ONLINE TICKET BOOKING SYSTEM

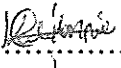CASE STUDY (UGANDA NATIONAL THEATRE)

BY

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A REPORT SUBMITED TO THE COLLEGE OF APPLIED SCIENCE
AND TECHNOLOGY IN THE PARTIAL FULLFILLMENT OF
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UNIVERSITY

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Declaration

I Kodet Ronald Lorika declare that this project report is my own original work and has never been presented to any institution of higher learning for the award of Bachelor of Information Technology of Kampala International University.

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Signature....................

Date.1ˢᵗ.08.2013....

Approval

This graduation Project Report has been submitted with the approval and supervision of:

Signature……………………………………   Date…………… 03/09/13 ……

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List of Acronyms

CRSs..Computer reservations systems

DB..Database

DFD...Data flow Diagrams

EDI...Electronic Data Interchange

ERD...Entity Relationship Diagram

GDS...Global Distribution Systems

HTML...Hypertext Transfer Protocol

IBEs...Internet Booking Engines

OTBS...Online Ticket Booking System

PHP..Hypertext pre-processor

SQL..Structured Query language

SABRE...Semi-Automatic Business Research Environment

UNT...Uganda National Theatre

Abstract

This report describes how ticket booking is done in Uganda National Theatre, their problem statements and by reviewing the literature on existing online ticket booking system in order to acquaint with the available body of knowledge in our area of interest. The report gives a detailed study of the types of electronic payment systems used as mode of payment.

Today more and more people are relying on information technology to perform their operations more efficiently. Computers are put to more use as tools of commerce, governance and education and they can no longer be looked at as luxury items. It is in the process of establishing information technology department in an effort to computerize its operations and service delivery to the public.

It is better at this time for the Uganda National Theatre to come up with an online system that can make booking of tickets easy as part of improving operations and service delivery. The system study found that the existing system (manual) was very slow, prone to errors and hard to quickly generate integrated reports for fast decision-making. This project has developed an online system alternative for tickets booking. Users can book tickets online which makes the processes easier and fast.

CHAPTER ONE

1.0   Introduction

Online Ticket Booking System (OTBS) refers to a system that is able to process tickets for all the events in Uganda National Theatre (UNT). UNT has been losing many customers due to a poor booking system for the tickets.

Ugandan citizens and foreign nationals have to look for agents and pay cash in specific areas around the city to purchase the tickets before any event which results to long queues and time wastage.

1.1   Background

In the early days of American aviation, passengers were very few and the airlines did not fly regularly as at present. Ticket fares were regulated by the Civil Aeronautics Board. All routes, fares and flight schedules were published in the Official Airline Guide and travel agents requested reservations by phone or telex. As the number of passengers flying annually began to grow, this manual system could not cope and the airlines looked at upgrading their method of ticketing.

In 1946 American Airlines were the very first to come out with an automated booking system. This was called the Electromechanical Reservisor which comprised a temporary storage of magnetic drums. The airline's operators had to do the actual lookups as travel agents could not directly query this system.

1953 marked the birth of complex airline reservation systems when American Airlines launched the SABRE (Semi-Automatic Business Research Environment) reservation system. Then DATAS by Delta, Apollo by United Airlines and PARS by Trans World Airlines. Eventually these were replaced by complex Computer reservations systems (CRSs). Originally operated by airlines, CRSs were later extended for the use of travel agents who could query the systems and make reservations themselves.

In the early 1980s CRSs were extended with more features and the new systems were able to book and sell tickets for multiple airlines where the earlier CRSs could handle only one. These newly developed systems were called Global Distribution Systems (GDS). Eventually airlines divested their direct holdings in GDS companies, with the notable exception of the Asian carriers who remain owners of the following GDSs: Abacus, Topas, Axess, Infini and Travelsky. In addition Amadeus has Air France/ KLM, Lufthansa and Iberia as minority shareholders.

Through a GDS, travel agents could easily retrieve the information needed about many airlines. They had greater information-searching and booking capabilities.

Yet passengers themselves needed a travel agent's assistance when making a booking. If any passenger wanted to book a seat or to go through a schedule they would have to contact the travel agents. So the airlines needed a web-based booking system which will allow the passengers to directly retrieve information about the air schedules, make booking etc. That is when the Internet Booking Engines (IBEs) were introduced. IBEs are used by nearly every airline at present to cut off extra expenses and to support instant booking and payment.

The Uganda National Theatre has its own ticketing system that is done manually by the authorized agents who are poorly distributed all over the city and in some areas they are not able to cater for the long queues of guest.

For those who wish to book in advance in order to attend a major entertainment event in the Uganda National Theatre, one has to go to the official booking offices, stand in line and then pay in order to obtain a ticket.

The tickets have to be printed which usually results in potential theft, loss, forgery, illegal selling of tickets and poor record management of tickets sold. This always leads to low revenue income to event sponsors.

The UNT faces a problem of tickets being expensive to manufacture and distribute.

The Researcher has decided to come up with an online ticket booking system that will reduce the long queues and time wastage which discourages the guests to attend certain events that take place in the theatre.

1.2   Problem Statement

Due to the Long queues and overcrowding of the theatre entrances by clients who come to purchase tickets to attend events in Uganda National Theatre, which leads to some guest missing to attend the available event in time. Therefore the researcher will come up with a system that will enable ticket booking easy.

1.3   Main Objective

The main objective is to develop a secure online ticket booking system to improve and enable booking of tickets easier to avoid long queues.

1.4   Specific Objectives

o To identify requirements for the Online Ticket Booking System
o To design the system that will make online booking of tickets easier and fast.
o To test, validate and implement the system.

1.5   Scope

The OTBS will provide options for viewing different events available with different timings for a particular date and also enable a client to register as a member, book a ticket, modify or cancel a particular reservation, details of cost of the ticket, make payments through mobile money and he/she can also modify his details.

The research was carried out to cover the development and implementation of an online booking system for tickets. The researcher got the information from clients, managers, accountants, secretaries, agents and administrators of UNT.
The new system will be used by the administration of UNT.

1.6   Significance

It will introduce the use of mobile phones to make payments through mobile money services hence eliminating the risks of carrying paper money.
It will be easier for clients to check availability of events in the theatre, buy tickets and pay the tickets online.

Electronic-ticketing shall be different from traditional paper tickets because e-tickets will be safer and reliable

Revenue for the theatre will be increased because the online system will attract more customers and there will be no need of hiring many staffs at the counter to sell the tickets

The project will contribute to awareness about the importance of online reservation to the traditional counter booking, by providing well-developed online reservation service facility to the users.

Online ticket buying will remove the hassle of traveling to the theatre before the events, standing, waiting in the queue and hassle of where customers can park their cars

The project will be important for the Partial Fulfillment of the Requirements for the Award of the Degree of Bachelor of Information Technology of Kampala International University.

CHAPTER TWO

LITERATURE REVIEW

2.0   Introduction

This chapter presents the reviewed literature related to the topic of study. This section covers the different ideas on which system designers and builders depended on to construct and improve the means of online ticket booking and description of the types of electronic payments systems that have been used.

2.1   Online Ticket Booking Systems

Online ticket booking system is an information system that uses Internet web technologies to deliver information and services, to users or other information systems/ applications. It is a software system whose main purpose is to publish and maintain data by using hypertext-based principles.

2.2   Online booking/Reservation

Based on Pedone (2001), wide spread use of the internet has led to the emergence of variety of electronic services. Electronic ticket or E-ticket is an example of such a class of e-service-tickets give evidence to their holders to have permission enter a place of entertainment, use a means of transportation, or have access to some internet services. E-tickets give evidence to their holders to have permission to enter a place of entertainment, use means of transportation or have access to some internet services.

Users can get the tickets by purchasing them from a web server or simply receiving from a vendor or from another user who previously acquired them. E-tickets can be stored in a desktop computer or personal digital assistants for future use. For some cases, like e-tickets non-transferable example e-ticket airline, it has to be validated to prevent duplication and ensure authenticity and integrity.

The validation process is called e-ticket problem. Here results in the server either accept or reject the e-ticket and intended to prevent duplication which avoids multiple use of an e-ticket by the same or different users, ensuring authenticity and integrity that e-tickets are only accepted if they

have been issued by an authorized source and have not been tampered with. In addition to privacy, it is desirable that e-tickets should not contain any information associated with their holders.

The validation process is called e-ticket problem here, results in the server either accepts or rejects the e-ticket, and intended to prevent duplication which avoids multiple use of an e-ticket by the same or different users; ensuring authenticity and integrity that e-tickets are only accepted.

According to Pedone (2001), e-ticket validation problem in context in which users can't be trusted and servers may fail by crashing.

Besides that, two specification of the ticket problems are the at most once and the at least once e-tickets problems. Both specifications may result in some e-tickets never being accepted or accepted multiple times in execution with failures.

There were a few protocols that can be used to solve the e-ticket problem, which are quorum based e-ticket protocol, Simple e-ticket protocol and the optimistic e-ticket protocol can be used to solve the at most once e-ticket problem.

2.3   Electronic Payment Systems

According to Charalampos (2004) National and Kapodistrian University of Athens Electronic Payment Systems and Marketing: Electronic payment systems can be considered to be merely the next—albeit significant—step in a long line of changes in payment clearing systems. The electronic settling of accounts, for example, has long been an integral part of payment systems using credit cards, debit cards, automatic teller machines, and prepaid cards. What enables any payment mechanism to be processed electronically is the fact that unlike currency, bills, or coins which carry monetary values, non-cash mechanisms are promises or contracts of payments.

2.3.1 Types of Electronic Payments

Choi et al., (2003) classified all electronic payment systems into three groups: payment through an intermediary, payment based on EFT and payment based on electronic currency.

2.3.2 Payment through an intermediary payment clearing service

According to Choi et al (2003), When face-to-face purchase is replaced with on-line commerce, many aspects of a transaction occur instantly, under which various processes of a normal business interaction are subsumed. For example, a typical purchase involves stages of locating a seller, selecting a product, asking a price quote, making an offer, agreeing over payment means, checking the identity and validity of the payment mechanism, transferring of goods and receipts. In order to be used as a substitute for face-to-face payments, online payment systems must incorporate all or some of these stages within their payment functions.

The lack of face-to-face interaction also leads to more secure methods of payment being developed for electronic commerce, to deal with the security problems for sensitive information and uncertainty about identity. Consequently, electronic commerce transactions require intermediaries to provide security, identification, and authentication as well as payment support, shows a stylized transaction for online commerce using an intermediary.

In this model, the intermediary not only settles payments, it also takes care of such needs as confirming seller and buyer identities, authenticating and verifying ordering and payment information and other transactional requirement slacking in virtual interactions sellers and buyers. A buyer need only send the seller his identification number assigned by the intermediary. Upon receiving the purchase order, the intermediary verifies it with both the buyer and seller and handles all sensitive payment information on behalf of both. This is the electronic commerce model followed by First Virtual Holdings, Inc.

2.3.3 Payment based on EFT—notational funds transfer

The second type of payment classified by Choi et al (2003) systems does not depend on a central processing intermediary. Instead, sensitive payment information (such as credit card or bank account number) is transmitted along with orders, which is in effect an open Internet implementation of financial electronic data interchange (EDI).

2.3.4 Payment based on electronic currency

Choi et al (2003) third type of payment systems transmits not payment information but a digital product representing values: electronic currency. The nature of digital currency mirrors that of paper money as a means of payment. As such, digital currency payment systems have the same advantages as paper currency payment, namely anonymity and convenience. As in other electronic payment systems, here too security during transmission and storage is a concern, although from a different perspective, for digital currency systems double spending, counterfeiting, and storage become critical issues whereas eavesdropping and the issue of liability (when charges are made without authorization) are important for notational funds.

2.4 E-payment initiatives

According to Charalampos (2004) a wide range of initiatives for e-payments over the internet and wireless networks have been developed by a large number of payment service providers, including financial institutions and new providers of payment services comprising technology and telecommunication companies.

The new payment service providers offer their products either directly to customers (positioning themselves between the banks and their customers) or to financial institutions(providing the technical know-how and/or operational facilities).Credit cards ,credit transfers and debit instruments are the methods and techniques which have been developed to adopt the traditional payment instruments for use over the internet.

2.4.1 Credit cards

Credit cards allow customers to make purchases and/or withdraw cash up to a prearranged ceiling. The credit that is granted is either settled in full by the end of a specified period, generally a month, or can be settled in part, with the remaining balance extended as credit.

2.4.2 Credit transfers

Credit transfer is an instruction from the payer to his/her bank to transfer on demand deposits of a certain value to the beneficiary's account. The majority of banks in Europe already provide e-banking applications to their customers with which online credit transfers can be initiated. Some

banks also encourage their customers to use credit transfers for purchases from online shops by providing additional e-commerce facilities. For example, customers can initiate a payment in real time directly from the merchant's website by selecting credit transfer as the payment method.

2.4.3 Debit Instruments

Debit instruments allow the payer to have purchases directly charged (debited) to funds on his/her account at a deposit taking institution. A distinction is made between three types of debit instruments: direct debits, debit cards and cheques Direct debits are pre authorized debits on the payer's bank account that are initiated by the beneficiary. Direct debits are currently often used for recurring payments, such as utility bill payments (e.g. for water, electricity and telephone usage).

2.4.4 Payments made Using Mobile Money

While using this mode of payment, clients who are connected to Mobile money service providers will no longer need to travel with hard cash when they are planning to make their payments.
This may be done by the theatres partnering with Mobile money service providers to use their money transfer service M-MONEY as a ticket payment solution for its customers. The new service can be used to book tickets while in all parts of Uganda.

A registered M-MONEY user who is buying a ticket equal to specified amount including all taxes will be able to use the service. When a customer wants to make payment (inclusive of all taxes), they are given the M-MONEY booking reference number, ticket value in Ugandan shillings inclusive of taxes and the business number via SMS.

A customer will then use this booking reference number to make payment through M-MONEY using the business number and thereafter gets a Ticket confirmation receipt of payment in the Web Portal provided by service providers. Theatres management then sends SMS with a valid ticket number and an e-ticket to the client.

A client using Website has to log on to the website, buys a ticket that equal to specified amount Inclusive of taxes; then uses the booking reference number to make payment through M-

MONEY. Theatres management confirms receipt of payment in the Web Portal provided by MOBILE MONEY service providers and sends both SMS and email with e-ticket to the customer.

2.5 Problems of implementing online Ticketing

Based on Friedman et al. (2000), one of the major inhibitors of on-line shopping has been the perception of poor security associated with payment methods. Indeed, it has been reported that on-line shoppers are still suspicious about transmitting credit card information over the Internet. The need for a lot of financial support: Much as the organization is certain of benefiting from the results of implementing their OTBS, it needs a lot of funds to support such projects. Even when the system is operational, it will need financial support to maintain.

Political influence in the organization: Much as the organization may be in need of an online ticket booking system, the politics within the organization might cause such a project be abandoned even before completion.

Security of the organization's information: Once the organization implements on OTBS, then the information concerning their tickets revenue matters become prone to unauthorized access. This means that the organization will need to set up enough security measures both physical and logical.

Need for more technical expertise. Much as the staff members of the organization may be used to executing the processes involved in ticket management in their organization, there will be need for technical support to run the OTBS implemented for example the system and database administrators may not be present in the organization before the OTBS is set up.

2.6 Case Study on Entertainment and sporting ticketing Industry

Edward (2000) recommends that nowadays, clients and patron really frustrated with existing ticket agents. They feel unhappy with the poor service and high fees charged by current third party ticketing agents.

In reference to Tod et al. (2000), there are a lot of problems that plague the entertainment and sporting ticketing industry now days. GEE was developing its proprietary licensed approach for developing the ticketing solution of the future. Some of the significant entertainment and sporting event ticketing industry challenges GEE addressed while developing its solution are as follows:

1. In efficient of primary sales channel for tickets to entertainment and sporting event
2. Lack of competitive pricing and competition in the industry.
3. Dissatisfaction of patron with today's ticketing options and costs.
4. Lack of ticketing alternatives and options for today's users of ticketing services and products.
5. Limited access to popular events by event patrons. Because of the fragmentation of the seller market, a true market value is difficult to determine.
6. Barer bond business model of physical tickets influence it difficult and challenging to sell or transfer tickets to other patrons on short notice for many corporate ticket owners, as well as certain individual ticket owners.
7. The seller of paper tickets does not collect important demographic information about the patron in many instances.
8. Paper tickets have tremendous risk of theft, loss, counterfeiting and are simply expensive to manufacture and distribute now a days.

Solutions

Computers and Internet are changing commerce because goods and services that are sold in stores, through mail order, or via the telephone are today also bought and sold through various forms of e-commerce. EBay, uBid and Bid.com represent one of the most successful categories of commerce is the Internet-based auction site. GEE'S proprietary model for selling and trading E-Tickets is ideally suited to exploit this receptiveness.

These new technologies should be used to more efficiently determine optimal offer prices, determine what price to offer, buyers can now readily locate products at desire prices or consult market benchmarks.

E-Market places are being created within most industries, attacking outdated business practices and inefficient trading relationships.

2.6.1 Case Study on Computicket

This is an existing OTBS for different entertainment categories such as sports, festivals styles music and travel. Someone can book, even if he or she is not a member by clicking on the menu bar and choose the category of entertainment he or she is interested in booking. After selecting the category, there is need of choosing the date schedule of the event and the venue which is followed by the event schedule with ticket price, venue, date and time and the number of tickets the clients wish to book.

2.6.2 Case Study on National Theatre London

This is an existing OTBS that provides clients with different schedules of events in the National Theatre of London. Booking can only be done by members but the system also provides the new users the opportunity to register as a member and then be able to select the events of their choice. After selecting the category, there is need of choosing the date schedule of the event and the venue which is followed by the event schedule with ticket price, venue, date and time.

2.7 Advantages of Online Ticket Booking

One of the major benefits that e ticketing will offer is that it does not require a paper ticket/record as a confirmation of your booking. The confirmation of your booking deception in the organizer computerized ticketing system in an electronic format. You need not to carry a paper ticket while travelling and hence there is no fear of losing the ticket or forgetting it behind since they exist in electronic format. Helps minimize transport costs by just logging on the net and performing all the necessary transactions and security together with providing flexibility and convenience.

This type of making reservations reduces the risk of you losing your paper tickets since print outs of your e-tickets can be taken anytime and anywhere. No queue for buying events tickets and customers can access more information and find other deals online.

2.7.1 Disadvantages of Online Ticket Booking

A computer crash could cause client reservation and other information to simply vanish. Most networks have backup systems in place to prevent such an occurrence, and customer's printouts of e-ticket documents can guard against this, but it remains a possibility and has happened in the past.

Users need internet and Computer experience in order to access information.
Users need a credit card or some other format of payment in order to make their payments.
If the website is down you won't be able to book online.

2.8 Conclusion

Unlike other existing Online Ticket Booking Systems mentioned above, the proposed OTBS will incorporate Mobile money as one of the means for payments which will bring more convenience to the booking process since mobile devices are cheap and widely used in the country and world at large. The proposed OTBS will also avoid other third party booking companies since the database will be managed and controlled by the theatre administration hence enhancing security.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

This section includes the different research methods that were used in order to achieve the objectives of the project. These methods include: interviews, reviewing of existence documents, observation technique and questionnaires.

3.1 Requirements analysis

3.1.1 Interviews

This involved interviewing Uganda National Theatre Ticket booking Department officials and other relevant persons in different divisions on information concerning tickets. Through the interview, the researchers gave a chance to other respondents to ask all relevant questions concerning the topic of the study. This gave the researchers an advantage of getting first hand information from the respondents.

3.1.2 Review of existing documentation

Document review was used to understand the current system and get relevant literature of the ticket management techniques that are being used. A number of documents were reviewed ranging from invoices, payment receipts, and the printed tickets counter books.

3.1.3 Observation technique

Observation technique helped the researcher to physically observe the processes involved in booking of tickets and the characteristics of these processes for example the speed of information flow and the number of personnel involved.

3.1.4 Use of Questionnaire

In the questionnaire respondents read the questions, interpret what was expected and wrote down the answers. In the case of questionnaires, there was no one to explain the meaning of the questions to respondents. This helped the researcher in collecting information from a larger sample and offered greater anonymity.

3.2 System Design

After collecting data about the existing system at the theatre, the researchers made use of the following tools to design and analyze the new system.

In designing the process involved defining the architecture, components, modules, interfaces, and data for a system to satisfy the needs of the end users.

3.2.1 Conceptual Design

Conceptual design is the first phase of a design where drawings are the primary factor focus. A good conceptual design comprised of the creation of an idea, the exploration of the intentions of an idea and the representation of an idea in form of a plan.

3.2.2 Logical design

There was need of coming up with a logical data model which contained all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which was then used to create a database.

Logical design pertains to an abstract representation of the data flows, inputs and outputs of the system. This was often conducted via modeling, which involved a simplistic and sometimes graphical representation of an actual system. In the context of systems design, modeling could undertake the following forms, including:

a)   Entity Relationship Diagrams

b)   Data flow diagrams

a)   Entity Relationship Diagrams

The E-R Diagram was used in data modeling to set up an entity relational model of the system. This involved determining the relationships between the various entities in the system and associating these entities with their attributes and attribute domains.

b)   Data Flow Diagram

The Data Flow Diagram (DFD) was used to model the processes involved in the system to show how data flows into and out of the system in a top-down manner by giving a graphical representation of a system's components, processes and how they will interface with each other.

3.3 Physical design

Physical design was the actual input and output processes of the system. This was laid down in terms of how data is input into a system, how it is verified/ authenticated, how it is processed, and how it is displayed as output. Physical design, in this context, does not refer to the tangible physical design of an information system.

3.4 System Implementation

a. A scripting language (PHP in particular) embedded in HTML was used to develop graphical user interfaces (GUIs) that the users would interact with while logically interacting with the server.

b. MySQL database management system was used to store, manipulate, retrieve data, querying to generate reports like summaries on tickets being booked.

c. Apache WampServer was processing the user's requests and sending information through the web browser

3.5 Testing and Validation

Testing was carried out based on the relevant review of the system to find bugs such as incorrect functions, ensure that it is complete and accurate which was followed by full system testing to ensure that all units function effectively as a single system.

Validation was carried out by taking the system to the users to check whether it meets their requirement

3.6 Conclusion

The research methods used such as, interviews, review of existing documentation and observation helped to come up with an online ticket booking system which proves to be an effective system that is user friendly and solves a couple of problems that many fans face while booking to watch events.

CHAPTER FOUR
SYSTEM ANALYSIS, DESIGN AND IMPLEMENTATION

4.0   Introduction

This chapter describes and verifies strengths and weaknesses of the existing system used at the theatre. It highlights the requirements of the proposed system, its design and implementation

The system is categorized into logical and physical design; it describes the information flow of the system. This includes; context diagram, dataflow diagram, enhanced entity relationship diagram, data dictionary and the architectural design. The logical design involves the entities of the systems, attributes and the relationships between them as they appear to the users and the system requirements.

4.1   System study

From the data gathered about the existing system in the theatre, a manual system was used for booking and storing data. The system was found to result to long queues which led to overcrowding of theatre entrances by clients who come to purchase tickets in order to watch events, making them miss the events or fail to catch in time.

4.1.1   Weakness of the current manual system

The following weaknesses were identified about the current manual system

- o The system was time consuming and slow due to the manual data capture methods and tools involved because it required storage of records on paper which still needed to be compiled.

- o The system had duplication of records (tickets) due to poor coordination between the agents involved in the process. In that at times they do not inform their workmates about the number of tickets bought due to ignorance or fatigue.

- o The system was highly prone to loss of data since paper based filing of data has the weakness of being misplaced if not well managed. Further still fire was a great threat to the information kept since very many files are paper based and no fire proof and filing cabinets exists.

- o The system did not cater for illiterate agents who felt left out. This is because they could not participate in the running and management of the various activities and records.

4.1.2   Strength

Although the manual system has its problems to different users such as agents and members, after gathering, studying and analyzing information about the present system, the following were established as its strength:

- o The manual system was simple and easy to understand since it needed no computers to operate.
- o The current system was not prone to malware such as viruses, worms and Trojan horses meaning the data stored was not prone to malware.
- o The manual system was cheap to put in place since papers were readily available hence this eased the availability of resources.
- o The system was popular to many fans, agents, and administrators therefore the proposed system had no room for better understanding when in use.

4.2   User Requirements

A number of staff members from the ticket stores of some of the distributors were approached by the researcher during the system study and were asked how and what they would need the system to be and the following were the findings:-

The system should be easy to learn and adopt.

The system should be fast in producing results thus reducing processing time and increasing user productivity.

The system should improve efficiency of information storage and retrieval.

The system should allow users take a few steps to get done with any task.

The system should have an element of consistency especially the interface.

The system should have an element of error validation. That is, a system that would detect a user entering unusual commands or data format that is inconsistent with the database.

The system should provide attractive interfaces with easy navigation throughout the system.

4.3 Functional requirements

These are requirements necessary for the system to function efficiently and effectively and they include the following;

The system should enable customers to register as members before they order event's ticket.

The online Ticket booking System should also enable customers to view ticket availability, ticket cost, events schedules and after booking successfully, an email can be sent to them.

The system should show venue, the start and end times of events, and ticket number.

The system should allow the administrator to upload new information so that the member can check the availability of events.

The system should also allow the agent to view tickets booked by a member.

The system should be able to store the records for all members who have booked tickets.

4.4 Non-functional requirements

These are requirements that do not affect the functionality of the system.

The system should allow user access restrictions through a username and password.

The system should be fast enough to satisfy the user.

User interface should be as simple and intuitive as possible.

User interfaces should provide data validation against user input.

4.5 System specifications

The system requires various hardware and software so that it is compatible with a variety of computers and runs smoothly without any errors. Therefore research was carried out and the following software and hardware were recommended:

Table 4.1 showing software specifications for the system.

Software	Minimum system requirement
Operating system for the client PCs	Windows XP and later versions, Vista/Linux or any server windows and server 2005.
Database management system	MySQL Server,

Table 4.1: Software specifications

The hardware specifications for the system are described in the table 4.2 shown below

Hardware	Minimum system requirement
Processor	Intel Pentium II or above
Processor speed	800 MHZ or above Memory 128 MB RAM or above depending on the Operating system.
Hard drive	10GB or above

Table 4.2 : Hardware Specifications.

4.6 Security Requirements

Before members can book a ticket, they have to create an account with the system with a unique username. Until then they can only access limited sections of the system such as viewing available events.

The system particularly does not accept blank fields or non valid input. The system has a unique login section for the admin who can view and carry out a series of activities. Users can logout at any time they fill like since there are provisions for such on any authorized page.

4.7 System Design

The researcher approached the design of the system by modeling the processes and data involved in the system.

4.7.1 System Architecture

Figure 4.1 describes the architectural design of the developed online ticket booking system showing how the system users interact with the graphical user interface and how the interface goes ahead to interact with the database.
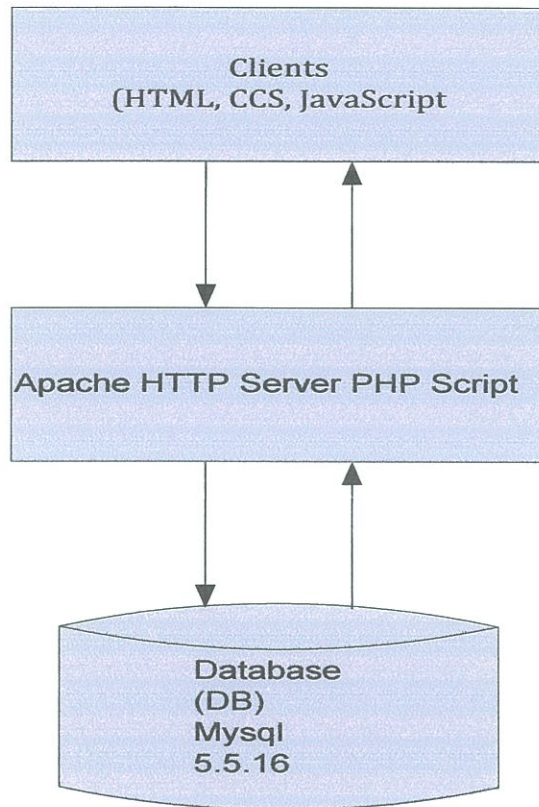
Figure 4.1: Showing system architecture

4.7.2   Conceptual System Design

This is a process of constructing a model of information concepts that were used in modeling the prototype. The models constructed included a context diagram, data flow diagram and entity relationship diagram.

Context Diagram

Figure 4.2 is a context diagram that shows the interaction of the system with the external entities.
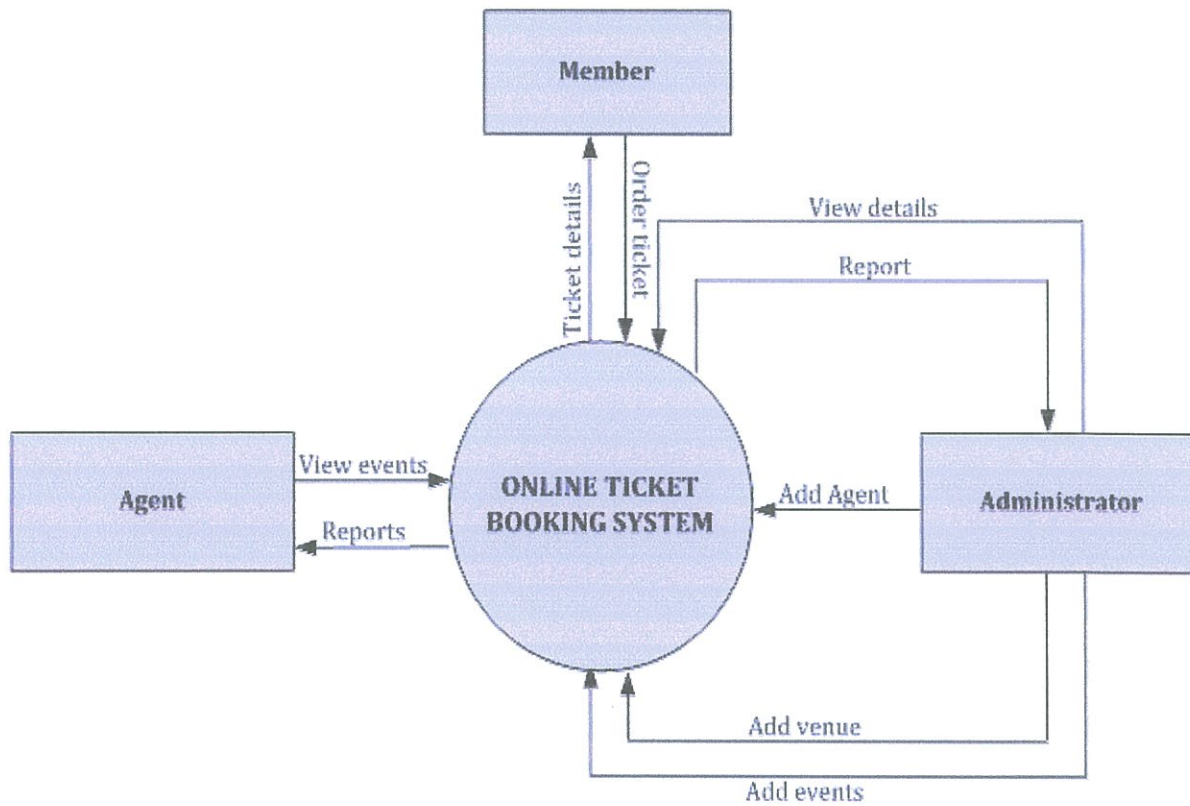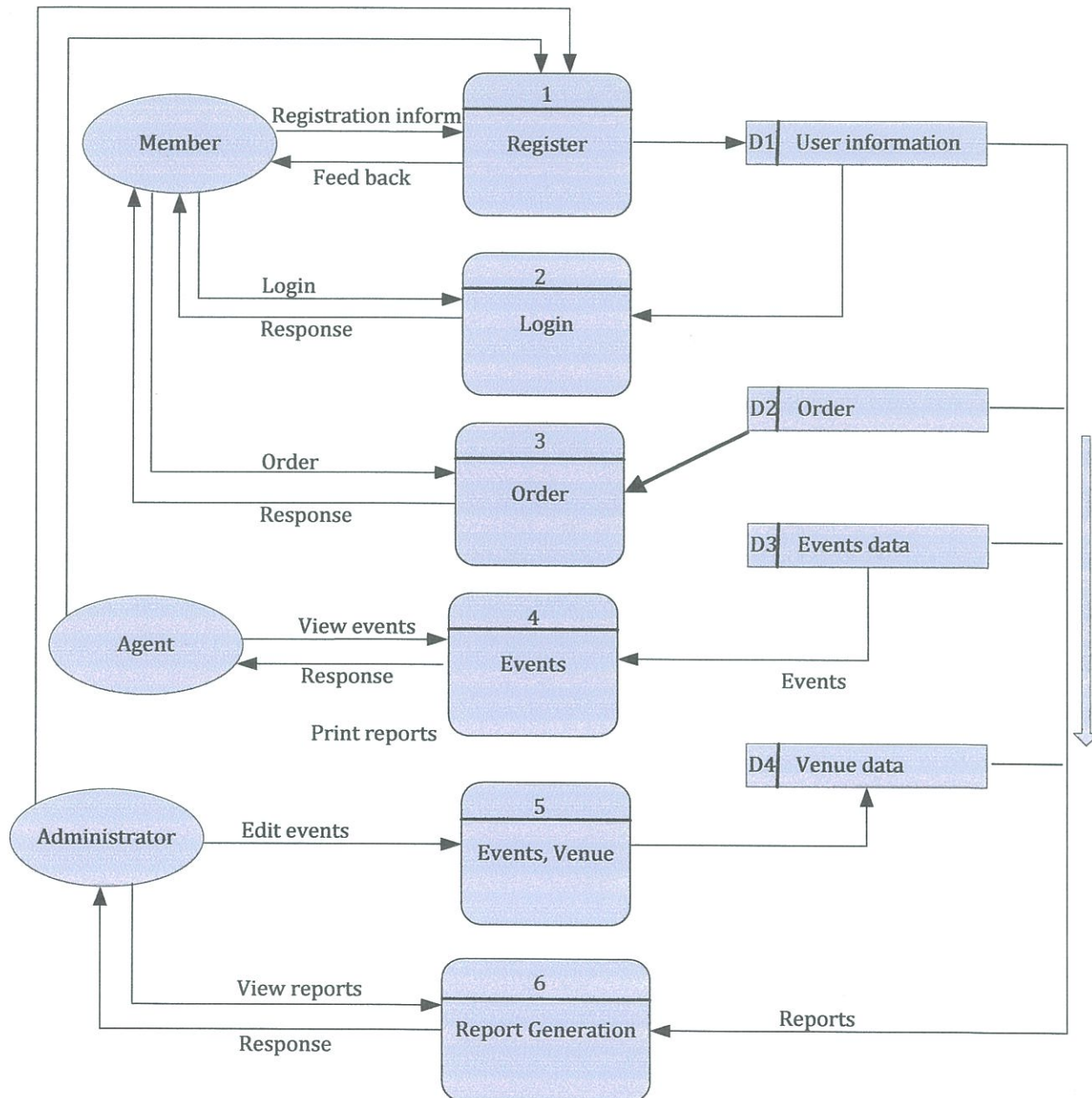External entities are namely; Member, Administrator and Agent.

Figure 4.2: Context diagram

Data Flow Diagram

Figure 4.3 shows the flow of information for user's log in into the system, up to the administrator updating the database and viewing of generated reports

Figure 4.3 : Shows the flow of information for user's log in into the system

Database Design

a) Conceptual database design

This is the design of a model of the information used in the system independent of all physical consideration. This involves identification of the entities, relationships and attributes.

I. Entities and their attributes in the System.

The entity types that were identified were; event, member, agent and administrator entities.

Event is the area or major objects under a search

Member is the information consumer

Agent acts as a representative and an authorized user of the online ticket booking system and helps clients to acquire tickets at various venues.

Administrator maintains the data in the database.

a. Table 4.3 shows member, agent and administrator entities and their attributes

Member	Agent	Administrator
member id (PK)	agent id(PK)	administrator id(PK)
user id(FK)	user id(FK)	user id(FK)
Fname	Fname	Fname
Lname	Lname	Lname
Password	Password	Password
Gender	Gender	Gender
Email	Email	Email
Addr	Addr	Addr
Usertype	Phone	Phone
	Usertype	Usertype

Table 4.3: Entities and their attributes

I. Entities and Multiplicities

The entities were then structured into binary entity relationship diagrams as shown in figure 4.4 below.

```
┌──────────────┐   1..1      Orders      1..*    ┌──────────────┐
│   Member     │─────────────────────────────────│   Ticket     │
└──────────────┘              ⇒                   └──────────────┘
```

Assumption: A member orders ONE to MANY tickets and a ticket can be ordered by ONLY ONE member

```
┌──────────────┐   1..*      Hosts       1..1   ┌──────────────┐
│   Event      │────────────────────────────────│   venue      │
└──────────────┘              ⇐                  └──────────────┘
```

Assumption: An event can be hosted by ONE venue and a venue can host ONE to many events

```
┌──────────────┐   1..*     Confirms     1..*   ┌──────────────┐
│   Agent      │────────────────────────────────│   Ticket     │
└──────────────┘              ⇒                  └──────────────┘
```

Assumption An agent confirms ONE to MANY tickets and a ticket can be confirmed by ONE to MANY agents

```
┌──────────────┐   1..1     updates      1..*   ┌──────────────┐
│   Admin      │────────────────────────────────│   Venue      │
└──────────────┘              ⇒                  └──────────────┘
```

Assumption: An administrator updates ONE to MANY venues and a venue can be updated by ONE administrator

```
┌──────────────┐   1..1     Updates      1..*   ┌──────────────┐
│   Admin      │────────────────────────────────│   Event      │
└──────────────┘              ⇒                  └──────────────┘
```

Assumption: An administrator updates ONE to MANY event and an event can be updated by ONE administrator

```
┌──────────────┐   1..1      Adds        1..*   ┌──────────────┐
│   Admin      │────────────────────────────────│   Agent      │
└──────────────┘              ⇒                  └──────────────┘
```

Assumption: An administrator can add ONE to MANY agents and an agent can be added by one administrator

Figure 4.4: Binary entity relationship diagram

The binary entity diagrams were assembled into an enhanced entity relationship diagram as shown in figure 4.5
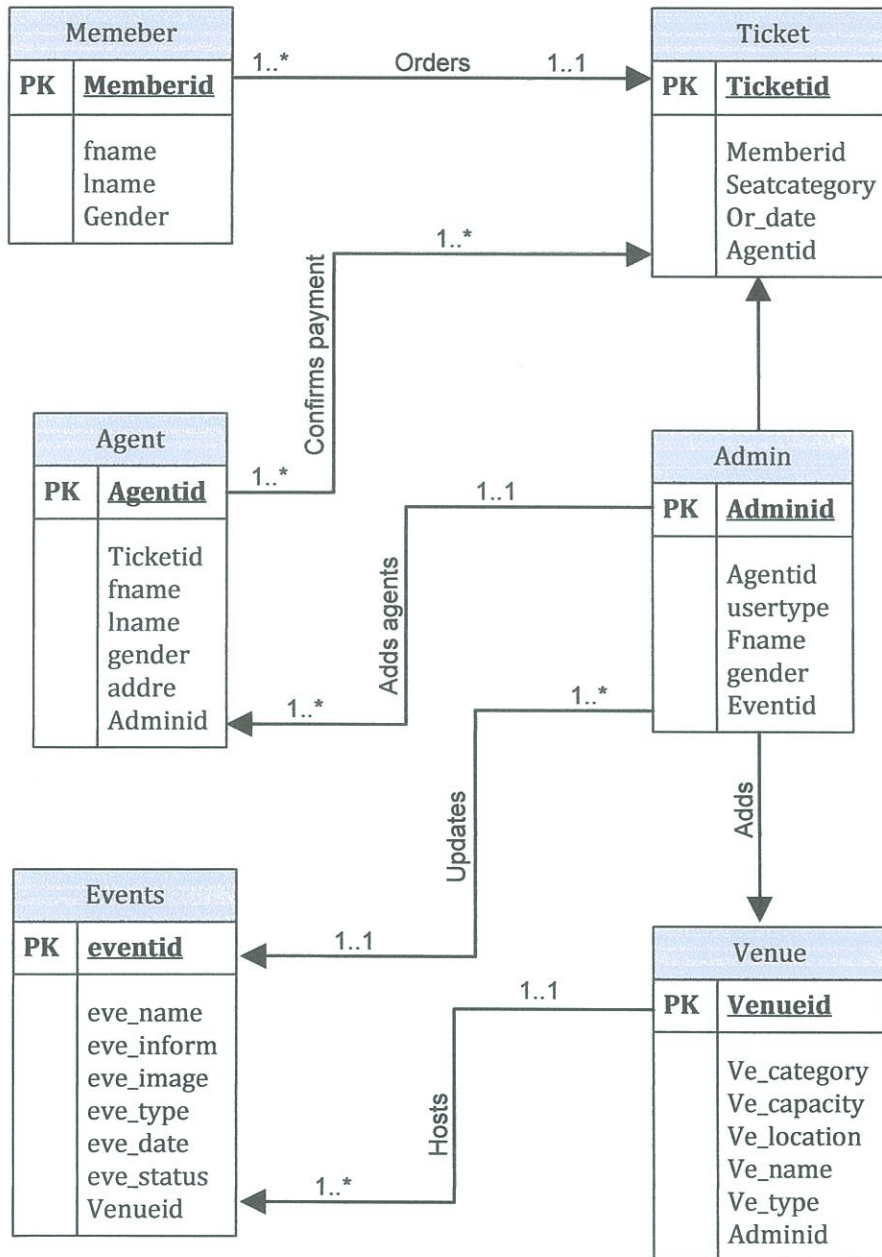
Figure 4.5: Enhanced Entity Relationship Diagram

Description of Relationships (Data Dictionary)

The data dictionary shows a centralized repository of information about data upon various processes such as ticket booking, venue categories.

Table 4.4 describes the administrators, data types description of field name and the outstanding details

Field Name	Data Type	Description	Outstanding detail
Adminid	Int(20)	Admin Id	Not null, PK
Userid	Varchar(50)	User Id	Not null, FK
Fname	Varchar(50)	Admin's fname	Not null
Lname	Varchar(50)	Admin's sname	Not null
Password	Varchar(50)	Admin'spassword	Not null
Gender	Varchar(10)	Admin'sgender	Not null
Email	Varchar(50)	Admin'semail	Not null
Addr	Varchar(50)	Admin's address	Not null
Phone	Varchar(15)	Admin's phone number	Not null
Usertype	Varchar(10)	Admin's user type	Not null

Table 4.4: Administrator

Agent's table 4.5 describing agent, data type, the description of the field names and the outstanding details of the agent

Field Name	Data Type	Description	Outstanding detail
Agent id	Int(20)	Agent's id	Not null, PK
Userid	Varchar(20)	User's id	Not null
Fname	Varchar(50)	Agent's first name	Not null
Lname	Varchar(50)	Agent's sir name	Not null
Password	Varchar(50)	Agent's password	Not null
Gender	Varchar(10)	Agent's gender	Not null
Email	Varchar(50)	Agent's email	Not null
Adder	Varchar(50)	Agent's address	Not null
Phone	Varchar(15)	Agent's phone number	Not null
Usertype	Varchar(10)	User type	Not null

Table 4.5: Agent

Event table 4.6: describing event, data type, the description of the event and the outstanding details of the event.

Field Name	Data Type	Description	Outstanding detail
Eve id	Int(20)	Event's id	Not null, PK
eve_name	Varchar(50)	Event's name	Not null
eve_venue	Varchar(50)	Event's venue	Not null
eve_category	Varchar(50)	Event's category	Not null
eve_image	Varchar(20)	Event's image	Not null
eve_info	Varchar(500)	Event's information	Not null
eve_date	Varchar(50)	Event's date	Not null
eve_time	Varchar(50)	Event's time	Not null
eve_status	Varchar(50)	Event's status	Not null
Venue id	Int(20)	Venue id	Not null, FK

Table 4.6: Event

The table 4.7 shows member name, data type, description and the details of the associated member.

Field Name	Data Type	Description	Outstanding detail
Memberid	Int(20)	Member's id	Not null, PK
Userid	Varchar(20)	User's id	Not null, FK
Fname	Varchar(50)	Member's first name	Not null
Lname	Varchar(50)	Member's sir name	Not null
Password	Varchar(50)	Member's password	Not null
Gender	Varchar(10)	Member's gender	Not null
Email	Varchar(50)	Member's email	Not null
Addr	Varchar(50)	Member's address	Not null
Phone	Varchar(15)	Member's phone number	Not null
Usertype	Varchar(10)	User's type	Not null

Table 4.7: Member

Venue table 4.8 showing the fields, data type, description and the outstanding details.

Field Name	Data Type	Description	Outstanding detail
Venueid	Int(20)	Venue's id	Not null, PK
ve_name	Varchar(50)	Venue's name	Not null
ve_capacity	Varchar(50)	Venue's capacity	Not null
ve_location	Varchar(50)	Venue's location	Not null
ve_phone	Varchar(50)	Venue's phone number	Not null

Table 4.8: Venue

Below is a ticket table 4.9 showing field names, data types description of the field names and the outstanding details.

Field Name	Data Type	Description	Outstanding detail
Orderid	Int(20)	Order id	Not null, PK
Or_fname	Varchar(50)	Order first name	Not null,
Or_sname	Varchar(50)	Order sir name	Not null
Or-phone	Varchar(50)	Order phone	Not null
Or_email	Varchar(50)	Order email	Not null
Or-date	Varchar(10)	Order date	Not null
Seat_cat	Varchar(50)	Seat category	Not null
or_status	Varchar(50)	Order status	Not null
Memberid	Int(20)	Member's id	Not null, FK
Agentid	Int(20)	Agent's id	Not null, FK
Eventid	Int(20)	Event's id	Not null, FK

Table 4.9: Ticket

4.9 System Implementation

The system is made up various components each of which performs a specific role to achieve the objectives of this project as stated earlier in the project report.

Components of the online ticket booking system include;

4.9.1 The Graphical User Interface (GUI)

This component mainly allows the user to interact with the system. It provides the following services;

a) Authentication of members. The system allows the members to login into the system so as to gain access to the system services.

b) Registration and management of users. Through submission of user profiles to the system, the user can be managed and registered.

c) Data entry forms. The system provides the administrator with data entry forms through which they add booking events and venues into the backend of the system.

d) Reports Display. The system provides the agents with detailed report showing the amount of tickets that have been booked.

4.9.2 The database component

This component serves as the back-end of this system and provides the following services;

a) Insertion. Allow the user to commit data to the system's database

b) Deletion. System allows the administrator to delete unwanted data in its database.

c) Update. The system allows the web application administrator to log into the system and add, update information on tickets.

d) Searching. The system allows the user to search information about a given record in its database.

e) Data retrieval. The system allows a user to get information about a given record.

4.9.3 Security component

This component handles the security issues of the system through the following

Member registration and management

4.9.3 Security component

This component handles the security issues of the system through the following

Member registration and management

This helps in registering members by giving them access rights to the services provided by the system. Also manages user accounts through updating user's profiles and deleting of users who are no longer authorized to access the system.

User Authentication.

A user is requested to submit user login details created at the time of registration to gain access to the system functionalities. Without the right log in information, a user can't access the system.

4.9.4 Conclusion

This chapter gives clear indication of the information flow between the system and the users of the system. It shows the security part of the system and the benefits that the users gain from using the system. Convenience and effectiveness of the system gives the users ease of using the system

CHAPTER FIVE
PRESENTATION OF RESULTS/FINDINGS

5.0   Introduction

This chapter discusses the conversion of the above designs into a proper working computer application. It shows the presentation of the design solution implemented in chapter 4 to meet the requirement of the proposed system. The researchers designed possible formatted, recommended input and output screens to be used for the new system in place. These forms were intended to ensure accurate completion of the system and keeping the system attractive to the users. The researchers also grouped the data in a similar way from one application to the next and therefore meeting the purpose for which they are designed.

5.1   Explanation of Results

The outcome of the project was a tested prototype that has the following functions

a) To study the existing online ticket booking system and to review the related literature on the online ticket booking system was achieved through the use of data collection methods such as interviews, and reviewing of existing documents.

b) The design of the online ticket booking system was done by use of design tools such as Data Flow Diagrams (DFD) and an Entity Relationship Diagram (ERD).The use of data flows diagrams was to examine data inputs, outputs and processes while showing how data moves through the system. Entity Relationship Diagram was used to find the entities, their attributes and relationship between those entities. It is from these relations or tables that the system databases were formed.

c) PHP, MySQL and HTML were used in the implementation of the system which helped to bring the system to life.

   Samples of the graphical user interface are shown in figures 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7

5.2   System testing

Testing was carried out based on the relevant review of the system to find bugs such as incorrect functions, ensure that it was complete and accurate and finally a full system testing was done to ensure that all units function effectively as a single system.

5.3 Validation

Validation was carried out by taking the system to the users to check whether the system meets the specified requirements.

5.4 The system map

The system map shows how users of the system logs in and the various activities they undertake as shown below in figure
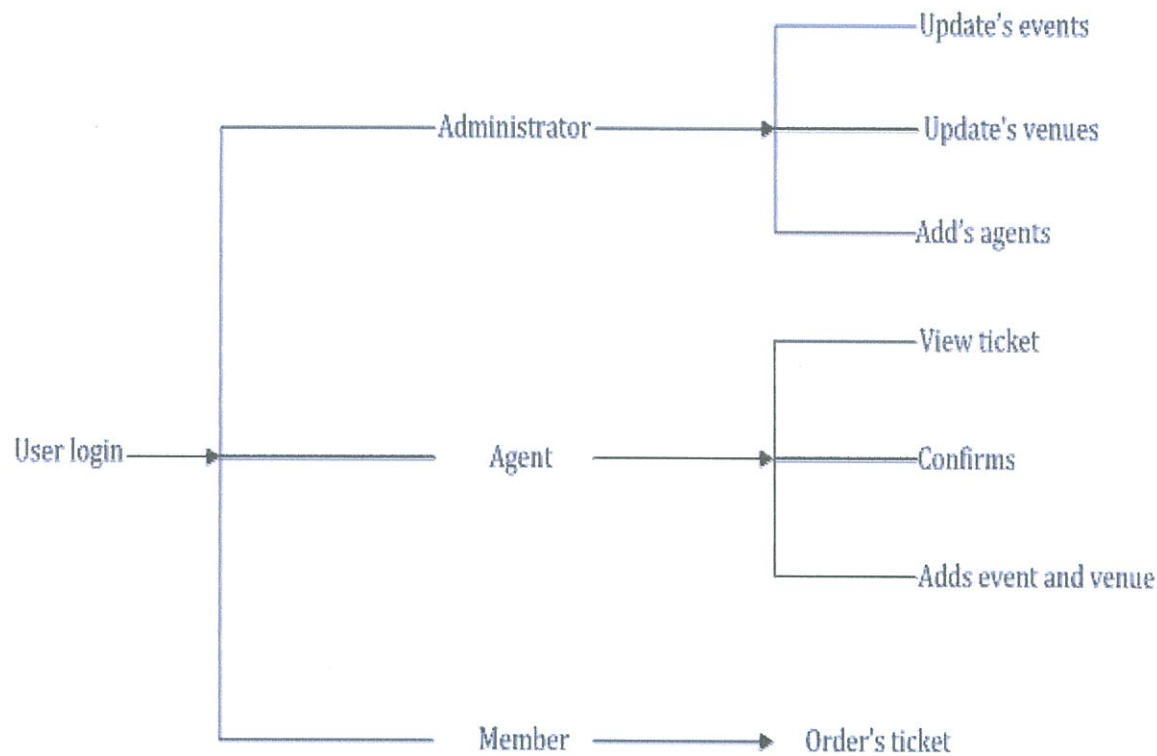
Figure 5.1 : The system map

5.5 Conclusion

This chapter represents the description of results and recommendations, how the system was tested by the researchers and how it was validated by the users.

Home page

Figure 5.2 shows the interface used by the administrator, agent and members to access information
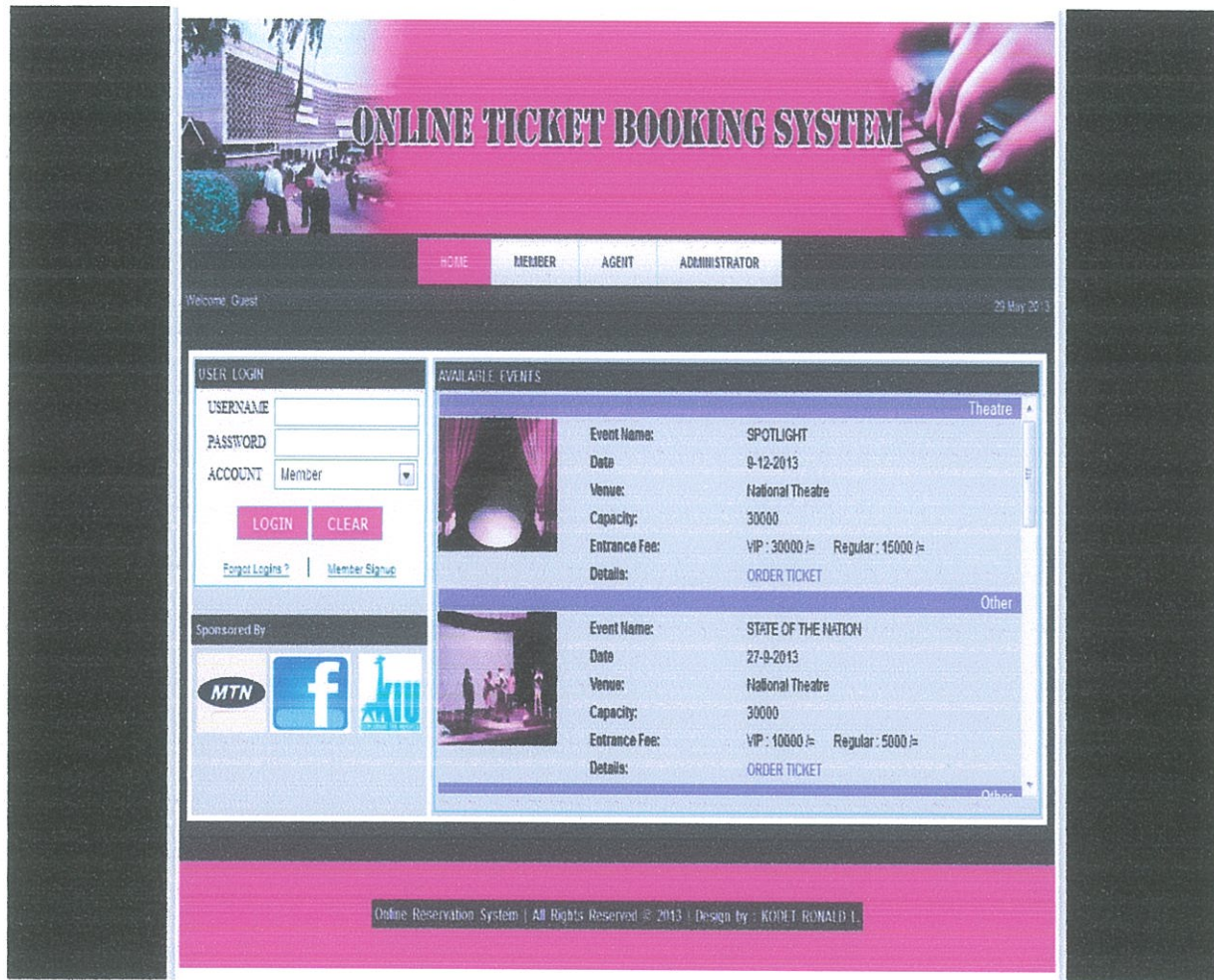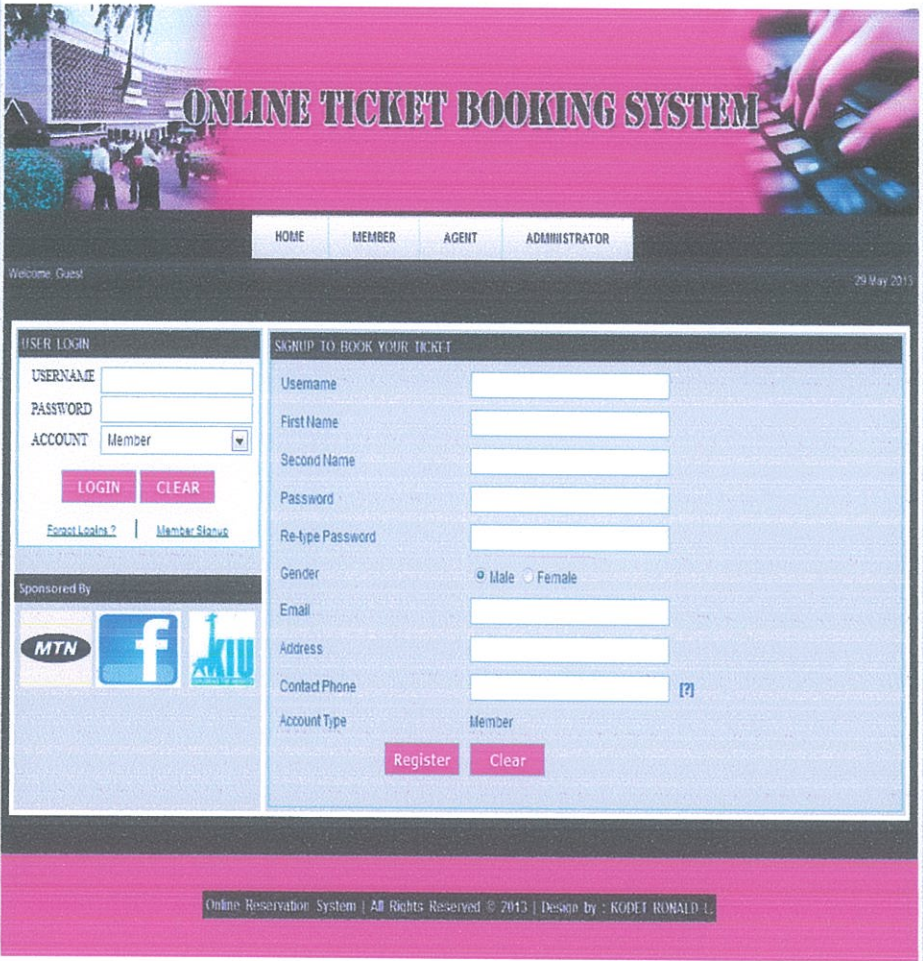
Figure 5.1: home page

Member sign up page

When a new member wants to access the system he or she has to sign up to an interface as displayed on the screen below in Figure 5.3

Figure 5.2: Member sign up page.

Registered member

Figure 5.4 Displays a registered member accessing the system.
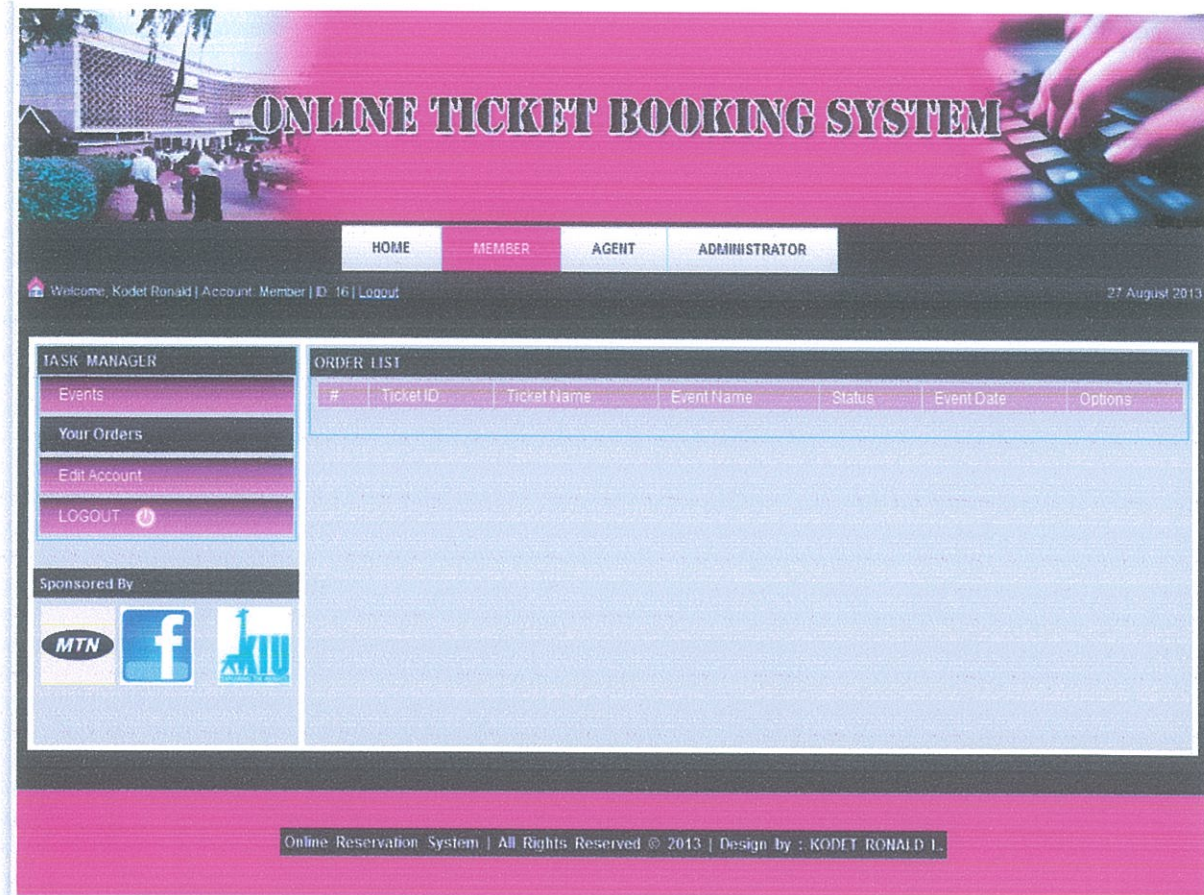
Figure 5.3: Registered member form.

Unregistered member

Figure 5.5 shows unregistered member denied access to the system because they don't have privileges required to access the system.

Figure 5.4: Unregistered member form.

Administrator accessing the system

For an administrator accessing the system after logging in, the screen is displayed as shown in figure 5.6 below.

Figure 5.5: logged in administrator form

Administrator adding events

Figure 5.7 shows administrator adding new event to the system. The registered members can be able to view the added events.

Figure 5.6: An administrator adding new event form.

Administrator viewing and printing a report

Figure 5.8 shows administrator viewing and printing the report of the bookings and member details. Only the administrator can view and print a report.
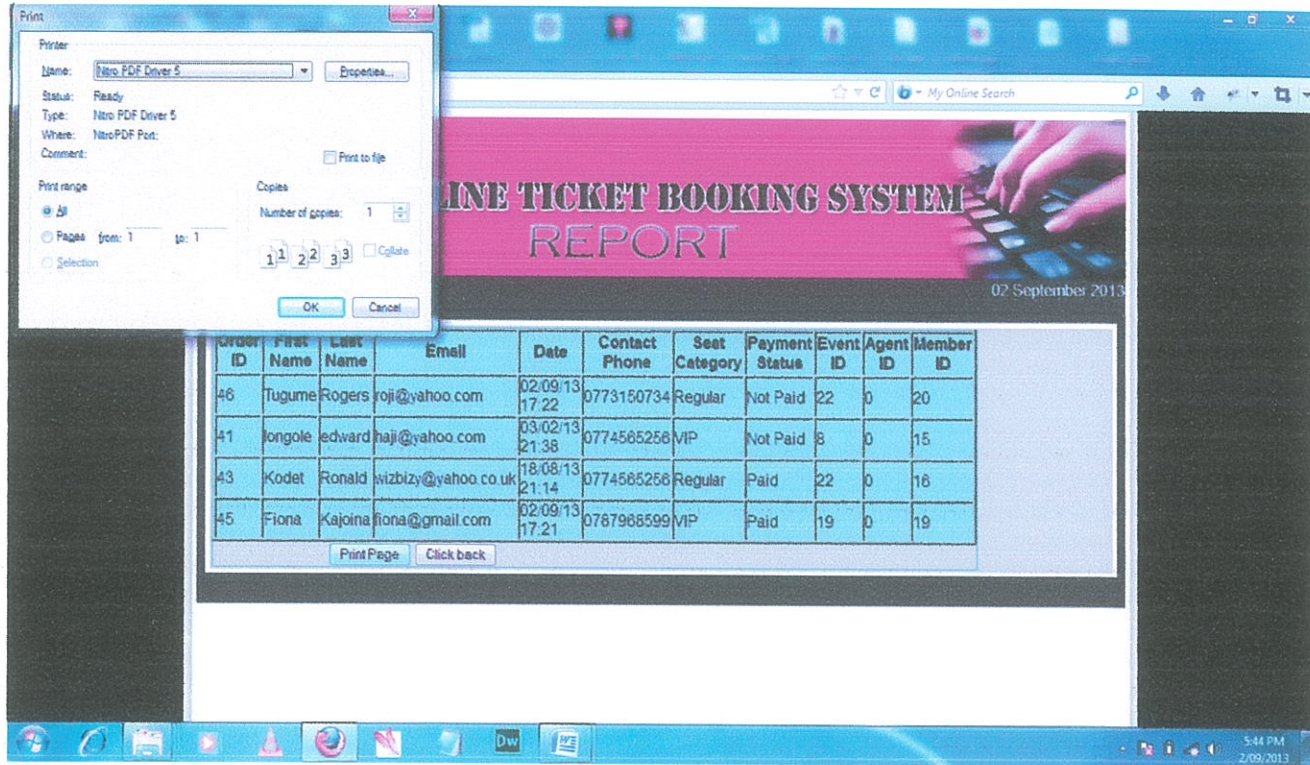

Figure 5.8: An administrator viewing and printing report.

CHAPTER SIX
CONCLUSION, SUMMARY AND RECOMMENDATIONS

6.0 Introduction

This section discusses the achievements realized in relation to the objectives of the project, the limitations encountered during the project and concluded by giving recommendations regarding this project.

6.1 Discussion of Achievements

The researcher was able to achieve the project's intended objectives as follows:

The users of the system are able to book tickets and retrieve stored information about tickets

The system is also customizable for the theatre revenue management needs.

6.2 Limitations

Much as the researcher was able to obtain the above achievements, a number of limitations were experienced during the project implementation as stated below;

During the system study, the stadium staff members (who were among the target groups to be interviewed) were reluctant in giving information regarding ticket booking, claiming that those were sensitive information. This delayed the speed progress of the project.

During the implementation of the system, there was limited number of computers that have the software needed hence affecting the progress of the project.

6.3 Recommendations

We recommend that in the future if other researchers have interest in Online Ticket Management for theatres or any other entertainment institution, this project should be a starting point. Future work may consider all other sources of ticket booking at the various theatres although this study considered the major theatre (UNT) only.

Training of theatre staff on the use and functionality of the system should also be carried out.

We also recommend that many people use the system and enjoy the benefits associated with it.

In future, additional functionalities should be made on the system to cater for improvements in using the OTBS.

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Appendices

Appendix 1: Gantt chart

	Work Break down structure	Jan	Feb	March	April	May	June	July
1	Data collection		■	■				
2	Data analysis		■	■	■			
3	System Design					■	■	
4	System Implementation						■	■
5	Validation							■
6	Report writing							■

Appendix 2: Project Budget.

Item	Cost/Amount (UGX)
Storage devices; Flash Disk (4GB)	40,000
Stationery: Hand/Note Books (6),ream, clip boards pens and file	38,000
Printing, binding and photocopying	30,000
Laptop	1,000,000
Software	50,000
Rewritable Compact Discs	5, 000
TOTAL	**1,163,000**

Appendix 3: Interview guide

I would like to conduct an interview with the management of Uganda National Theatre and clients who use the theatre in order to ascertain the user needs and requirements so as to develop an online ticket booking system. Feel free to express your opinions about the current system

A. Tickets Administrator:

1. Is there a system in place to manage tickets booking in the theatre?
2. What is the procedure for one to obtain a ticket?
3. What information do you give out to the clients before they book?
4. How do you know the amount of tickets being sold?

B. Theatre Client:

1. What procedure do you go through to get a ticket?
2. Which challenges do you face while booking?
3. If there are some challenges faced, what should the new system cater for?