Mobile Application for Ergonomic Coupon Aggregation and Handling

Swati Kinhekar[#], Saurabh Tyagi[#], Saksham Talwar[#], Prafull Nikose[#]

[#] *Computer Engineering Department, Fr. C. Rodrigues Institute of Technology, Vashi*

***Abstract*—Right from the advent of the World Wide Web, the applications of websites in several verticals has been very innovative and interesting. In recent times, there have been a lot of e-commerce websites that have been coming up with the promise of being able to deliver your required items right at your doorstep. This sector has seen several successful players like Flipkart and Amazon, groups with plenty of funding and looking forward to build a larger customer base. Due to this, the online market has been flooded with many offers and deals across several categories. But the general public is usually unaware of the same due to the sheer number of such websites and apps. With this project an Android based mobile application will be built which will pull all the relevant deals for them so they can be utilized before they expire.**

***Keywords*—E-commerce, Mobile Shopping, Coupons, Android, Java.**

I. INTRODUCTION

The e-commerce world is bustling with activity these days. On one hand, there are new sites coming up as one reads this, and on the other hand, there have been several allegations of incompetence and malpractices by the same sites. Whatever be the case, this has resulted in more publicity for such organizations and with such sites offering more and more offers every day to the users, the user interest in this segment has never been higher, considering the convenience of being able to pay electronically and getting the required goods delivered at their doorstep. But, with the rising number of e-commerce websites, a different phenomenon has been observed. This is the availability of too many focus points for the potential buyers. Due to too many websites, and each website offering a number of offers, a common person with a computer or a smartphone is not able to grasp the deal because they simply do not know that such an offer is available online. This causes losses for both the consumer and the e-commerce players because the customer is missing out on good deals and the players are missing out on the opportunity to deal with new potential customers.

There are some systems which already exist in the domain of informed shopping, but there are several shortcomings in these offerings. Some of the systems covered fail to provide the basic service of being able to channel the valid coupons to the users. Other shortcomings faced by new users include poor implementation of the user interface, lack of category and number of active coupons on the services et al. This creates the scope for a platform which can overcome these shortcomings.

Thus, the platform christened as **"Aye Coupons"** changes the scenario by providing the users with a mobile application which lists the deals or offers for whichever store or website the user may want to shop at. Further it displays the available coupons in a presentable & simplified way through which the most informed choice can be made.

II. LITERATURE SURVEY

This section provides in-depth information about the systems already functioning in this area either as a website or as a mobile application. This project requires extensive use of Java and XML for the development of Android application and the knowledge of the concept of geo located coupons due to the intended feature of coupons identification for offline stores. Because of the nature of the project being a commercially implementable one, there is a marked dearth of scholarly articles on the topic because it's still a niche like e-commerce was when its advent began a few years ago.

The requirement analysis which is done for a project usually through literature surveys and study of already existing systems leans more on the study of existing systems in this case. The main reason for the feasibility of such a project is that the other developers who have ventured in this field have not been able to pay heed to all of the requirements of the users and many times do not contain the basic features like intuitive User Interface, ability to seamlesslybrowse coupon, etc. So, the study of existing systems has been based on a particular platform by the name of "Coupon Raja[1]". The finding on initial surveying and analysis through the use of the service and of the analysis of user reviews yields the following observations:

1. The service is being offered through both a website and Android application. Application for Apple devices is also available
2. The website has a clean interface and provides several coupons and deals across various segments and in several cities.
3. The current traffic is 40,000+ daily users with a 9 lac+ registered user base
4. The Android application is available on the Google's marketplace, Play Store
5. The User Interface does not follow the latest design language prescribed by Google a.k.a. the Material design theme.
6. Though the interface is simple, and categories are provided via filters, it lacks the feature to rearrange the coupons as per user's wish
7. The application is being criticized by several users as being 'laggy' and 'memory hogging'
8. No presence of geo located coupons

9. The main crux point is that several users are reporting a lot of expired coupons in the application and thus the precious time of the users is wasted in browsing already expired coupons and deals
10. Another point mentioned by users is the imbalance in the number of deals and coupons present on the platform

Another service that was studied goes by the name 'Coupon Dunia[2]' which is the pioneer in the coupon industry. It has been in the market for long and is backed by the likelihood of the Times Group and several independent funders which in turn has enabled them to progress in all the verticals i.e. by having a website, an Android app and an application for iPhone as well. The findings from the initial survey conducted has observe the following features :

1. The service is being offered through Android, iPhone and also in the form of a website which runs well on computers as well as smartphones.
2. Though the website has a clean interface, it has some room for improvements.
3. They've tried their best to cover as many categories and stores as possible, but they still list a very small number of stores.
4. When it comes to offline stores, they just list restaurant coupons.
5. Due to limited resources in hand, only the Android application could be tried, which is available for free on the Google Play Store.
6. The User Interface is decent with multiple log in options.
7. Their interface is based on the earlier version of Android Material design, but they terribly need an upgrade.
8. No presence of geo-located coupons.
9. Though the application works fine on majority devices, it faces problems on devices with Intel based CPUs.
10. They list a large number of deals that no longer work and thus drive criticism their way.

The above analysis suggests that even though the platform has a strong presence online, the application being provided to the users does not provide a satisfactory experience to the users in terms of performance and functionality. The Android application checks on the basic points but fails in several other points as mentioned above. So, the large number of users who use the service are remaining dissatisfied because in today's time the users are moving towards the mobile platform and expectations are high regarding the app experience. The general trend is that people want seamless experience while transitioning from the website to the app which is not the case completely in the present situation. The proposed system lays a larger emphasis on the application itself which is its strongest point. The system learn from the experiences of the users in different scenarios and from different existing systems to gauge the requirements of potential users of this platform and thus overcoming their weaknesses and turn them into strong points.

III. PROPOSED SYSTEM

This section presents the various features of the proposed system which would help the system to stand out from the crowd and drive the users from the existing platforms to proposed one.

The noteworthy features include the following:

1. Android based application based on the Material Design methodology, making the application widely available and intuitive to use.
2. Plans to cover universal or the online deals as well as including the maximum possible local deals based on the location of the users.
3. Ability to login to the system using multiple entry points, like being able to login from platforms like that of Facebook, Google+ or from individual emails, which will provide ample options to the user to seamlessly connect to the platform.
4. Providing the ability to locate coupons using the GPS location of the user. This will allow the users to locate the offers available in the stores nearby to them using their current location information, which will be utilized by the application and correlated with the coupon data to provide users with relevant coupons.

The following 3 sections labelled A, B and C explain about our platform and why it was chosen, the design guidelines that were followed and the programming languages that were used in the project.

A. Choice of Android as a development platform

Google's Android platform was chosen as the platform for the development of the above mentioned Android application. The reason for this is that the as of Q2 2012, the number of Android smartphones being shipped worldwide formed more than 70% of the total share. Due to the OS being popular and easy to use, it is an attractive proposition for developers to showcase their products to so many smartphone users via the Google's app store or the "Play Store"

B. Design language used for the project

The application will be developed using the latest design guidelines released by Google, called as the "Material Design". The material designed applications use colour to improve the aesthetics of the application and use a flatter design with relevant animations where every new card, window etc. appears due to some gestures on the part of the user like swipes, touch etc. All this lends in making the UI of the application more attractive and thus the same is utilized in our project.

C. Programming languages used in the project

As the selected IDE or the "Integrated Development Environment" for the application is the Android Studio, the application will be developed in Java and the backend will be done in SQL.

The following section D describes the modules which make up the system:

D. Block Representation of the system

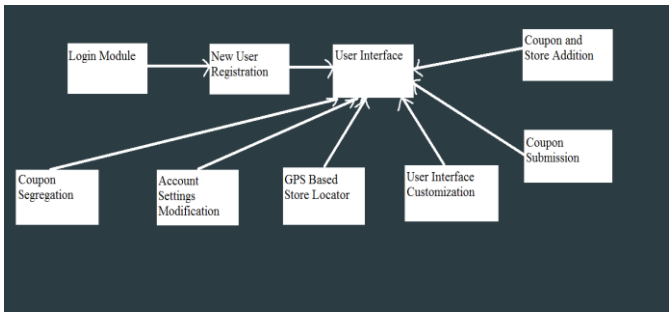

Fig 1: Block Diagram

As the diagram depicts, the system consists of several modules which can be divided into the categories of Login Module, Application settings and customizations and Server side data manipulation. All of the interactions that take place in the application are done through the User Interface. The modules interact with each other to make the overall system work. Some modules like the GPS Based Store Locator are available only to the registered users of the system. So, this is an example of the interaction between the login module and the GPS module via the user interface of the application. Thus the UI plays an important part in the successful operation of the system and hence the UI will have to be easy to understand for the users and compatible with the server side modules.

The major blocks of the system are explained as follows:

1. Login Module: This module comprises of the new user registration and the login gateway for the existing users. The login module will be initiated when a user first opens the application, prompting the user to create an account. The user will be able to login through popular social websites like Google+ for this purpose. Google login is also an attractive option for both the developer and user because Android based devices ought to have a Google account logged in to use Google's services. So, this gives the user an option to seamlessly link the social account to the application. This module is optional in nature and the user can skip the screen to directly start browsing coupons.
2. User Interface(UI): This is an important module because all of the interaction that will take place between the user and the system will be through the UI. The UI will be responsible to provide the user with the kind of coupons that are required. With the help of User Interface Customization module, the UI is responsible for pulling the required coupons from the application server to the user's screen.
3. Coupon and Store Addition: This module forms the backend of the application and will be a part of the application server. It is the place in the server memory where the coupons are stored by the admin of the database. The addition and updation of coupons is carried by the admin and a few other privileged users or editors, who will be responsible for keeping the content provided by the system up to date.

IV. DESIGN AND WORKING

The following section A describes the working of the application in a typical scenario where the user utilizes the application, with the help of an activity diagram.

A. State Chart Diagram of the System

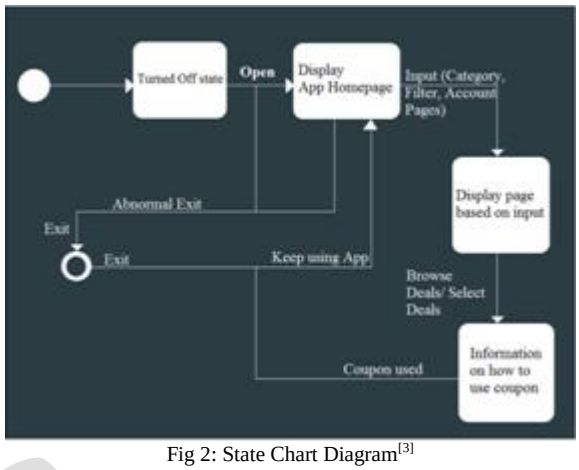

Fig 2: State Chart Diagram[3]

As the diagram depicts, the state chart of the application is shown in the case of a typical scenario when the application is used. The application is initially in the turned off or closed state. It passes through the various states namely:

1. Display of App Homepage: Here the homepage with the featured coupons and deals will be displayed to the user.
2. Display of Relevant Page based on User Input: With the utilization of User Interface, the coupons based on the preferences of the user will be displayed on the application screen
3. Display information on coupon utilization: Relevant information about the coupon like the validity, the description of the offer et al. will be displayed to the user along with the instructions as to how the deal can be accessed.

The application then goes into the exit state. This state is achieved when the use of the application is complete and the user has closed the application. This results in the app screen being replaced by the user's home screen.

V. CONCLUSION

After analyzing the existing system and the proposed system, it can be safely conclude that Aye Coupons would be of great help to shoppers. It will not only keep the shoppers updated with the latest offers going online, but will also enable them to look for deals or offers going in the physical stores located near to them using the location obtained through the device's GPS hardware.

REFERENCES

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