

Improvised Smart Shopping Based on Android Application

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Abstract— This paper is all about providing a human-centered approach for de-signing a ubiquitous computing system which aims at providing a better experience for shoppers at a supermarket and a comfortable way for a hassle-free shopping experience, which eliminates the drawbacks involved in a traditional way of shopping for both customer and a retailer. This idea has been implemented with an android application using smartphones with android application. This application has two modes of operation- online (inside the shop) and offline (outside the shop). Facilities such as offers, payment (both wallet service & cash), invoice generation and history of purchase are provided. The implementation is also described with a user scenario in each phase which successfully contributed to the system design by giving a clear picture of user experiences.

Keywords: Android Shopping App; Barcode scanner; Supermarket;.

I. INTRODUCTION

At the present scenario shopping means to feel comfort and ease the steps involved in it. There are various factors to keep in mind when it comes to traditional way of shopping such as products search, billing and payment. An android application is developed to provide an interactive environment and enhance the shopping experience.

Technological development has provided and still developing to provide solutions to various workloads and has provided a safe and comfortable environment to live in. When it comes to a supermarket, Concept stores like the metro groups future store which uses radio frequency identification tags, stores also have integrated self-checkout points to speed up the paying process while others integrate barcode scanners either at a common section or in separate shopping trolleys.

Android is an operating system developed for smartphones and tablets. It is based on Linux kernel and uses Dalvik Virtual Machine (DVM) for executing Java byte code [1]. Absence of GNU C Library and some functions differentiate it from being Pure Linux. Android's source code is released by Google under open source licenses.

Some features of Android are-

- Highly customizable nature
- Reasonable Price
- High degree of ease due to presence of PC like apps.
- Hardware and Software features
- Full control over OS.

Android software environment consists of-

- Linux kernel
- Libraries and Dalvik Virtual Machine
- Application Framework
- Applications (built-in and custom)[2].

Massive a sensible mobile grocery aid that supports customers during all stages of the grocery shopping process. In a view to support existing shopping practices massive has been designed around a shopping list model where shopping lists has been created by customers using free from natural language massive also supports collaborative list formation by allowing customers to share shopping lists. For instance, shopping lists can be shared among shoppers when planning for a joint social event massive is constructed in collaboration with a large national supermarkets that has been equipped with additional Wi-Fi access points to enable positioning and from which we receive have got shopping basket data to support personalization[3].

II. LITERATURE REVIEW

In recent days there are many proposals made for improvising the shopping experience based on our requirement and convenience. Our review of this area discusses the few proposals which provided automated tools for the implementation.

Android development

1. Smart Shopping- An Android Based Shopping Application[2]
2. Smart Shopping:Location Based An Android Application [7]

An android application has been developed for the customers visiting a shop. This has implemented a software barcode scanner through phone camera. Customer will scan the barcode; will send a web service that will retrieve data from the database. After retrieval, that item related information can then

be seen into an expandable format and the same can be used for billing.

Drawbacks:

- Alternate method in case of phone without camera or in-case the camera fails to scan barcodes at times is not provided.
- A phone with internet is required.
- Explanation is not provided regarding non availability of internet or in-case internet is disconnected while using(backup method).
- A mobile phone with the application and internet connection can be used from anywhere outside the shop and possibly generate false bills.

Hardware development

1. Smart Trolley in Mega Mall [5]
2. Smart Cart to Recognize Objects Based on User Intention [3]
3. Smart Shopping Cart using a Product Navigation System [6]

A shopping cart is being provided with the hardware modules such as displays, RFID, Barcode scanner etc which is designed to travel along with the customer inside the shop and is expected to ease the efforts of a customer to purchase their requirements.



Drawbacks:

- A separate billing system has been provided in individual cart rather than a common billing section which can no way be called a smart method.
- Heavy and complex design for the customer to take along with them in the entire shop.
- The entire hardware is at the own risk of the customers to use and requires knowledge on using it.
- Proper information on invoice generation and stock availability is not explained.

These examples clearly state that all the designs implemented so far has faced serious problems, which has to be fixed. Most of the earlier tools were developed considering only a few constraints. This led to exclusion of many important constraints which further caused problems while implementing the same.

III. PROPOSED SYSTEM DESIGN

The basic idea of this project is to provide a system which could be designed for a layman to use for improving the shopping experience. It helps them to locate items, billing them and also to store the history of purchase for future reference. The proposed work explains the step by step procedure followed to design and implementation of the application.

A. Application development

- The android application is developed using Android SDK which includes debugger, libraries and tutorials. With the help of Android Developmet Tool a new project is created, which provides an environment in which the android projects can be imported, build and run successfully.
- *ZXing*- It is the library which is used for scanning purpose and used in this app for scanning the items to be purchased.
- Finally a .apk file is created with the features and work functionality as explained in the below work.

- This file has to be imported and installed in the user's mobile phone.

B. Customer's experience

- This file has to be imported and installed in the user's mobile phone.
- The user must be a registered user to use it further. Details such as name, contact number, Email Id and address is collected.
- The app works in two different modes-online(inside the store) and offline(away from the store).
- Case 1: The user opens the app while he is away from the shop. Can open the app in offline mode (i.e) can prepare a list of items for purchase, check for offers, update their wallet and see their purchase history. Cannot scan any barcode or generate bill.

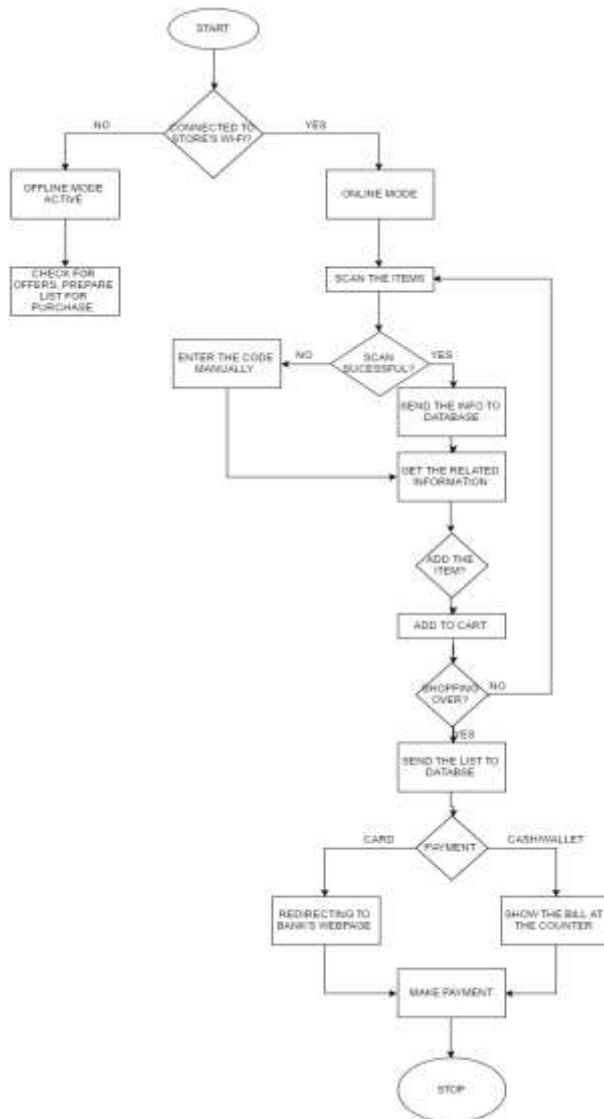
- Case 2: The user connects to the shop's Wi-Fi and opens the app. Can open the app in online mode (i.e) can scan the items present inside, generate bills and make payments either in cash, card or wallet. A copy of the invoice is also sent to the registered mail.

C. Shop owner's experience

- The app keep tracks of number of people used the app inside the store to make payments.
- The copy of the invoice is also kept in record for auditing purpose and to maintain clear stock availability in the store.

D. Security enhancement

- The application is designed to work in the online mode if and only if the mobile is connected to the particular Wi-Fi and the battery life is greater than 25%.
- If the customer is unable to scan the barcode due to various reasons the code can be manually entered.



- In case of network failure in between the scanning process, the codes can be scanned (without any relevant information about the product), saved and processed at the last stage of billing when the network is available.
- In case of any system failure in between the process, bill can be generated for the products

saved to cart before failure through the app and other items in the usual billing method.

- In order to provide theft control facility in the store, the final bill displays the total quantity that is billed and its corresponding net weight which can be used to check while transferring the items from the trolley to the carry bag.

IV. CONCLUSION

The conclusions of this study suggest that knowledge of specific domain improves the results. This Project has been implemented on Android platform. Also, different attributes have been added to the project which will prove to be advantageous on the real time application of the system. This application can be implemented by any store managers for distributing it to their customers who can access android. The application will prove beneficial for everyone especially the senior citizens.

REFERENCES

- [1] Dr.Gagandeep Nagra, Dr.R.Gopal, "An study of Factors Affecting on Online Shopping Behavior of Consumer", International journal of scientific and research publications, Volume3,issue 6,June 2013,ISSN:2250-3153. .
- [2] Adarsh Borkar and Madhura Ansingkar "Smart Shopping- An Android Based Shopping Application" *International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 4 Issue 3, March 2015, ISSN: 2278 – 1323.*
- [3] T.Shanmugapriyan "Smart Cart to Recognize Objects Based on User Intention" *International Journal of Advanced Research in Computer and Communication Engineering, Vol. 2, Issue 5, May 2013, ISSN (Online) : 2278-1021.*
- [4] A. Meschtscherjakov, W. Reitberger, M. Lankes, and M.Tscheligi, "Enhanced shopping: a dynamic map in a retail store," in *Proceedings of the 10th International Conference on Ubiquitous Computing. ACM, 2008, pp. 336–339.*
- [5] J.S.Awati, S.B.Awati "Smart Trolley in Mega Mall" *International Journal of Emerging Technology and Advanced Engineering ISSN 2250-2459, Volume 2, Issue 3, March 2012*
- [6] Prof. Harish Narula, Ms. Mansi Shah, Ms. Saloni Rokde "Smart Shopping Cart using a Product Navigation System" *International Journal of Engineering and Technical Research (IJETR) ISSN: 2321-0869, Volume-2, Issue-10, October 2014.*
- [7] Lokhande Priyanka V. Abhale Priyanka M "Smart Shopping: Location Based An Android Application" *Imperial Journal of Interdisciplinary Research (IJIR) Vol.2, Issue-1, 2016 ISSN : 2454-1362, Page 278-281.*
- [8] Wallace Jackson "Android Apps For Absolute Beginners" APRES publication, 2011, ISBN-13 (electronic): 978-1-4302-3447-0.
- [9] Michael Burton and Donn Felker "Android Application Development For Dummies 2ND EDITION", John Wiley & Sons. Inc.