Time Saving Android Supermarket Automation

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Abstract—**A supermarket is a place where thousands of customers come day in and day out to purchase a number of items which is made available to them at a single location. In the current scenario we notice a large amount of customers waiting in a queue for a long duration. In this paper, we present a proposed system, wherein the time spent by the customer is reduced to a great extent. We make use of android java to develop an app on the Smartphone that is used by the customer. This app is integrated with the database at the back end to keep track of various parameters such as selected items, available items, price of items, etc.**

Keywords— supermarket, customer, android java, queue, app

I. INTRODUCTION

In this project we build an automated and a time saving supermarket. Supermarket is the place where customers come to purchase their daily use products and pay for it. With so many customers coming day in and day out, there is a need to make the overall shopping experience of the customer very simple and efficient. We can achieve this if we are able to reduce the time spent by the customer in the waiting queue.

This project is based upon the implementation of an automated supermarket, wherein, the customer scans the item himself or chooses it from the list and picks up his/her item from the billing counter. This is to reduce the physical presence of the items in a supermarket at the front end of the system.

We make use of android java, which is used to develop applications for various smart phones. Bluetooth has been used as a medium to communicate between various systems and the application on the android smart phones.

II. EXISTING SYSTEM

At present, the customer walks into the supermarket with a trolley in his/her hand. Then he looks around for the items he wishes to purchase. Once the customer decides on the item he/she is going to buy, they place it in the trolley. After this, they join a queue where they wait for their turn to be serviced. When their turn comes, the selected items are scanned by the cashier and a bill is generated containing the total amount to be paid by the customer. The customer then makes the payment directly through cash or chooses another mode of payment such as a debit card or a credit card.

In another existing automated supermarket present in some countries is where a customer takes around a trolley and picks up all the necessary items and brings it to the self-checkout counter and scan the item themselves and pay by cash or card and pack the items and take it home where the whole process will be monitored by a supervisor and constant cameras at every self-checkout counter.

In the existing system a customer takes number of items and gives it to the cashier. The cashier then scans each item and issues the bill. There is lot of time consumed on each customer and then the other customers have to wait for a longer time in the queue.

A. Drawbacks

The main drawbacks of the existing automated supermarkets are:

1. Item robbery/shop lifting.
2. Trolley traffic in an overcrowded supermarket.
3. Time taken to scan items at the billing counter by Inexperienced self takes longer time to scan all items than by trained staff.
4. Large amount of time spent in the supermarket for the whole process.
5. Physical handling of all items all around the supermarket consumes time and energy.
6. Physically searching required items is a daunting task in a supermarket that consists of thousands of items.

III. PROPOSED SYSTEM

In the proposed system we eliminate the time consumed on scanning each item by the cashier. In our proposed model we provide an android application or a scanner for customers who do not have an android phone. The customer himself scans the barcode on the item he wants to purchase.

The customer can select the item in any of the following two ways:

1. The customer can scan the barcode of the item from a list provided by the supermarket.

2. The customer can go to the rack and scan the item directly.

Either way the customer need not pick up the item physically. The scanner or the application then calculates the total price of the all the selected items. The selected items are displayed on a monitor and are picked up by the staff members of the corresponding department in the supermarket. At the end of the billing process the selected items are delivered to the customer after the payment is made.

The customer shows the total price displayed on the scanner or the app to the cashier and pays the bill.

We also provide an alternative for online shopping wherein the customer selects the item and makes the payment online. The customer can either request for home delivery (after a suitable range of price) or can go to the supermarket and pick it up.

In our proposed "automated supermarket" system, each customer is given an interactive display and a barcode scanner which can be used to scan the items in case of confusion with brands, else items can be check listed from a list given on the gadget. Once all items are scanned or chosen or both, the customer can proceed to the billing counter where the customer has to pay the bill and wait for 5-10 minutes for the products to be packed and brought to the customer to take away. The customer is notified about the completion of packaging of his items through a short text message to his cell phone.

Also, a website is provided for the customer to log onto and order the shopping list from home. The payment can be done online or cash on delivery is provided. Customers can even order items online; so that they are packed by the time the customer drives to the supermarket to pick up their item.

In this system the main advantage is that, the more planned a customer's shopping list is, the faster is the process for them. To avoid frantic searching of items, a search tab is provided using which the customer can find the required item or department while physically scanning items and gets the rack number, so as to find the rack the item is placed on and to scan the item of choice from the department. The same search tab can be used to find the item and directly checklist it than to scroll down all the way to find it among the thousands of items the supermarket database consists of when using a check list method to order.

A. Working of the system

This system consists of the customer, who is to be given an interactive display device that is personalized for that particular customer id. The display device acts as an interface between the customer and the storage department where all the items exist that are picked up and packed for the customer by the hired staff of the supermarket. The customer is also given a barcode scanner that is used to scan the barcode of the required items that are not decided upon.

Example: If a customer wants to buy soap, the customer would want to see the sizes it is available in and the variants personally so as to decide then and there The check list is for items that don't really have variants or for items that the customers specifically want to buy and have pre planned to buy it. The list of items that the customer has selected or decided upon is then displayed on to the screens in the storage and packing department so that the staff starts to pack all the items on the list into the bag of the customer id.

The list is transferred to the storage and packing department over a wireless network which is then transferred over to the billing counter. The billing counter is the place where the bill is generated and the payment is done and the packed bag is handed over to the customer.

A website is also created that is used to order items from home for delivery or pick up and even payment can me made online or in person while pick up or cash on delivery.

B. WAMP

WampServer is an open source project, free to use (GPL licence).

WampServer is a Windows web development environment. It allows you to create web applications with Apache2, PHP and a MySQL database. Alongside, PhpMyAdmin allows you to manage easily your database.

C Advantages

The advantages of the proposed system are:

1. The app provides an option of two languages which helps customers from various backgrounds to use the app easily.
2. The chances of shoplifting are reduced to a great extent as the customer does not pick the items by himself. It is delivered to the customer by the work staff.
3. Since the customers need not go around the supermarket searching for the item, hence, a lot of time is saved.
4. Customers need not wait for a long time in the queue.

IV. CONCLUSION

The proposed system is a very efficient and effective way to reduce the time spent by the customer in a supermarket. The system prevents shoplifting by not allowing the customer pick up the items. The availability of multiple language in the application allows customers from various backgrounds to use the app easily.

A disadvantage of the system is that a lot of man power is required to service each customer. Also, the customer needs to have some experience of using an android smart phone.

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