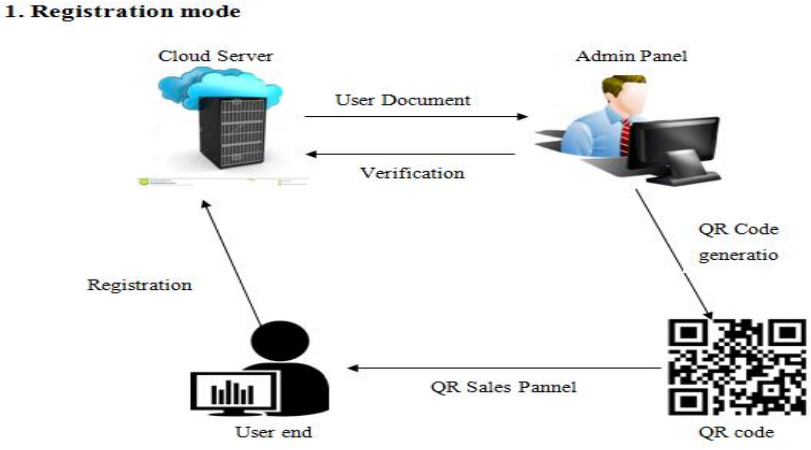

Fig. 2 Registration Mode

In the identification mode illustrated in Fig.3, when the customer scans the QR code of the product, URL request will be sent to the server panel. Then the server panel will verify the password; after the authentication the data will be send to the sales panel.

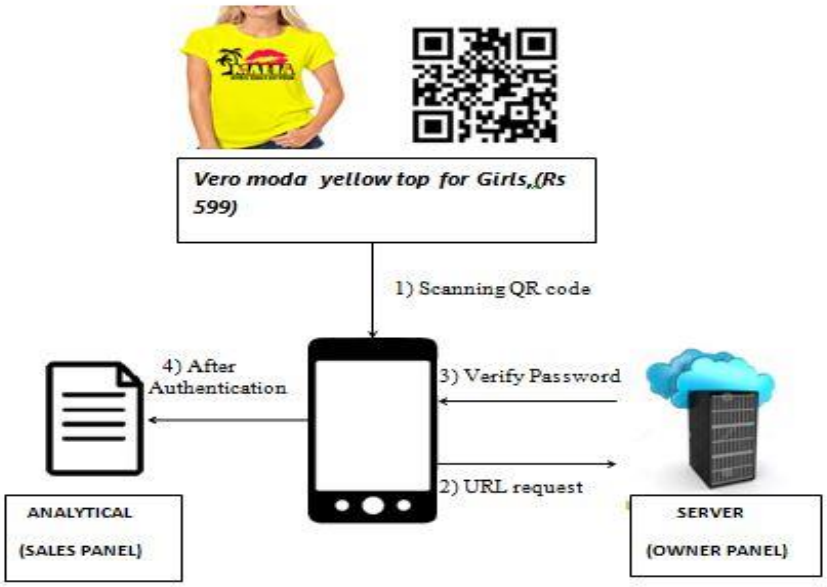

Fig.3 Identification mode

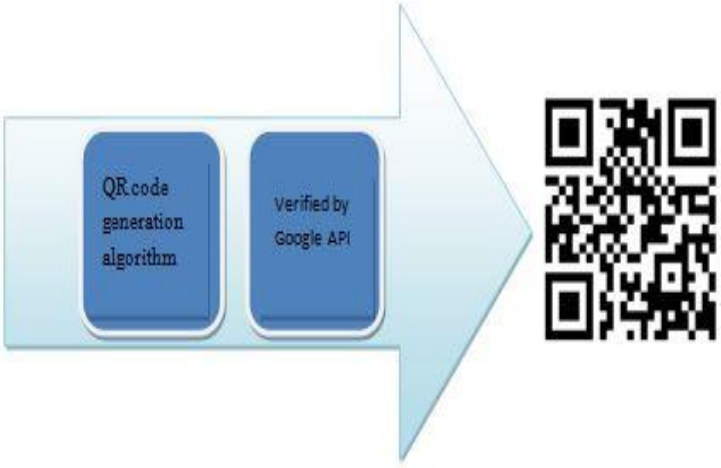

Fig. 4 Flow of QR code generation

Fig.4 shows the method of generating QR code using the QR code generation algorithm and verifying it using Google API services

There are three panels in this process, they are;

Shoppers panel

Customers Panel

Delivery Panel

In the shoppers panel shown in Fig.5, there is a product registration panel where registrations of the product is done .Code is generated using QR code generation algorithm. After the generation of the QR code details are displayed on the display panel.

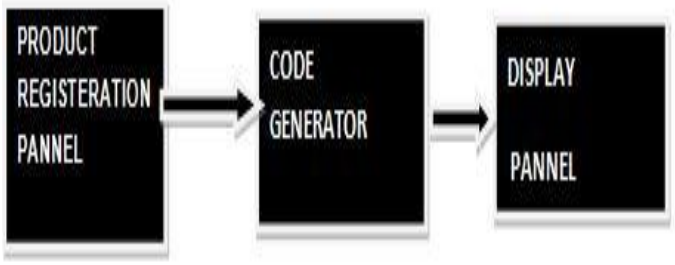

Fig. 5 Shoppers Panel

In the customer panel shown in Fig.6, customer registration is done with customer login and customer login and authentication. Whenever the customer will scan the QR code, product details will be displayed on his screen and he/she will place the final order. Once the scanned product are confirmed the details of the product are send to database for update the remaining quantity of product. If any modification required in list of products, the customer can modify. Customer has the choice to select the colour and the quantity of the product. Bill is previewed on the user screen, then customer will add it to cart. Customer will fill his information needed.

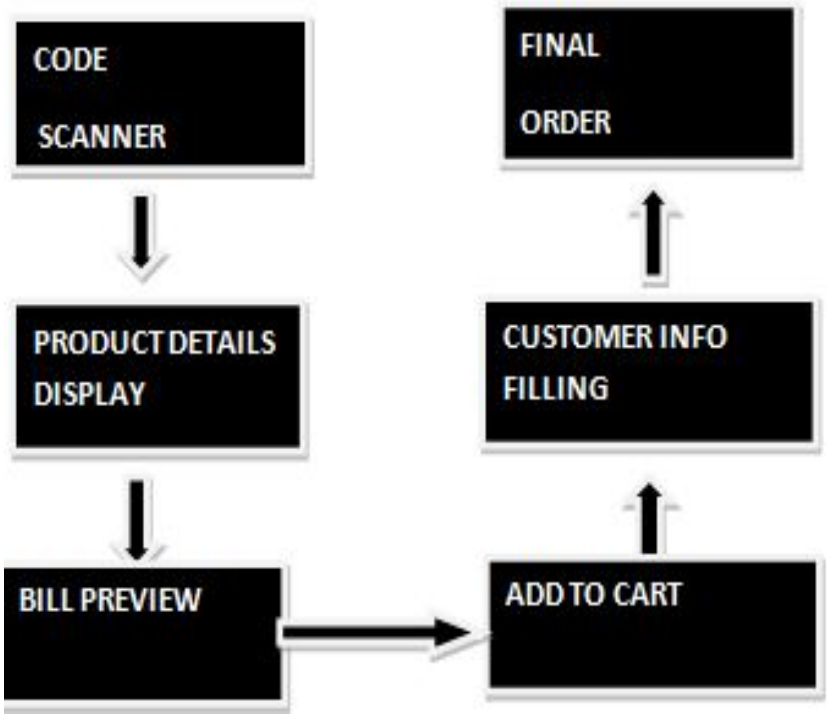

Fig. 6 Customers Panel

After placing the final order, order delivery process begins in the delivery panel. If the customer is already registered then his data will be updated in the database, if he is a new registration then his data will be added in database.

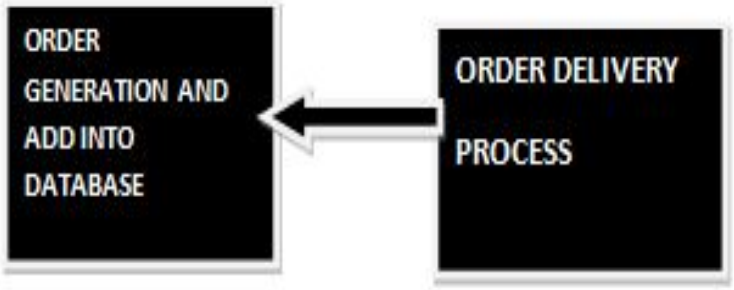

Fig. 7 Delivery Panel

Conclusion:

The work carried out here depicts a real time capturing system for consumer supplies using Quick Response code (QR Code) in an android Smartphone. In addition, for checking the product after the payment is done automatically with the help of Interactive system. The system will be instrumental for the costumers since it helps in saving their valuable time as well as it reduces stress of shopping of daily usage items for an household.

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