FACULTY OF SCIENCE AND EDUCATION

DEPARTMENT OF COMPUTER STUDIES

A WEB-BASED TOURISM MANAGEMENT SYSTEM

(CASE STUDY OF SIPI FALLS, KAPCHORWA DISTRICT, UGANDA)

By

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This Final Year Project Report is submitted to the faculty of science and education, department of computer studies for the Study Learning to a Project in Partial fulfillment of the Award of the Degree of Bachelor of Information Technology at Busitema University.

AUGUST 2026

DECLARATION

I **Chepkwemoi Damaris** of Registration number **BU/UP/2023/1481** do hereby declare that this project is original and has not been submitted for any other degree award to any institution/University before.

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APPROVAL

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DEDICATION

I thank the Almighty GOD who successfully enabled me to complete the entire course and my project. I dedicate this project to my beloved mother Mrs. Chelangat Scovia and my lovely brothers and sisters. Special thanks to my supervisor Dr. Nandutu Irene for her tireless efforts towards achieving my degree and throughout the entire course. I also thank my fellow course mates and friends who put effort through my education to this level. May GOD bless you and fulfill the desires of your hearts and supply your needs according to his riches in glory.

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ABSTRACT

This study focuses on the design and implementation of a web-based tourism management system for Sipi Falls in Kapchorwa District, Uganda. Tourism in rural destinations often faces challenges such as limited access to information, inefficient booking processes, and inadequate promotion of attractions. The main objective of this research was to develop a system that enhances tourism service delivery by providing an online platform for destination information, accommodation booking, tour scheduling, and visitor feedback. Specific objectives included analyzing existing tourism management practices, identifying user requirements, designing system architecture, and testing the functionality of the proposed solution.

The study employed a descriptive research design, combining qualitative and quantitative methods. Data were collected through interviews with stakeholders, tourists, and document reviews. System development followed the RAD model, incorporating requirements analysis, design, coding, testing, and deployment.

Key findings revealed that the current tourism management practices at Sipi Falls are largely manual, leading to inefficiencies and limited accessibility for international visitors. The proposed web-based system addresses these gaps by offering real-time information, streamlined booking processes, and improved communication between tourists and service providers.

In conclusion, the system demonstrates significant potential to improve tourism management and promote rural destinations. Recommendations include training local stakeholders on system use, continuous system updates to meet evolving needs, and integration with national tourism platforms to maximize visibility. The study highlights the importance of digital solutions in enhancing tourism sustainability and supporting socio-economic development in Uganda.

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LIST OF ACRONYMS

Acronym	**Meaning**
DFD	Data Flow Diagram

ERD	Entity Relationship Diagram
HTML	Hypertext Mark-up Language
PHP	Hypertext Pre-processor
DBMS	Database Management System
UI	User Interface
UX	User Experience
RAD	Rapid Application Development
SDLC	Software Development Life Cycle

Table 1: List of Acronyms

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Tourism is a key driver of global and national economies, contributing nearly 10% of global GDP and about 12.8% of Uganda's GDP. Despite this importance, Uganda's tourism sector still struggles with manual record-keeping, weak marketing, and poor data management. At Sipi Falls, one of the country's most visited sites, reliance on informal methods limits efficiency and visitor satisfaction.

To address these challenges, this study designed and implemented an online tourism management system for Sipi Falls. The system automated bookings, secured visitor records, integrated marketing tools, and provided analytics for better decision-making. This enhances service delivery, improve tourist experiences, and strengthen the site's contribution to Uganda's tourism growth.

1.2 Background of the study

Globally, tourism management systems were grounded in information systems theory, which emphasized efficiency, accuracy, and decision support in service industries. Theoretically, these systems existed to automate processes such as bookings, tourist registration, marketing integration, and data analytics, thereby reducing paperwork, minimizing human error, and ensuring reliable data for strategic planning (Mahendru et al., 2024). Practically, they were applied to streamline daily operations at tourist destinations managing reservations, maintaining centralized tourist records, promoting sites through digital platforms, and generating analytical reports that guided managers in improving services (Masimba, 2024). Statistics showed that tourism contributed nearly 10% of global GDP (Garg, 2025), while in Uganda the sector accounted for about 12.8% of GDP and generated USD 1.28 billion in 2024, with international arrivals rising by 7.7%(Frechtling, 2010). These figures highlighted the magnitude of tourism's economic importance and the need for efficient management systems to sustain growth.

Despite this progress, Uganda's tourism sector still faced challenges such as inconsistent record keeping, reliance on manual data collection, and limited adoption of digital tools. These inefficiencies led to data losses; for example, in 2013 several tourism offices reported losing visitor records due to poor storage and mismanagement (Ministry of Tourism, Wildlife and Antiquities, 2014). At the local level, Sipi Falls, one of Uganda's most popular tourist destinations, continued to rely on manual methods for bookings, visitor registration, and marketing. This informal management made it difficult to track visitor flows, promote the site effectively, and deliver smooth services, thereby limiting its potential as a tourism hub. To address these challenges, the solution developed was a digital tourism management system for Sipi Falls. This system automated bookings and visitor registration, maintained accurate digital records, integrated marketing tools to reach wider audiences, and provided analytics dashboards for evidence-based decision-making.

By adopting this system, Sipi Falls improved efficiency, enhanced visitor experiences, and contributed more strongly to Uganda's tourism growth, aligning with national development goals.

1.3 Problem statement

The tourism sector in Sipi falls still depended on manual record-keeping and informal management. This caused problems such as lost records for example, in **2013**, several tourism offices reported losing visitor data due to poor storage(Study et al., 2018).The tourism sector in Uganda contributed about **10% of GDP** and earned **USD 1.28 billion in 2024**, with international tourist arrivals reaching **1.37 million, a 7.7% increase from 2023** (Garg, 2025). Ideally, this growth should have been supported by modern systems that kept accurate records, made bookings easy and promoted destinations effectively.

These weaknesses created serious limitations: visitor statistics were unreliable and made planning difficult, marketing efforts remained weak and reduced visibility, and service delivery was slow, which lowered tourist satisfaction. At Sipi Falls, one of Uganda's most visited sites, management was still manual, making it hard to track visitors, promote the site, and provide smooth services. To solve these challenges, the solution developed was a **digital tourism management system** for Sipi Falls. This system automated bookings and tourist registration, kept secure digital records, integrated marketing tools to reach wider audiences, and provided analytics for better decision-making. With such a system, Sipi Falls ran more efficiently, gave tourists better experiences, and contributed more strongly to Uganda's tourism growth.

1.4 Main Objective of the study

The main objective of this study was to design and implement an online tourism management system for Sipi Falls that improved efficiency, accessibility, and sustainability.

1.5 Specific Objectives of the study

1. To review the literature and determine the requirements for developing a web-based tourism management system.
2. To design a user-friendly web-based tourism management system.
3. To implement web-based tourism management system.
4. To test and evaluate the functionality of web-based tourism management system.

1.6 Significance of the study

This study was significant for several groups. For tourists, it provided easier access to information and booking services, making visits more convenient. For the local community, it increased visibility and income opportunities through better promotion of

cultural and natural attractions. For government agencies, it provided reliable data for policy and planning (Charles Tushabomwe-Kazooba et al., 2020). For researchers, it served as a model for rural tourism management that could be replicated elsewhere.

1.7 Scope of the study

This study focused on designing and implementing an online tourism management system specifically for Sipi Falls in Kapchorwa District. The scope covered the content, geographical, and time aspects.

Content Scope: The study focused on collecting and managing relevant tourism information for Sipi Falls. This included visitor profiles, booking details, revenue records, and feedback data to support effective management. It also covered cultural, historical, and geographical content about Sipi Falls to enrich the tourist information portal. The content scope ensured that both operational data for administrators and informational content for tourists were incorporated into the system.

Area Scope:

The system was implemented at Sipi Falls, located in Kapchorwa District, Eastern Uganda, approximately 277 km from Kampala. These falls were found on the foothills of Mount Elgon National Park near the Kenyan boarder to Uganda. The system was designed in such a way that it could later be scaled to other tourist destinations in Uganda.

Time Scope:

The system was developed and completed within four months, covering requirements gathering, design, development, testing, and deployment.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the existing literature on tourism management systems, destination information platforms, and tourist tracking tools. It explored how digital technologies transformed tourism operations, particularly in rural destinations, by improving efficiency, transparency, and tourist satisfaction. The review highlighted both the strengths and weaknesses of current systems and identified requirements for developing a more effective tourism management solution.

2.2 Tourism in the Digital Age

Tourism is one of the fastest-growing industries worldwide, contributing significantly to employment and economic development. Traditionally, tourism relied on manual processes such as paper brochures, physical booking offices, and word-of-mouth promotion. These methods often resulted in inefficiencies, including poor record-keeping, limited accessibility, and delayed communication (Buhalis, 2014).

With the rise of digital technologies, tourism organizations increasingly adopt online platforms to streamline operations. Digital systems allow destinations to market themselves globally, provide instant booking services, and collect visitor feedback. This shift has been described as "e-tourism," where information and communication technologies (ICTs) play a central role in shaping tourist experiences (Buhalis, 2014).

2.3 Tourism Management Systems

2.3.1 Overview

Tourism management systems are integrated platforms designed to support destination managers, tour operators, and visitors. They provide tools for booking, information sharing, and monitoring tourist activities. By connecting multiple stakeholder's hotels, transport providers, cultural sites, and local communities these systems create a centralized hub for managing tourism operations (Xiang, Du, Ma, & Fan, 2017).

2.3.2 Types of Tourism Management Systems

Manual Systems: Paper-based records and brochures remain common in rural destinations but are prone to errors, duplication, and inefficiency.

Spreadsheet-Based Systems: Some organizations use Excel or similar tools to record bookings and visitor data. While better than manual methods, they lack automation and realtime updates.

Web-Based Tourism Platforms: Cloud-based systems that allow online booking, destination information, and visitor feedback. These platforms are more efficient, scalable, and accessible to both tourists and managers (Sigala, 2021).

2.4 Features of an Effective Tourism Management System

A well-designed tourism management system should include:

Online Booking and Reservations. Tourists can book services remotely, reducing reliance on physical offices (Buhalis, 2014).

Destination Information Sharing. Systems should provide maps, guides, cultural insights, and event updates to enhance visitor experiences (Tussyadiah & Sigala, 2018).

Visitor Feedback and Analytics. Collecting reviews and analyzing tourist behavior helps managers improve services and plan future strategies (Gretzel et al., 2015).

Security and Data Integrity. Protecting sensitive tourist data through authentication and encryption ensures trust and compliance with privacy standards (Hamarneh, n.d.).

Multi-Stakeholder Integration. Linking hotels, transport, and attractions into one system improves coordination and efficiency (Verzuh, 2015).

2.5 Loopholes in Existing Tourism Systems

Despite advancements, current tourism management systems face several challenges:

Limited Integration. Many systems operate in isolation, failing to connect accommodation, transport, and attractions.

Delayed Updates. Tourists may not receive real-time information on availability, weather changes, or cancellations.

Accessibility Issues. Rural destinations often lack digital infrastructure, limiting the effectiveness of web-based systems (Mahendru et al., 2024).

High Costs. Implementing advanced systems can be expensive, making them inaccessible to small-scale operators (Yang, 2025).

2.6 Relevance of the Tourism Management System

The proposed tourism management system enhanced efficiency in destination management, improved transparency in service delivery, and provided real-time information to tourists. It also empowered rural destinations like Sipi Falls to compete with urban centers by offering modern,

digital services. By aligning with global digital transformation trends, the system strengthened tourism's role in economic development, cultural preservation, and community empowerment (Yang, 2025).

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter described all the methods and procedures in conducting research; Research design, area of study, population and sampling method, data collection methods and analysis, system development, design and implementation, testing and validation, and ethical issues that were used during the study.

3.2 Research Design

The study was designed as a case study focused on Sipi Falls in Kapchorwa District. Mixed methods approach was used, combining qualitative and quantitative techniques. Qualitative methods involved reviewing literature, tourism reports, and conducting interviews with stakeholders to capture descriptive insights. Quantitative methods included surveys and visitor records which were used to collect measurable data such as booking trends and revenue. This combination ensured detailed understanding and statistical evidence that guided the system requirements.

3.3 Area of study

The study was conducted in Sipi falls along Mbale Kapchorwa highway in Kapchorwa district in Eastern Uganda.

3.4 Population and Sampling Strategy

Random sampling was used for tourists visiting Sipi Falls during the study period, capturing diverse opinions and experiences. Purposive sampling was applied to select key stakeholders such as managers and community leaders that ensure that those with relevant expertise were included. This approach balanced targeted insights with generalizable visitor perspectives.

3.5 Data collection

Requirements for the tourism management system were collected through several channels. Interviews with site managers, guides, and community leaders were highlight operational challenges and management practices. Surveys with tourists provided feedback on booking processes, service delivery, and overall satisfaction. Secondary sources such as government tourism reports and academic studies consulted to validate findings. Bringing together these different perspectives ensured that the system reflects stakeholder needs and visitor expectations.

3.6 Data presentation and Analysis

Collected data was analyzed using both qualitative and quantitative techniques. Interview responses were examined thematically to identify common challenges and opportunities. Survey results and tourist records were analyzed using descriptive statistics to reveal booking patterns, tourist demographics, and revenue flows. Comparative analysis was also conducted against successful tourism systems in places such as Kenya's Maasai Mara and Malaysia's e-tourism platforms to identify best practices.

3.7 System Development

The development approach for this project was the structured system analysis and design methodology which involved user in the requirement analysis and users were involved in every stage until requirements were met.

System development followed the **Rapid Application Development (RAD)** model, which emphasized quick prototyping and continuous stakeholder feedback. This approach was suitable for the tourism management system at Sipi Falls because it allows faster delivery of functional modules and ensures the system meets user needs, modules were developed as prototypes and integrated to make a complete product for delivery.

3.8 System Design

System design refers to the strategy used to carryout research that defines the logical plan to establish research questions through interpretation and analysis of data. We used tools such as context diagram and a use case diagram to represent information from the collected data.

3.8.1 Context Diagram

Context diagram is a visual representation that illustrates the interactions between a system to be developed and external entities. It shows how tourists, administrators, partners, and staff interact with the system. The system gives a simple view of how the system connects with its main users. Tourists log in, create accounts, make bookings, and get feedback, while staff manages tourist data, oversee operations, enrich the process by creating package details, managing tours, accepting bookings, updating schedules and generate reports. Partners such as hotels and transport companies update availability, handle reservations, and also maintain accounts in the system. Altogether; the diagram shows how these four actors exchange information with the system, making tourism more efficient, transparent, and collaborative as shown in figure 1 below.

Figure 1: Context diagram showing how tourists, staffs and partners interact with the system.

3.8.1 Use Case diagram

A use case diagram is a type of behavioral diagram in unified Modeling Language that represents the functionality of the system from users' perspective. It illustrates the interactions between users and the system to accomplish specific tasks.

In the **Use Case Diagram** of the Tourism Management System, three main actors interact with the platform: tourists, staff, and partners. Tourists use the system to login into the system, create account, search destinations, make bookings, view information, and submit feedback. Staff also login into the system, create accounts; oversee operations by managing tourist data, manage packages and generating reports. Partners such as hotels and transport companies update availability, handle reservations, login and create accounts into the system. Together, these actors demonstrate how the system integrates multiple stakeholders, ensuring tourists enjoy convenient and personalized experiences, managers maintain control and oversight, service providers deliver reliable services, and tour guides add cultural and human value to the tourism process. This holistic design highlights the system's ability to improve efficiency, transparency, and collaboration across the tourism ecosystem as shown in figure 2 below.

Figure 2: Use Case diagram showing how tourists, staffs and partners interact with and use the system.

3.9 Implementation

The following tools will be used in the implementation of tourism management system.

Visual studio code will be the text editor which will be used to write dynamic codes which generates pages quickly and easily.

HTML is a markup language that will be used to create user interface with cascading style sheets (CSS).

Windows 10 pro-operating system and MySQL database server will be used to build the system.

MySQL will be used to develop the databases of tourism management system.

Hypertext processor (PHP) will be used to build the front end of the system.

Xampp sever will act as the server-side database tool for implementation of the database of the system.

3.10.0 Testing and Validation

Testing was carried out to ensure the system worked correctly and met user needs. Unit testing will check individual modules, while integration testing confirmed that different parts of the system

worked together smoothly. User acceptance testing involved site managers and tourists trying out the system to see if it meets their expectations. Validation will compare system outputs with the requirements gathered earlier to confirm accuracy and reliability.

3.11.0 Ethical Considerations

Strict ethical standards were followed throughout the study. All participants provided informed consent before taking part as shown in appendices (page 14 and 15), and their information was kept confidential and handled securely. The research complied with Uganda's data protection laws, ensuring that privacy and trust were maintained at every stage.

CHAPTER FOUR

FIELD STUDY RESULTS AND SYSTEM DESIGN.

4.1 Introduction

This chapter describes the study of the current system, strengths of the current system, and weaknesses of the current system, system requirements (functional and non-functional requirements), and system design (system architecture, context diagram, dataflow diagram, use case diagram, and entity diagram).

4.2 Background Information of the Organization (Current System)

At Sipi Falls, tourism is managed using manual methods. Tourists are registered in books; bookings are confirmed by phone calls or face-to-face and marketing is mostly through word of mouth. Revenue records are written in files that are hard to track and sometimes get lost. This system has worked for many years, but it is slow, not reliable, and cannot handle the growing number of tourists.

Because tourism is one of Uganda's biggest sources of income, using such a manual system makes it hard to plan, promote, and manage tourism properly. That is why a digital system is needed.

4.3 Strength of the current system

Even though the current system is old, it has some good points:

Community involvement: Local guides and residents are directly involved in tourism activities. This makes the tourist experience more cultural and authentic.

Flexibility: Manual systems can be changed quickly without needing technical skills or computers.

Low cost: Running the system does not require much money, which is good for small operators.

Personal service: Tourists interact directly with guides and staff, which makes the experience friendly and personal.

4.4 Weakness of the current system

The weaknesses are more serious and affect growth:

Data loss: Records can easily be lost, damaged, or misplaced. This makes it hard to keep accurate visitor statistics.

Slow bookings: Tourists must call or visit in person to book, which wastes time and discourages international visitors.

Poor marketing: Because there is little online presence, fewer people outside Uganda know about Sipi Falls.

No analytics: Managers cannot get clear statistics for planning, such as visitor numbers or revenue trends.

Weak security: Paper records are not safe from tampering or unauthorized access.

4.5 System Requirements

4.4.1 Functional Requirements

The new system should be able to:

Allow **user registration** for tourists, staff, and partners.

Provide **online booking** for tours, hotels, and transport.

Keep **visitor records** safe and easy to access.

Support **digital marketing** to reach more people worldwide.

Collect **feedback and reviews** from tourists to improve services.

Show **analytics** like visitor numbers, revenue, and booking trends.

Allow **partners** (hotels, transport providers) to update services and manage reservations. **4.4.2**

Non-functional Requirements

The system should also:

Have strong **security** with passwords and encryption to protect data.

Be **easy to use** for both local and international tourists.

Be **scalable** so it can expand to other tourist sites in Uganda.

Be **reliable** with little downtime.

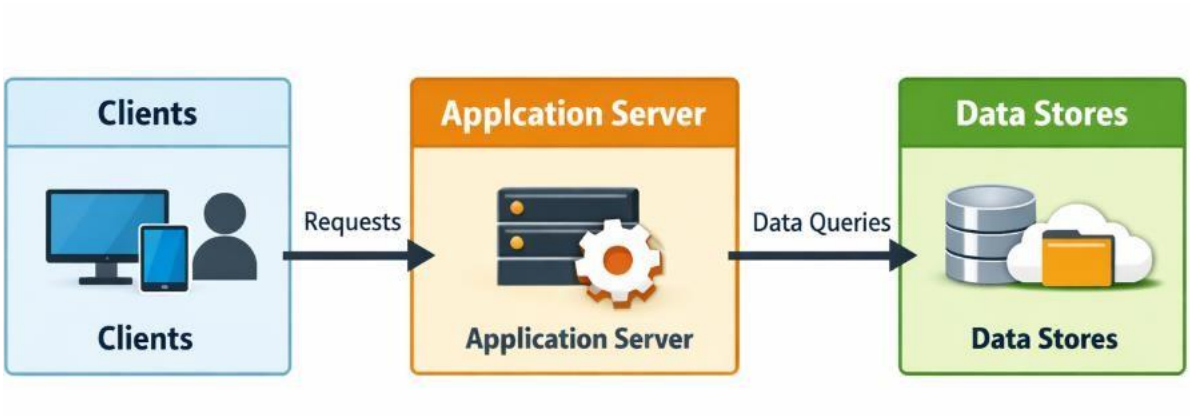
Follow **Uganda's data laws** to protect privacy and comply with regulations.

4.6 System Design

The requirements determined were used to design the system. The design development methods in the study are Rapid Application Development (RAD).Design stages include system architecture, context diagram dataflow diagram, system modeling using UML (use case) and Entity Relationship Diagram (ERD).

4.6.1 System Architecture

Web based system has the architecture that contains the internet, web browser and the database as shown below. This information flows from the internet to the server by the use of wireless and non-wireless. The web browser sends requests to the server and the server provides feedback through the web browser. The server then retrieves information from the database where it is stored and provides to the server back when needed and the client gets information from the server as illustrated below.



Source: Created by Chepkwemoi (2026) using Microsoft Copilot

Figure 1: System architecture showing different layers of system architecture the system

4.6.2 Context Diagram

The context diagram shows how users interact with the system:

Tourists: Register, log in, book services, and give feedback.

Staff: Manage tourist records, oversee bookings, and generate reports.

Partners: Update hotel and transport services, manage reservations.

This shows how information flows between users and the system.

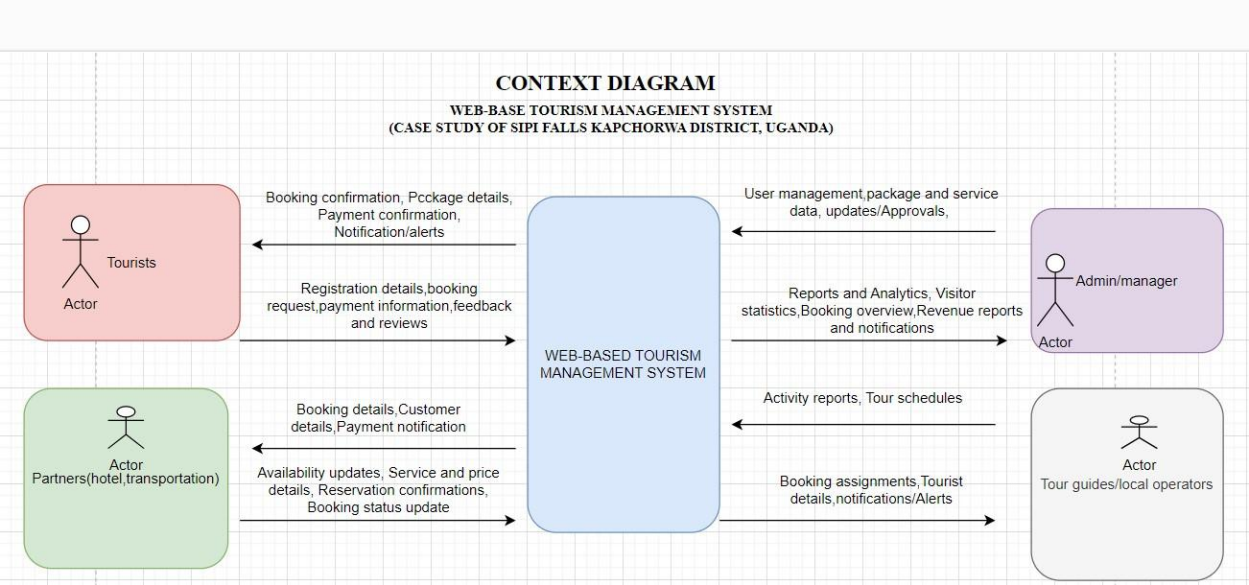


Figure 2: Context diagram showing how tourists, staffs and partners interact with the system

4.6.3 Data Flow Diagram

The DFD shows how data moves:

- Tourist makes a booking → System checks details → Database saves → Staff approves → Tourist gets confirmation.
- Tourist gives feedback → Stored in database → Managers view reports and make decisions.

This ensures smooth flow of information.

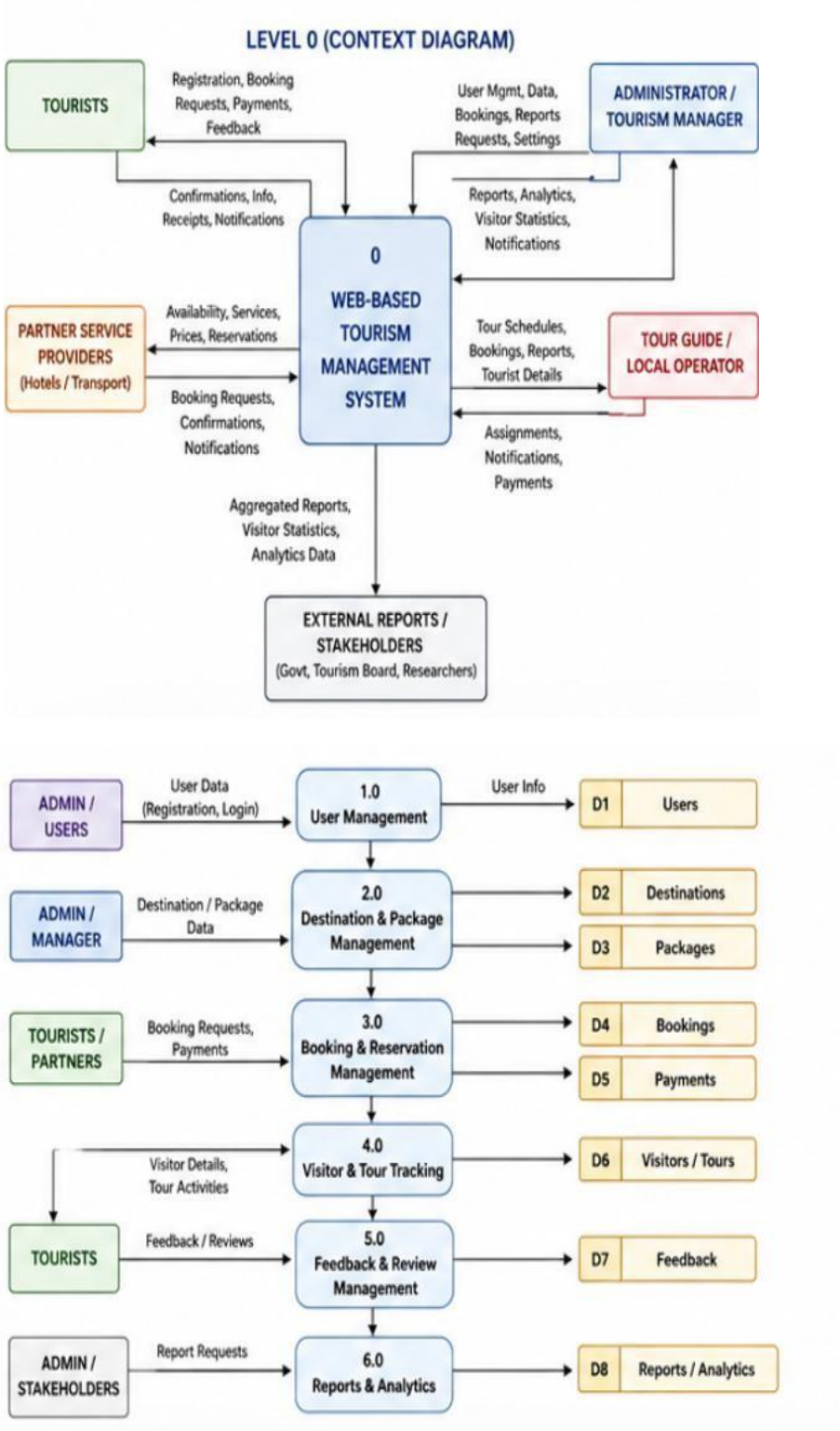


Figure 3 & 4: DFD showing how tourists, staffs and partners interact with the system.

4.6.4 Use Case Diagram

The use case diagram shows what each user can do:

Tourists: Create accounts, search destinations, book services, give feedback.

Staff: Manage data, bookings, and reports.

Partners: Update availability and reservations.

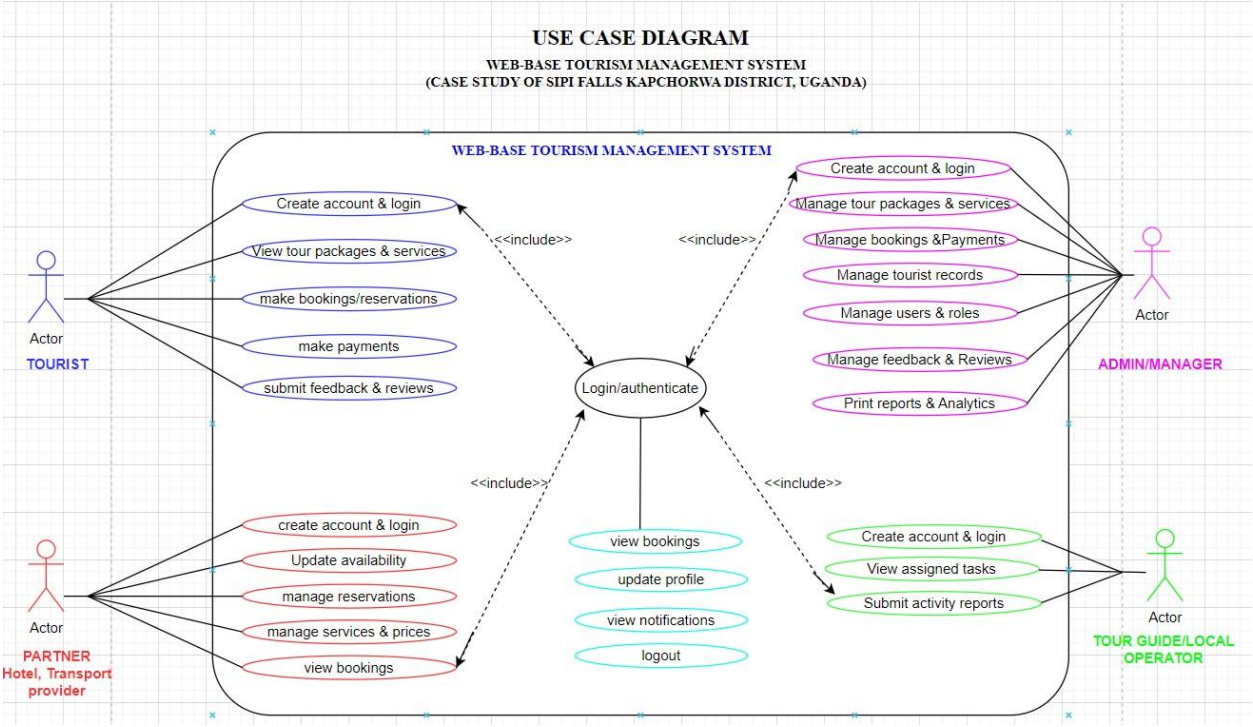


Figure 5: Use Case diagram showing how tourists, staffs and partners interact with and use the system.

CHAPTER FIVE: IMPLEMENTATION AND TESTING

5.1 Introduction

This chapter explains how the tourism management system for Sipi Falls was built and tested. It shows the tools used, the steps followed during development, and the methods used to test the system. The aim was to make sure the system is reliable, easy to use, and meets the needs of tourists, staff, and partners.

5.2 System Implementation

The system was created using windows environment, Microsoft Visual Studio Code was used to create the user interfaces (front end), CSS was used for designing the user interfaces created, JavaScript was also used for interactive features PHP was used for handling bookings, logins and system logic, then MySQL was used to create a database for storing data after which a logical connection was built. XAMPP server was used for local testing/hosting.

5.3 Login page

This is the first form that comes when the program is launched. It's meant for security and authentication purposes. When loading the system, one should go to the web browser and type http://localhost/TMS/login to open the login page as illustrated in the figure below.

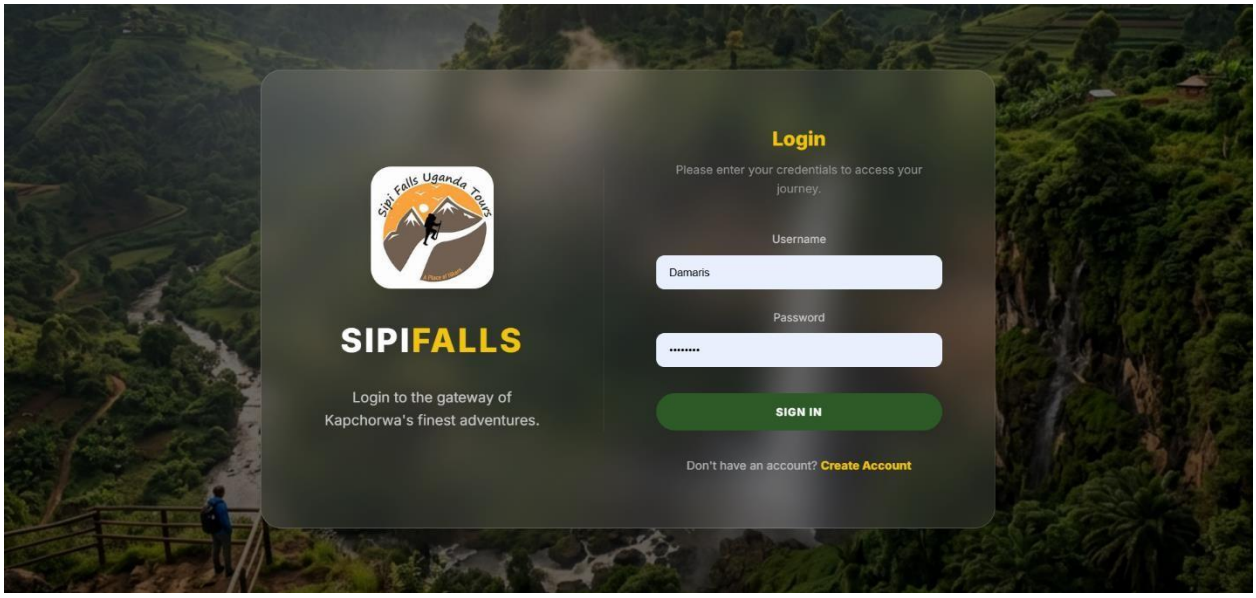


Figure 6: Login Page showing how tourists' login into the system

5.4 Create Accounts page

This page allows the tourist to create an account. Without creating an account, the tourist will not be able to login and book services in the system. This system is meant for authorization.

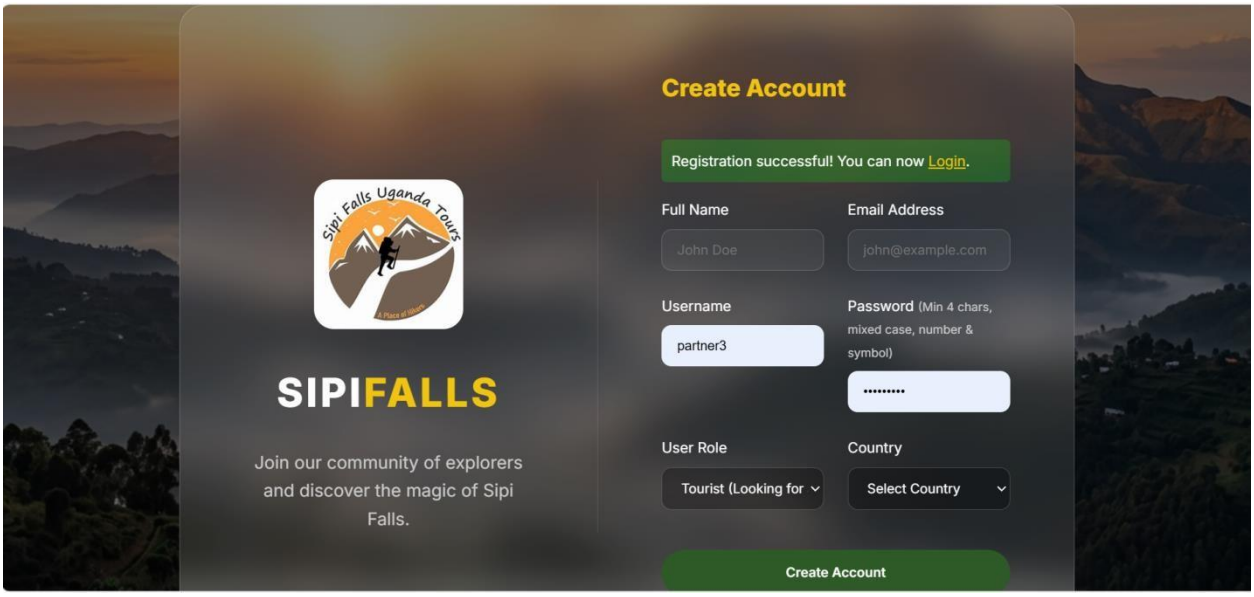


Figure 7: Create Accounts page showing how tourist create accounts in the system.

5.5 Admin dashboard

This is where administrators and site managers view all the system users, manage tour packages view bookings and reports from tour guides, assign tasks to tour guides. Also, they are able to see total revenue generated.

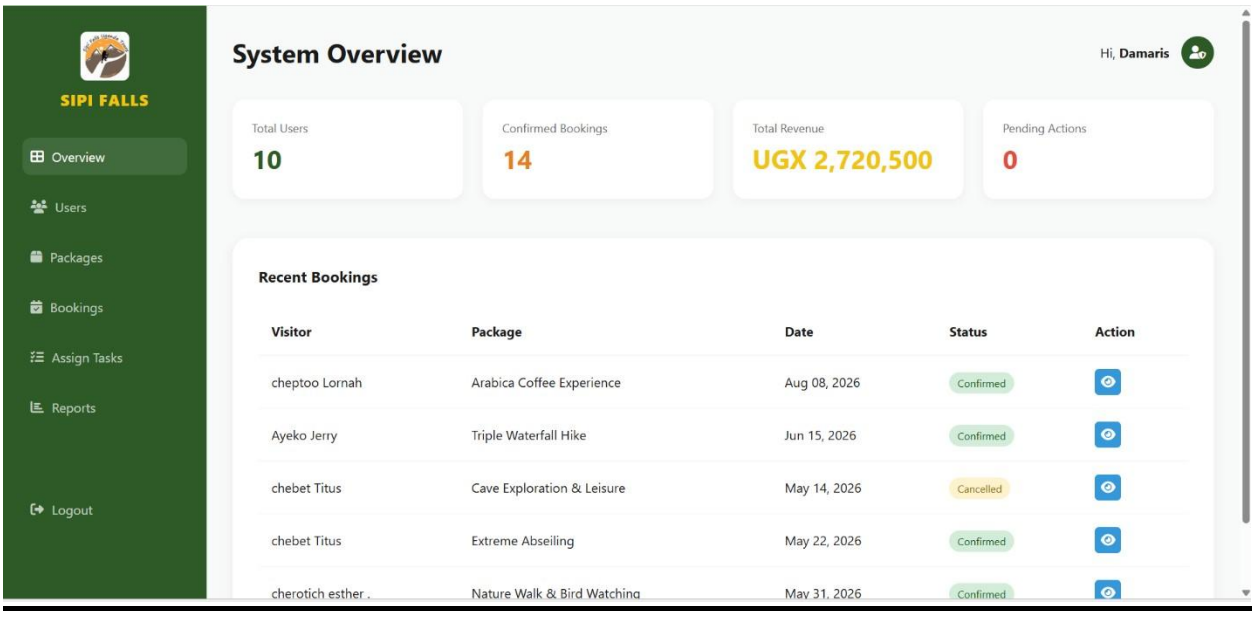


Figure 8: Admin dashbo**ard**

5.6 Managing tour packages

This is where system administrators and site managers are able to add or create new package.

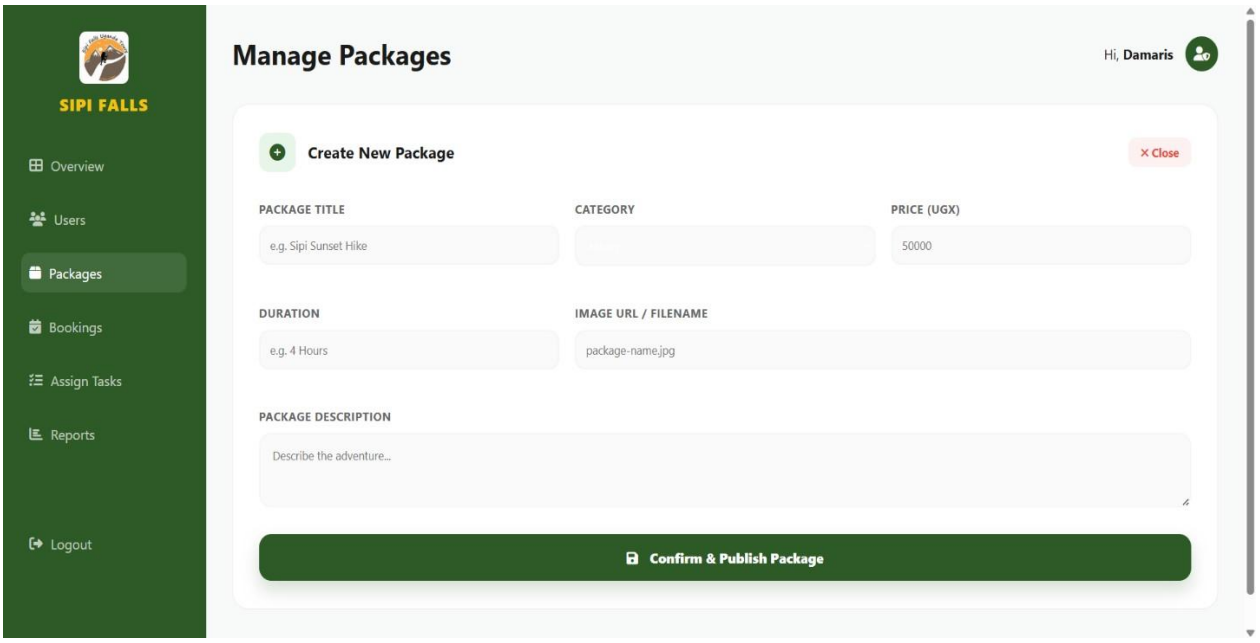


Figure 9: Shows how administrators and site managers add and create new packages for tourists

5.7 Tourist dashboard

This page allows tourists to view and edit their profile, give feedbacks and reviews after visiting the site, make bookings and get notification for their payments and confirmation of their booking.

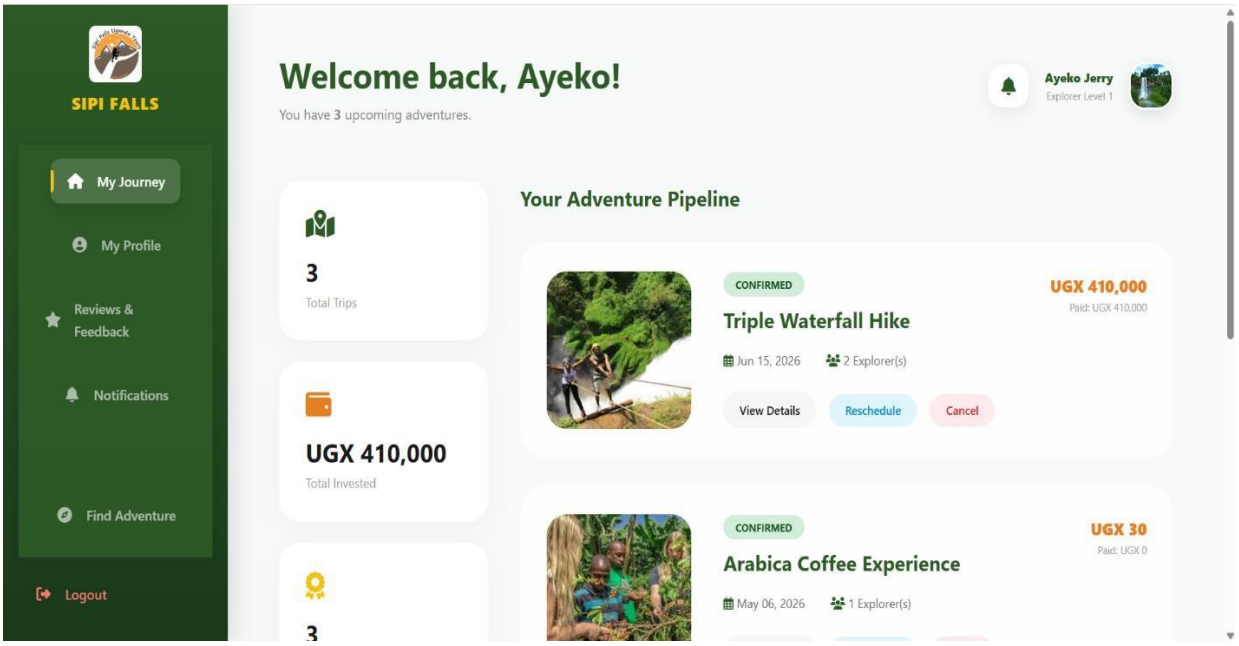


Figure 10: Tourist dashboard

5.8 Tour guide dashboard

This is where tour guides view their tasks that the manager has assigned them and they get those tasks inform of notifications. Tour guides can also submit weekly reports to the site manages and logout.

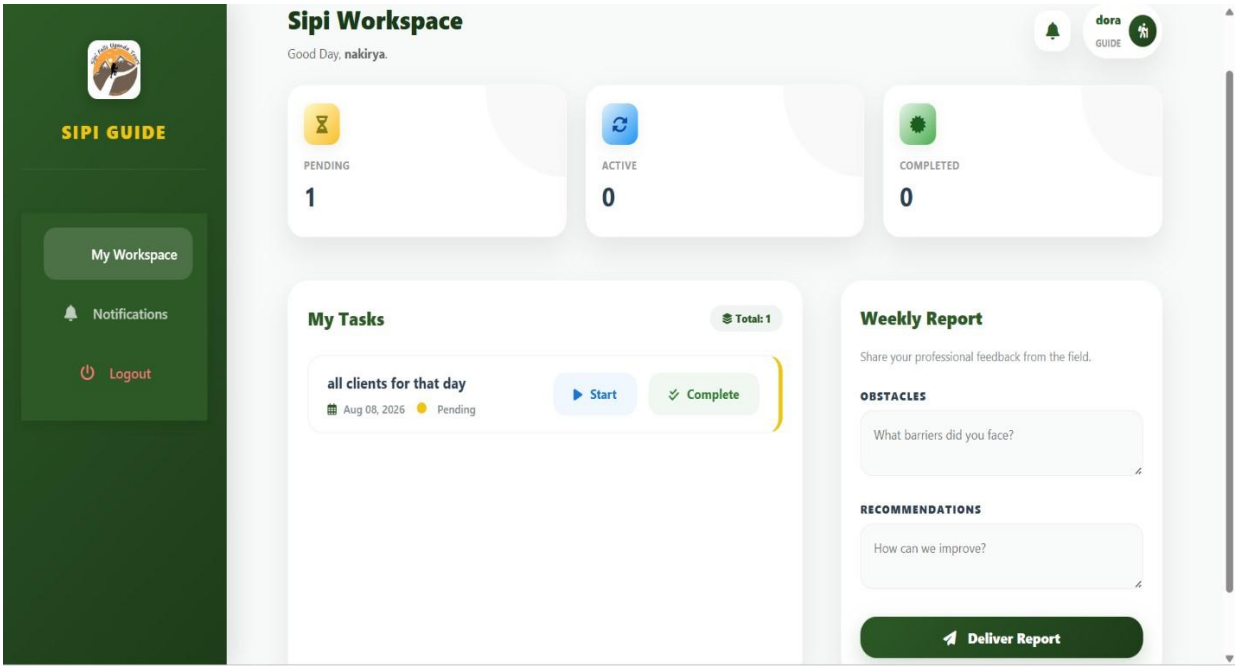


Figure 11: Tour guide dashboard

5.9 Partner dashboard

This is where Sipi falls partners view their total revenue, pending payout and total sales, they can also view all the service reservations and bookings, get notifications about bookings and payments, they also manage their services by adding new services and logout of the system.

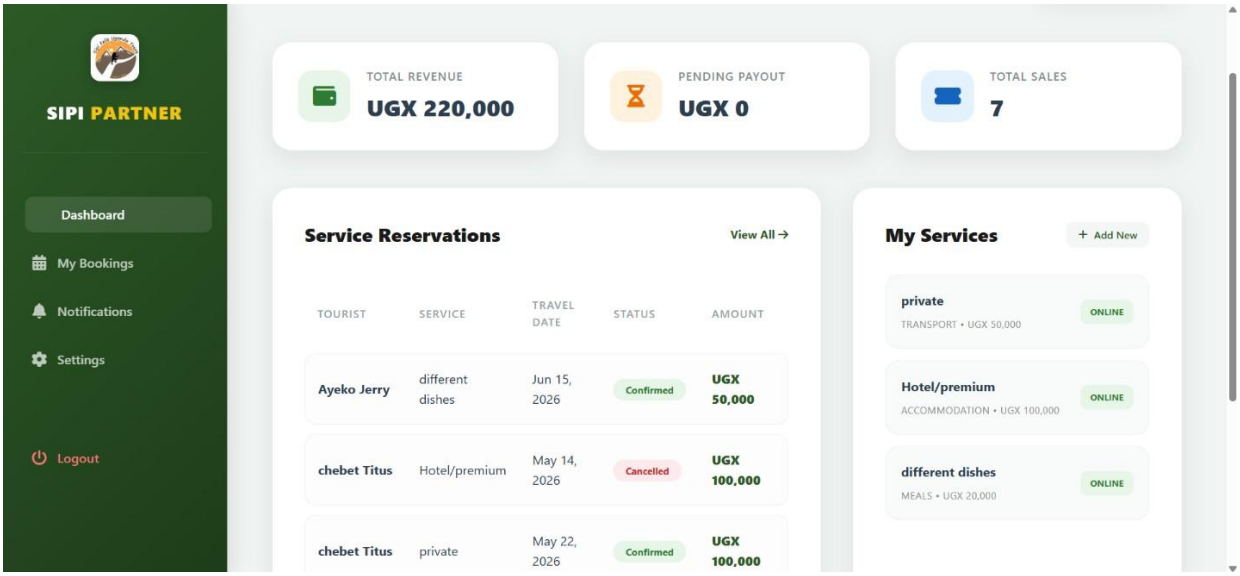


Figure 12: Partner dashboard

5.10.0 Printing Reports

This is where the site managers are able to booking rates in a pie chart, trending adventures and weekly field reports. The manager or admin is also able to print the page or reports as shown in figure below.

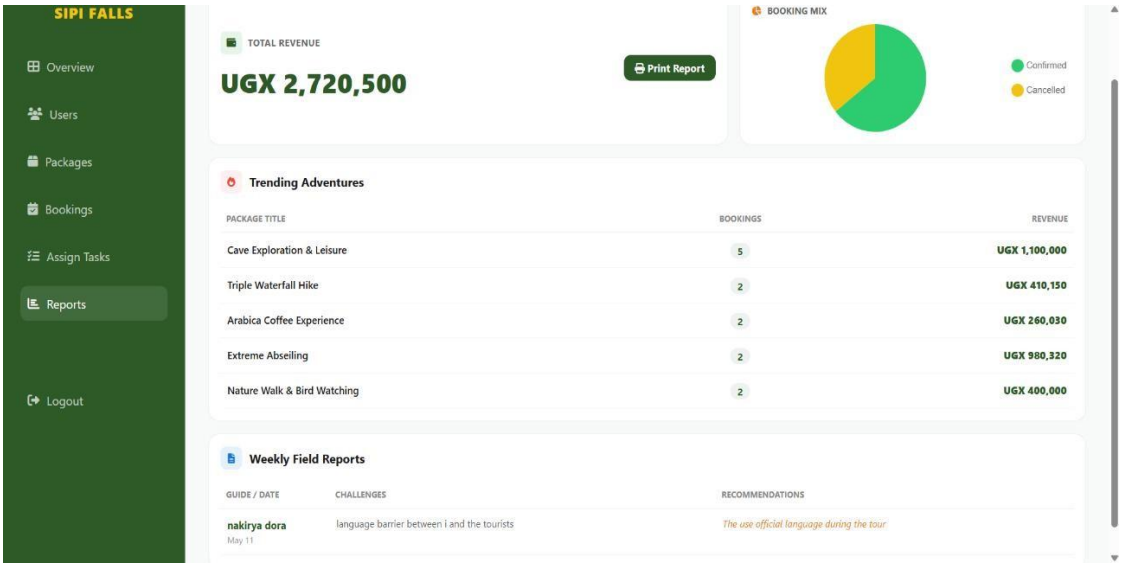


Figure 13: Shows how Sipi Falls admins print reports.

5.11.0 Booking services

This shows how services are booked by tourists as shown below.

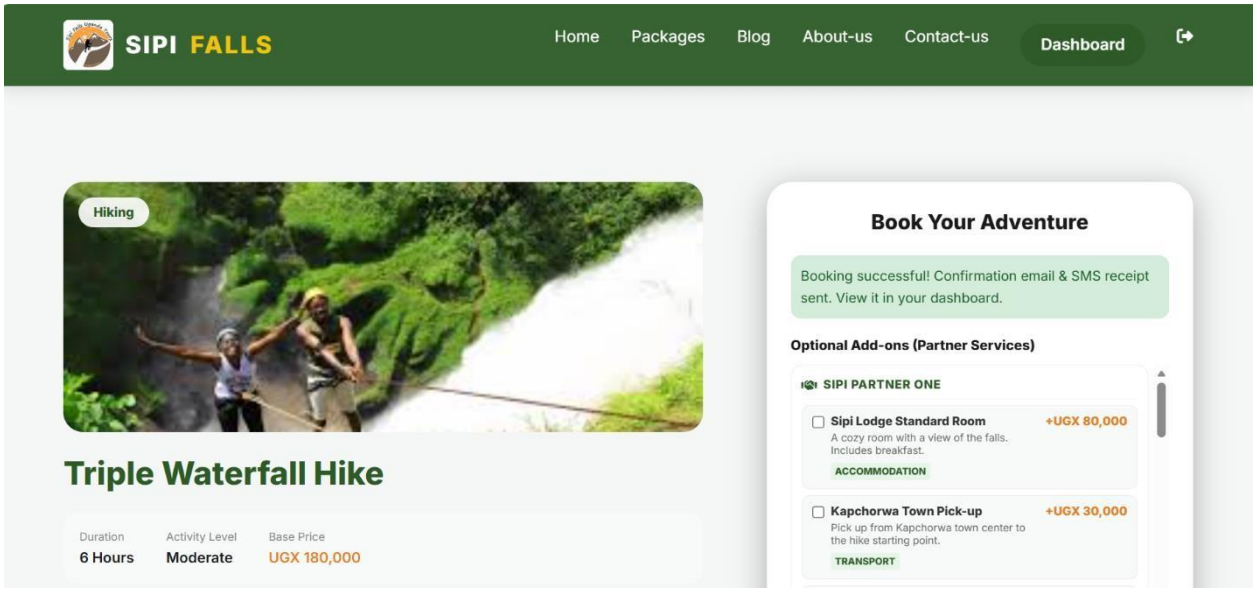


Figure 14: Shows how tourists book services.

5.12.0 Assigning Tasks

This shows how tour guides are assigned tasks. It also shows a list of resent assignments as illustrated in figure below.

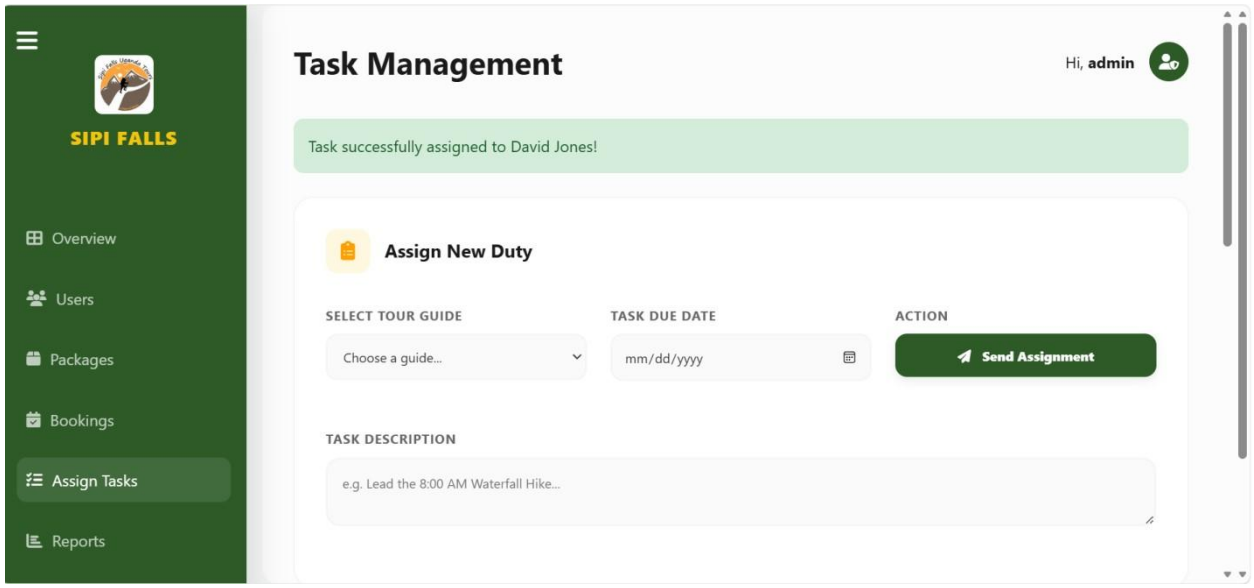


Figure 15: Shows how admins or managers assign Tasks to their tour guides.

5.13.0 Database

This shows the database for the system and the tables in it. In this case the name of the database is sipi_falls_db. And below it is the tables contained in it as shown in figure below.

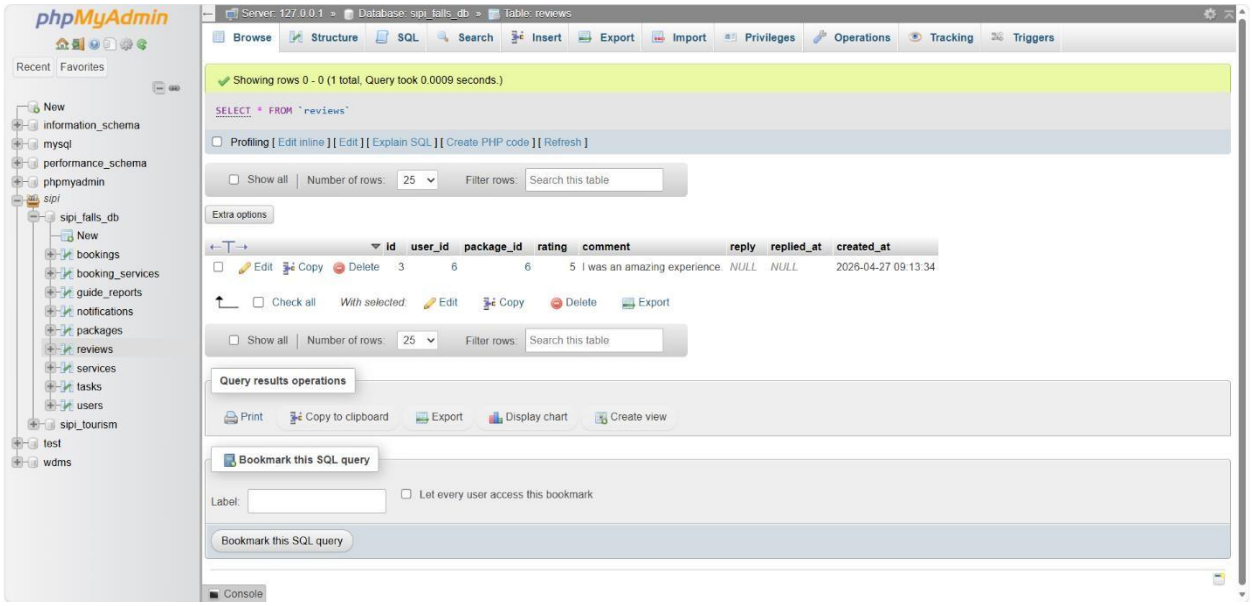


Figure 16: Shows the entire database (sipi_falls_db) and all the tables contained in it.

CHAPTER SIX:

DISCUSSION, CONCLUSION, RECOMMENDATION, LIMITATION AND FUTURE WORK.

6.1 Introduction

This chapter presents the discussion of results obtained from the study, followed by the conclusion, recommendations, limitations, and suggestions for future work. The aim is to summarize the findings, highlight the strengths and weaknesses of the current tourism management system at Sipi Falls, and propose ways to improve tourism services for visitors, local communities, and the environment.

6.2 Discussion of results.

Objective 1. To review the literature and determine the requirements for developing a web-based tourism management system.

The literature review revealed that traditional tourism management in rural destinations like Sipi Falls relied heavily on manual processes such as paper records and word-of-mouth promotion, which were inefficient and prone to data loss (Mahendru et al., 2024). By analyzing existing systems, the study identified critical requirements including online booking, destination information sharing, visitor feedback mechanisms, and multi-stakeholder integration (Tussyadiah & Sigala, 2018). These findings guided the system's design to ensure it addressed the weaknesses of manual and spreadsheet-based systems, such as poor marketing and unreliable visitor statistics. *"*Tourism organizations increasingly adopt online platforms to streamline operations… Digital systems allow destinations to market themselves globally, provide instant booking services, and collect visitor feedback*" (*Mahendru et al., 2024).

Objective 2. To design a user-friendly web-based tourism management system.

The design used diagrams to show how tourists, staff, and partners would use the system. Tourists could log in, create accounts, book services, and give feedback. Staff could manage tourist data and create packages, while partners like hotels and transport companies could update availability. This made the system easy to use and connected all groups. "Tourists log in, create accounts, make bookings, and get feedback, while staff manages tourist data, oversee operations, enrich the process by creating package details, managing tours, accepting bookings, updating schedules and generate reports. Partners such as hotels and transport companies update availability, handle reservations, and also maintain accounts in the system" (Context Diagram, Section 3.8.1)

Objective 3. To implement web-based tourism management system.

The system was built using tools like HTML, CSS, PHP, and MySQL. It included dashboards for tourists, guides, partners, and administrators. This made it possible to automate bookings, keep

safe records, and promote Sipi Falls online. ″The system automated bookings, secured visitor records, integrated marketing tools, and provided analytics for better decision making″ (Introduction, Section 1.1).

Objective 4. To test and evaluate the functionality of web-based tourism management system.

Tests showed that the system worked well. Unit and integration tests confirmed that different parts worked together. Site managers and tourists tried the system and found it reliable and easy to use. The system solved problems like slow bookings, poor marketing, and lost records. ″Validation will compare system outputs with the requirements gathered earlier to confirm accuracy and reliability″ (Testing and Validation, Section 3.10.0).

Overall, while the system benefits the local economy and promotes cultural pride, it requires modernization through digital tools, stronger regulation, and better infrastructure to meet international tourism standards.

6.3 Conclusion

The research concluded that tourism at Sipi Falls plays a vital role in supporting the local economy and preserving culture. The current community-based system provides jobs, income, and pride but struggles with inefficiencies, poor infrastructure, and limited environmental protection.

The introduction of a **web-based tourism management system** addresses these gaps by automating bookings, securing visitor records, integrating marketing, and providing analytics for better planning. Testing confirmed that the system is user-friendly, reliable, and beneficial to tourists, staff, and partners. This project demonstrates that digital systems can transform rural destinations into competitive tourism hubs.

6.4 Recommendation

Based on the findings, the following recommendations are made:

Guide training: All guides should undergo mandatory training and licensing to improve professionalism and safety.

Infrastructure improvement: Roads, trails, toilets, signage, and waste management facilities should be upgraded.

Digital adoption: Expand the web-based system to include online booking, visitor feedback, and real-time updates.

Environmental protection: Introduce recycling points, ban single-use plastics, and monitor erosion.

Benefit sharing: Create transparent systems to ensure fair distribution of tourism income among locals, especially women and youth.

Government support: The Ministry of Tourism should provide policies, funding, and infrastructure to strengthen community-based tourism.

6.5 Limitation

This study faced several limitations:

Data collection: Some tourists and staff were unavailable during interviews, limiting sample size.

Infrastructure challenges: Poor roads and limited internet access made it difficult to collect and verify data.

Resource constraints: Financial and time limitations restricted the depth of testing and system deployment. The time allocated for the study was not enough because of course works, tests, exams and research.

6.6 Future works

Future research and development should focus on:

System expansion: Scaling the web-based system to other tourist sites in Uganda.

Mobile application: Creating a mobile app for easier access to bookings and information.

Advanced analytics: Adding predictive analytics to forecast visitor trends and revenue.

Sustainability studies: Researching long-term environmental impacts of tourism at Sipi Falls.

Community projects: Exploring how tourism revenue can support education, health, and conservation initiatives.

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APENDICES.

Interview Guide for staff.

The following questions had been carefully designed to guide the interview process during the study.

1. What is the current tourism management system at Sipi Falls, and how does it work?
2. How does the tourism management system at Sipi Falls help the local people and the economy in Kapchorwa?
3. What effects does tourism have on the environment at Sipi Falls, and does the management system protect nature well?
4. What do local people, tourism workers, government officers, and visitors think about the tourism management system at Sipi Falls? 5. How can the tourism management system at Sipi Falls be improved to make it better for visitors, local people, and the environment?

For Tourists.

Interview Guide for Tourists at Sipi Falls

1. Background Information

Visitor profile: Can you tell me where you are visiting from?

Travel purpose: What made you decide to visit Sipi Falls?

Visit frequency: Is this your first time here, or have you visited before?

2. Booking and Arrival Experience

Booking process: How did you book your trip or accommodation?

Ease of access: Was it easy to get information about Sipi Falls before coming?

Arrival experience: How was your experience when you first arrived here?

3. Tourist Services

Accommodation: How do you rate the accommodation services you used?

Guides and tours: Did you use a tour guide, and how was the service?

Transport: How convenient was the transport to and around Sipi Falls?

4. Information and Marketing

Information access: Did you find enough information about Sipi Falls online or at the site?

Promotion: How did you first hear about Sipi Falls?

5. Overall Experience

Satisfaction: What did you enjoy most about your visit?

Challenges: Did you face any challenges during your stay?

Suggestions: What improvements would you suggest for tourism services here?

6. Technology and Future Improvements

Digital services: Would you prefer using an online system for bookings and information?

Feedback: Would you be willing to give feedback through an online platform after your visit?

Informed Consent Form

Study Title: Design and Implementation of an Online Tourism Management System for Sipi Falls

Researcher: Chepkwemoi Damaris

Institution: Busitema University, Faculty of Science and Education, Department of Computer Studies

Purpose of the Study

You are invited to take part in this study. The aim is to design and test an online tourism management system that will improve booking, visitor records, and marketing at Sipi Falls.

Procedures

If you agree to participate, you will:

Take part in an interview about tourism activities at Sipi Falls.

Share your experiences, challenges, and suggestions.

The interview will last about 30–45 minutes.

Risks and Benefits

Risks: There are no known risks in participating.

Benefits: Your views will help improve tourism services at Sipi Falls and support academic research.

Confidentiality

Your answers will be kept private.

No names will appear in reports.

Information will only be used for academic purposes.

Voluntary Participation

Participation is your choice.

You may refuse to answer any question.

You may stop at any time without penalty.

Consent Statement

I have read and understood the information above. I agree to take part in this study.

Participant's Name: _____ **Signature:** _____ **Date:** _____

Researcher's Signature: _____ **Date:** _____

Images Taken at the area of study







