



# AUTOMATED SMART SHOPPING CART

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**Abstract-** An innovatory product with user acceptance providing with serenity, convenience, timelines and efficiency in day-to-day life. Shopping at malls is becoming daily activity most of cities. Malls are getting almost crowded now days, most of people do shopping from mall. People purchase different items and put them in trolley. After purchasing, one needs to go to billing counter for payments. At billing counter the cashier prepare the bill using QR Code Reader which is very time consuming process and results in long queue at billing counter.

**Keywords-** Smart Trolley, QR Code, Smart Shopping.

## I. INTRODUCTION

The idea for the project is to optimise this process of shopping at a retail store, by enabling the customer to handle the check-out process. The approach to automated shopping and billing until now has been more hardware-centric. A number of attempts have been made to design Smart Shopping Carts with various different functionalities. After negotiating busy supermarket aisles, you often have to pick the queue you think will move fastest to stand a chance of getting your shopping home before the ice cream melts. Now days purchasing and shopping at big malls is becoming a daily activity in metro cities. We can see huge rush at malls on holidays and weekends. The rush is even more when there are special offers and discount. People purchase different items and put them in trolley. After total shopping everyone requires to go to top billing counter for payments. At the billing counter the cashier prepare the bill using bar code reader which is a time consuming process and results in long queues at shopping centres. But this monotonous service may become a thing of the

past thanks to sensors embedded into the wheel of trolleys. Our aim is to develop a system that can be used in shopping centres to solve the overlooking challenge. The system will be placed in all the trolleys. It will consist of a QRCode reader. All the products in the mall will be equipped with QR-Codes. When a customer place any products in the cart, its code will be recognised and the price of those products will be stored. Thus the billing will be done in the trolley itself. Item name and its cost will be displayed on local display. In the modern world, every supermarket employ shopping baskets and shopping trolleys in order to aid customers to select and store the products which they intend to purchase. The customers have to put every product which they want to shop into the shopping trolley and then move to checkout at the billing counter. The billing process is quite highly time consuming. We propose to do this by using a smart phone application that allows the user to scan the products he or she wishes to purchase, generate the bill for all the products selected, and make the payment. Instead of using traditional bar codes, we propose to use Quick Response (QR) codes to identify each product. The application includes an option to search where a product is located in the store. The entire process of bill generation is automatically carried out, and is displayed on the interface as the user continues shopping. Once all the items are scanned and the user confirms the purchase order, the final bill is generated and the user is be redirected<sup>5</sup> to payment options. The customer has the option to sign up for a custom wallet that can be used for faster payment.

## II. LITERATURE SURVEY

We believe that the current system of shopping at a retail store has seen little change and our proposed model can help enhance the customer shopping experience. Customers have to wait for painfully long

durations during the checkout process, irrespective of the number of items they are checking out of the shop. This is especially true when the people in front of you are counting their cash or coupons at an unbelievably slow pace and during discount sales. The billing process at a shop is the most tedious part of shopping, and we believe this can be eliminated. Also, when you are in a large store for the first time, finding a specific product can be a tedious task.

Moreover, retail stores traditionally make use of barcodes to identify each product as well as in their membership cards. In terms of data storage, bar codes can hold less data, mostly numeric, and take up greater space as they are one dimensional. Also, if a bar code is damaged or dirty, they are not capable of reading any data and they cannot be properly scanned.

We believe that the entire system can be changed to provide a better shopping experience for the customer, as well as for the store management, through digital solutions.

### III. RELATED WORK

While doing survey we found that most of the people prefer to leave the shopping mall instead of waiting in long queues to buy a few products. People find it difficult to locate the product they wanted to buy, after selecting product they need to stand in a long queue for billing and payment. To try to resolve the problems formerly found, recent years have seen the appearance of several technological solutions for hypermarket assistance. All such solutions share the same objectives: save consumer's time and money, help the retailers to win loyal clients.

One system is designed i.e. the Web shopping cart system as a common client-server application on Web. Then they simplified several problems on implementation of Web shopping cart system, which are unfamiliar to the Web. In order to solve the problems, proposed a new mechanism that can manage user sessions with high reliability and safety. It is compared the Web shopping cart system implemented using the proposed mechanism with the one developed by the conventional methods.

One more system is proposed, an automatic embedded software generation framework that can create and evolve Zigbee applications. The framework consists of two major modules, pattern extraction and code generation. Pattern extraction and development are

designed to provide Zigbee application with model reuse and modification. SysML serves as a medium between pattern development and code generation. A smart shopping cart application is implemented using this pattern based software framework

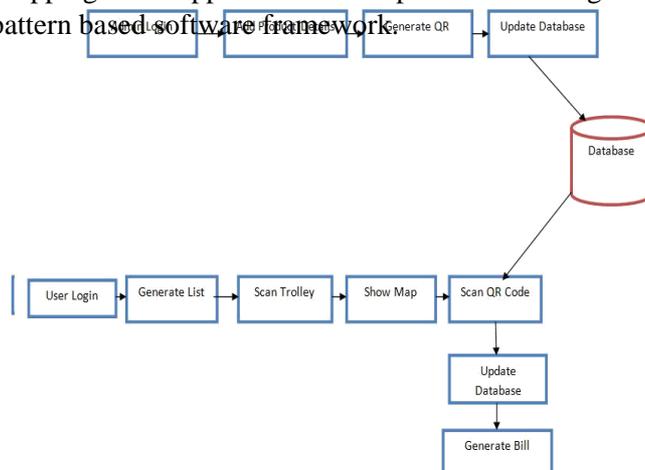


Fig1. Architecture Diagram of the System

The smart cart system combine a Shopping trolley(cart) with 2 sets of QR code scanners placed at 2 different location i.e. entry and exit respectively. It facilitates the user to self-scan the QR code of the purchased products which he intends to purchase. Wrong entries can be corrected by making use of a keypad that changes the working of the machine from adding the products to removal of products and activates the other QR code scanner at the opposite end. A wireless smart-device makes entry of all the scanned items of the particular cart (with allotment number) ; and is connected with the shopping centers backend database which contains details of the products such as Available Stock, Cost Price. The scanned items are automatically invoiced in wireless smart device for their purchases, thereby remarkably decreasing turnaround time and reducing and transmitted to the Shop's central Billing program. System will generate a bill. Then user will pay the bill and take out all their products and place them into carry bags during the checkout process. The smart phone application is one that provides a User Interface (UI) to interact with the products, by means of adding, viewing or removing it to a personalised cart. The customer can access the smart phone application for shopping once they have been authenticated via Bluetooth. The application uses a QR code scanning feature that accesses their

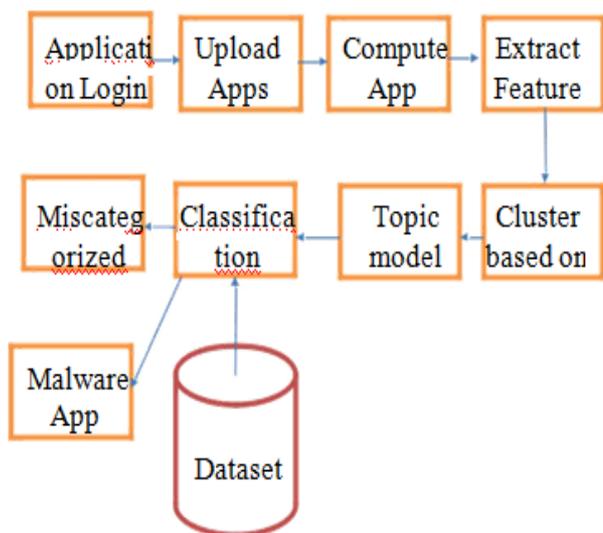


Fig2. Database Connectivity

smartphone camera and allows a user to pick up a product, scan its QR code and thereby add it to the cart. The UI display updates with the current product's details and the total bill auto-increments. The UI also has the option to select an item and remove it from the cart. The application is also able to tell the users which section of the store a particular product can be found in. This enables the user to quickly find what he or she is looking for and bypasses the hassle of standing in long queues to get their items checked out. In addition to this, there is also an option to pay using wallet for registered members. Once they log in, if their balance is sufficient, the bill amount is deducted from their wallet; else they are redirected to other payment options.

#### IV. CONCLUSION AND FUTURE WORK

We believe that this process of shopping can revolutionize the existing shopping system, as it isn't a very high cost investment for the store management. Almost everybody owns a smart-phone with a camera which is all that is required to perform the software automation that we propose. In exchange, the speed of shopping and the convenience that the customer gets is immense. This leads to a win-win situation where the customer is happy to come back for the convenience that this system provides, and the management is happy with the customer retention they get. In future we can also add weight sensors to detect weight of products added into the cart, and we can also use dynamo to the wheels of the cart to recharge the system.

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