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EFFECTIVE METHODOLOGY FOR PURCHASING IN SHOPPING MARTS USING QR-CODE AND SMART TROLLEY

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ABSTRACT

With the improvement of living standards, online payment for purchasing good in the marts becomes popular. Therefore, building a simple, fast and convenient shopping system has become a mutual concern of merchants and customers. We have proposed a methodology through which customer can place his order by scanning QR code of products and a smart trolley will automatically collect products from their respective place, after that customer will pay bill at billing counter and collect his products. This simple optimization method was given to design and enable the shopping system to run on smart phones, with the help of QR code generation and recognition technology.

KEYWORDS: Quick Response code, Smart shopping, Smart Trolley

1. INTRODUCTION

Over the last few years, technology has introduced many products which can be used to approach the consumers. One approach among them is QR codes – short for Quick Response codes – originally created by a Toyota subsidiary in 1994 to track auto parts[1]. The QR codes are similar to bar codes which are used by retailers to track inventory and price products at the point of purchase and sale.

QR-codes can also be used in shopping marts. If we see a hypothetical system where every item will have a specific QR-code so, the customers have to scan the QR-code of the products they want to purchase and as the customer submits the final order,

the smart trolley in go down will collect the ordered products from each stall in go down[2]. As soon as the procedure gets complete, the customer will collect the bill as well as products from the cash counter.

2. PROBLEM DEFINITION

On shopping marts purchasing of products and their collection from various blocks is a hectic and tedious task where in today's world time is very precious. Following are the problems which are faced by customers:

1. In shopping malls, customers firstly have to look for their required products, secondly they have to manage a cart (trolley) with

them in case they have too many products to buy in large shopping area[3].

2. Customers have to stand in long queues for a longer period of time, which is time consuming.
3. There are chances that after the customers select the product and if their mind change then they put the product in the stall of some other products, so rearrangement of products in their proper places become time consuming and complex task for the staff members of the shopping mart[4][5].
4. Chances of products damage are high[6].

3. PROPOSED SYSTEM

We have proposed an effective methodology for purchasing on shopping marts using QR-Code and Smart Trolley. This methodology contains the following steps

Step 1: Customer after entry to the shopping mall and how will open the App on his smartphone.

Step 2: Login into the App.

Step 3: After login user will scan QR code available on the entry door of shopping mart (unique QR code will be assigned to the customer).



Fig. 1. Scanning QR Code at the time of entry

Step 4: After the QR code is assigned, customer can purchase the product by just scanning the QR Codes printed on the products, customer can also select the products from the previous ordered list or bill.

Step 5: After the final order of products, customer will click on bill generation and go to bill counter.

Step 5: Each smart trolley will have unique id and as the customer is clicking on bill generation, the unique trolley id will be connected with the customer's QR code id.



Fig. 2. Customer is scanning QR Code printed on product

Step 6: Then the smart trolley will be moved to each block in the mart and the shop/stall keeper will put the customer's ordered products in

the trolley and then trolley goes to the next stall and same process will continue till the order is completed.



Fig. 3. List of Purchased products

Step 7: Then the trolley will be moved to the billing counter by the embedded system and the

customer will take the products and pay the bill amount.

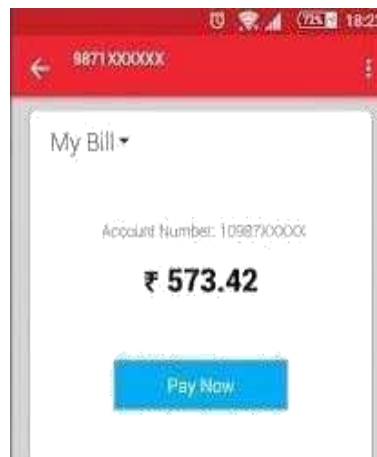


Fig. 4. Bill amount generated after the purchasing

4. PROCESS OF SHOPPING USING QR-CODE

QR-codes can also be used in shopping malls. Here we are proposing a system (mobile application) where sample product will have a specific QR-code so, the customers have to scan the QR-code of the products they want to purchase. As soon as they complete their shopping, instead of standing in long queues with their products, they just have to collect their bill as well as their products from the cash counter.

Customer has to install app before they enter to the mall and as the customer will come for shopping they will open the mobile application and then a unique id will be assigned to each customer. After the unique id is assigned customer can start

scanning the QR code for the product he/she wants to purchase.

Sample Products are displayed with QR code and customer needs to scan product QR code using app, then he will enter quantity of that product. When customer will finish his complete purchasing of products by scanning the QR codes of products a unique smart trolley (unique smart trolley number will be given to the customer) will be assigned to each customer in the mart. Then the trolley will go to each stall one by one, and stall keeper will put products in trolley as displayed in Fig. 5. In marts shopkeeper and person of the particular block will put the customer ordered products in the smart trolley. The smart trolley will reach to the cash counter block when customer taps on check-out button in the app.

The billing amount will be reflected immediately including discount and offers. Until he/she reaches Billing Counter he/she will not have trolley. When he/she reaches at billing counter and

do check-out, the trolley will come with all the purchased products from mart and immediately he/she can pay the bill and collect the products.

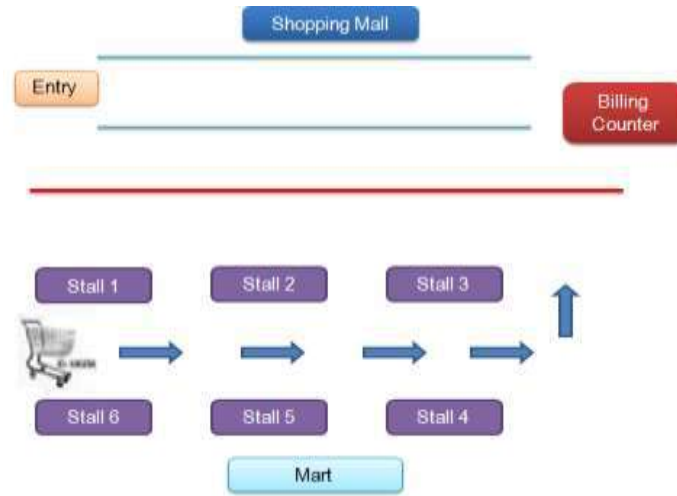


Fig. 5. Processing of Product through smart trolley in Shopping Mall

5. ADVANTAGES

As all the trolleys are kept in the mart more number of customers can be accommodated for shopping[7]. The numbers of trolleys required are less as compared to the existing system. As the stalls with original products are kept in mart, the shopping area space will become large[8][9].

6. FUTURE ENHANCEMENTS

In the future we can include some more features in this system as customer bank details can be maintained, if we include this feature then the bill payment will be automatically deduct from customers account and customer will not wait in the queue for his bill payment[10][11].

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