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DEPARTMENT OF COMPUTER SCIENCE



ONLINE SHOPPING MALL

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STATEMENT OF AUTHENTICITY

I have read the university regulations relating to plagiarism and certify that this report is all my own work and do not contain any unacknowledged work from any other source. I also declare that we have been under supervision for this report herein submitted.

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SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision laid down by Christian Service University College, Kumasi-Ghana.

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ABSTRACT

Online shopping provides a good example of the business revolution. E-commerce is currently experiencing a period of rapid development; the large number of Internet users provides a good foundation for the expansion of the online shopping market. In this study, perceived usability, perceived security, perceived privacy, perceived after-sales service, perceived marketing mix, and perceived reputation were used for analysis. This research was conducted by using the primary data source, and the survey method was employed in the research. This research found that there were relationships between the perceived usability, perceived security, and perceived privacy, perceived after-sales service, perceived marketing mix, perceived reputation and consumers' attitude to adopting online shopping. However, only marketing mix and reputation were found to significantly influence consumers' attitude to adopt online shopping. The findings helped in understanding consumers' online purchase behavior.

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To my family, I say a big thank you as part of the journey of this study, my gratitude to the chaplaincy of Christian Service University College for their words of inspiration.

GOD BLESSES YOU ALL.

DEDICATION

This work is dedicated to the Almighty God for protecting and guiding me through my research work and to the Obeng Badu family. It is also dedicated to all who have provided the needed guidance, encouragement and support to make this study a success.

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CHAPTER ONE

INTRODUCTION

1.0 INTRODUCTION

Online shopping has become a popular way for consumers. This new innovative pattern of shopping not only brings a great number and wide range of merchandise to consumers; it also offers a huge market and numerous business opportunities. In the past twenty years, we have witnessed the rapid development of the Internet and the geometric growth of the Internet users. Although the number of Asian Internet users was the highest in the world, the Internet penetration rate of Asia was lower than elsewhere. The penetration rate of Internet users in Asia was just higher than Africa, as at 30 June 2010, according to the Internet World Statistics (2010). The highest was North America with a penetration rate of 77.4%. We have been clearly feeling the tremendous change that was brought by the Internet, which has penetrated every corner of the world. From communication, education, and finance to entertainment, we can clearly see the application of the Internet. The Internet has resulted in a great revolution for every industry. The working efficiency, information transmission, and even cultural exchange have been unprecedentedly improved. Without doubt the Internet has influenced our lives deeply in which it plays an indispensable and irreplaceable role.

1.1 PROJECT OBJECTIVES

This is mainly about 'how to do' and also will help provide an insight to the whole system design and implementation of the online Shopping Mall. The system has the following as the main goals inasmuch as the project is concern;

- Implement the different types of user – Administrator, Customer and Vendors.
- Implement shopping cart for checkout and payment procedures.
- Management of products and orders.

1.2 PURPOSE OF THE PROJECT

The purpose of this project is to create a functional website for people to be able to both buy and sell goods. Users of this website will be able to create an account which will supply them with an easy to use interface in order to both purchase items listed by other users and sell items to other users. The basic requirements state that the users will be able to securely register and manage their profiles. They will also be able to navigate through available items by category, or by using a well-executed search function. Finally, a payment mechanism will be built in to allow the use of credit cards and checks to purchase items in order to abstract away one of the most difficult parts of setting up an on-line store or mall. The website will be maintained and managed by administrators. They will have the authority to approve and reject requests for new shops and maintain various lists of shop categories. The administrator will also be able to control customers and visitors actions.

1.3 RESEARCH QUESTION

As the issues of online shopping has been demonstrated, the whole process of online purchase is through the Internet, in the virtual environment, there are many uncertain factors that are difficult for online consumers to control, such as online security, privacy protection, and after-sales service. Some people believe that these problems could directly influence their attitude in adopting online shopping. Many people believe that it is too complicated to process online

shopping and that it is impossible to physically check the quality of the merchandise. Moreover, fraud has also become a serious issue, as a matter of fact a treat that has beset e-consumers. Thus, through the research, questions of below came across;

- What is the level of consumers' attitude towards online shopping?
- What are the factors that could influence consumers' attitude to adopting online shopping?

1.4 LIMITATIONS OF THE PROJECT

The most obvious limitation of the study is its cross-sectional design. Therefore, firm conclusions about the directions of causality implied in the model cannot be drawn. Thus, relationships among variables must be interpreted with caution. Interpretations of models using structural equation modeling are also not proof of causality. True causal inferences can only be drawn testing models using longitudinal data. This is especially important for a subject like online shopping behavior that is not static but is a developmental process that changes over time. Since only self-report measures were used, common-method variance and response consistency effects may have biased the observed relationships. However, perceptions of usefulness and ease of use are not objective measures. Because perceptions are necessarily self-reported, such measures are the most effective at measuring these cognitions. Therefore, this is an unavoidable criticism of the study of online shopping behavior. The data collection was confined to only five relatively large cities of India since constraints were faced during data collection. The replication of the study at different regions of India would enable better generalize ability of the findings of the study. At the same time data collection during real shopping experience could have elicited

better responses improving findings. The sample for the present study comprised of 509 shoppers of Electronic Gadgets and Home Appliances. This sample is only a very small proportion of the entire population of retail shoppers in the country. Therefore, research studies with much larger sample size would be required to ensure appropriate generalization of the findings of the study. The study was limited to individual shopping behavior. India being a collectivistic country, most of the shopping happens in a family set up. Consideration of family shopping behavior might have revealed interesting findings. The construct of shopping orientations was measured through an instrument developed by a researcher in other country. Though the instrument shows scientific reliability and validity, yet this is the first study for which it has been adapted in India and more studies are required before it is established as an acceptable tool for exploring Shopping orientations. The present study has relied largely on quantitative methodology of data collection (though qualitative methodology was used to a limited extent) and is therefore restrictive. Therefore, more of qualitative methodology of data collection should be undertaken in future to provide wider perspective to the present study. For instance, the research design can employ case study methodology or content analysis to provide a holistic picture to the given subject.

1.5 SPECIFIC REQUIREMENT

The design document consists of State Machine/ Activity Flow Diagrams, Class Design, Internal Data Structures, Architectural design, User Interface and Testing.

Purpose;

- Precise understanding of the requirements and constraints related with the programming language, and User Interface.
- System decomposition into manageable units or modules.
- Abstraction of the system implementation with the help of classes.
- Provide a basic outline of the User Interface of the online shopping mall.

The report is the result of the design phase. The class diagrams and activity provide a schematic representation of the various classes used and design flow respectively. The diagrams were prepared using IBM Rational Software Architect. The Consolidated Activity diagram provides a model to visualize the flow in the system as a whole. The class diagrams also hold the data structures that would be used and also their data types. The mall will be implemented using PHP as the programming language. My SQL database will be used to store vital user, product and order information.

1.6 PROJECT SCOPE

For this project we want to define what will be done such that the final product meets expectations. With this in mind, the following are the parts that will be completed:

- Secure registration and profile management facilities for customers
- Browsing through the e-Mall to see the items that are there in each category of products like Apparel, Kitchen Accessories, Bath Accessories, Food, Electronics, Services etc.
- Adequate searching mechanisms for easy and quick access to particular products and services.

- Payment mechanism and gateway for all popular credit cards, checks and other relevant payment options.

In addition to the above mentioned basic functional requirements for the project, then also plan for the following supplementary requirements as well where a shopping cart is created so that the customers can save their items and checkout later with the entire shopping cart. A sorting mechanism for products in each category such as: most purchased, price from low to high, and newly listed. Also was there a plan for a feedback mechanism for the products from the customers. Feedback can also be given on a particular vendor and the entire mall. For maintaining the robustness of the system and also for the safety of customers and vendors, the following is ensured in the study:

- Overall system quality should be good and it should be a smooth experience for both vendors and customers.
- The system should be easy to maintain. We will be using object oriented programming techniques.
- Customers and vendors details will be secure from outside intruders.
- Safe payment gateways will be used and all the security checks will be made to ensure a safe deal.
- The system will remain up at all times. The hardware and software should be robust and will be tested extensively.

1.7 SIGNIFICANCE OF THE PROJECT

The research will have significant impact on the practical applications of intelligent-agent-based e- communities of buyers and vendors in the industry. It will also have a significant impact on the broad social norms underlying the design of agent systems. Many current e-commerce

applications exploit agent technologies to misrepresent online products and services or to surreptitiously gather and mine personal data. By focusing on consumer protection and privacy principles as a significant design feature, our research will re-orient the way that responsible technology creators conceive of the e- communities that they are not only constructing but also populating.

On the other hand the recommender in the E-Commerce environment acts as a specialized seller for the customer. The recommenders mainly rely on user interfaces, techniques of marketing and large amounts of information about others customers and products to offer the right item to the right customer. The recommenders are the fundamental elements in sustaining usability and site confidence. E-Commerce recommenders are gradually becoming powerful tools for e-business.

CHAPTER TWO

REVIEW OF LITERATURE

2.0 INTRODUCTION

This chapter consists of review of literature related with influence of online marketing on consumers and also deals with business perspective. Then it reviews the current issues in online marketing and factors affecting adoption of online marketing. Further it provides a critique review of miscellaneous studies related with online marketing. This is followed by highlighting the research gaps and contribution of the present study.

2.1 INFLUENCE OF ONLINE MARKETING ON CONSUMERS

2.1.1 Online Shopping Behavior

Identifying pre-purchase intentions of consumers is the key to understand why they ultimately do or do not shop from the Web market. One stream of research under online consumer behavior consists of studies that handle the variables influencing these intentions. A compilation of some of the determinants researchers have examined are: transaction security, vendor quality, price considerations, information and service quality, system quality, privacy and security risks, trust, shopping enjoyment, valence of online shopping experience, and perceived product quality. The lists of factors having a positive or negative impact on consumers' propensity to shop do not seem to be very different from the considerations encountered in offline environments. However, the sensitivities individuals display for each variable might be very different in online marketplaces. Factors like price sensitivity, importance attributed to brands or the choice sets considered in online and offline environments can be significantly different from each other.

Uncertainties about products and shopping processes, trustworthiness of the online seller, or the convenience and economic utility they wish to derive from electronic shopping determine the costs versus the benefits of this environment for consumers. Further studies aiming to complete the full set of factors influencing consumers' repurchase intentions are still much awaited.

2.1.2 The Online Purchasing Process

Many studies frequently mention that there is a vast amount of window shopping taking place online but the number or the rate of surfers who turn into purchasers or regular buyers are very low. This might happen because of the lack of consumer intention to purchase an offering from the online environment at the outset. It might also happen because of various problems that arise during online shopping driving the consumer to abandon the task in the middle. Therefore, while one stream of research should identify the reasons behind the purchase reluctance of consumers, another area of concentration should be why people abandon their shopping carts and stop the purchasing process in the middle. Such attempts can help to understand how to turn surfers into interactors, purchasers, and finally, repeat purchasers by making them enter into continuous interaction with this environment.

2.1.3 Consumer Satisfaction and Loyalty in the Online Market

Investing in consumer satisfaction from the online experience and creating brand or site loyalty are critically important for companies that want to have a long run presence on the Web. There are two approaches taken to induce loyalty into consumers in an online context.

One approach is to focus on concrete factors. For example, creating a convenient and a well-designed online store and offering secure transactions are the keystones of satisfying e-

consumers. However, all satisfied consumers do not become loyal. Personalization attempts and increasing the social value of online experiences are very important to make consumers build strong brand relationships in the cyber world. Although there are opposite argues, some studies find that personalized Web sites and customer communities are highly influential on the consumer brand relationship especially for experienced Internet consumers. Besides, businesses that can create trust and increase the perceived value of online shopping can turn their satisfied consumers into loyal ones in the e-marketing environment too. The Online environment accommodates so many opportunities for creating loyalty that even offline offerings can be effectively facilitated with supporting after sale services provided through the Web.

2.2 THE BUSSINESS PERSPECTIVE

2.2.1 Important Issues about Firms

Just as much as the effort spent to understand the consumer perspective, significant level of attention has been directed toward the firm side of the online marketing world. The most conspicuous subtitles about the firm-perspective of the topic are handled in this section.

2.2.2 Scope and Type of Activities Firms Can Perform in the Virtual Environment

Making use of the information based advantages of the Web is one major transactional area. Companies can communicate continuously with their business partners and consumers, get and disseminate information, and solve business problems immediately and effectively through the use of advanced information technologies; thus exchanging sectorial information so easily becomes an important source of efficiency for any online company. The Web can also be used for communicating company image and philosophy. Firms can establish an online presence, give

information about themselves and their offerings and promote their philosophies very effectively through the Web. Companies can perform almost anything they do in the offline market in an online context. A compilation of the commonly mentioned activities include taking and placing orders, following new business opportunities, B2B marketing, consumer research, promoting and advertising offerings, increasing brand awareness, communicating with other firms, bypassing traditional channels and augmenting traditional markets, boosting service and auctions.

2.2.3 The Strategic Value of Online Marketing

There is a shift in the current online vision of firms from “how to get in the game” to “how to play the game”. However, many studies emphasize what firms can do online and the advantages and disadvantages they will experience, adequate effort has still not been shown toward formulating a strategic perspective of the online marketing environment.

2.3 ADVANTAGES AND DISADVANTAGES OF GOING ONLINE

The excitement created by the unique and innovative characteristics of the Web created a tendency to focus on the advantages created by the medium at first. However, contrary points also emerged rapidly and the pros and cons of going online began to be discussed simultaneously. The operational advantages of being online mentioned by many studies create an extensive list: becoming easily accessible from different parts and time zones of the world, being introduced to global business opportunities, decreased red tape in international operations, possibility to conduct personalized, effective and interactive advertising, the availability of marketing research and analysis tools, lower capital and overhead costs, lower operating costs, decreasing cost of capital, tax advantages, increased efficiency in business-to-business

transactions, flexible ordering, better order tracking, leveling the playing field with other firms, enhancing the firm's image by appearing to be on the cutting edge of technology, and reaching a larger audience of prospective clients.

However, the disadvantages of going online are just as prevalent and, therefore, the authors of studies that discuss the pros of e-business has shown an equal effort to note the negative sides of going cyber. Privacy and security problems, various operational, strategic and cost-based disadvantages, the difficulty of controlling online transactions and measuring outcomes, high costs of entering e-business, the difficulty of setting prices at an international level, intensified competition, cultural differences, differences in international trade laws, changes between the telecommunication infrastructure and technical standards of different countries, high costs of individual delivery, the difficulty of dealing with virtual transactions, problems about disintermediation, the fear of technology most consumers experience, the lack of socialization and tactility are only some of the most commonly encountered disadvantages of becoming an online business.

Therefore, companies need to implement a strict structure to determine the costs and the financial outcomes of going online in order to be sure that the pros exceed the cons for their business and firm. The list of the advantages and disadvantages of becoming an online business is quite long. For many companies, Internet based plans are not yet a priority because of costs, system incapability and the fact that their external partners cannot participate in the e-business environment yet. In other words, e-commerce is the sweet spot but transforming into a real electronic business is the critical and difficult part of all this excitement.

2.4 THE ANTI-SOCIALISING DEBATE

One of the major paradoxes of technology is that major technological advancements create isolation while assimilating people with a totally new and different world. This is exactly what happened with the diffusion of the Internet phenomenon into the lives of consumers. Past research about automated retailing systems show that, this kind of shopping is a depersonalized experience and that consumers have a negative attitude toward this effect. Besides, this problem cannot be limited to shopping experiences. At a broader level, it is also about the weakening of social bonds because of the loyalty individual's transfer to the communities in the virtual environment. There are counter views that find this effect minor and argue that most individuals will slowly abandon "hanging out with virtual souls" in the Web environment. Thus, it is possible to claim that the Web has absorbed some of the social value of shopping experiences but has successfully replaced them with "techno-social" ones. Companies can make attempts to build relationships and create online communities to replace the social exchange consumers make in real life shopping scenarios. The ease of building strong relationships between consumers and companies can be attributed to the customized communication between the parties which cannot be achieved with mass media. However, this still does not resolve the question about whether the Web can fully replace the social value of online shopping. Meanwhile, it is important to remember that marketers are just as threatened from the loss of social interactivity as consumers. The benefits companies might lose as a result of less social shopping could be another very interesting issue to work on.

2.4.1 Ethical Issues, Privacy and Security Concerns

The Internet was originally designed to be an environment accommodating a free flow of communications, thus, the legal framework for Web-based transactions are incomplete, unclear or contradictory .There is no governing body in this platform and handshake standards are used, which can work only as long as users have an implicit agreement to cooperate and show respect for one another . Although there are many governmental and non-governmental units working to develop generally applicable legal impositions and rules for the cyber market, ethical concerns and the perceived risks about privacy and security problems remain as the single most important factor deterring consumers from engaging in commercial transactions in the online market without hesitation.

2.4.2 Factors Influencing the Consumers' Online Information Search

The Web allows for the amassing, analysis, and control of large quantities of specialized data, which enables comparison shopping and speeds the process of finding items. The Web also facilitates trials and can provide instant gratification; customers can test products online, which may stimulate purchase. Ease of use of technology, effectiveness of online search, and user satisfaction are antecedents of the perceived benefits of information search. Each of these factors is shown in Figure below and discussed next.

Figure : An Online Information Search Model

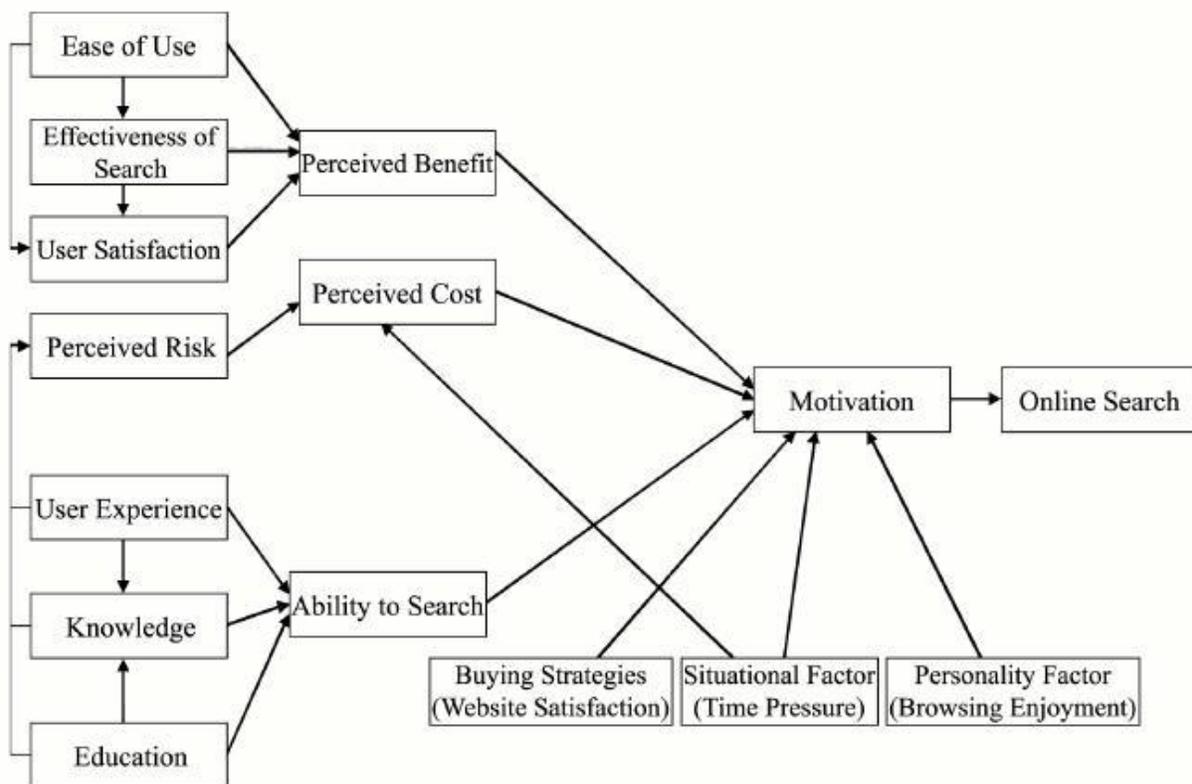


Fig 2.0

Ease of Use

Ease of use in the context of online search includes Web design, format, template, and user-friendly program. One key feature is interactivity, which allows consumers to personalize their information search, thereby increasing the perceived benefits of a search.

Effectiveness of Search

Effectiveness of search can be defined as the consumer's ability to acquire and utilize relevant information from the external environment. Interactive decision aids on the Internet (e.g. a wide variety of software tools including search engines), help consumers locate useful information, such as screening alternatives and organizing pieces of messages to form a viable consideration set.

User Satisfaction

User satisfaction can be defined as an individual's positive and/or negative reactions to the use of information or computer technology. Information search requires less effort online than offline. For example, it takes far less time and effort to visit a virtual store than a local retail outlet. This great flexibility, in the electronic shopping environment, increases consumers' satisfaction.

Perceived Cost of Information Search

Perceived costs consist of monetary, temporal (time), mental, psychological, and behavioral (physical) effort required in a search process. Studies found that search costs negatively affected search activity as predicted by theory. After all, online search is not effortless. In fact, it can be stressful as some may experience information overload. Shopping online is perceived to be quite

risky. Perceived risk includes fear of technology use and information overload, feeling of uncertainty and confusion, feeling of insecurity when engaging in online transactions (e.g. credit card fraud). Because technology for secure transactions (e.g. online payment) is not yet mature, security and privacy are major issues that should be addressed satisfactorily in this medium. Hence, perceived risk will induce a perception of increased cost in searching online that discourages motivation to search information online.

Ability to Search

In addition to perceived benefit and cost, ability to search is a major determinant of information search online. Capability to search is related to *knowledge education* and *experience*.

Buying Strategies

Buying strategies can be conceptualized as either simplifying or optimizing in information gathering. Kiel and Layton (1981) found that consumers satisfied with their previous purchases searched less information for the next purchase. Also, people seem to visit fewer stores online despite the fact that they are “just a mouse click away” from other stores. This is consistent with the idea that consumers are limiting their search to just a few of the most popular sites.

Situational Factor

Urgency and time pressure are situational variables. An immediate need shortens purchase decision time and therefore reduces information seeking. Time pressure reflects the consumer’s perception of time availability and sacrifice (e.g. ability to do something else or delayed use of the product).

Personal Factor

Research found that information search is positively related to enjoyment of shopping. In the internet environment, the extent to which potential goal-directed shoppers can find relevant and reliable information with ease should be a key determinant in their repeated use of the Web. Those browsing for fun (intrinsic enjoyment), without any shopping purpose, will be less concerned with ease of access with reliable information. However, they may be more concerned with whether the process gives them sufficient stimulation, new interests and fun to keep them coming back.

Motivation to Search

Here I define motivation as the desire to expend effort in gathering and processing information, which is characterized by both direction (which pieces of information are collected and processed) and intensity of the effort (the level of goal-directed arousal). Internet users appear to be primarily motivated by communication/ information needs, but do not necessarily feel shortage of time compared to non-users. Perceived cost and perceived benefit of have an impact on information search by influencing motivation to search. That is, lower (higher) search costs and higher (lower) search benefits can increase (decrease) motivation to search. As discussed earlier, the ability to search seems to have appositive effect on the motivation to search. Consequently, the effects of perceived benefit, perceived cost, and ability to search should be mediated by motivation to search. Early e-shoppers were largely bargain hunters, expecting the lowest prices as a reward for their risk taking. Amazon and other early e-businesses used the lure of cheaper prices to attract the shoppers online. Things have now moved on and, according to the Goldfish e-Tail Price Index, online prices rose by 4 percent in the year up to February2002. The

Internet has unique features for the communication of promotionally priced fares to both business and general travelers. The use of the Internet by airlines to communicate information is becoming prevalent, from relatively slow beginnings in the middle years of the decade. This relates both to hard information, in the form of schedules and the availability of fare information, and to the softer areas of more general company information. Web presence is itself significant but the design of the site even more important. From a consumer perspective it must be relevant and useful, with easy navigation features so that the time spent on a visit is fruitful. Moreover, the site should invite revisiting is a critical difference in the initial motivation to visit and to contact again. In principle, the site offers a one-to-one relationship to the visitor and should have immediately communicable positive features.

CHAPTER THREE

METHODOLOGY

3.0 INTRODUCTION

Methodology is the system of methods followed in a particular discipline, the branch of philosophy that analyses the principles and procedures of inquiry, methodological analysis applied in this study.

3.1 TECHNOLOGIES TO BE USED FOR THE PROJECT

In order to credit the tools we will use and to provide some Insight as to what is needed to create a project like this, the list below will highlight all software and technologies used in order to create the Project and what it was used for.

Requisite Pro - Used to track progress on the project and to manage Requirements.

Eclipse - Integrated Development Environment used to write and Debug code.

My SQL - Database management system.

MS Project - Project management software which is used to develop Plans, assign resources, and create time lines.

SVN - Revision control system used to keep track of revisions to the Project.

Junits - Used to create unit tests for our Java programs.

Maven - Used to build, manage, and integrate our project.

RSA - Used to model our desired architecture for the project.

3.2 OVERALL DESCRIPTION

3.2.1 Product Perspective and Stakeholders

The Online Shopping Mall will provide easy access to consumers to products from different vendors without having to walk into the particular stores. It will also help vendors by reaching out to more and more customers through internet. It will be a win-win situation for all.

The software will be designed to be easy to use with very good and intuitive CHI (Computer Human Interface) and reliability. It will be available to customers and vendors round the clock.

The support will be added for every Operating System (Windows / UNIX / Mac). On-line shopping malls have become an essential link between products and customers. In our project, we will be developing an online shopping system for all of our stakeholders. There will be two sets of stakeholders: external stakeholders and internal stakeholders. External stakeholders consist of suppliers, banks, governments, deliverers, shareholders, investors, and customers. The primary requirement is the ease with which they can find, transport, and purchase needed items. The internal stakeholders consist of employees, marketers, managers, owners, and developers. Their primary requirement may be profit, both short and long-term. For these reasons, each group of stakeholders will want the website to emphasize high-margin items. Managers, another group of stakeholders, will require the application to track visitors. The application's developers are stakeholders too. They may want to use new development technology to keep up to date. Our team strives to look for improvement in all related business areas so that members can benefit from its services and obtain the best value for their interests.

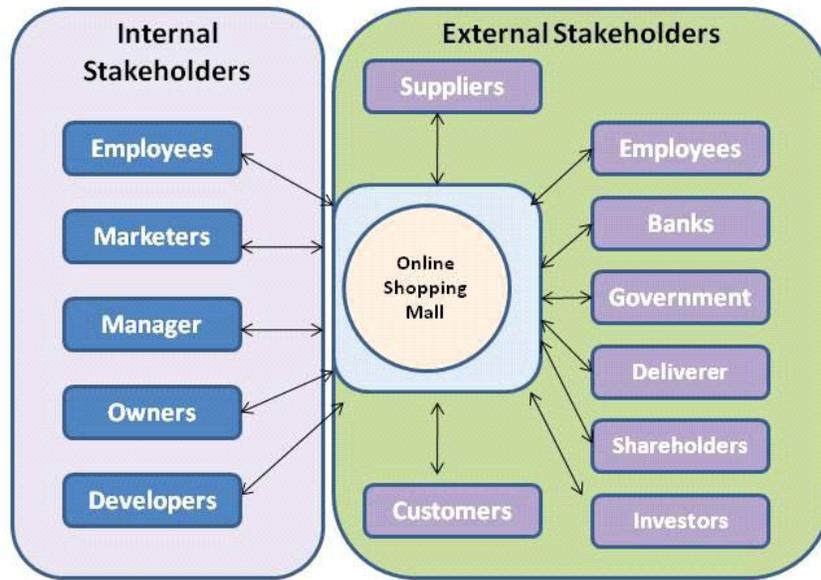


Fig 3.0

3.3 PRODUCT FUNCTIONS

3.3.1 For Users

Basic Account features are required for both Customers and Sellers.

This includes

- Registering
- Login
- Forgot/change passwords
- “Account Details” section containing contact details

3.3.2 Browse and Search:

User should be able to browse through the entire items list by modifying certain selection criteria's such as:

- Item category,

Price range selection,

Item/Seller Rating based selection.

In addition to providing the above mentioned search feature, user should also be able to search for a particular product. This is applicable to all stakeholders (Guests, Customers, sellers and Administrators)

3.3.3 Shopping

- Add / remove items to their shopping cart/list
- Customer should have the option to buy desired item(s) sold by one or more sellers.
- Customer will have access to finalize product lists of items she wishes to buy and make the final payment.

The website should support all popular credit cards and make sure that the transaction happens securely.

3.3.4 History

- Shopping history: List of items previously shopped
- Item View history : List of recently viewed items
- Search history: Recent search criteria used by a customer

3.3.5 For Sellers

- Account Setting
- The requirements specified in the Accounts section in user requirements.
- Shop installation request.
- Sellers should get authorization from Administrator before selling products/installing shop(s) in the mall.
- Transaction history
- Status of all the transactions for a seller.

3.3.6 For Administrators

- Account Setting
- Authorizing shop installation requests
- Updating product information
- Monitoring transactions and keeping track of its status
- Update Seller/Customer/transaction information (In case of system errors/complaints)

3.4 USER CLASSES AND CHARACTERISTICS

The system will be implemented for following users:

For Customers/Visitors

A customer will be able to purchase items through the shopping mall. She will also be able to see her purchase history. A secure session would be maintained and a user name and password would be allocated for every customer. Customers won't be able to make changes to the system. She will only be able to browse through the items using search function and checkout them. She

can then purchase it online via the secure payment method and by providing her billing address and shipping address. Customers will also be able to provide reviews for various items and rate them.

For Administrators

An administrator has more privileges than regular user. Main functions of an administrator will be the management of customers and vendors. Administrators can view, modify and delete the personal information and passwords of members if necessary. They would also be able to search information about members and vendors. Administrators will also be able to view the invoice list of placed orders, orders that have shipped, and disqualified orders.

Vendors

Any user can submit a shop creation request through the application. After the approval of the request by the Mall Administrator, the requester will be notified. The Shop Owner will be responsible for setting up her products and managing her shop. The shop owner will be able to add, remove or update items from her shop. She will need to assign items to categories listed by the Administrator so that the management of products in the mall is easy. The Shop Owner can also decide to close the shop and remove it from the mall.

3.5 DESIGN AND IMPLEMENTATION CONSTRAINTS

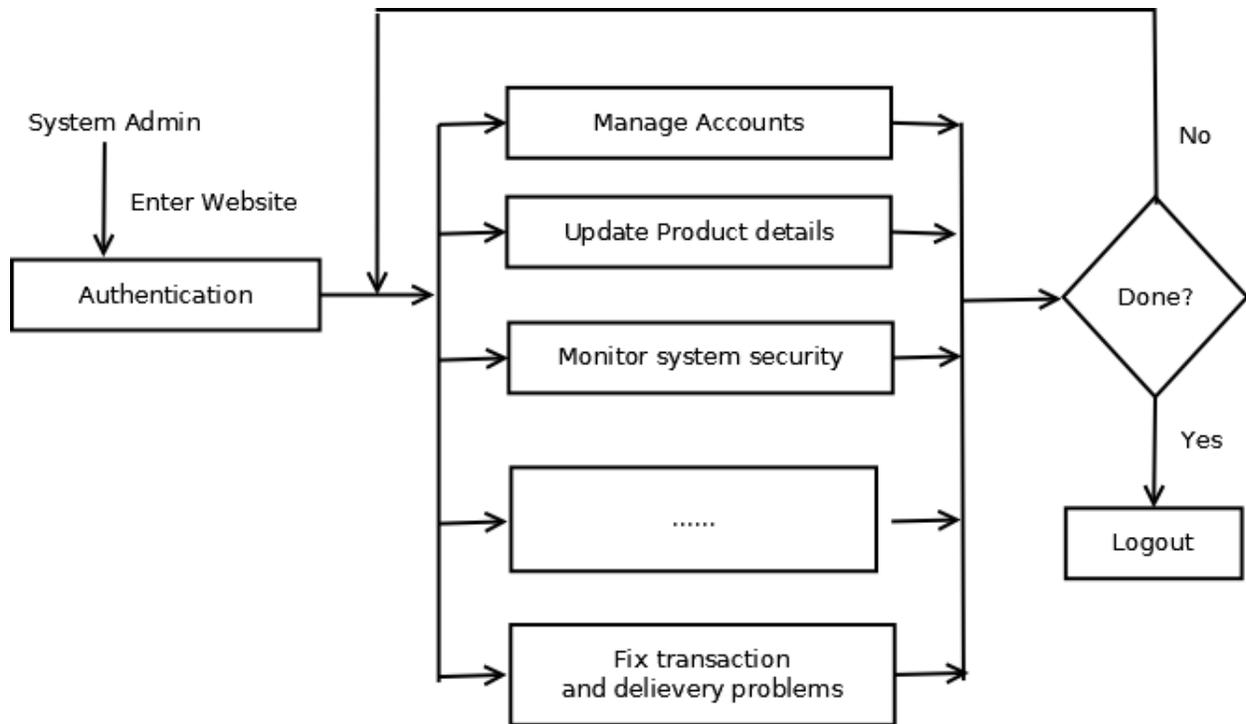
In order to create good software, design constraints and other contingencies need to be addressed. In this section we will enumerate any and all considerations that must be made when creating this project.

- Must be coded efficiently enough to run well on provided server hardware
- Client side code and/or web pages must be able to run efficiently on low end hardware

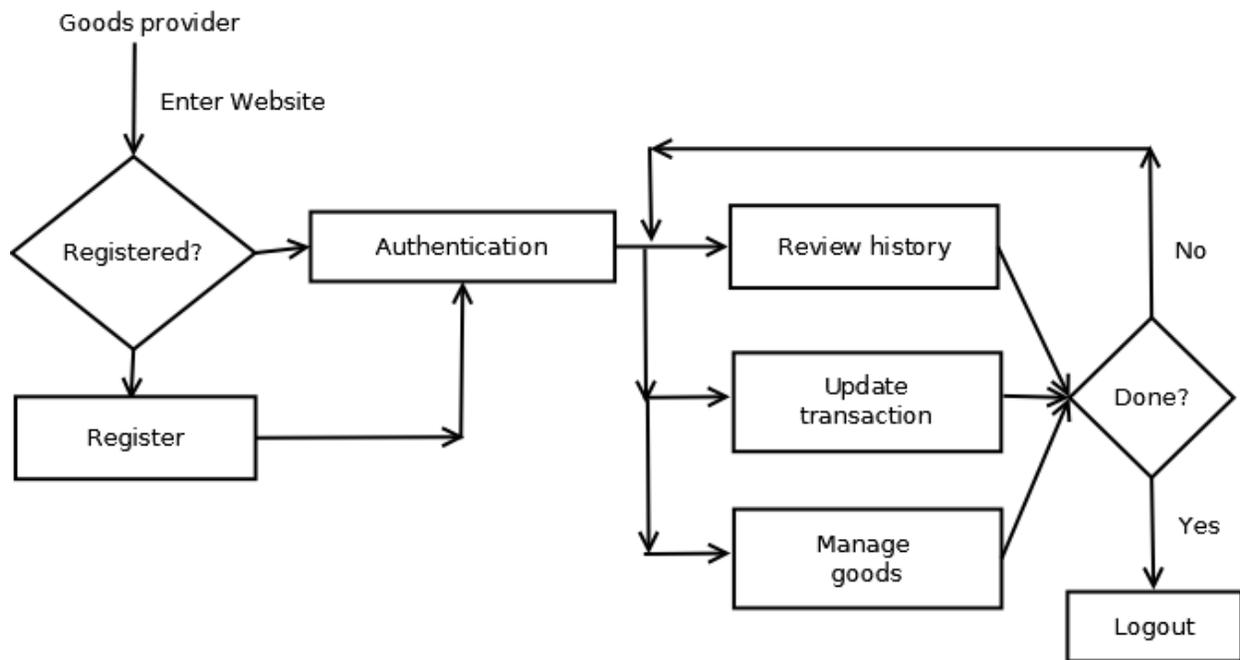
The database will be created and maintained in a way that makes it of reasonable and manageable size.

3.6 USE CASES AND ACTIVITY FLOW

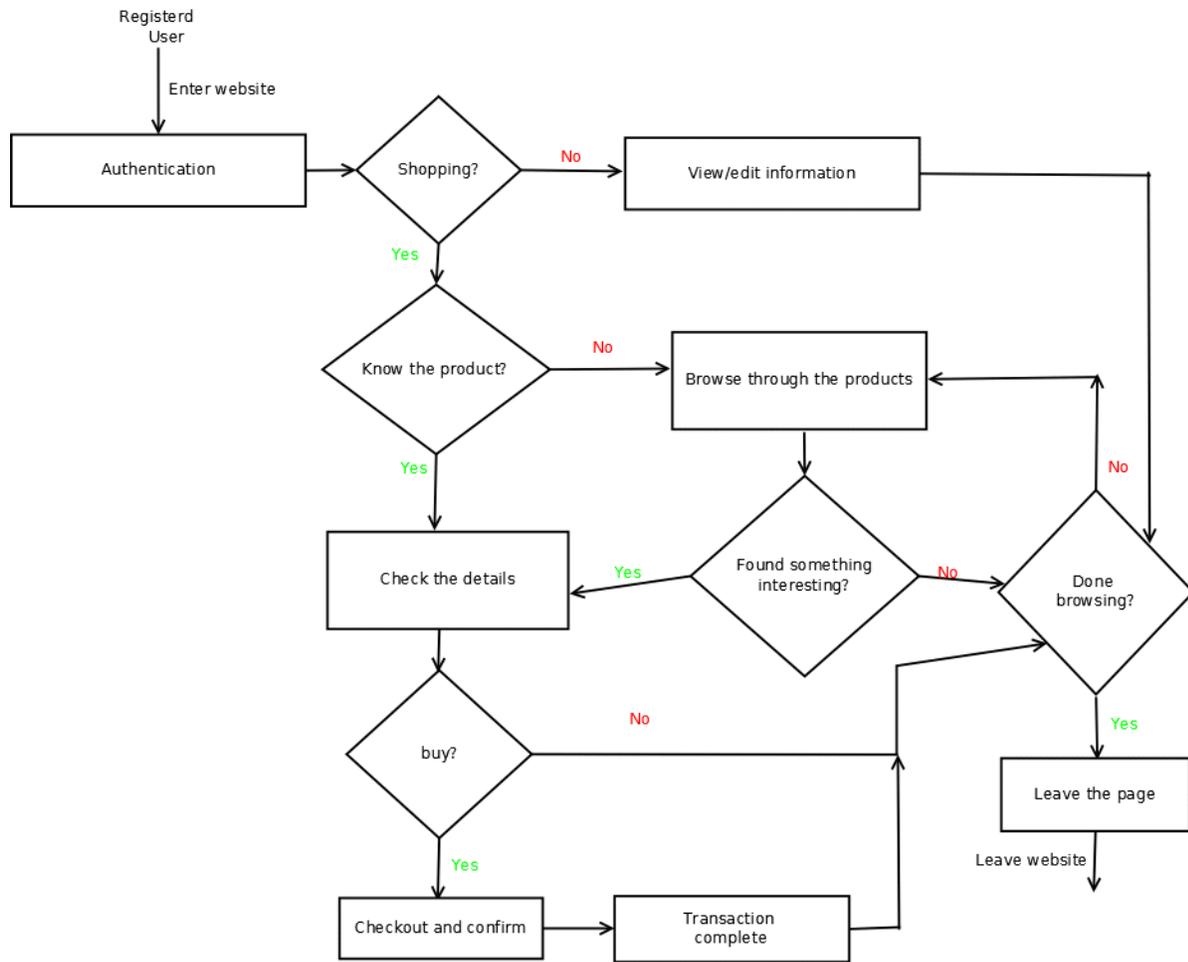
Activity Flow associated with the system administrator.



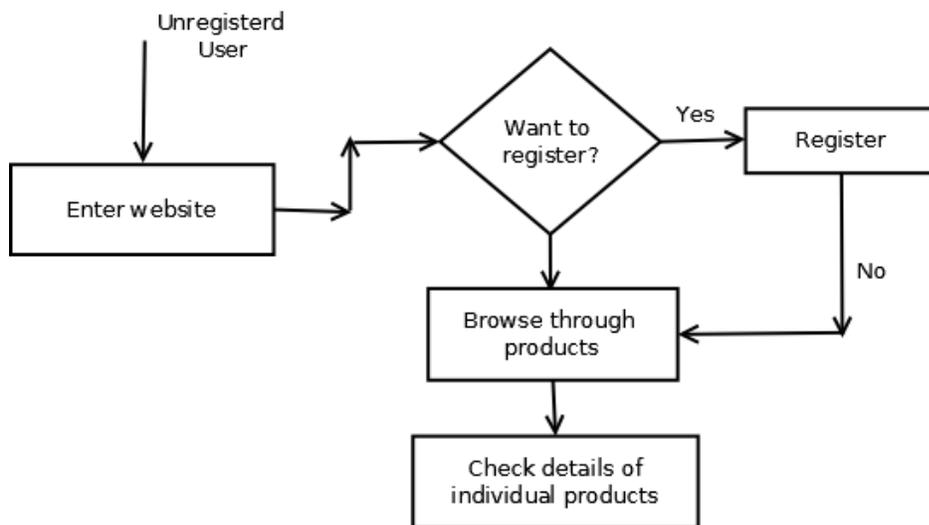
Activity Flow associated with a shop owner



Activity Flow associated with a registered user.

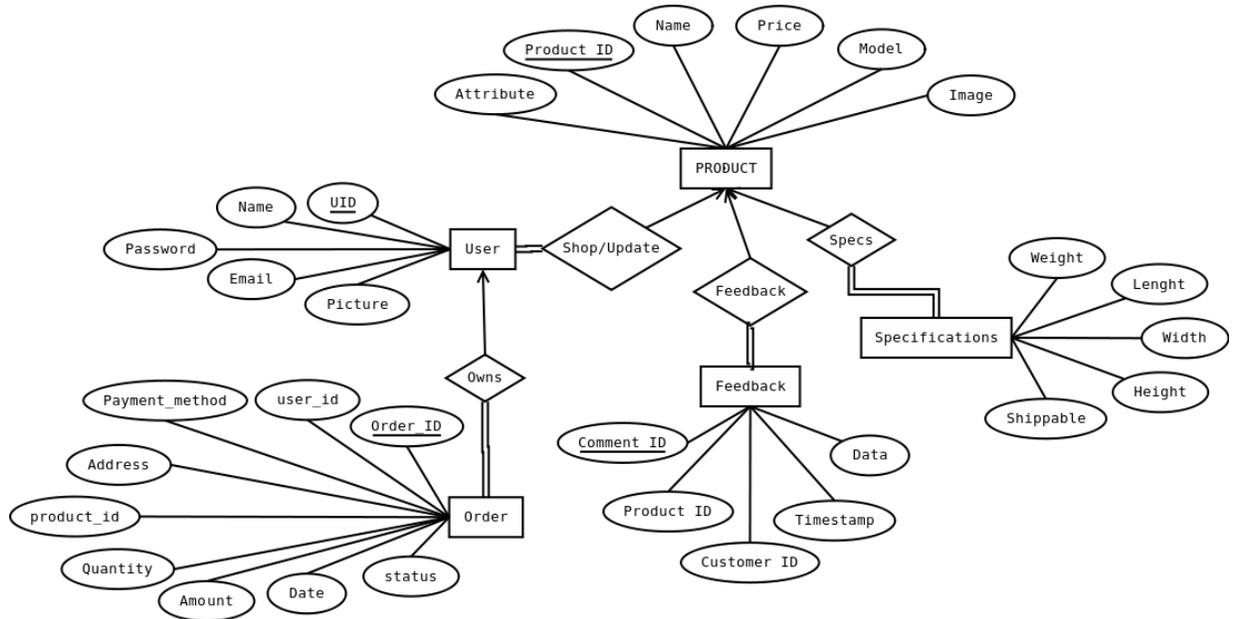


Activity Flow associated with an unregistered user.



3.8 SYSTEM ANALYSIS

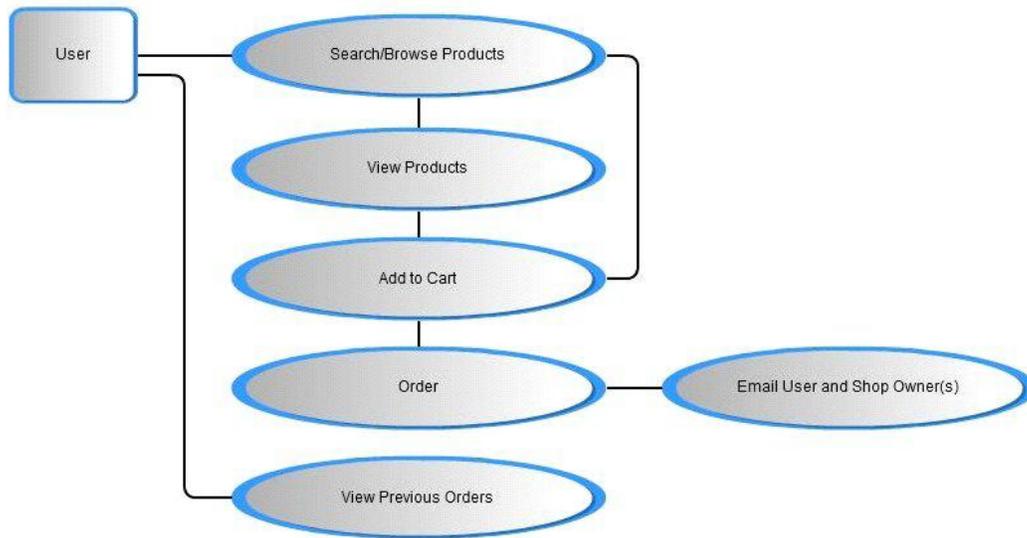
ER Diagram



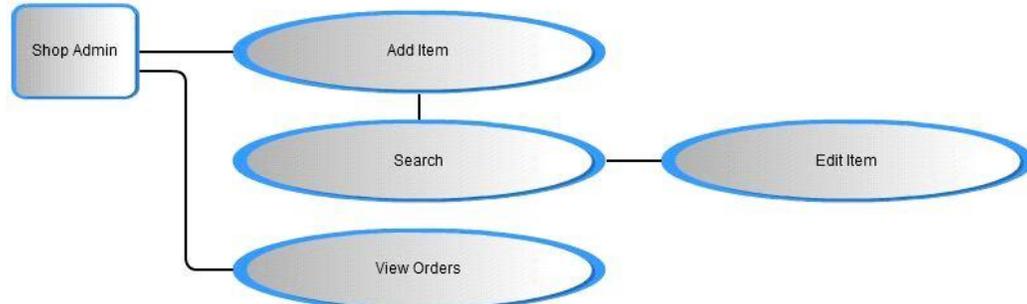
3.8.1 Data flow diagrams

These data flow diagrams represent the how information is moved from action to action for each user group. They show how information flows for each user and the paths they take as they complete various actions specific to their workflow.

Users:



Shop Admins:

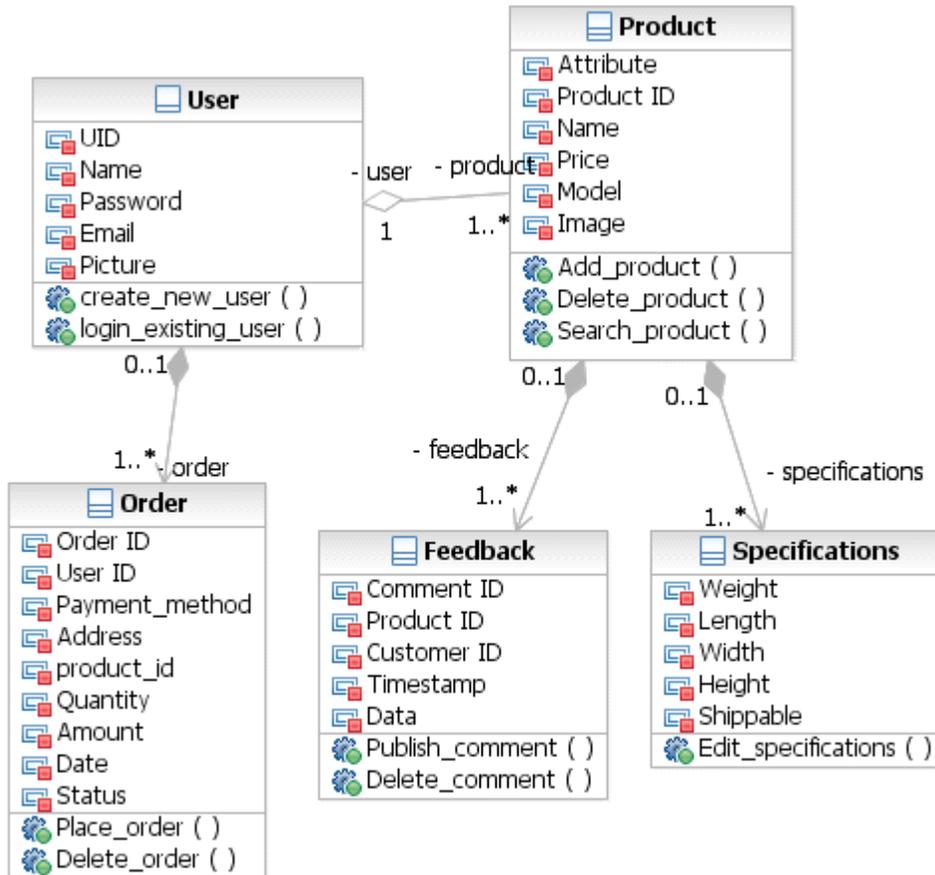


Administrators:



Classes

The following classes are used to design an online shopping mall. A class diagram is used to represent the relationship between the classes in a Unified Modeling Language (UML).



Class Diagram

User Class

The user class is used to store the details of all the users. It is used to create a new user or help an existing user login. There are two types of users: admin and a normal user. Every user can place an order or search for a product. The admin can add and delete products as well.

Order Class

The order class contains the details of the placed order.

This class is used to place or delete an order. The order class is notified when an order is placed or deleted by a user.

Product Class

The product class contains the details of the products in the online shopping mall. This class will be notified when the user searches for a product or the admin adds or deletes a product.

Feedback Class

The feedback class contains the details of the comments posted on the various products. This class is responsible for posting comments on products and deleting them by users.

Specifications Class

The specifications class contains the various specifications of the products. This class is used to edit the specifications of the products.

3.9 INTERNAL DATA STRUCTURES

The Internal Data Structures are the member variables of each class. The following are the internal data structures used in each of the classes.

User Class

- **UID:** this is the unique identifier of each user
- **Name:** the name of the user
- **Password:** the password of the user
- **Email:** the email id of the user
- **Picture:** the picture uploaded by the user

Order Class

- **Order ID:** the order ID associated with that particular order
- **User ID:** the ID of the user who placed the order
- **Payment method:** the mode of payment
- **Address:** the shipping address of the user
- **Product_id:** the ID of the product that was ordered
- **Quantity:** the number of items that were ordered
- **Amount:** the cost of the order
- **Date:** the date the order was placed
- **Status:** the current status of the order, whether the order was shipped or still in the processing stage.

➤ Product Class

- **Attribute:** the description of the product
- **Product ID:** the unique ID of the product
- **Name:** the name of the product

- **Price:** the price of the product
- **Model:** the model number of the product
- **Image:** a picture of the product

Feedback Class

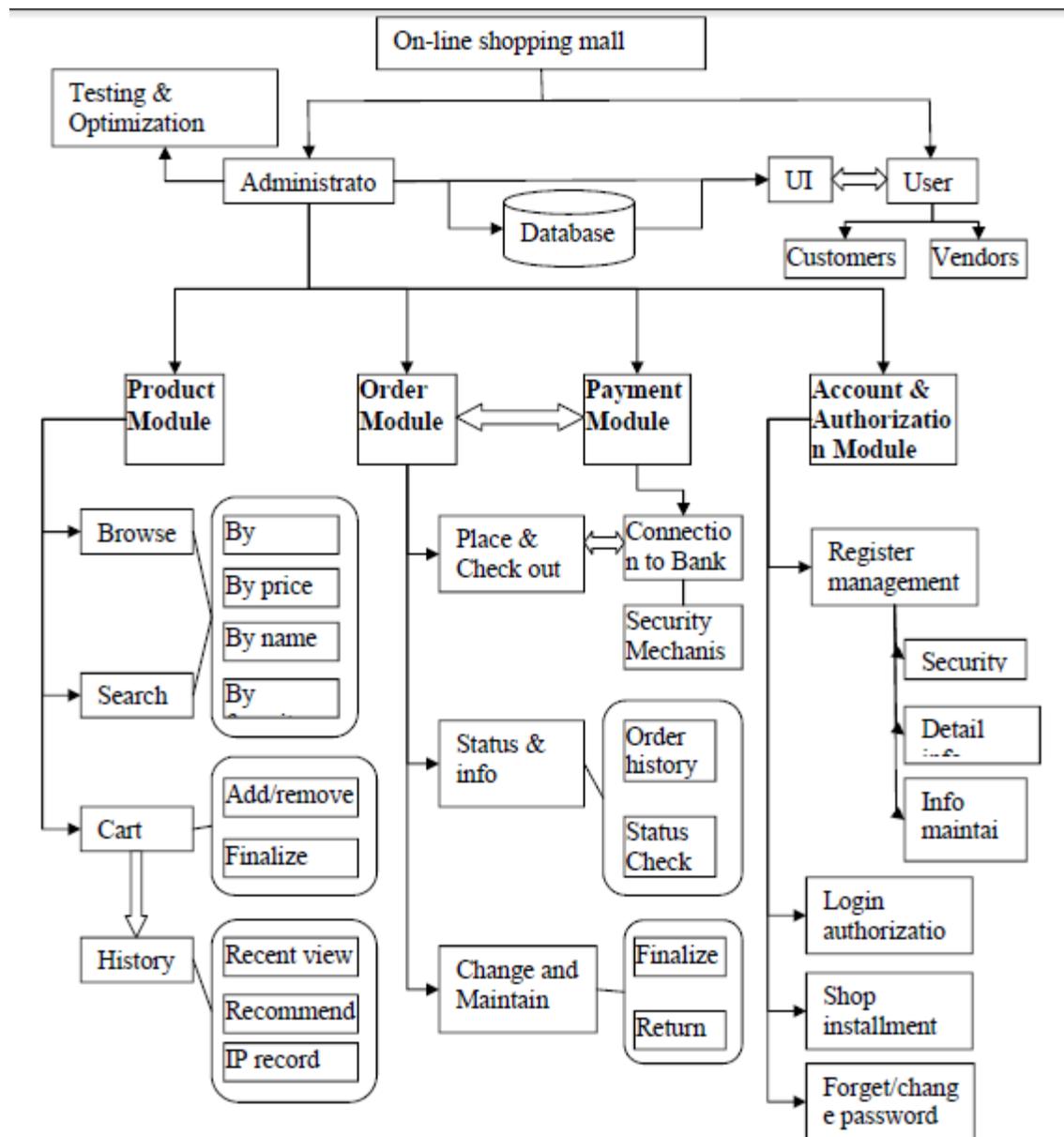
- **Comment ID:** the ID of the comment published
- **Product ID:** the ID of the product on which the comment was made
- **Customer ID:** the ID of the customer who made the comment
- **Timestamp:** the time when the comment was made
- **Data:** the string that was posted as a comment

Specifications

- **Weight:** the weight of the product
- **Length:** the length of the product
- **Width:** the width of the product
- **Height:** the height of the product
- **Shippable:** whether the product is shippable or not

3.10 SYSTEM ARCHITECTURE

Comparing to previous structures or architecture of functions or actors, this part mostly focuses on the overall system design architecture, which describes the internal necessary requirements and structures during design process for system designers.



Except for UI, testing and optimization, the on-line shopping mall system is divided into 4 major modules as below. Each of them implements a primary utility for either vendors or customers or both.

Product Module

Some of its sub-modules (or functions) are exclusive for customers. This module requires designers to implement browse and search function for our web visitors and is supposed to be as friendly as possible and as reliable as possible (i.e. fast, 7-24 service, barely break down and recovery). As it was mentioned in Part 2, browse/search should be by different categories. Then cart is necessary for users' convenience and they should be able to modify any selected items in the cart list. The history record could function as a browse/search history review, similar product recommendation, etc.

Order Module

It contains three major roles, check-out, which connects customers, vendors, banks and administrators. Order information/status check, and order maintenance, which allows users to act (cancel/return etc) on their placed orders to some extent.

Payment Module

Provides payment methods (i.e. various bank cards or other commercial tools) and provides security mechanism.

Account & Authorization Module

This part creates and records user's information in database with different priority and authority, which might allow customers or vendors to have their own account to buy or sell. Related architecture is very straight forward. Administrator authorization required.

All the modules above should be able to connect to database system, normally execute basic SQL.

CHAPTER FOUR

TESTING AND IMPLEMENTATION

4.1 INTRODUCTION

This chapter of the project exhibits the testing of the required system and the design process or the implementation of the main system interface.

4.2 TESTING

Unit testing

For not doing break the functionality of existing the system, we will test individual use cases and list down test cases for each of the use case.

Log in

- Identification and Password properly initiated, encrypted, and validated
- My SQL injection test
- Checking for uppercase, lowercase, number, special charactering ID and password
- Either of ID and password not blank
- Checking for overlapping ID
- Checking for weak passwords
- Not available to minors without permission from parents
- Checking for e-mail notification about making ID and initiating password

Login and start shopping

- Correctly validated before starting a shopping
- Not possible to check out products which is already in progress
- Displaying list of all available products
- Checking for newest version products place on first page.
- Checking for exact number of products stocks
- Checking for available coupon information
- Checking for visibility about previous history of search
- h. Checking for system about suggestion for newest version of products

View online help

- Help documentation appropriate to every occasion

Payment

- Certification username and card information for security
- Consumer payment for money in proper order.
- Certification for expiration month and year
- Certification about CVS number
- Checking the maximum limit of credit card
- Checking for signature

Shipping

- Checking for available address information
- Checking for private information and updated address
- Chargeable or no chargeable for shipping
- Checking for number about comment to deliveryman
- Checking about time for shipment
- Check about comment when the consumer will not be in home

Logout

- Search history saved properly after logout
- Checking out information saved in database
- Customer redirected to the login screen
- Checking e-mail system about purchasing information

Integration testing

We consider the online shopping mall system as a black box and white box; also check up all of the parts. Also, we will conduct as following orders; creating test plans, performing code review of the application modules that integrate the application block, executing the use cases of the application, performing load testing, performing stress testing, performing globalization testing and perform security testing.

- System compatible with different web browsers (Google chrome, Fire fox, and IE)
- System compatible with different Operating System (Widows, Linux, and Mac)
- System compatible with 32 bit or 64 bit operation
- Stress testing against a large number of customers

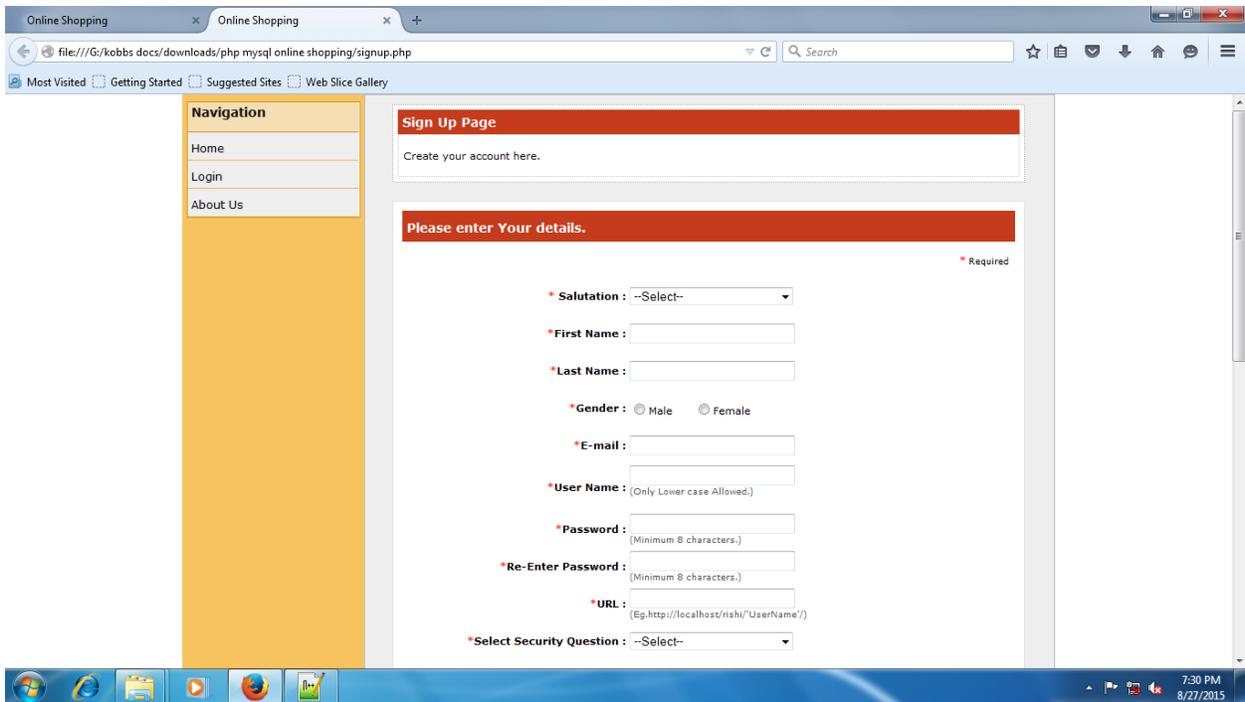
- Stress testing against a large number of purchasing in one products
- Stress testing against security hazard from hackers

4.3 USER INTERFACE

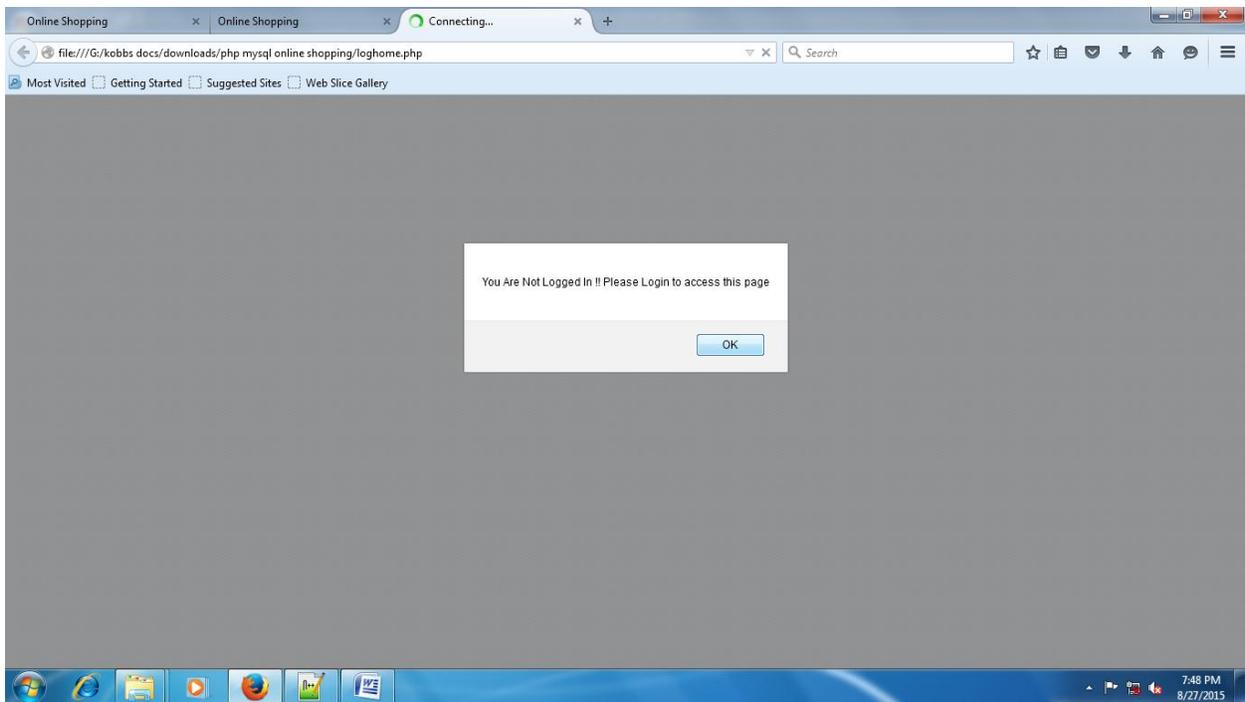
This controls a display for user and that allows the user to interact with the system.



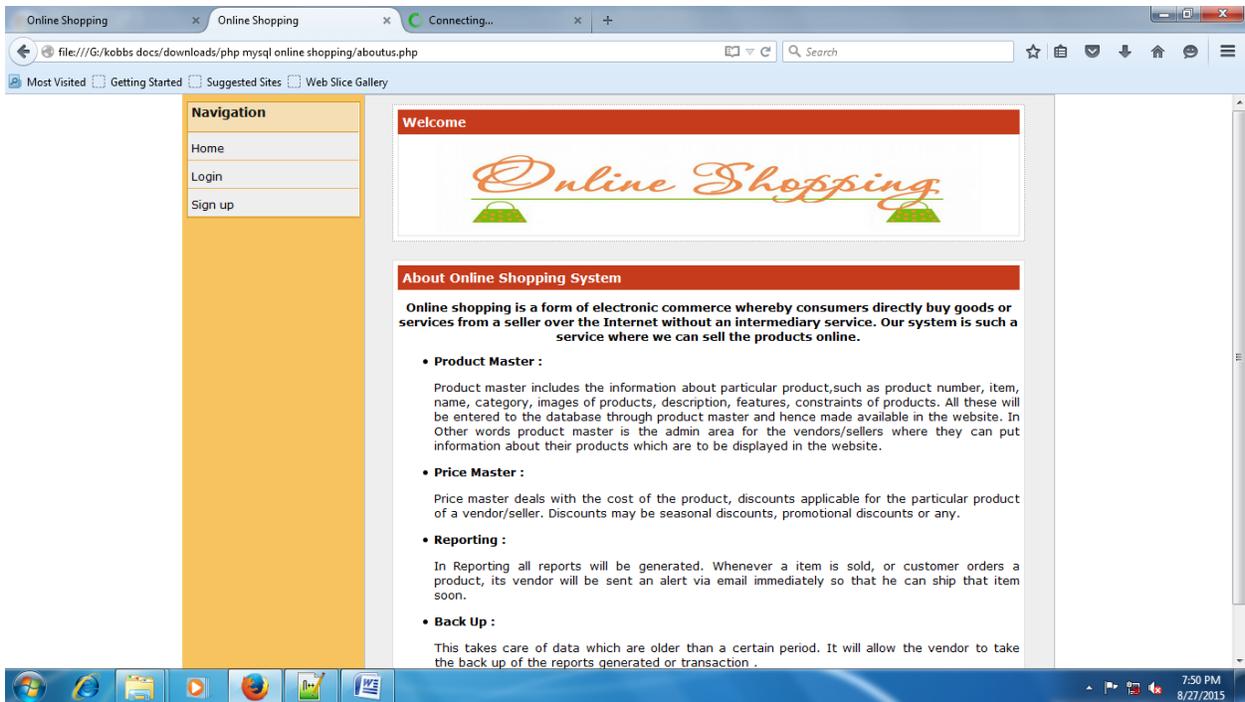
The Welcome interface



The sign up interface



Unrecognized user



Briefs About the mall

CHAPTER FIVE

CONCLUSION AND RECOMENDATION

Consumer motivations;

The major consumer motivation in online shopping is that of shopping convenience. This was the clear motivation that respondents generally highlighted, and is reflected across a number of sub-factors, which are:

- Greater product availability - For the most part, online shopping sites offered greater product ranges than their retail store equivalents. The key reason for this, of course, is that in the online channel, one essentially has all the existing stock in store locations and warehouses as effectively available online.
- Delivery to other persons - With the online shopping channel, consumers are not limited to just taking the product with them home. Consumers can opt to have their purchases delivered to other addresses as it would just be a similar process for the firm in delivering the purchased product. This is added flexibility for the online shopper.
- Extensive information availability - Consumers are able to quickly find out more about the product being purchased including basic information and possible reviews by other purchasers.
- Quick comparison between different stores - Expanding the information availability mentioned above, shopping convenience also relates to consumers being able to compare prices of products, and also compare other variations in the offering (i.e. bundle offers) to ensure that they achieve the best offering.

- 24-hour access - Finally, the convenience of being able to shop at own leisure no matter what time it is at the comfort of home or the office.

Emerging trends for online shopping;

There are three key emerging trends which should be noted as these have organizational implications:

- Security is still a key issue but organizations are increasingly addressing this - Both online and non-online consumers see this as a risk and managing this properly can only help increase the online shopping market, which already is growing phenomenally. The organization which can provide strong comfort to the online and potential online consumer will have a large market to cater to.
- Usability of an online site as an increasing differentiator - Some firms tend to invest in making their sites flashier. However, flashier is not always better as the results of the research indicate. Most consumers prefer easily navigable sites, and this is seen by the consumers as an increasing differentiator when considering various sites to do online shopping.
- Firms utilizing the online channel to develop consumer relationships - A large number of firms realize this point and are investing in developing consumer relationships through the online channel. The results of the research, however, indicate that most organizations still fall short of the requirements that consumers have in order to allow firms to build relationships with them. Thus, this seems to be an opportunity for organizations which can imitate or surpass the most successful organizations currently in managing these consumer relationships through the online channel.

End note

The application can be used for any E-commerce application. It is easy to use, since it uses the GUI provided in the user dialog. User friendly screens are provided. The application is easy to use and interactive making online shopping a recreational activity for users. It has been thoroughly tested and implemented. The 'Online Shopping' is designed to provide a web based application that would make searching, viewing and selection of a product easier. The search engine provides an easy and convenient way to search for products where a user can search for a product interactively and the search engine would refine the products available based on the user's input. The user can then view the complete specification of each product. They can also view the product reviews and also write their own reviews. Use of Ajax components make the application interactive and prevent annoying post backs. Its drag and drop feature make it easy to use.

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