

KAMPALA INTERNATIONAL UNIVERSITY
AN E-BUSINESS SHOPPING CART SYSTEM FOR MANAGING
SALES IN AN ONLINE SUPERMARKET

BY

DOREEN NINSIIMA. BBC/42141/91/DU

And

PETER BAGOROGOZA. B. BIS/40704/91/DU

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SYSTEMS

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DECLARATION

Doreen Ninsiima and Peter Bagorogoza do hereby declare that this project report is the fruit of our original work and has not been published or submitted for any degree award to any University or other institution of learning before.

Signature: 

Date: 

DOREEN NINSIIMA

Signature: 


Date: 

PETER BAGOROGOZA. B.

APPROVAL

This project report has been submitted with my approval as the supervisor.

Signed:.....

Date:.....

Mr. Bada Joseph Kizito

Department of Information Technology,
College of applied sciences and technology
Kampala International University

DEDICATION

This piece of work is dedicated to our dear parents Mr. Paul and Mrs. Scovia. K. Muramuzi and Mr. Paschal and Mrs. Geraldine Bagorogoza, our siblings Michael, Vincent and Herbert as well Paul, Judith, Irene, Grace, Clare and Victoria, not forgetting all our friends that have been of great help in its completion. And above all, to God Almighty who has made it possible for us to reach this far.

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Glory is to God, the Heavenly Father, who created us, has always been a source of guidance in our lives and for the opportunities he has given us. Because of Him we have attained yet another achievement in our lives and we are more than grateful for he has watched over us and this has led to the completion of this research project.

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List of Abbreviations and Acronyms

DFD	-	Data Flow Diagram
DHTML	-	Dynamic Hyper Text Markup Language
ERD	-	Entity Relationship Diagrams
HTML	-	Hyper text Markup Language
PC	-	Personal Computer
PHP	-	Hypertext Preprocessor
SQL	-	Structured Query Language

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ABSTRACT

This project aimed at developing an online shopping cart system. This system allows the administrator to view, add, edit and delete the different categories, sub categories and the products in the system's database. It also allows customers to view the web content, order products online, fill customer registration forms and also subscribe to the newsletter.

The objective of this study was achieved using tools like interviews and study of existing Literature. DFDs and ERDs were used in the analysis and design of the system. The technologies used in the implementation include, PHP, JavaScript and the Database Management System used was MySQL 2005. The developed system is now favoring other modes of payment such as pay pal that is more convenient to customers and the business owners.

Online shopping is the process whereby customers directly buy goods or services from a seller in real-time, with or without an intermediary service, over the Internet. If an intermediary service is present the process is called electronic commerce, E-commerce is the buying and selling of goods and services on the Internet, by the use of the World Wide Web. In developed economies consumers find the World Wide Web a great place for bargain-hunting, with most goods available at lower prices than in a bricks-and-mortar store.

CHAPTER ONE

Introduction

1.1 Background to the problem

Shopping has become an everyday activity, a way of life for some and an addiction to others. It is one of the activities people all over the world engage in to pass time, socialize and catch up on the latest fashions, accessories and commodities. It is during engagement in this activity that some people's desires are fulfilled, satisfied and even made aware about so much. With the emerging and ever growing interest in the activity for both buyers and sellers across the world, it is inevitable that it would find a steady foothold on the internet and the World Wide Web (WWW). This is purely because I, an individual living in Uganda wants to buy clothing, music records, household items, business purchases and so on, the list is endless. So with shopping being a big part of today's life, anybody and almost everybody can access the internet service and simply browse through their favorite site and select items to buy.

But convenience appears to be an even bigger attraction as revealed in surveys because most online shoppers find the crowded high street too stressful.

The internet has revolutionized the way people live their everyday lives. The internet has also changed the way people consume products and the means of satisfying their demands for their comfort. The internet has made it easier for people to acquire these goods. In today's society, people are doing all kinds of financial transaction ranging from buying holiday gifts to buying cars and paying their bills over the net.

In Uganda, the population has a great attraction to the latest fashion, technology, digital products among others. Although our population is drawn to town and suburbs around major cities, lowest price points and special offers draw one to buy something in a particular store.

In recent years, Supermarkets have been constructed around town and this simply means a customer has to move to different supermarkets in order to make up his or her mind and finally make a choice of what to buy where.

In many supermarkets found in Uganda's urban suburbs, there are a lot of activities that take place during which the customer has the overall intension to purchase product/products. In these

activities they include. A customer being allocated parking space to park their vehicle (in some supermarkets parking services are not available), a customer then goes into the supermarket and chooses what they want to buy through self-service, after which the customer moves to the cashiers desk to pay for the items she/he has purchased and leaves the supermarket.

As the growths of highly educated youths and adults who may have jobs and also live within these urban suburbs increases; their main choice of a shopping venue is a supermarket where they make their purchase for products with the least inconvenience. As a result, there tends to be a lot of congestion at the supermarket during the evening hours when most of these people have closed the workday and need to make a stopover at the supermarket for some items. The congestion can either be within the supermarket for instance, customer's congestion caused by queuing at the cashier's desk to make payment for their purchase or the congestion may be outside the supermarket for instance, many customers' vehicles are parked very close together to maximize parking space usage; this sometimes creates vehicle traffic which simply consumes a lot of time.

Amongst this congestion there are several problems that may arise such as; a customer getting dissatisfied with the customer service the supermarket is offering to them. There is also theft of products from the supermarket by the customers due to congestion that provides a sense of false security for the customer to steal without getting noticed. And also, some goods run out of stock leaving some customers not served.

1.2 Problem Statement

Customers find it tiring to move around in the supermarket looking for the items they need and then spend a lot of time in a queue to the cashier's desk waiting for their turn to make payments for the items purchased as well as getting caught up in traffic and wasting otherwise useful time.

1.3 Objectives

1.3.1 Main Objective

To design and develop an online shopping cart system for game stores which will ensure effective and efficient management of the store and the customers it serves..

1.3.2 Specific Objectives

- (i) To identify the requirement for an online shopping cart.

- (ii) To design a model for an online shopping cart.
- (iii) To implement an online shopping system based on the designed model.
- (iv) To test and validate the online shopping cart system.

1.4 Scope of the study

The major interest and focus was on game stores in Kampala. This area will be used as a case study because the supermarket is a familiar one with most of Kampala’s population and the researcher. The researcher intends to design and implement a sustainable, reliable and flexible automated online shopping cart system. The system will be used by supermarket administrators and customers.

1.5 Significance

The development of an online shopping system enables customers to quickly seek out deals for items or services with many different vendors (though some local search engines do exist to help consumers locate products for sale in nearby/linked stores). Search engines, online price comparison services and discovery shopping engines can be used to look up sellers of a particular product or service.

Fraud and security concerns; with the proposed system, the use of pay pal will ensure that the money reaches the intended destination and there will be no worry of fraud since the store will have dedicated lines and customers will have personal accounts for their transactions.

Online shopping system allows customers to browse a limitless number of online products and product categories while seated in one place and make purchases for desired products.

The online shopping system also enables customers shop from their homes or places of work without coming to the supermarket itself. This will help customers who cannot do their shopping during supermarket open hours to be able to shop anytime.

The online shopping system also helps in tracking customers’ orders such that orders can be monitored wherever they are at any particular time.

The online shopping system will limit congestion whereby shopping can be done online without necessarily coming to the supermarket during the peak hours and in festive seasons.

CHAPTER TWO

Literature Review

2.0 Introduction

This section has literature related to shoppers experience through carrying out traditional shopping, the challenges they face and the reason as to why shoppers would opt for an online shopping cart.

The information was necessary in assessing the work done and knows how e-commerce systems have been developed for various organizations. These systems may be defined as the application of information and communication technologies (ICT) in support of all the activities of business. E-Business constitutes the exchange of products and services between businesses, groups and individuals and can be seen as one of the essential activities of any business.

2.1 Customers motives, concerns and Business models

According to Keh and Shieh(2001) grocery shopping is time wasting and very stressful to consumers and because of this, consumers are therefore attracted to online shopping for its convenience and also exposes a variety of products to the consumer.

2.1.1 Online Experience for Customers

Keynote Research panel (2005) noted that it's clearly evident that today online supermarkets battle for market share and brand affinity, many are striving to attract shoppers through sophisticated functionality and services on the web. For such offers to be successful, these companies have adopted a structure of a new web application to provide optimal performance and service, while closely managing the cost of running the business. To do so, many online supermarkets are turning to practice of service level management (SLM), a set of management activities that helps ensure online shoppers receive the best possible experience through online services that perform consistently and effectively and because of this, online supermarkets have taken advantage of an out sourced service-delivery model to prioritize and resolve issues based on end-user impact, resulting in effective management of operational costs. They further stress that online supermarkets can address intra organizational tensions related to service level issues. Consequently, online supermarkets can build and protect brand equity through consistent and

exceptional performance of web channels. Capitalize on investments in marketing campaigns and the online store front itself by ensuring that web infrastructures are ready to handle expected user loads, grow revenue and market share by attracting shoppers with rich sophisticated value added online services, gain greater insight into customer buying behavior and cater to high value customers.

2.1.2 Grocery shopping stressors

Aylott and Mitchell (1998), state that the appeal of E-grocery services is also influenced by many consumers finding grocery shopping a stressful activity. In a study of (239 respondents) they found two major stressors associated with traditional grocery shopping, namely crowding and queuing, with regard to these concerns the authors note that: “crowding is disliked because it frustrates customers achieving their task as easily as they would like to. They waste a lot of time and this would also invoke the feeling of claustrophobia in some people. Queuing is a function of crowding and adds to the feeling of frustration and the distress they noted”.

2.1.3 Impact of Technology on Successful Aging

Charness and Warner (2003) stresses that online shopping eliminates one being exposed to noise and traffic present in typical Grocery stores, this becomes a divided attention task where intentional resources are diverted due to other shoppers trying to get by or reaching for merchandise nearby. Taken together with the evidence that older adults typically perform worse under conditions of cognitive load, these factors suggest that traditional shopping does not offer an environment for optimal decision making.

2.2 Strategies for Increasing Profits through the Internet

Barry (2004) argues that online shopping increases profit margins since it facilitates online incentives such as use of online couple and other product promotions. However online shopping has enormous potentials for benefits associated with learning to use the web to shop and other activities, it's heavily dependent on an individual level of web literacy. Furthermore visual and other aspects of web may present additional obstacles and keep shoppers from fully enjoying the services.

2.3 Services provided by e-commerce

(i) One of the main benefits of e-commerce is that the store is effectively open 24 hours a day, 7 days a week. The time the customer decides to buy something, the Internet provides such

opportunity to do it right the time he/she decided. Furthermore, staff need not be awake and “in the store” to receive orders and process payments.

(ii) In one word, ecommerce brings the benefit of the product promotions, cost saving , timely information, shortened remittance times, information consistence, better customer services, better customer relationship, customizations of products, competitive advantages and convenience of doing businesses (Gunasekaran and Ngai, 2005; Ngai and Wat, 2005).

(iii) Since e-commerce is not constrained by geography, local shops can compete with national and multinational companies for consumers located anywhere in the world. Other benefits include ease of transactions, quick and efficient shopping processes, and the availability of specific items.

2.4 Review of existing systems

2.4.1 Amazon.com

Amazon, a Fortune 500 company based in Seattle, Washington, is the global leader in e-commerce. Since Jeff Bezos started Amazon in 1995, they have significantly expanded their product offerings, international sites, and worldwide network of fulfillment and customer service centers. Today, Amazon offers everything from books and electronics to even motor vehicles. They operate sites in the United Kingdom, Germany, France, Japan, Canada, and China and maintain dozens of fulfillment centers around the world which encompass more than 12 million square feet.

Technological innovation drives the growth of Amazon, offering their customers more types of products, more conveniently, and at even lower prices. They offer a personalized shopping experience for each customer, book discovery through "Search Inside The Book", convenient checkout using "1-Click® Shopping", and several community features like *Listmania* and *Wish Lists* that help their customers to discover new products and make informed buying decisions.

In 2000, Amazon began to offer its best-of-the breed e-commerce platform to other retailers and to individual sellers. Now, big-name retailers work with Amazon Services to power their e-commerce offerings from end-to-end, including technology services, merchandising, customer service, and order fulfillment. Other branded merchants also leverage Amazon as an incremental

sales channel for their new merchandise; you can find products from top retailers across our retail site. Finally, independent software developers also derive value from the platform--through Amazon Web Services by building profitable applications and services that cater to Amazon customers and sellers.

This evolution of Amazon from Web site to e-commerce partner to development platform is driven by the spirit of innovation that is part of the company's DNA. E-commerce is still in its infancy. In the years to come, you'll see Amazon create new technologies, expand into more geographical locations and continue to improve the lives of shoppers and sellers around the world.

2.5 Conclusion

According to the existing systems that we have reviewed, there is still need to develop a better system to cater for the weaknesses of the existing system. Now that people can access the internet not only through PCs, but also from the Web TVs, Palm Pilots and mobile phone. According to a study, more than 600 million people would have access to the Internet globally. Therefore because of the easy access of internet and increased educated people in Uganda, it was found important to come up with an online shopping system to cater for that market.

CHAPTER THREE

Methodology

This discusses the pattern of the research, the approaches to data collection for designing and implementation of the proposed system. ACCA (1996) states that a system development methodology can be defined as collection of procedures, techniques and documentation aid which will help system developers in their efforts to implement a new system. The following were used while developing the proposed system; Interviews, observations, questionnaires, data analysis and design, implementation, testing and validation, deployment.

3.1 Data Collection Techniques

3.1.1 Interviews

Interviewing involved the process of asking given respondents questions orally. The researcher (interviewer) asked the respondent(s) several questions regarding the subject area. These interviews were conducted on individual basis or as a group. The responses were captured or noted down, analyzed and processed for use during the design and implementation of the project.

Extensive face to face interviews were used at capital shoppers and the staff members and customers were interviewed so as to get the relevant information and understand how transactions are carried out. This facilitated getting clear user requirements and functional requirements of the system.

3.1.2 Observation

This method was used to further understand the working of the traditional shopping system and how sales and transactions were being processed. Loopholes from the systems studied are what were capitalized on to design our new system. The observation method required a systematic use analysis, inspection and examination. It involved careful study of the existing shopping systems in Uganda today as well as the pre-existent System in order to understand information flow and how the on line shopping system was being utilized. This method helped the researcher learn about the problems related to online shopping.

The researchers also noted how different information files moved from one desk to another and this enabled the researchers to come up with clear information flow and was able to identify the relationships between the different entities.

Observation of the existing system was also carried out to examine its performance.

3.1.3 Questionnaires

This method of data collection had written questions which were sent or given to respective individuals or groups of respondents who ended up being the potential system end-users. After these questionnaires were filled, they were then sent or given back to the researcher(s) for data processing and analysis so as to determine the requirements of the system. Questionnaires were employed mostly in instances where researcher(s) had no chance to physically interview the respondents.

3.2 System analysis and design

In system analysis, the collected data was validated and cross checked to see that the findings were in line with the systems objectives. During this stage, the identified system requirements included functional and non functional based on the system study, users of the system, processes and engines and also drew a plan on how the design of the system was to be implemented. Some of the techniques that were used in system Design comprised of dataflow diagram, entity relation diagrams (ERD), these were easily understood and interpreted by any person. The tools also showed clear break down of the entities and their relationship. Structured analysis approach was used to analyze the system.

3.3 System Implementation

Several technologies were used during the implementation of this project. It had three major parts, client side, server side and the database engine as shown below.

3.3.1 Implementation Tools

In the implementation stage, the following tools were used; Html is a mark-up language for adding some annotation to text, show how pages are displayed and define hyperlinks between documents. Java script and this is a scripting language originally developed by Netscape, this enabled researchers to add interactivity to web pages and these scripts were embedded directly

into web pages, Java Servlets because these languages were easily manipulated and they were used to develop a user interface which was not complex yet fully functional.

3.3.2 Server side

The server side was developed in java because the java language could interface both the client side and the data base engine, the language was also to be used to implement the system security by use of session beans.

3.3.3 Database

MySQL Server was the Database Management System (DBMS) used to create and manage the system's database. It is a free and highly customizable low maintenance database management system. Consistently stable in high volume data environment with a wide range of support available for free over various forums and support portals. This DBMS was used to store the different data/ information from the customers and the shop owners.

3.4 Testing

This is the process of executing application programs with the aim of finding out errors, using Careful planned test strategies and realistic data the system was methodically and thoroughly tested to uncover faults in the application programs and the database structure. The faults found were then corrected and the process was repeated until the system was confirmed to be working according to users' specification and performance requirements.

This was achieved by:

- (i) Testing the system performance, efficiency, disk space and its throughput to ensure proper functioning of the system.
- (ii) Testing for security issues like resistance to remote attacks and authentication procedures.

3.5 Validation

This was done to ensure that data fed into the system satisfies the pre-determined formats, it was presented to experts to identify weaknesses and strengths of the system and give advice where necessary. Here different users were allowed to interact with the system to find out its validity and the system was found to be valid.

CHAPTER FOUR

System Study, Analysis and Design

4.0 Introduction

This chapter shows establishment of the requirements for An E-Business Software Tool for managing Sales in an online supermarket and the design of the system. The system was designed to meet the needs of automated supermarket shopping requirements for the users and the public and maintaining of records for the sales.

4.1 System Study

The existing system was studied and evaluated at game stores in order to obtain the actual system and user requirements.

4.1.1 The Existing System

The existing system used at game stores is a manual off line system. Products in the store are arranged on shelves and according to type and their category.

A client comes to the store picks a cart and moves around trying to identify the products that he or she desires., checks the price, compares with the other product and chooses if he/she will add it to the cart or not. After the choice is made, the customer moves on to the next shelves in search of the next product. This process continues till the customers shopping list is completed.

The customer has to keep the detailed price of the product that he/she has bought to make sure that he/she is not above the planned budget. In case of change of mind, the customer has to suffer the indignity of having to take back the product to the shelf.

When the customer finally feels that the shopping cart contains all that is needed he then continues and makes a cure for the counter in order to make payment. On busy days these queues tend to be long and this usually tires the customers.

At the counter, the barcode is read by a barcode reader, one product at a time and the computer reflects the price of the products chosen calculate the total products then the customer makes the payment using cash or using a payment card like visa for selected banks. The customer then carries his product to his/her transportation then leaves the store.

4.1.2 Weaknesses of the Existing System

According to the study we carried out, the following weakness in the existing system were identified:

- i. Customers are faced with a challenge of spending long hours looking for the products in the shelves of the super market. This makes shopping in super markets very tedious and boring.
- ii. Super markets spend a lot of money on the security personnel who have the role of verifying receipts, protecting the customers and the administration of the supermarket
- iii. There are no price comparisons with the existing system because when the customer visits a store, he or she has to settle for whatever price the vendor has placed on a particular item.
- iv. Also sales Pressure is associated with this system; the customer is awkwardly propositioned by eager sales people.

4.1.3 Strength of the Existing System

- (i) The Customer has a physical view of the products hence gaining chance to know the expiry dates, product quality and also comparing products immediately.
- (ii) The customer can talk to someone immediately when he or she has a question regarding the product, the customer doesn't need to wait for long time to be answered as it is the case with online shopping.
- (iii) If a customer is buying clothing materials he or she is given a chance to try it on, feel the material and see how it looks on them.
- (iv) The customer doesn't suffer with the transport or shipping costs which are charged on each and every item shopped online.

4.2 System Analysis

In order to document the entire end user requirement for the system, data collected was analysed using structured analysis approaches such as DFDs and also Document Flow Diagrams which are used to identify the physical movements of documents so as to specify the processes. This section includes requirement of the new system that were categorised in to user requirements, functional and non-functional requirements.

4.2.1 User requirements

These are requirement that a user expects the system to perform upon its implementation and completion. From the study the following user requirement where identified at game stores.

- (i) Ability to select multiple Items with the greatest of ease and minimal restrictions.
- (ii) Ability to compute the total cost of the Items purchased by a customer.
- (iii) User friendly Interface.
- (iv) Secure access to the web page and authentication.
- (v) Ability to save order details of the customers.
- (vi) Confirmation of the success of transaction to a customer.

4.2.2 Functional Requirements

These are the requirements that define what the system must do and the system describes specific behaviour functions of the final system. However the system cannot work without them.

- (i) The system must register product categories.
- (ii) The system must be able to store product details and prices.
- (iii) The system must be able to create a cart for a customer.
- (iv) The system must be able to process a customer's purchase and generate a receipt for the purchased commodity.
- (v) The system must be able to accept a payment.

4.2.3 Non Functional Requirements

These are the requirements that give the system more functionality but the system can function well without them.

- (i) The system must be user friendly.
- (ii) The system must be able to keep user data with confidentiality.
- (iii) The system must be able to print receipts with all details fast.

- (iv) The system should send notifications to customers on a success full purchase.
- (v) The system must notify the shop owner on any complete or pending purchases.

4.2.4 System requirements

Hard ware, software and security gadgets are expected to be in place to enable high performance.

Hardware	Minimum system requirements	Reason
Processor	Intel Pentium 900Mhz or higher	Affordable
Random access memory	1GB of RAM or higher	Fast speeds
Hard drive space	80GB for desktop	Relative storage capacity
Display monitors	Resolution of 800*600 or above	Clear visibility

Table 4.1: Hardware requirements of the proposed system

Software	Minimum system requirements
Operating system	Windows 2000 and above Operating Systems
Database	MySQL
web server	Apache

Table 4.2: software requirements for the proposed system

4.3 System Design

The system was designed with the help of DFDs, ERDs and model designs. The system is stationed and it is accessed worldwide. For a client to shop for a product one must be a registered client, it is only the system administrator responsible for granting rights for accessing system functionalities.

4.4 New system

The proposed system is an online shopping system that can be used by customers to shop for products online and have their product delivered to their locations of choice. This system can

help game stores arrange its products in a more attractive way and also allow the customers browse through the products in the store without getting tired and the customers will be able to make payment online using mobile money and have their entire product delivered.

The security function required authentication where login interfaces were provided and they involved making of the username and the password. For the customers to make orders, they have to first register. The system gives privileges to the person supposed to login. Among others include modification, addition, creation and access.

4.4.1 Architectural Design of the System

This section gives a view of the new system with the main components of the system and how they communicate with each other. This stage comprises of the Database design, user interface design and the program specification.

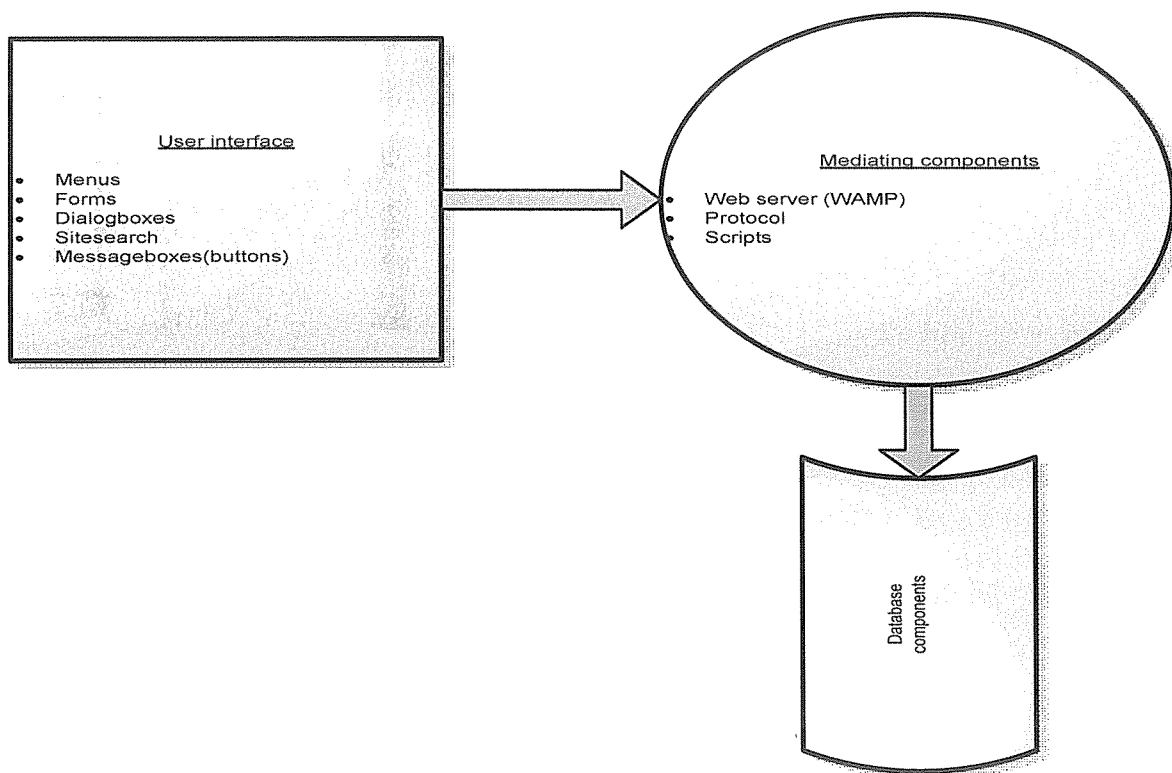


Figure 4.1: Architectural design of the new system

Figure 4.1 above shows concept that focuses on the components or elements of the system and unifies them into a coherent and functional whole and gives an overview of how different components of the system interact with each other.

4.2 Contextual Diagram

A contextual diagram is the highest level view of the system. We used a contextual diagram to show the interaction between a system and external entities with which the system is designed to interface.

CONTEXT DIAGRAM FOR AN E-BUSINESS SOFTWARE TOOL FOR MANAGING SALES IN A SUPERMARKET

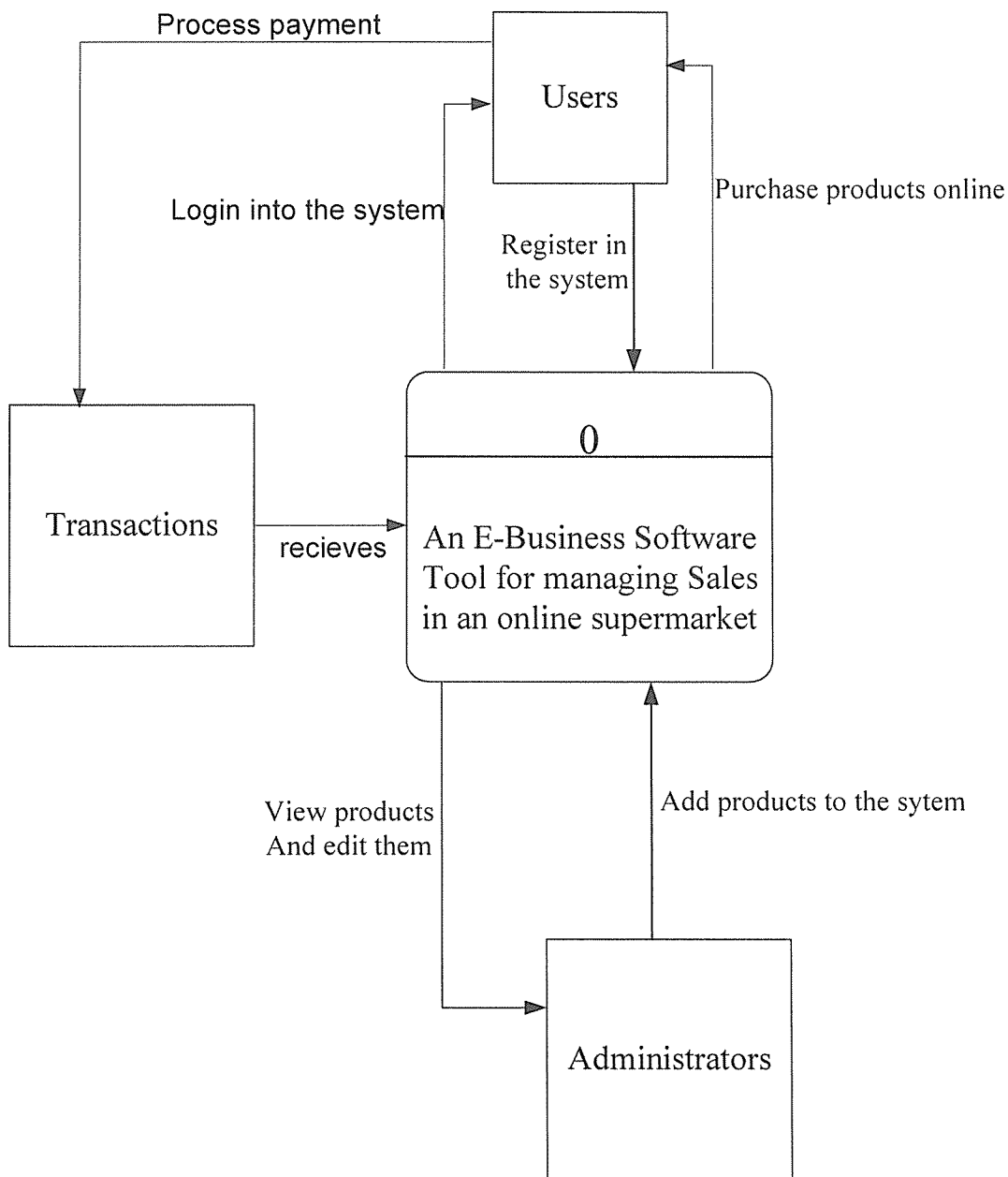


Figure 4.2: contextual diagram

4.4.3 Data Flow Diagrams

A Data Flow Diagram (DFDs) is a network model of an information processing system that allows how data is moved and changed through an information system in a graphical top down fashion. We used DFDs to give the graphical representation of the system components, processes and the interfaces between them and they were also used to show where a document came from, its destination and what was called for. Symbols used in a DFD include;

Level 1 DFD for the Online Shopping System

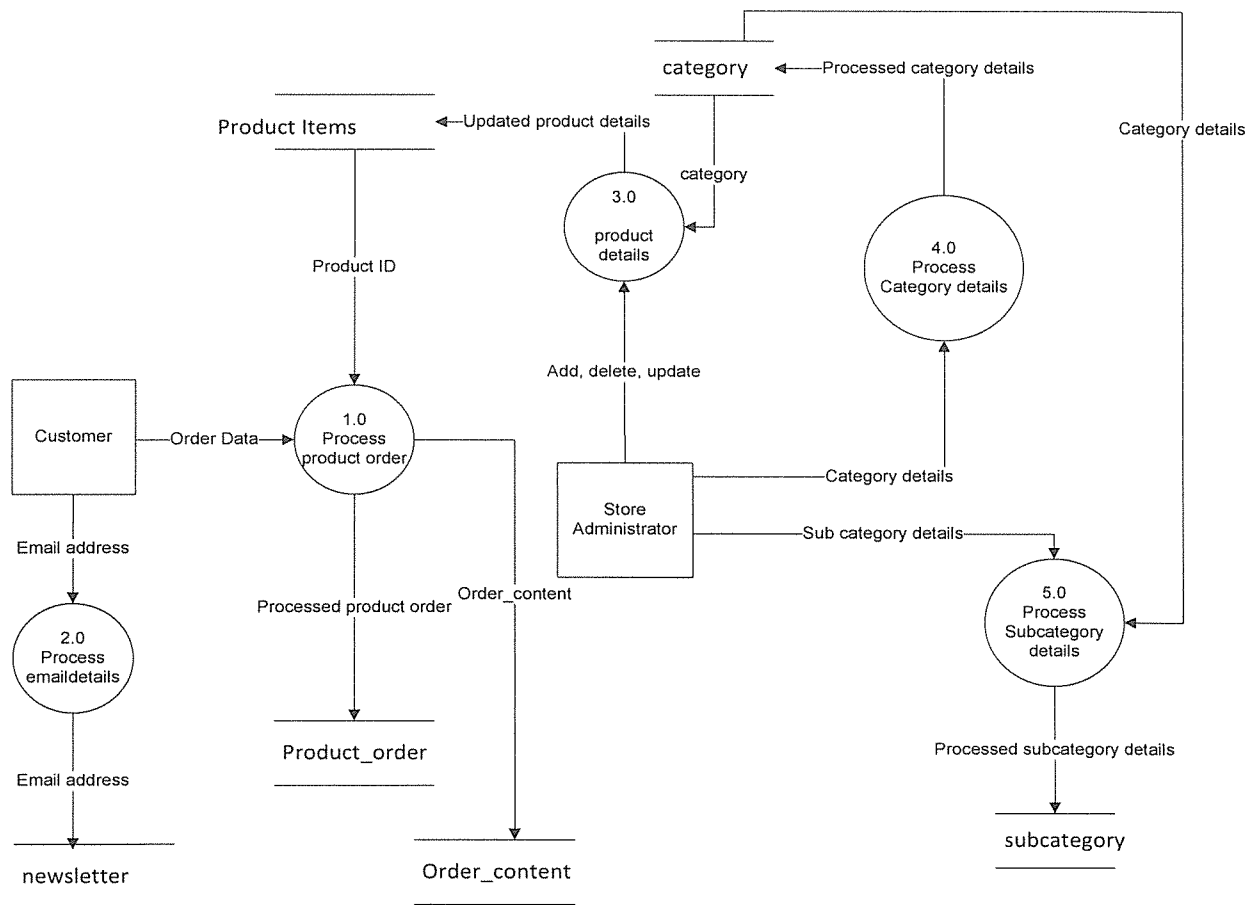
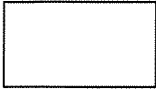
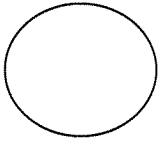


Figure 4.3: Data flow Diagram

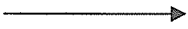
Key



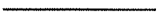
External Entity



Processes



Data Flow



Data Stores



4.4.4 Data Modelling

Data Modeling provides the structuring of the system. In this section, various entities, their attributes and data types are identified as well as relationships among entities. This was done by identifying the data requirements, Entities and their associated attributes making up the system and was concluded with an ERD for the system.

(i) Entities

Entity	Description of entity
Category	Stores product categories
Subcategory	Stores product subcategories
Product	Stores product catalogues.
product_order	Stores client product orders
order_content	Stores featured products details.
Newsletter	Stores subscribed emails for the newsletter
User	Stores all users of the system

Table 4.3: database entities

(ii) Identification of entities and their attributes

Administrator (id{PK}, username ,password, product_id{FK}, user_id{FK}, product_id_array{FK})

Primary key: id

Foreign Key: product_id

Foreign Key: user_id

Foreign Key: product_id_array

Transaction (transaction_id{PK}, product_id_array{UK} ,payment_date ,receiver_email ,payment_status ,card_No ,amount)

Primary key: transaction_id

Foreign Key: product_id_array

Product (product_id{PK}, product_name ,price ,details ,category, sub_category ,date_added)

Primary key: product_id

User (user_id{PK}, FirstName, LastName, password, email, Address, country)

(iii) Entity Relationship Diagram

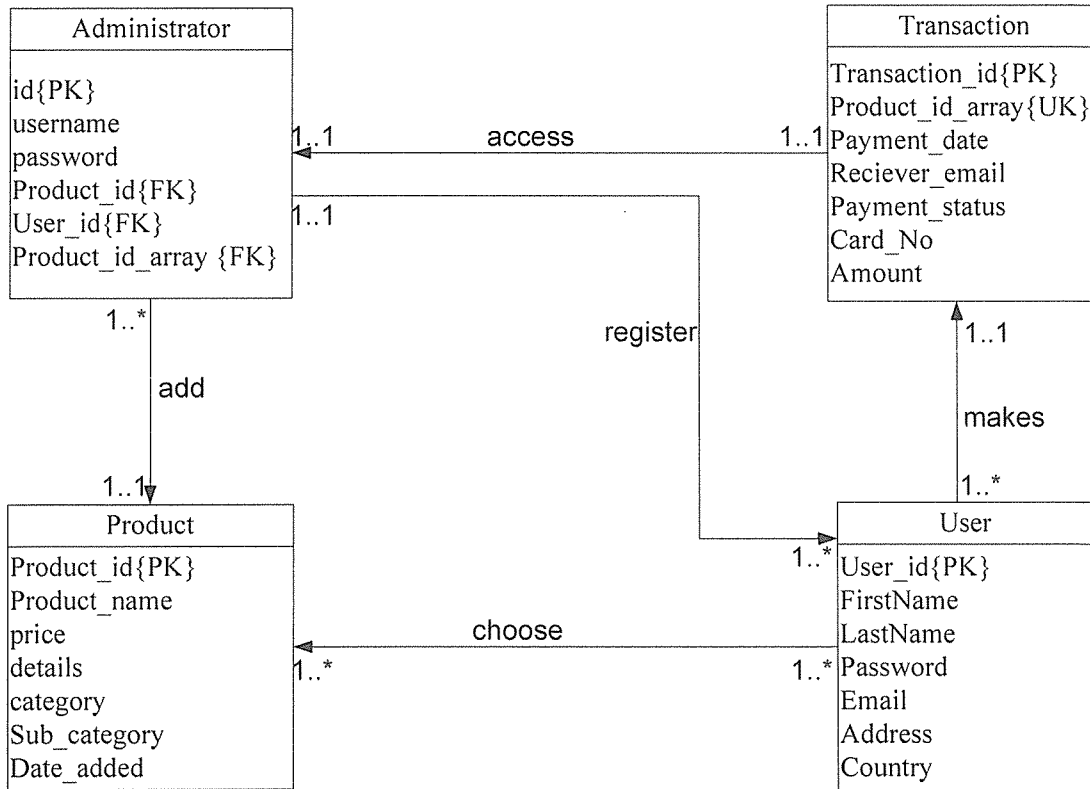


Figure 4.4: Entity Relationship diagram of the system

(iv) **Data Dictionary Attributes**

Attributes	Description	Datatype	Constraints
id	Shows identity as a unique identifier	int(11)	Primary key
username	username	varchar(255)	Not null
password	password	varchar(255)	Not null
Product_id	Product identity	Int(11)	Foreign Key
User_id	User identity	Int(11)	Foreign Key
Product_id_array	Product identity array	varchar(255)	Foreign Key

Table 4.4: Administration

The records of administrators working on the system are recorded in the table above.

Attributes	Description	Datatype	Constraints
User_id	Unique Identifier	int(11)	Primary key
FirstName	First Name	Varchar(30)	Not null
LastName	Last Name	Varchar(30)	Not null
password	password	Varchar(30)	Not null
email	email	Varchar(50)	Not null
Address	Address	Varchar(255)	Not null
country	country	Varchar(255)	Not null

Table 4.5: User

The users of the system information are recorded in the table above.

Attributes	Description	Datatype	Constraints
Transaction_id	Unique Identifier	int(11)	Primary key
Product_id_array	Product identity in the array	Varchar(255)	Unique Key
Payment_date	Payment date	date	Not null
Receiver_email	Receiver email	Varchar(255)	Not null
Payment_status	Payment status	Varchar(255)	Not null
Card_No	Card number	Varchar(255)	Not null
Amount	amount	Double(10,1)	Not null

Table 4.6: Transaction

Attributes	Description	Datatype	Constraints
Product_id	Unique Identifier	Int(11)	Primary key
Product_name	Product name	Varchar(255)	Not null
price	price	Double(10,1)	Not null
details	details	text	Not null
category	category	Varchar(16)	Not null
Sub_category	Sub category	Varchar(16)	Not null
Date_added	Date added	date	Not null

Table 4.7: Products

Product details were recorded as above.

CHAPTER FIVE

System Implementation

5.1 Presenting of findings

Customer shopping trends that were carried out in a more traditional way say a client would have to come to game stores and purchase products and other accessories. A client comes to the store, picks a cart and moves around trying to identify the products that he or she desires., checks the price compares with the other product and decides if he/she will add it to the cart or not. After the choice is made, the customer moves on to the next shelves in search of the next product. This process continues till the customers' shopping list is completed. Customers have faced a problem because they have to come to Kampala so as to get the different products of their choice.

With game stores Online Shopping System however, the following functionalities were catered for;

1. Authentication was catered for where users logged in and can view certain functionality. The administrator of the system also has his own login interface to access the system.
2. Privilege levels were provided for the authorized user of the system where after login, the administrator (level **ADMIN**) and ordinary users (level **USER**) have a different view of the system.
3. The system caters for quick and easy access to products and services provided game stores. This enables for efficient utilization of time and resources.
4. Data storage is another provision enabled by the game stores Online Shopping System. The system stores customer details and their financial transactions.
5. The system also prevents users from making errors by prompting them before and action like logout, delete, update on a particular information. This enables users to confirm actions and minimizes critical error making within the system.

5.2 Challenges Encountered

Throughout the project life time many challenges were encountered at different project design and implementation stages more especially during data collection. For instance ignorance of some customers and employees we intended to interview was a problem even after securing the permission to be given the information from mainly the employees.

5.3 Benefits of the project

The project led to development of an online shopping system that enabled game stores to quickly keep and retrieve information for example on the existing commodities and their prices, the sales made and purchases of commodities needed to be replaced.

The Project has led to the development of an online shopping system that has enabled people (customers) to purchase, make payments of any product online hence increased access to internet.

5.4 Screen shots

5.4.1 Home Page

The page in *Figure 5.5* displays the categories, latest products and their details and it's where the customer registers when they want to shop and also has an option of viewing the shopping cart.



Figure 5.1: Home Page

5.4.2 Successful Membership Registration

The page in Figure 5.2 illustrates the registration of any customer who wishes to shop with game stores.

The screenshot shows a Mozilla Firefox browser window with the address bar displaying 'localhost/E-Business-Software/register.php'. The page title is 'register'. The browser's menu bar includes File, Edit, View, History, Bookmarks, Tools, and Help. The toolbar contains buttons for Back, Forward, Home, Stop, Reload, and a search bar with 'Google' as the default engine. Below the toolbar are links for 'Most Visited', 'Getting Started', and 'Latest Headlines'. The main content area features a registration form with the following sections:

- Sign in:** A link for users who already have an account.
- Your Personal Details:** Fields for * First Name, * Last Name, and * E-Mail.
- Your Address:** Fields for * Address 1, * City, and a Country dropdown menu currently set to 'Uganda'.
- Your Username / Password:** Fields for * Username, * Password, and * Password Confirm.

At the bottom of the form are two buttons: 'Clear' and 'Register'. On the left side of the page, there is a sidebar with a dark background containing white text that reads: 'Game Stores has launched it new website. Check it out Today and get the latest updates on our stock. Shop now has been made easy with Game Stores. Ask any question, make any suggestions and we will get back to you within 24 hours. It will make us serve you better. Feedback We have...'

Figure 5.2: Customer Registration

5.4.3 Add to cart

The page in Figure 5.3 displays the product which is going to be added to the cart, it has the product description, Guarantee, shipping fee and Add to Cart button

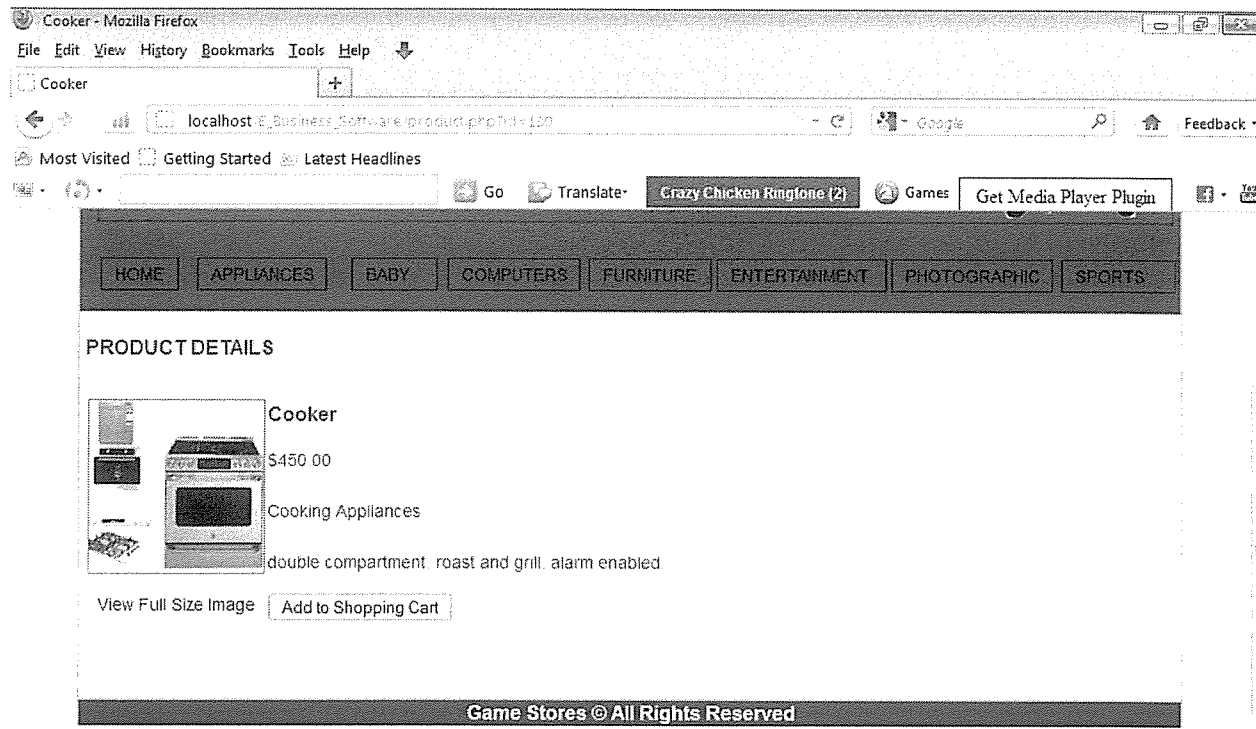


Figure 5.3: Add to Cart

5.4.4 Shopping Cart

The page in Figure 5.4 shows the products in the shopping cart, price, quantity and totals, the customer can continue shopping, recalculate the price or proceed to check out if he or she is through with the shopping.

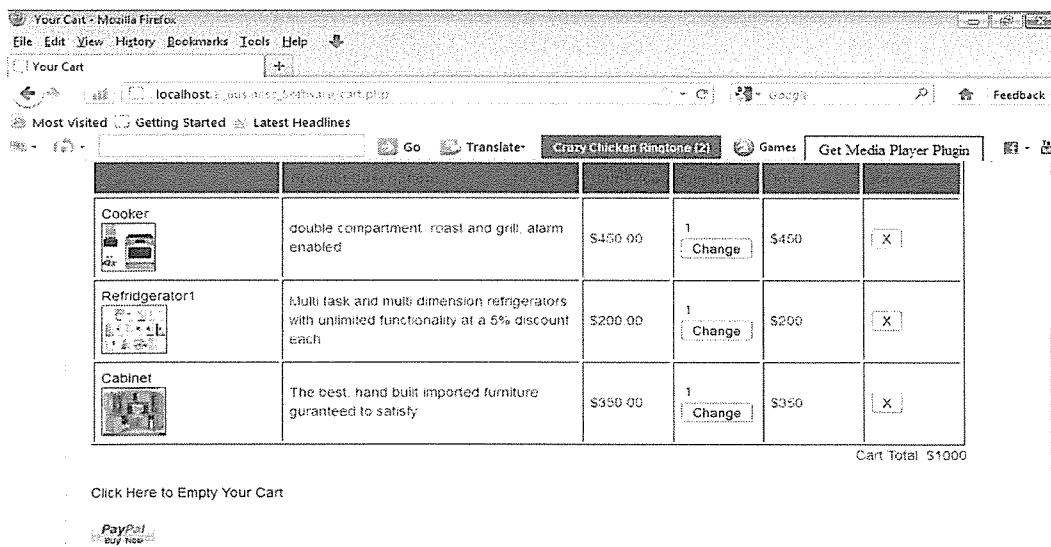


Figure 5.4: Shopping cart

5.4.5 Administrator authentication

The page in *Figure 5.5* displays how the store administrator is prompted to authenticate his identity.

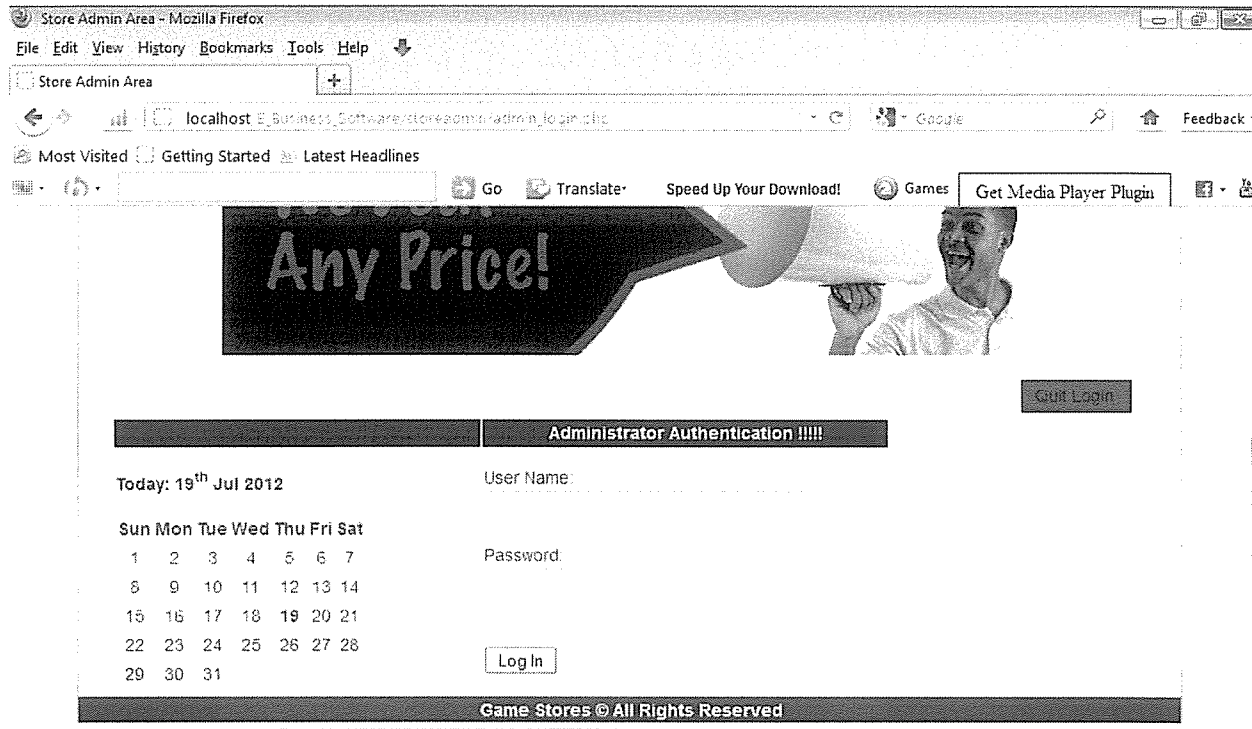


Figure 5.5: Administrator authentication

5.4.6 Successful Admin login

The page in *Figure 5.6* displays the successful Administrator Log in window.

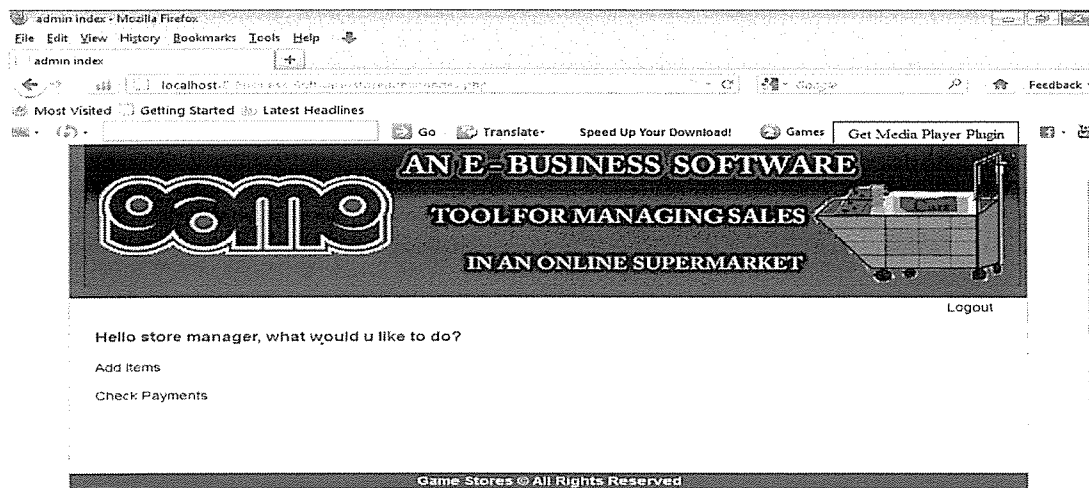


Figure 5.6: Successful Admin login

5.4.7 Administration Panel

The page in Figure 5.7 displays the add item administrative section of the online shopping system of game stores. They can Edit, add, delete and update products, categories and sub categories.

product List - Mozilla Firefox

File Edit View History Bookmarks Tools Help

product List

localhost/business/software/store/administrators_list.php

Go Translate Games Get Media Player Plugin

122	Laptop	\$20.00	Jun 16, 2012	Edit • Delete
123	Refridgerator	\$400.00	Jun 16, 2012	Edit • Delete

Export Result

Add New Shopping Item Form

Product Name

Product Price \$

Category ---Select Category---

Sub Category ---Select Subcategory---

Item Details

Product image

Browse...

Add This Item Now

Game Stores © All Rights Reserved

Figure 5.7: Add item Administrative Panel

5.4.8 Product list

The page in Figure 5.8 displays the administrator panel where the products in the store are listed.

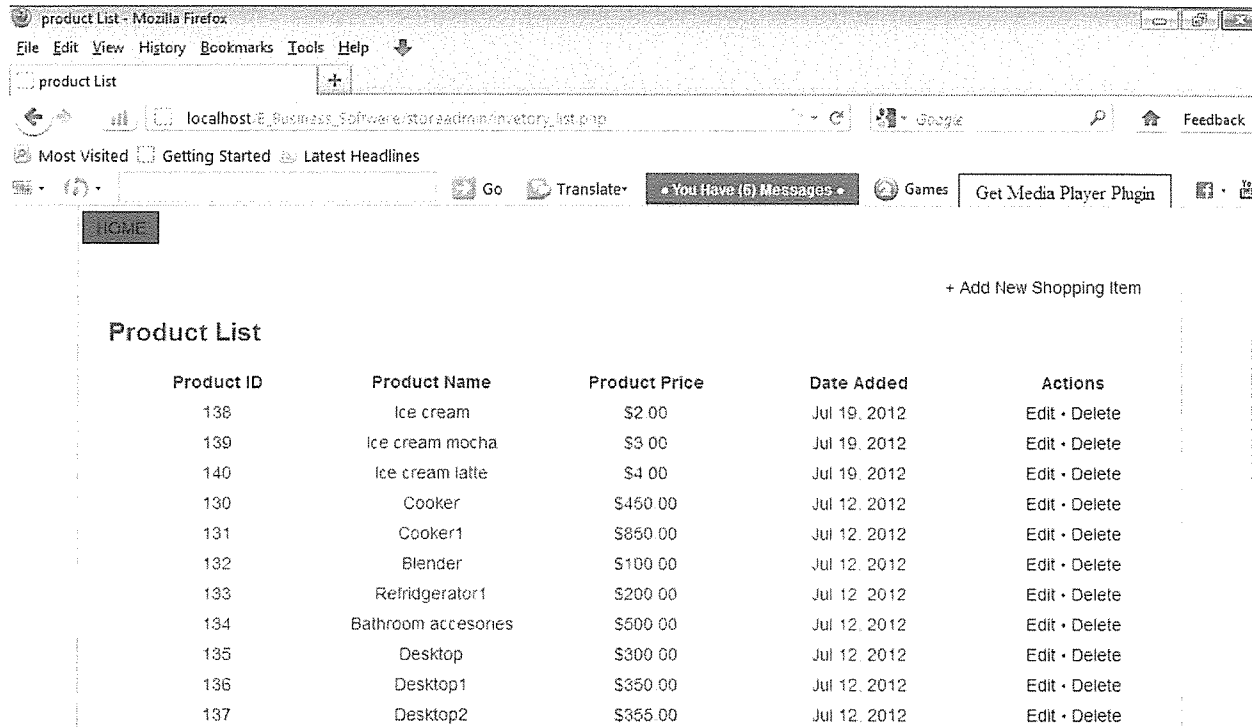


Figure 5.8: Product list

5.5 System Testing

Testing was conducted after all modules of the system were integrated. This phase consisted of security and usability of the developed system to ensure that the system functions well. The developed system was tested for usability, security and efficiency and security. The following tests were carried out:

5.5.1 Unit Testing

This involved testing each module or class or functions that were identified in the system

5.5.2 Integration Testing

This consisted of studying how two or more units work together within a system. Also various components of the system were meaningfully manipulated and this tested the functionality of the system as a whole.

5.5.3 Functionality Testing

This consisted of two types of testing that included:

- (i) Black box testing: This aimed at deriving sets of inputs that fully exercise all the functional requirements of a system.
- (ii) White box testing. This comprised of methods that could perceive what software codes are and base their tests on the software's actual architecture or code.

5.6 Validation Results

Some experts were used in the area of database systems to check whether the system conformed to the standards of similar systems under defined operating conditions. Further tests on validation were carried out on the system to verify that it met the specified user requirements. The system was presented to the users so as to get feedback about the system performance as to whether the system met their needs or requirements.

The users were satisfied with the system and concluded that the system was simple to use allowing users to navigate through the system with ease. The system was fast in responding to the different calls.

CHAPTER SIX

Summary, Conclusion and Recommendation

This project was successful in implementing the goals stipulated earlier in chapter one of this report. The database at the backend stores all the systems information regarding all shopping and management to allow easy report generation, quick product search, inserting, updating and deleting specific records in the database about particular system transactions.

6.1 Summary

The main objective of this project was to develop an online shopping system for game stores. Interviews with users were carried out and observations carried out to determine problems with the current system and getting user requirements for the system.

A new system was designed based on the user requirements system functionalities which included a graphical user interface and a data base for better information storage and processing for easy report generation.

6.2 Conclusion

The study identified major problems faced by game stores due to use of a manual shopping system and attempted to solve them by developing an Online Shopping system that will work alongside the existing one and consists of the following; User friendly interfaces to interact with the back end of the system, Protocols and scripts to link between the database and the interface and report generation engine for producing online shopping reports in real-time.

6.3 Recommendations

Further research should focus on integrating the system with mobile money servers of different companies like MTN, Airtel, WARID and others.

The project team encourages other interested researchers to make more improvements and additions that is to say, a live chat session to enable customers communicate directly with support staff.

Other supermarkets in the country should adopt this system in order to have their problems solved as in the case of game stores. This is because of the efficiency and effectiveness of the

Online shopping System thus reducing on the inconveniences involved in purchasing Products through the Traditional methods of Shopping.

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Appendices

Appendix 1: Questionnaire



KAMPALA INTERNATIONAL UNIVERSITY

We are students of Kampala International University offering the study of Management Information Systems and Business computing, conducting research about shopping systems as well as Online Shopping system for small and large scale businesses. We are collecting data which will eventually help us to come up with a system prototype in the above subject. We therefore request for your sincere responses to the questions in this questionnaire. We appreciate all your cooperation.

1. What is your name?(will not be published)

.....

2. Are you a customer of game store Supermarket?

Yes ☐

No ☐

3. How do you find shopping at game store Supermarket?

☐ Good

☐ Fair

☐ Enjoying

☐ Don't know

4. Do you find any problems looking for products you want to buy at game store Supermarket?

☐ Yes

☐ No

5. If yes, which problems?

.....

6. How do you see shopping and knowing products shifted to online access?

.....

7. Will technology help game store Supermarket capture a higher market and help you as clients too?

.....

Appendix 2: Interview Guide

This interview guide is to the development of an online shopping system. The questions asked aimed at getting data of the development of the online shopping system. You as an employee or customer in this supermarket are kindly requested to answer the questions.

The study is a partial requirement for the award of Bachelor of Science in Management Information Systems and Bachelor of Business Computing of Kampala International University. From personal interviews of various staff of personnel, decisions, details of the current system were obtained.

Steps followed to conduct an interview.

1. We identified the industry we wished to learn about and that was the supermarket industry.
2. We prepared for the interview by deciding on what information we would like to obtain about the industry and also prepared a list of Questions that we would like to have answered.
3. Identified the people to interview and those included the customers in the supermarket and the marketing and sales manager of the supermarket.
4. We arranged the interview by contacting the person to setup an interview with through telephone; such persons included the marketing and sales managers in the supermarket.
5. We then conducted the interview by referring to the list prepared questions; staying on track and allowing for spontaneous discussions.
6. Lastly we followed up the interview by recording the information gathered.

Questions asked included;

1. To the manager

- ✓ What are the most purchased Goods / items in the supermarket?
- ✓ What is the price range of these most purchased Goods?
- ✓ What comments do you give to your customers after purchase?
- ✓ What is the basic prerequisite for making an order in your supermarket?

2. To the Customers

- ✓ What is your most favorite Item for purchase?
- ✓ How rich would you like the web content to be?
- ✓ What part of shopping do you find most satisfying?

Appendix 3: Sample Code

```
<?php
session_start();
if(isset($_POST["username"]) && isset($_POST["password"])) {
    // check if the username and password combination is correct
    //and exists in the database
    $username = $_POST["username"];
    $password = $_POST["password"];

    //      session_register("userId");

    $eaconn = @mysql_connect("localhost","root","")
               or die("Could not connect to the database!");
    $eadb = @mysql_select_db("gamestores", $eaconn) or die ("Failed to find User name/password,Please
contact the administrator!");

    //create query to check n c if staff exists
    $finduser = "SELECT * FROM user
                WHERE username = '$username'
                AND password = '$password'";

    $result = @mysql_query($finduser, $eaconn)
               or die ("User Login failed!" .mysql_error());

    if (@mysql_num_rows($result) == 1) {
        // the username and password match,
        //open apporiate pages
        $row = mysql_fetch_array($result);
        if ($row["userType"] == "Administrator"){
            // set the session
            $_SESSION['Administrator_is_logged_in'] = true;
            // after login we move to the main page
            header('Location: storeadmin/admin_login.php');
            exit;
        }

        elseif($row["userType"] == "USER"){
            // set the session
            $_SESSION['User_is_logged_in'] = true;
            // after login we move to the main page
            header('Location: home.php');
            exit;
        }

    }

    else
    {
        $errorMessage = " Access denied ";
    }
}

?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-
transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
```

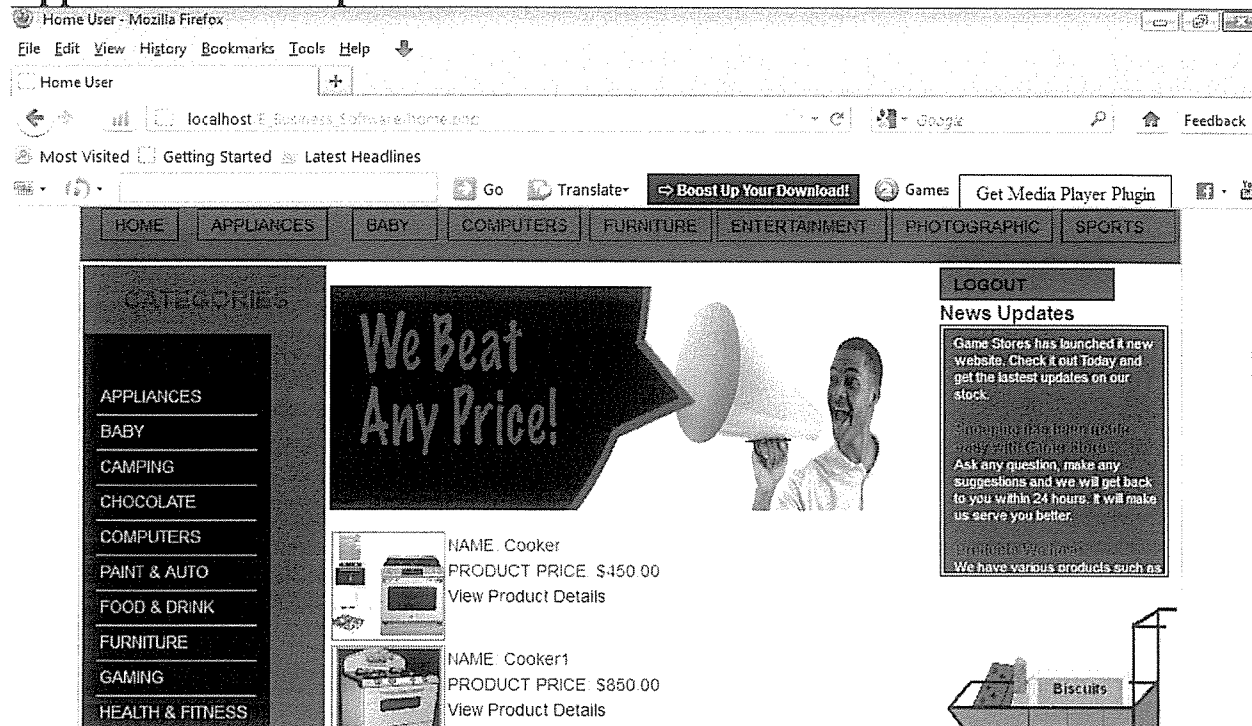
```

<head>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8" />
<title>E-Business Software for Supermarket</title>
<link rel="stylesheet" href="style/style.css" type="text/css" media="screen" />
<style type="text/css">
<!--
td.link {cursor:pointer;}
td.link {padding:2px 10px 2px 10px; cursor:hand;}
.style1 {color: #666666}
#layer1Text { font-family:'Special Elite',cursive;
font-weight:400;font-style:normal; color:#101010;
font-size:48px;
letter-spacing:0px;
z-index:1,position:absolute; left:128px;
top:12px;
display:block
}
#layer2Text {font-family:Arial;font-weight:400;font-style:normal;color:#5cdb29;font-size:30px;letter-spacing:0px;z-
index:1,position:absolute;left:10px;top:10px;display:none}
#layer3Text {font-family:Arial;font-weight:400;font-style:normal;color:#999999;font-size:20px;letter-spacing:0px;z-
index:1,position:absolute;left:20px;top:90px;display:none}
.style18 {color: #0000FF; font-weight: bold; }
.style23 {
color: #0000FA;
font-weight: bold;
}
-->
</style>
</head>
<script language="JavaScript" type="text/JavaScript">

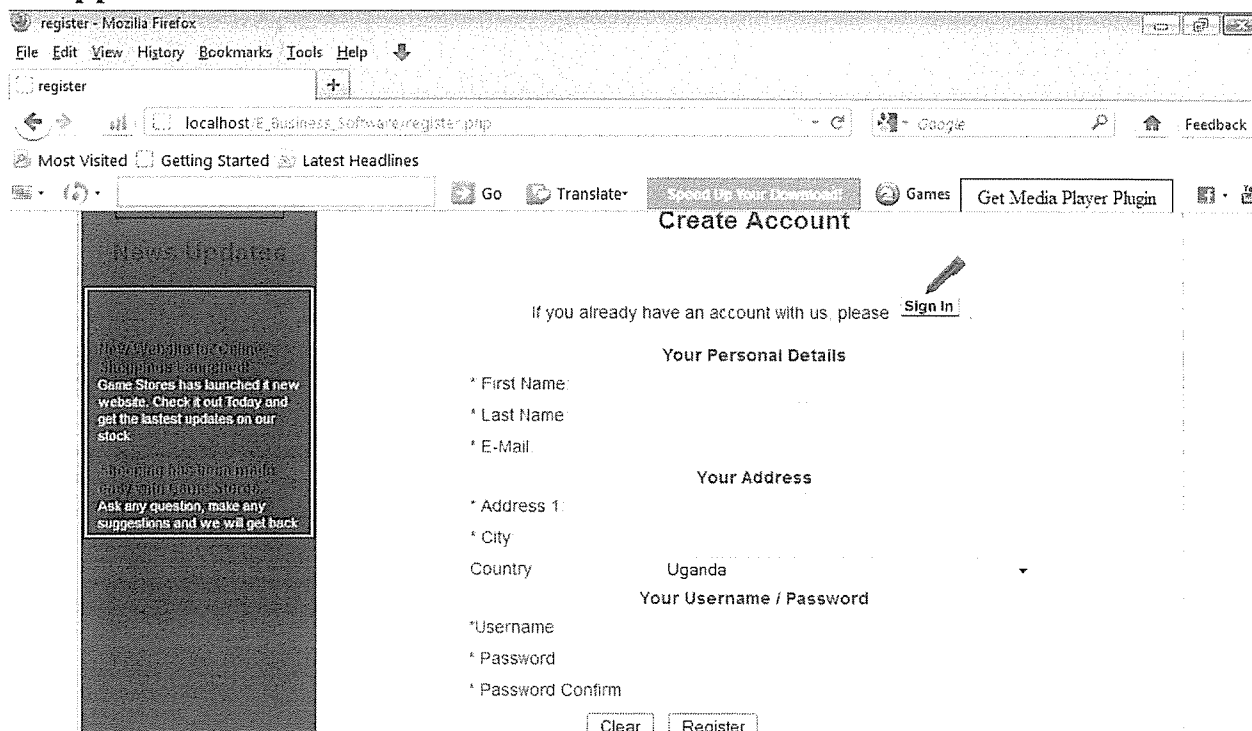
javascript:window.history.forward(-1);

```

Appendix 4: News updates



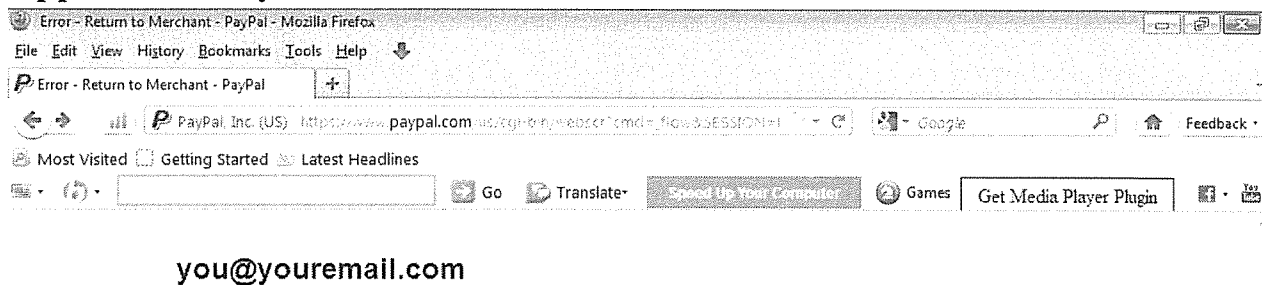
Appendix 5: Account Creation



Appendix 6: An error message after filling in wrong information.




Appendix 7: Payment error



Return to Merchant

PayPal Secure Payments

 This recipient is currently unable to receive money.

[Return to Merchant](#)

PayPal The safer, easier way to pay.
For more information, read our [User Agreement](#) and [Privacy Policy](#).