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E-Market Place

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Aabstract: This document is a complete report on the research conducted and the project made in thefield of computer engineering to develop a software for E-market place to manage the details of Products, Customer, Shipping, Payment, Category. It manages all the information about Products, Sales, Category, Products. The project is totally built at the administrative end and thus only the administrator is guaranteed the access. The purpose of the project is to build an application program to reduce the manual work for managing the Products, Customer, Sales, Shipping. It tracks all the details about the Shipping, Payment and Category. The report proposed the results and solutions on the limited implementation ofthe various techniques that are introduced in the project.

Keywords: E-commerce, Shopping, Application, Online, Smartphone, Store.

1. INTRODUCTION

The internet has changed many aspects of society, from business to recreation, from culture to communication and technology, as well as shopping and travelling. This new form of communicationhasprovided new ways of doing business with the help of technological development. E-commerce is the new way of shopping and doing business. Technology has allowed companies to promote and sell their products on new markets, overcoming geographical borders as never before. Consumers have access to a wider market of products when they use wireless and internet technologies. Mobile deviceswith wide access to the Internet have allowed companies to reach consumers in more diverse ways, thus ensuring deep market penetration.

This study investigates the opportunities generated through mobile telephone access to the Internet. Faster wireless networking standards allow wireless devices to use more e-commerce applications, and consequently, permit wider access to mobile commerce (m-commerce). M-commerce has been defined as "a special branch of e-commerce, in which mobile devices and their network connection medium are used to buy, sell, and promote products, services, and information".

Fig: Buyer's preference for shopping

According to Koukia, Rigou and Sirmakessis (2006), wireless technologies have improved traditional e-commerce by "providing the additional aspects of mobility (of participation) and portability (of technology)." On this theme, mobile and e-commerce application developments are an important factor for the expansion of m-commerce among consumers. The technical characteristics of devices and corresponding applications, as well as Internet access facilities, are determining the level of acceptance of m-commerce and its development. Aspects like processing power, display and device size, mobile internet coverage,

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standardization and quality of devices, are only some of the important factors that decide the level of use of m-commerce, and consequently, the level of its development.

The purpose of designing interfaces for mobile applications should be to increase consumers' interest in using and dedication to m-commerce. Among the inhibiting factors is that m-commerce applications were developed based on e-commerce applications. The most important thing when designing such applications is to design the application in such a way that it does not distract the user from the main purpose of the application. However, aspects concerning security and accessibility should not be neglected. Even though storing sensitive data such as medical, financial, or personal information on mobile devices can help people, the risks of losing such information or of unauthorized access are higher and should be considered when an m-commerce transaction begins**.**

This paper will review the latest trends in mobile and e-commerce applications and will develop an application architecture that describes the internal architecture of both web and mobile components. Moreover, the focus will be on developing a more sophisticated demonstration mobile application regime that will employ web-services to communicate with web servers. Furthermore this paper will discuss the main characteristics of devices used for m-commerce, the available survey design guidelines, and the important role of these characteristics for increasing the potential of m-commerce will be articulated.

This paper will also investigate the requirements of e-commerce applications and why normal websites are not suitable for mobile devices. More specifically this paper will analyze the characteristics required for websites so that they function properly on mobile devices. These characteristics are screen size, input device, task-based interfaces for mobile devices, m-loyalty, design aesthetics and website design. Other research questions relate to the reason why mobile native applications are preferred over mobile websites and what can be achieved using PhoneGap cross-mobile platform applications. Finally, the paper will attempt to provide solutions for mobile application development and make recommendations for future directions.

2. PROBLEMSTATEMENT

The purpose of e-commerce app is to help customers narrow down their broad ideas and enable them to finalize the products they want to purchase. For example, suppose a customer is interested in purchasing a mobile. His or her search for a mobile should list mobile brands, operating systems on mobiles, screen size of mobiles, and all other features as facets. As the customer selects more and more features or options from the facets provided, the search narrows down to a small list of mobiles that suit his or her choice. If the list is small enough and the customer likes one of the mobiles listed, he or she will make the purchase.

3. OBJECTIVE

The main objective of e-commerce application development is to sell products to users. The most successful websites are carefully optimized to achieve a high percentage of purchases. To achieve success e-commerce applications need to integrate all of the latest online closing & upsell techniques available which have been proven to increase the chances that a visitor will purchase.

4. METHODOLOGY

A literature review on the two major issues of e-commerce mobile applications has been conducted, these being: firstly, the interface usability of mobile applications; and secondly, design and security considerations. The literature review concluded that mobile applications must effectively operate on different Smartphones and have the ability to use different E-commerce web applications through web services.

A. Research Procedure

The main question answered here is: "How can we exploit the usability and security of e-commerce application(s) for mobile devices (m-commerce) with maximized mobile platform independence?"

The sub-questions indicated below should be answered in order to fully explain the main themes in this paper :

1) Why is mobility required for e-commerce application?
2) Why are normal websites not useful for mobile devices?
3) Why are mobile native applications preferred over mobile websites?
4) What can we achieve using the PhoneGap (cross-mobile platform application development framework)?
5) How will the initial application architecture use Spreecommerce, PhoneGap and web applications?
6) What are the different solutions for developing mobile applications?

In this paper the focus was also on developing a prototype mobile application. The following steps were taken in order to complete a demonstration application:

1) Understanding how the Spree commerce system was developed and how it works.
2) Improved the application architecture based on more research and actual development experiencegained while developing the application.
3) Developed a more sophisticated demonstration mobile application that will communicate with web servers through web services.

a) Developed of the PhoneGap application and tested it on iOS and Android

Page constraints have limited the paper's scope to actual functionality of the application. This paper will therefore discuss basic functionality.

Step 1: In order to achieve the first goal based on the web server was set up a Spree-commerce Ruby on Rails application. Spree is basically an open source e-commerce system and it has the ability to deal with web services in obtaining a list of products, product details and cart system.

Step 2: A mobile application gap via PhoneGap (mobile application development framework). Then product listing and view page was initiated through managing data from web services.

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Step 3: The application was tested on different Smartphones as follow:
1) Test on iPhone Simulator
2) Test on iPad Simulator
3) Test on Android Simulator
4) Test on actual iPhone device by paying 100$ apple developer account.

B. Software development methodology

Based on the questions developed for this study a general search was conducted in the first phase of the research. Software architecture was developed based on this research. The results of the research enabled the initial scope of the research to be more precise and achievable. Various software development methodologies were utilized since software engineering is a diverse field and encompasses many diverse
factors and contexts. Experimental software engineering was used in the initial development phase so that risk and uncertainty were reduced. An iterative software model was used as it is the best choice for prototype development.

C. Application Architecture

The application architecture is explained in terms of how: the Spree web application is hosted on the Ruby on Rails equipped webserver. Web services have been built inside the Spree application; and the mobile phone native applications built using PhoneGap which communicates with the webserver through web services to obtain data and information. (Figure1). This diagram shows how the application
architecture used the Spree web server and a native mobile application using PhoneGap which allows the same application to run in different mobile operating systems. This corresponds with the web server which uses web services to obtain data.

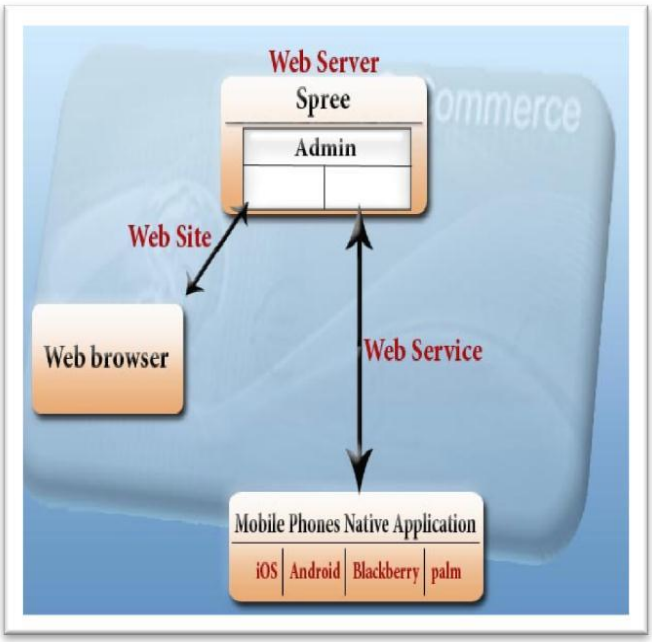

Figure: Application Architecture

5. SCOPE

A. Scope of application

The basic functionality delivered by the application features two main factors, product listing and a product detail page. Two changes were made,

- Spree web services were modified in order to show complete data in our mobile application.
- The functionality needed so that the mobile application can list products by requesting web services provided by the Spree-commerce application was added.
- The functionality of the mobile application was improved to show complete information on a product by requesting a second web-service from the Spree-commerce application.

Best practices were employed for making the user interface of the mobile application functional.

6. RESULT

A. User/System scenario

- The process starts when a user starts the mobile application.
- The mobile application requests the product listing web service.
- The web application (Spree-commerce application), which operates on remote web servers receives product listing web service requests.
- The web application finds the published products from the database and prepares JSON response.
- The mobile application receives JSON response and will convert it into HTML and render it. The mobile application also makes sure that all links in the product list should only work as AJAX.
- When the user selects a product the mobile application sends on AJAX request to the server for the product details web service.
- The server finds full details of the product and sends JSON response.
- The mobile application prepares HTML from JSON response for the display on the screen.

B. iOS and Android Demo Application

The application was tested on Android and iOS (iPhone/iPad/iPod operating system). The application provided two web services. Figures depict the web service which enables the user to see a list of products available. Figures shows that when you tap (select) any of these products, a new detailed page relating to the product selected will open and display information such as image, colour and price.

Android simulator tested

- List of products

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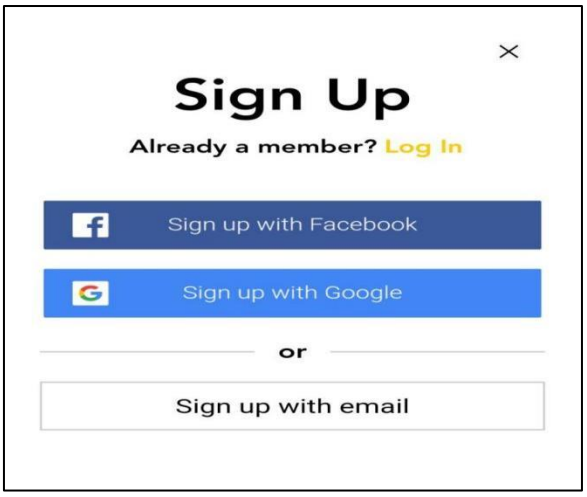

Figure 1: Sign Up page

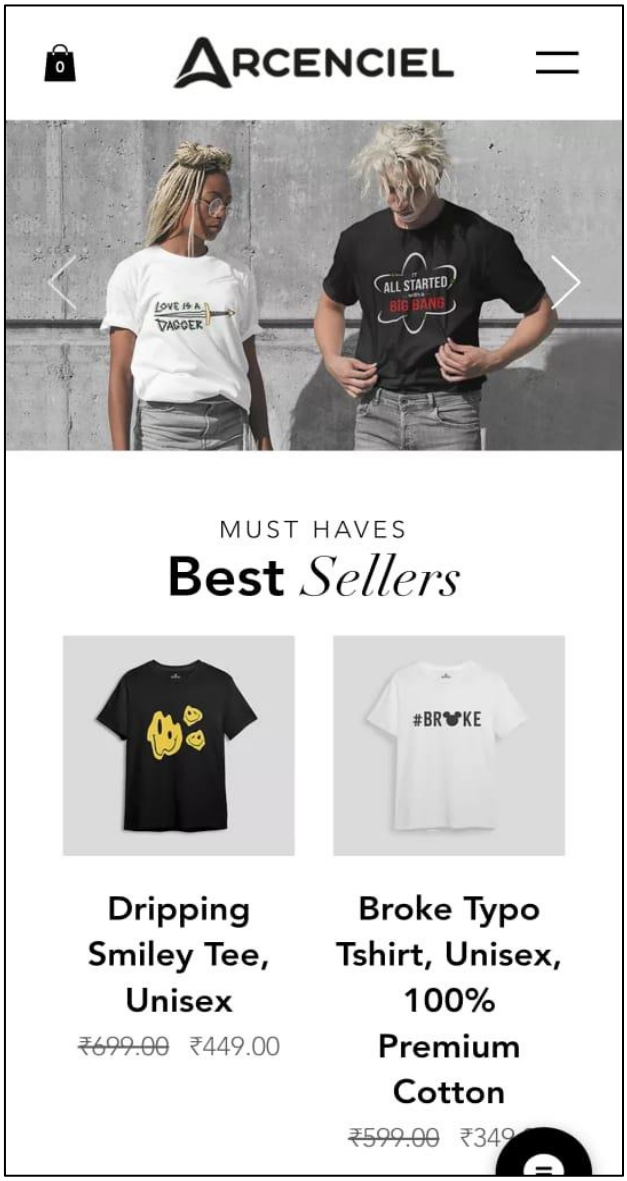

Figure 2: Home page

Figure 3: Product page

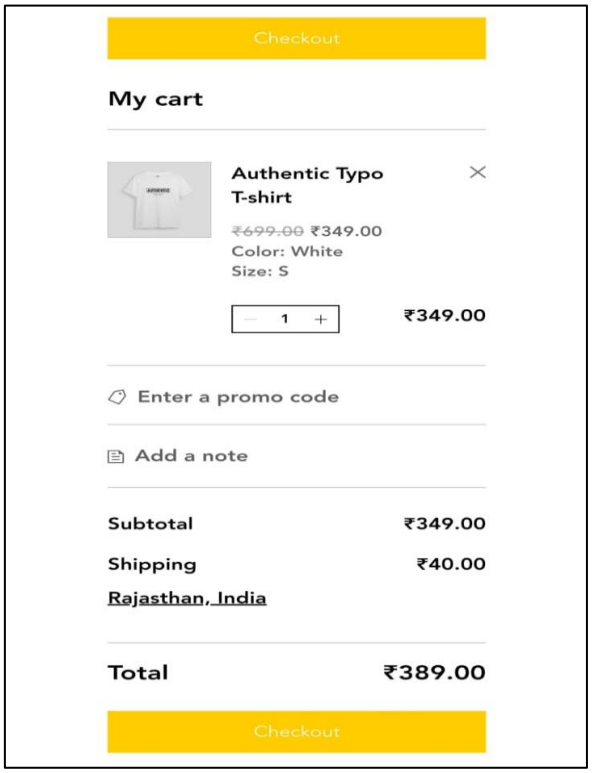

Figure 4: Cart page

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7. SET UP AND SETTING UP

A. Setting up Spree web application
1) Before starting the Spree application the following applications must be installed:
a) Unix bases OS
b) Mysql5
c) Ruby 1.8.7 or 1.9.2
d) Ruby on Rails 3.0.9
e) ImageMagick (library for image processing; used for generating different sizes of images)
2) Once these applications are installed then the following steps are needed:
a) Copy the e-commerce application code.
b) On UNIX terminal go to e-commerce application folder
c) Run bundle install [Make sure machine is connected to internet because this command will install all dependencies for the application]
d) rake db: create [It will create MYSQL database]
e) rake db: migrate [It will create all tables]
f) rake db: bootstrap [It will load sample data in database]
g) Rails S [run web application server]
h) Use frontend and admin panel of Spree application for exploration
B. Mobile applications
1) Deploy to iOS:
a) Run Xcode and open iOS version of PhoneGap project
b) Deploy to actual iOS device
- Add your device to apple provisioning portal (remember paid developer account is needed)
- Select device to be used in execution list and Click run button

c) Or run on iPhone simulator
- Select iPhone simulator in execution list and click run button

2) Deploy to Android:
a) Download and install Eclipse Classic.
b) Download and install Android SDK..
c) Download and install ADT Plugin for Eclipse.
d) Download the latest copy of PhoneGap and extract its contents.
e) Setup Project.
f) Merge our HTML code to be I used.

8. DISCUSSION RESULT

E-commerce functionality was provided by installing a Spree application on a web server. The research suggested that mobile phones such as Android-based Smartphones, iPad and iPhones were appropriate for installing the PhoneGap application on them. The research also illustrated that using JSON-based web services promoted data communication between PhoneGap and the Spree application. The native support of JSON in JavaScript and it being comparatively lightweight was the significant reason why this report suggested JSON should be selected instead of the XML data format.

The actual Spree applicationprovided several web services but the research forewarned that these web services would not be feasible with every application. For instance, often there was too much unneeded information on a products listing web service. For this reason and that of network latency, not only did an application slow down but in response to the JSON object. The processing of JSON in JavaScript was increased. The research also suggested that the required data such as the ID, title, the short description and slug were obtained by overriding that particular web service.
As the research elaborated, depending on the screen size of mobile phones, it was often the case that image sizes for the Spree application were either too large or too small. Fortunately, the paperclip library that is available in the Spree application was able to regenerate all the images after their smaller sizes were introduced. The research also suggested that for the UI components of a Smartphone, jQuery and jQueryMobile should be employed. The research also illustrated the fact that no image was used for UI components but rather CSS3 features were used, making this library the preferred option. The research indicated that jQuery guidelines were used to create a robust code and jQunit, which is a jQuery-based unit testing library dedicated to unit testing.
According to the research a PhoneGap template was used to make an Xcode project once this functionality became functional on WebKit based browsers such as Chrome and Safari. CSS, HTML and JavaScript were embedded into this project template. The research suggested that iPhone and iPad simulators had to be used for testing until it was definite that they worked appropriately. Once they indeed workedappropriately, the application was then tested on the actual device by purchasing a $100 Apple developer account. The research highlighted the fact that Android Smartphones followed a similar process. Android development and the Eclipse IDE plug-ins had to be installed in this case. The research suggested that an Android template was then used to make an eclipse project, merging CSS, HTML and JavaScript into the template as well. Ultimately, the research indicated that the Android simulator had to be utilized tocompile and test the application. This was the process used to execute the application and ensure its success.

9. CONCLUSION AND FUTURE DIRECTIONS

Mobility of people and technologies are key factors in today's economy. Mobile applications are of utmost importance when companies market their products or services. Mobile phones have generated an incredible opportunity for accessing the Internet, while m-commerce has increased the level of using a mobile phone for business. Applications for electronic and mobile commerce are, however, developedsufficiently to cover all aspects of the market. The ideal applications do not distract the user from his/her intent and they provide on appropriately level of security, accessibility and speed. Screen size, inputdevice, urgency, task based interfaces, and design are important aspects that developers have to consider when designing

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mobile phone applications. Such applications should be implemented on different operating systems, whether using JavaScript, CSS3 or HTML5, or combining these three together. The installation of a Spree application allows partial web services to function because not all applications may work with these web services. The device screen size proved to be of great importance but the Spree application solved these issues. Simulators for iPhone and iPad represent an excellent way to test applications.

A. Future directions

In order to bring this research from its current analysis on the basic model to an advanced level, the points listed under the scope of excluded and discussed below must also considered.

Payment transactions need to be made through a more secure and safe channel like UPI, which will ensure a safe and sound transaction system. Transaction payments should be password protected or should have a PIN code that confirms its reliability. Even if the gadget used - for example a cell phone - is lost, stolen or otherwise incapable of being used, consumers would not have to worry about theft or mismanagement of money. Furthermore, they can obtain a password to improve protection and security.

Products listed on the product information pages should have paged display pictures, which will be more appealing to the viewer. The product should be listed with information such as the product specifications: price, part number, technical details, features and packaging details. Yet some product information pages do not provide this information which is very inconvenient for the consumer and does not present a professional image.

The applications should allow users to change the web services' URLs. Settings should be made flexible so that users can improvise and access the web services they require by changing settings. The application should allow the user to add multiple sources for the same web server by cell phone so that the user can code flex, which means that a user can develop and deploy cross-platform Internetapplications being run on cell phones. This implies that a mobile application should be able to locate a list of products from different remote applications, which provide the same web services being supported by a mobile application.

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