

## Shop Smart

Mr. Bhasker Bhandare<sup>1</sup>, Ms. Gandhali Kale<sup>2</sup>, Ms. Nikita Srivastav<sup>3</sup>, Ms. Nazia Sultan<sup>4</sup>,  
Ms. SushmitaGawas<sup>5</sup>, Ms. Risha Dhargalkar<sup>6</sup>

<sup>1,2,3,4,5,6</sup>Department of Information and Technology Engineering, Padre Conceicao college of Engineering,  
Verna, Goa, India

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**Abstract** - A smart shopping system has a feature of automatic billing which scans the product details by scanning the RFID tags mounted on each product. The main objective of this project is to reduce long queues and time taken in billing at billing counters, by designing an intelligent shopping basket/trolley which uses a RFID reader.

**Keywords** – RFID Tags, Automated Shopping

### 1. INTRODUCTION

The use of RFID will simplify shoppers' experiences at stores and will allow stores to operate in a "no lines, no check out" fashion. This simplified shopper experience will be desired, because the customer will only need to grab what they need, and do not need to wait in the dreadful checkout lines. The "no lines, no checkout" experience will be due to the use of sensor fusion; specifically, passive RFID tags. RFID Tags store data similarly to barcodes; however, the tags do not need to be near or insight of the reader for the reader to scan the item. This will allow to the store to work autonomously, where the only staff members will be maintainers.

RFID will both revolutionize a new method of shopping that will change the convenience store market, leading to improvements in the shopping experiences by saving time for the consumer. At the same time Store will be able to gather even more information about consumers than was possible before, allowing for more directly targeted marketing. Moreover, as time progresses, more companies will likely adopt similar technology, moving this type of merchandising to various categories of storefronts across the country.

### 2. PROPOSED CONCEPT

Despite the presence of E-commerce people tend to buy many products only in supermarkets and malls for the sake of their own satisfaction. Among the difficulties faced by the customers one difficulty is to follow queue through the billing process. Though their intent is just to buy one or two products, waiting to bill products consumes time and also inconvenient these days as people live in a busy environment. As per our survey money and average time spent on each customer is high especially in overcrowded supermarkets. The shopkeepers are ready to welcome any smart machines that automate the billing process to reduce manpower and time consumed for that process. The main aim is to satisfy the customer and also reduce the time spent on the billing process which is to complete the billing process in the trolley rather than waiting in a queue even for one or two products. The customers have to add the products after a short scan in trolley and when done the finalized amount will be displayed on a mobile app.

Our ultimate motto is to mitigate the time consumption in purchase by getting rid of queue ensuring customer's comfort and shrinking the tediousness of barcode scanning and eliminating waging of billers, thereby accomplishing both customer and shopkeeper demands.

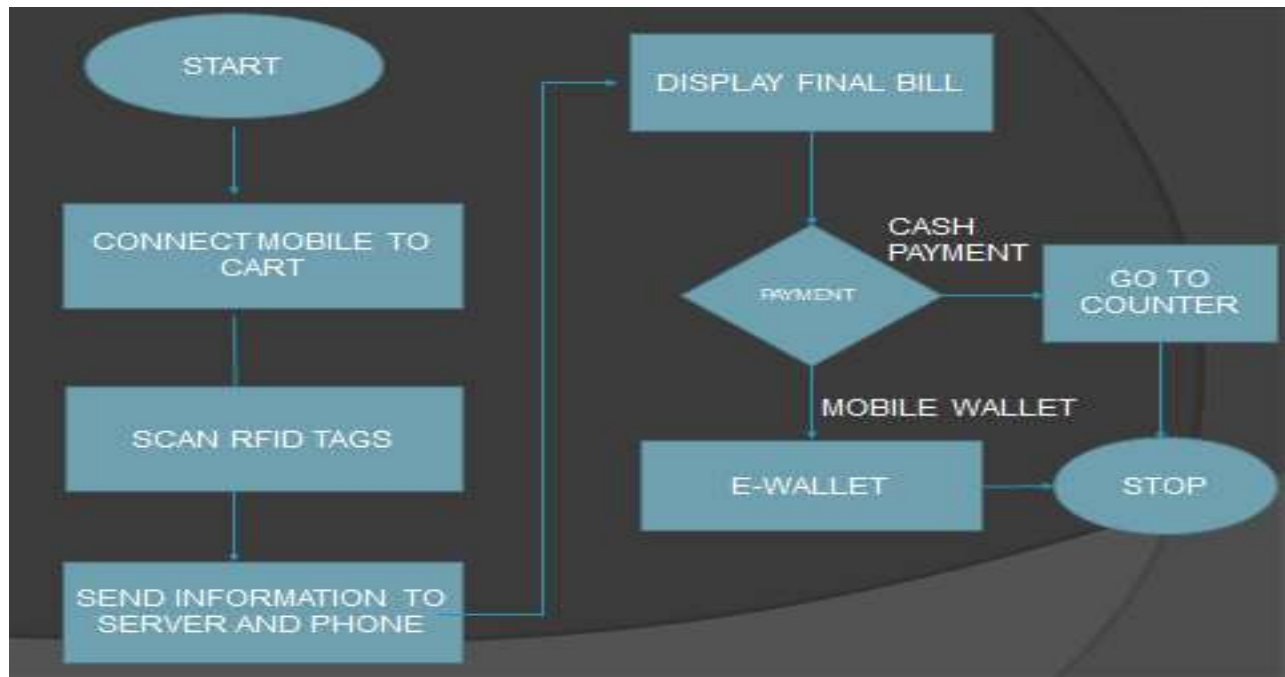


Figure 1 Workflow

### Some Main Components of the System

**RFID TAGS:** RFID belongs to a group of technologies referred to as Automatic Identification and Data Capture (AIDC). It consists of a microchip and some memory.

**RFID READER:** It consists of a RF module which acts as a transmitter (modulator + oscillator) and receiver (demodulator) of RF signal.

**ARDUINO UNO:** It receives the information code from the reader and displays the corresponding output. It has 14 input/output pins on one side and 6 input/output pins on the other side.

**WI-FI MODULE:** This module allows the system to be connected to the main server. Transport of information will be carried out due to this module.

**LCD SCREEN:** This screen will display the information of the product that is scanned. This screen will not display your final bill but just the information of each product you have scanned.

**MOBILE APPLICATION:** This application generates a QR code for each user separately, when the user registers on the app. When a cart scans the QR code, that cart is assigned to that user. The information read by the RFID will be transferred to the app, and the bill will be generated in the app itself.

### 3. EXPERIMENTAL RESULT

Each shopping cart is designed or implemented with a unique QR Code, RFID Scanner, and a Circuit which contains Arduino Uno, LCD Display, WIFI module & Power supply.

To see if it overcomes the drawbacks of both old physical shopping and online shopping and also if it fulfills the shopping needs of a customer in smart cities.



Fig: Hardware Components of the Trolley



Fig: Front view of the cart with it/s unique QR CODE

**Result:** Customer enters a shop and picks up a product he wants to purchase, scans it with the RFID reader mounted on to the shopping cart and then puts the product in the cart. The product details which is in the form of alphanumeric code is sent to the Arduino where the Arduino processor interprets the code and sends the information to the main server and on to the customer's mobile application using Wi-Fi. Mobile App then generates the final bill and allows the customer to make payment online instead of going to the payment counter.

It helps remove long queue at payment counters, payment is easy and transparent since online, saves time, and provides better user experience also it helps bridge the gap between old physical shopping and online shopping

#### 4. CONCLUSION

Taking into account the changing trends in retail shopping, we come to a conclusion that the intelligent shopping basket is most certainly a definite necessity for the retail market industry to step up their portfolios, cope up with the advancement and save time and manpower.

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- 7) International Journal for Research in Applied Science & Engineering Technology (IJRASET) ©IJRASET 2013: All Rights are Reserved 897 Automated Smart Trolley with Smart Billing Using Arduino Suganya.R<sup>1</sup>, Swarnavalli. N<sup>2</sup>, Vismitha. S<sup>3</sup>, Mrs. G.M. Rajathi<sup>4</sup> 1 Department of ECE, Sri Ramakrishna Engineering College, Coimbatore 2 Associate professor, Department of ECE, Sri Ramakrishna Engineering College, Coimbatore