

# ShopEZY- An Android Application Based on Barcode Scanning and Data Analytics

**Resmi R**

*B. Tech Student*

*Department of Information Technology  
KCG College of Technology, Tamilnadu, India*

**Shifana S**

*B. Tech Student*

*Department of Information Technology  
KCG College of Technology, Tamilnadu, India*

**Anju A**

*Assistant Professor*

*Department of Information Technology  
KCG College of Technology, Tamilnadu, India*

## Abstract

With the widespread use of mobile applications, people expect everything over a single touch starting from ordering food to booking tickets. However, there are various problems that are still in the process of automation. The problems identified in this paper are waiting in long queues for paying bills in supermarkets and retailers finding stock management difficult. It is a need that we figure out how to illuminate these issues. This paper proposes an effective solution for eliminating both the problems. The main aim is to automate the process of grocery purchase and stock management by using an application thereby aiding both customers and the retailers. ShopEZY is an android application that allows customers to scan the bar codes of the products and generate digital bills in the application. The concept of Data Analytics is used to carry out the process of stock management and barcode scanning for generating digital bills. Integration of these concepts in this application will help the stakeholders of the system to carry out their activities at ease.

**Keywords:** Automation, Android application, Barcode Scanning, Data Analytics, Firebase

## I. INTRODUCTION

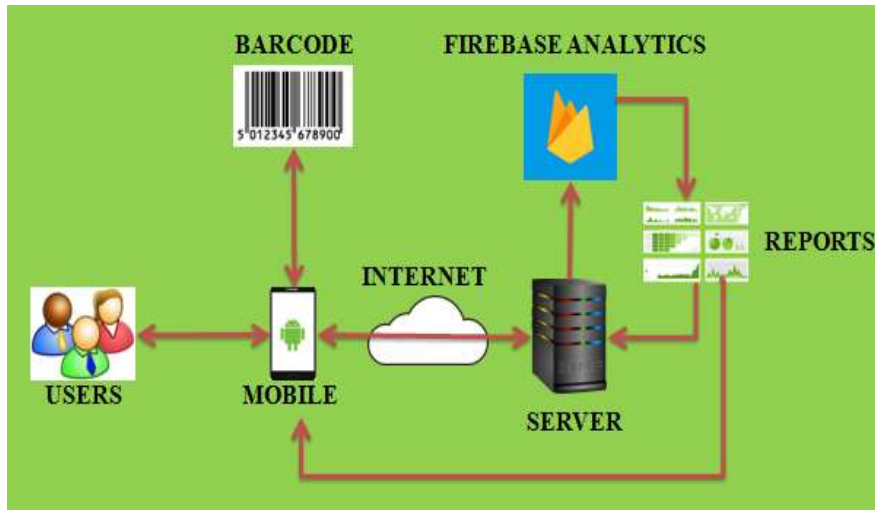
In the fast moving world today, it is a necessity that we find out how to reduce the time spent doing our day-to-day activities. With the immense growth in the field of technology and the widespread use of internet, it is possible to reduce the time spent in our routine work. This can be done by automating the processes to an extent which reduces considerable amount of time. This paper focuses on how to reduce the time spent by the customers and the difficulties faced by the retailers in the supermarkets. In the grocery purchase scenario today, the customers take the products and wait in queues for getting the bill generated and making the payment. As their turn comes, the retailer scans the barcode of the products using a barcode scanner and generates a bill for the products purchased. Then the customer pays the amount through his choice of payment options and leaves. With the advent of the technology of barcode scanning, it has now become easy to retrieve the product details. This requires no technical knowledge for its operation and consumes less amount of time. Hence, this technology is used to a larger extent nowadays. However, customers still have to wait in queues for their turns to get the products scanned and to make the payment. ShopEZY is an android application that aims at reducing the time that customers spend in the queues for getting the products billed. The customers are given the privilege to scan the products by themselves using the application without having to wait in the queue. A digital bill is generated in the application which can be used to make the payment. This eliminates the time being spent waiting in the queue for generating the bills. On the other hand, from the retailer point of view, it is difficult to manage the sales related information manually. This application reduces the complexity of managing sales information by helping retailers to monitor their sales regularly using the feature of analytics. The retailers can make use of the application to find out ideas to widen their business and increase their incomes.

## II. RELATED WORK

The authors Megha R. Mane, Nilam G. Amane, Sunita D. Patil, and Archana L.Lakesar in the paper [1] have introduced a smart way of making shopping process easy. The main idea behind this electronic shopping is to provide a system at low cost and easy operational features to make shopping go at an ease. The shopping system contains a barcode scanner which scans the product details. The LCD screen displays the details scanned by the barcode scanner which is sent to the shop's server via a Wi-Fi connection. The customer scans the barcode of the product, which gets displayed in the LCD screen as the customer keeps adding the products. Once the purchase is complete, the customer needs to click on a button to end his purchase. Clicking this button will generate a bill on the shopkeeper's system. Finally, the customer pays the amount and leaves. Thus this paper

concentrates on developing a system with the use of barcode scanner, microcontrollers and LCD displays that aids customers to carry out their shopping process at ease without standing in long queues.

### III. ARCHITECTURE



The above architecture describes the working of the application. The users, both customers and retailer use the application to carry out their activities. The customers scan the barcode of the products which are then added to the cart. The lists of products are sent to the retailer's server for confirmation. This will in turn generate a digital bill both at the customer's end and the retailer's end. The customer chooses the mode of payment and pays the bill. The retailer using all the data in the server performs analysis. The analytics feature in the application can be used to generate reports on how many products are fast moving and how many products are less preferred by the customers. This will enable the retailer to make effective decisions to increase the income and expand their business.

### IV. TOOLS

Android Studio is the Integrated Development Environment used for developing this android application. The application uses Firebase database, a cloud based NoSQL database as the backend to store data.



The tool used to carry out the process of data analysis is "Firebase Analytics." This tool offers a cloud-based service to analyse different kinds and large volume of data. Analysis of data produces reports that can be considered for making effective decisions to increase and expand the business.

### V. CONCLUSION

This drives to a conclusion that helping customers generate bills by themselves results in considerable reduction of time spent waiting in queues. Giving customers the privilege of scanning the barcode by themselves enhances the grocery purchasing experience and also attracts more customers with its simple operational ability. Also, the application will help the retailers in dealing with their sales information in an efficient way. Using the reports generated by the analytics feature in the application,

retailers can make intelligent decisions like which product should not be sold and which product has to be sold. This helps them to expand their business and increase their income.

## **VI. FUTURE WORK**

The future work includes developing a more safe and secure application with a feature to verify if all the products that has been taken by the customer is added to the digital bill and paid for before leaving the supermarket. It will also include feature to show exciting offers and deals in the supermarket.

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