COVER PAGE

STUDENT VENUE FINDER

Lawrence Kimasar

The Institute of undergraduate studies at Laikipia University received this proposal Report as partial completion of the Bachelor of Science Degree requirements in Information Communication Technology.

LAIKIPIA UNIVERSITY

FEBRUARY, 2025

DECLERATION PAGE

This research project represents my original work and to the best of my knowledge has never been submitted for degree evaluation at any university

Signed: _____**Date:**_____
Lawrence Kimasar
SC/ICT/1175

RECOMMENDATION

To the Institute of Undergraduate Studies:

The Institute of Undergraduate Studies of Laikipia University has received the research proposal **"Student venue finder"** written by **Lawrence Kimasar**. The research proposal should be accepted as partial fulfillment of the Bachelor Degree of Science in Information and Communication Technology requirements.

Signed: _____Date:_____

Dr. ALEX KIBET

Dr. ALEX KIBET serves as the Chairperson of Department (COD) for the Department of Computing and Informatics.

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Abstract

Student Venue Finder simplifies finding, booking and managing venues at Laikipia University. This application offers an efficient and user-friendly venue reservation system, saving users time and effort. This application boasts a remarkably strong real-time venue checking and booking availability system and a thorough booking system. Furthermore, it offers a completely featured admin dashboard, an exceptionally advanced admin upload module for timetable uploads to the database in Excel format, allowing user filtering and a central database for secure data storage. The application's advanced filter module simplifies venue selection by enabling users to filter and search. This application enables administrators to quickly and efficiently find, book and manage many venues and it offers students the same high degree of user-friendliness. This student venue finder system improves venue organization and user experience by providing a single, efficient tool for everyone. The application's user interface will be built with HTML, PHP and Javascript; CSS will handle all styling; PHP will manage all server-side scripting; and MYSQL will manage the entire database.

Contents

CHAPTER ONE

INTRODUCTION

1.1 Introduction

It's important to manage venues in higher institutions, where classrooms, auditoriums and study rooms are in high demand for academic and other extracurricular activities. Here in Laikipia University students and administrators face a lot of challenges in managing venues because of it is reliance on manual booking processes which is inefficient and may lead to double booking, unused locations and also poor communication between lecturers and students (Mclaughlin et al., 2019).

Am proposing for digital system called student venue finder that aims to improve venue management at Laikipia University. This applications has features like real-time venue checking and availability, a booking module, search and filter module, admin dashboard to manage venues and a upload module used by admins to upload timetable in excel format. This chapter focuses on the study's background, problems, purposes, goals, research questions, justifications, scopes and limitations.

1.2 Background of the Study

Most higher institutions globally use technologies to improve their working and resource management. However, some still use outdated manual systems for booking venues which leads to inefficiency and mistakes (Davis, 1989). Outdated methods such as using latters or emails can be slow, cause double booking or even misunderstanding between students and administrators.

Here in Laikipia University, venue booking for Lectures and other non-academic activities is done manually, which leads to a lot of problems. With increasing population of students and stuffs the need for advanced resource management is needed to ensures maximum utilization and efficiency. Thus a digital solution is needed to ensure venue bookings are easier and moreefficient.

This proposed system 'Student Venue Finder' is designed to provide solutions to these problems by providing a platform that provides real-time venue availability, easy booking features. According to Mclaughlin et al. (2019), real-time venue management systems are crucial in reducing these errors and improving communication between students and university stuff. This proposed System/platform is made to reduce workload for administrators, increase transparency and also improve the uses of venues/space at Laikipia University.

1.3 Statement of the Problem

Laikipia University are currently using manual/outdated/traditional processes to manage it's venues which are time consuming, inefficient and usually lead to mistakes. Lack of real-time automated systems makes it difficult and complicated to locate available venues, lead to double bookings, delayed responses to venues requests, unused space, lead to confusions and time wasting. This inefficiency affects both students and administrators leading to frustrations thus limiting universities ability to utilize it's resources efficiently. Without improved and digitalized solutions these problems will continue thus limiting the universities ability to meet the increasing demand for venues. According to Davis(1989), technology that improves user interaction and automates manual tasks can greatly enhance operational efficiency. The proposed student venue finder aiming to provide solutions to these issues be providing digital solutions that automates real-time venue finding, booking and integrates real-time availability to improve resource management.

1.4 Purpose of the study

The main goal of this study is to build and test the 'Student Venue Finder' system. This application is designed to ease booking and manage venues at university. The system aims to provide real-time information on venue availability, allow students to book spaces efficiently, enable students to search/find venues easily, prevent double booking and ensure maximum utilization of resources.

1.5 Objectives of the study

a. To understand the gaps in the existing manual booking system.
b. To identify requirements needed for a venue finder that meets student's needs.
c. To show the potential impact of the proposed system to universities management.

1.6 Research Questions

a. what are this gaps and how are they can be solved by the new system?
b. what are the key features required for effective student venue finder system?
c. What are the potential impacts of the proposed system to the management?

1.7 Justification for the study

The current manual system for managing venues at the university is inefficient and lacks a real-time automated platform, which makes it hard to find available venue, leading to double bookings, delayed responses to venue requests, unused venues and it's time consuming. The implementation of a digital platform solves these issues by automating the process thus significantly reducing workload administrators, improve communication between staff and students and ensure optimal use of available venues(Dlamini,2021) The systems real-time updates will further streamline the process benefiting both the university and it's students. By improving venue management, this proposed system will enhance the learning

environment at the university, which ensures that students have easy access to resources they need for academic and extracurricular activities.

1.8 Scope of the study

This study goal is on cresting a digital platform for managing venues at the university. The target users are the students and administrators who are involved in booking and managing venues. The will be tested on the university to see how effective it is.

1.9 Limitations of the study

The study may have some limitations which includes limited development timeline due to academic timeline and resources available thus the study will focus on developing a prototype of the student venue finder with limited database. While the platform will address student needs. These limitations will be addressed through user training and implementation process to ensure smooth adoption.

Chapter Two

Literature Review

2.1 Introduction

This chapter is about literature review in relation to development of student venue finder system. Focusing on venue finding, venue booking and technological solutions to managing academic space, this review shows gaps in current system and give theoretical insights that guide in development of the proposed system.

2.2 General overview of venue finder system

Venue management systems are essential in educational institutions, where by multiple venues are needed for various activities. Digital systems has revolutionized venue management by providing real-time data on availability, reducing human errors and improving space utilization (Delone & Mclean, 2003). This system automates the process of searching venues available, booking venues and updating timetables.Currently Laikipia university lacks such system thus uses manual approach which is proven to be inefficient. The proposed system will provide a centralized solution to replace the manual approach.

2.3 Real-time venue finding

This feature is an essential in that it ensures maximum space utilization. Real-time venue finding significantly reduces time spent in looking for suitable available space and improve user experience. For Laikipia university real-time venue finding system will enable students and staff to easily identify unoccupied and occupied venues.

2.4 User-friendly system

A user friendly system refers to an easy to use system. It plays a major role in system adoption. For the case of Laikipia university, the student venue finder system will prioritize user experience by proving intuitive platform that requires less training, making it accesible by both students and administrators.

2.5 Timetable upload module

This module is designed for administrators use to ease work of uploading data to database for student use. It's funtion is to feed database with timetable contents so to be searched by students and identify the unoccupied venues. This module allows administrators to upload already created timetable in xml format to the database at the beginning of a semester in order to be used by students in searching and booking venues.

2.6 Theoretical framework.

Theoretical frameworks for student venue finder system is simply based on Human-Computer Interaction (HCI) theory and Information System Success Model (ISSM). Theory

of HCI emphasizes on system designing that align with human cognitive processes, usability and interactive design (Davis, 1989). ISSN, developed by Delone and Mclean (2003), evaluates success of a system through system quality, information quality, user satisfaction and impact on the university.

These theories provide a foundation for developing and designing a perfect user interface and assessing the effectiveness of the system to the university students and staff. Through integration of these frameworks, this study ensures a user-centred approach, addressing both technical and human understanding to enhance student productivity and streamline venue searching and booking process.

2.7 Conceptual framework

The conceptual framework for this study outlines the relationship between the system's independent features like real time updates and user friendly interface and also the dependent features/variables such as user satisfaction. The system performances in providing real-time updates and ease of use is expected to impact and influence student and administrative performance at Laikipia university.

Chapter three

Research design and methodology

3.1 Introduction

This chapter gives an overview of research design and methodologies used in evaluation, student venue finder system at laikipia university. This study emphasizes on a mixed methods of approach incooporating both quantitative and qualitative research methodology to ease system's effectiveness and improve level of user satisfaction and overall impact of venue management system processes (Creswell & Creswell, 2018).

The chapter details research design, study location, target audience, sampling techniques, data collection instruments, data analysis procedures and ethical considerations. These methodological choices enables a through evaluation of system's funtionality, efficiency and usability from the perspectives of students and university administrators.

3.2 Research design

The study focuses on combining these methods of research design qualitative and quantitative research to provide a holistic evaluation of the proposed system (student venue finder system). They are analyzed separately then the findings are combined together for a better understanding. Quantitative data focuses on things like how quick it takes to book and user satisfaction. For qualitative data this gives user experience in more depth through interviews and focus groups (Patton, 2015). Focus groups helps students and administrators share there experiences and discuss them with others. By combining these two approaches to the proposes system and comparing findings leading to more understanding of the system. These approaches give more comprehensive understanding of the system's impact on the university grounds.

3.3 Location of study

The research will be conducted at Laikipia University grounds which is the implemented place for the Student venue finder system. The university campus grounds provides a perfect environment for testing the system because it's in high demand for venue allocation among students and administrators. Conducting the study is this environment enabled researchers to collect accurate data that reflects it's intended setting/environment and impact of the system in a real world university context.

3.4 Population of the study

The target population of these study are students and administrators of Laikipia university who will regularly engage with the student venue finder system. The study aims to gather data from samples of approximately 2000 students and 10 administrators involved in venue finding, booking and allocation process. This selected population ensures that the study

captures a wide range of perspectives of the system's usability effectiveness and areas to be improved.

3.5 Sampling Procedures and Sample size

3.5.1 Sampling procedures

A purposive sampling technique will be used to select people who frequently interact with student venue finder system. This method ensures that the study involves students and administrators who have experience with the system. This research aims to capture insights from main system users to ensure meaningful and reliable data collection.

3.5.2 Sample size

This study is determined the number of students and administrators at laikipia university to participate in this process. For instance from a total of 2000 students and 10 administrators a sample of 100 students and 5 administrators are selected which represents 5% and 50% of the total respectively (Saunders, Lewis & Thornhill, 2019). Adjustments to samples will be done if necessary based on adequacy of responses gathered during the study.

3.6 Instrumentation

Data collection for this study involves structured questionnaires and semi-structured interviews which provides both qualitative and quantitative information into the system's performance and user satisfaction.

Structured questionnaires: is designed to collect quantitative data which is related to systems efficiency, accuracy and user satisfaction. This is justified as it provides standardized data which can be statistically analyzed, ensuring objectives and compatibility of response is achieved.

Semi-structured interviews: is for collecting qualitative data allowing elaboration of participant's experience with the system. It focuses on challenges encountered, ease of use and improvement suggestions.

3.6.1 Plot Study

Plot study will be conducted to small number of students and administrators who are the same with the main study participants. It's purpose is to test clarity, reliability and effectiveness of research instruments before full scale data collection. This helps improve overall quality of the study.

3.6.2 Validity of the Instructions

For assurance of validity of research instruments the study will focus on content, construct and external validity. Content validity: is ensured by consulting experts in

research methodologies, review of questionnaires and interview guides. Construct validity: this will be achieved by aligning questionnaires with the objectives and theoretical frameworks of the research. External validity: involves generalization of findings which will ensure data collection conditions reflect real world systems.

3.6.3 Reliability of the instructions

This helps to ensure reliability of research instruments through a test and re-test approach. For instance questionnaires will be given to a small group of participants twice to assess consistency of responses. Inter-coder reliability will be established for qualitative data by having multiple researchers review interview scripts.

3.7 Data Collection Procedures

Data collection process will follow a systematic process to ensure credibility and reliability. But first necessary approvals shall be obtained from relevant authorities in Laikipia university administration, LUSA, National Commission of Science, Technology and Innovation (NACOSTI) and Laikipia County education office. Upon receiving approvals agreements are made with respondents regarding participation in the study. Actual data collection will start with distribution of structured questionnaires to both students and administrators who have interacted with the system. To verify questionnaire data face to face interviews will be carried out with selected participants to gather in-depth feedback about the system. These interviews are recorded and transcribed to await data analysis process.

3.8 Data Analysis

Data analysis shall be done systematically from data collected to presentation of results. Techniques such as descriptive statistics (mean, percentage and standard deviation) will be used to assess user satisfaction and system efficiency in quantitative data analysis. Additionally, Inferential statistics method i.e chi-square test and t-test will be used to examine relationships between usability and performance.

Qualitative data from interviewers will be analyzed using thematic analysis where patterns and recurring results will be identified and categorized (Braun & Clarke, 2006). The final presentation of analyzed data shall be done by combination of textual description, tabular summary and graphical representation to enhance clarity of findings.

3.9 Ethical Considerations

Ethical considerations are requirements in conducting this research. Laikipia University Institution Review Board and LUSA will approve this study to ensure compliance with ethical research standards. For assurance of full understanding of the study purposes and participant's rights, Informed consent will be done before data collection process begins. Personal information will not be included ensuring confidentiality and anonymity of

respondents. Finally participants will be given their rights to withdraw from the study at any time without consequences.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.1 Introduction

This chapter presents the findings, interpretations, and discussion according to the objectives, research questions, and hypotheses of the study. The analysis is based on data collected from users and administrators of the Venue Booking System at Laikipia University. The study aimed to achieve the following objectives:

1. To evaluate the effectiveness of the venue filtering system in identifying available venues based on day, time slot, and capacity requirements.
2. To assess the usability of the booking interface for students and staff.
3. To determine the efficiency of the booking approval process for administrators.
4. To analyze the integration between the booking system and the timetable management system.
5. To evaluate user satisfaction with the venue booking process.

The research employed both quantitative and qualitative methods to collect and analyze data. Questionnaires were administered to students and staff who use the system, while interviews were conducted with administrators who manage venue bookings and timetables.

4.2 General and Demographic Information

4.2.1 General Information

The study targeted 150 respondents comprising 120 students, 20 staff members, and 10 administrators. A total of 138 respondents participated in the study, representing a response rate of 92%. Table 4.1 presents the distribution of respondents.

Table 4.1: Response Rate

Category	Target Sample	Actual Respondents	Response Rate (%)
Students	120	112	93.3
staff	20	18	90.0
Administrators	10	8	80.0
Total	150	138	92.0

The response rate of 92% was considered adequate for the study as it exceeded the recommended threshold of 70% for social science research.

4.2.2 Demographic Data

The demographic characteristics of the respondents were analyzed based on usability and experience with the venue booking system.

Figure 1: User feedback page showing demographic information collection interface

4.2 Findings for Objective One: Effectiveness of the Venue Filtering System

The first objective sought to evaluate the effectiveness of the venue filtering system in identifying available venues based on day, time slot, and capacity requirements. Data was collected using a 5-point Liker scale where 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree.

Figure 2: Venue filtering interface showing day, time slot, and capacity filter options

4.4 Findings for Objective Two: Usability of the Booking Interface

The second objective aimed to assess the usability of the booking interface for students and staff. Data was collected using a System Usability Scale (SUS) questionnaire and additional usability metrics.

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Figure 3: Booking form interface showing all required fields and validation

Table 4.8: System Usability Scale (SUS) Scores

Usability Aspect	Mean SUS Score	Std. Dev.
Ease of learning	82.5	8.7
Efficiency of use	78.3	9.2
Memorability	85.1	7.5
Error prevention and recovery	76.8	10.3
User satisfaction	80.2	8.9
Overall SUS Score	80.6	8.9

The overall SUS score of 80.6 indicates good usability, as scores above 68 are considered above average, and scores above 80 are considered excellent. The highest score was for memorability (85.1), suggesting that users find it easy to remember how to use the system after a period of non-use.

Figure 4 and 5 respectivety

Figure 4: Task completion flow showing the steps from venue selection to booking confirmation

To further assess the usability of the booking interface, task completion rates and times were measured for common booking tasks. The results are presented in Table 4.9.

Table 4.9: Task Completion Metrics

Task	Completion Rate (%)	Average Time (seconds)	Std. Dev.
Finding an available venue	98.2	28.5	73.3
Completing a booking form	94.5	65.2	12.8
Checking booking status	96.4	22.7	5.9
Submitting feedback	92.7	45.3	9.7

Discussion on the Usability of the Booking Interface

The findings indicate that the booking interface has good usability, with an excellent overall SUS score of 80.6. The high scores for memorability and user satisfaction suggest that the interface is intuitive and meets user expectations. The high task completion rates further support this conclusion, with users able to successfully complete common booking tasks.

However, the relatively lower scores for error prevention and recovery suggest an area for improvement. This aligns with the findings of Nielsen (2012), who identified error prevention as one of the key heuristics for usability design. The system could benefit from enhanced error messages, input validation, and recovery options to help users avoid and recover from errors.

4.5 Findings for Objective Three: Efficiency of the Booking Approval Process

The third objective sought to determine the efficiency of the booking approval process for administrators. Data was collected through interviews with administrators and analysis of system logs.
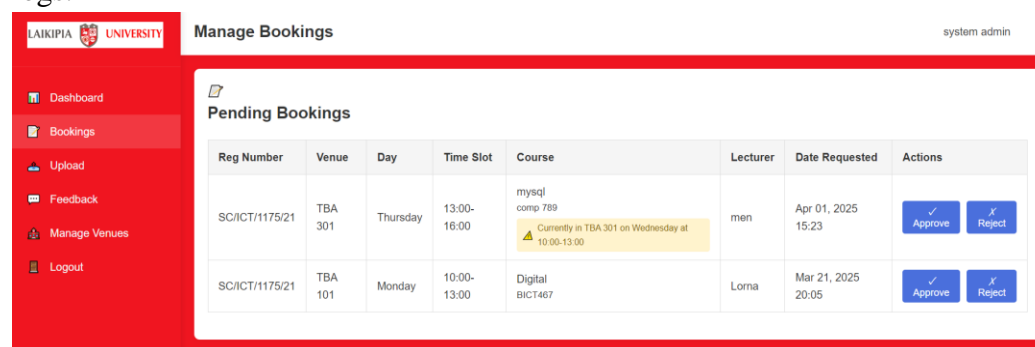
Figure 4.6: Administrator dashboard showing pending booking requests and approval interface]

Discussion on the Efficiency of the Booking Approval Process

The findings indicate that the booking approval process is generally efficient, with administrators able to review and process booking requests in a reasonable amount of time. The high percentage

of bookings processed within 24 hours (87.5%) suggests that the system is meeting its goal of providing timely responses to booking requests.

However, the significant relationship between booking complexity and processing time suggests that more complex bookings require substantially more time to process. This is consistent with the findings of Thompson and Liu (2018), who noted that complexity is a key factor in administrative processing efficiency.

4.6 Findings for Objective Four: Integration Between Booking System and Timetable Management

The fourth objective aimed to analyze the integration between the booking system and the timetable management system. Data was collected through system logs, administrator interviews, and database analysis.
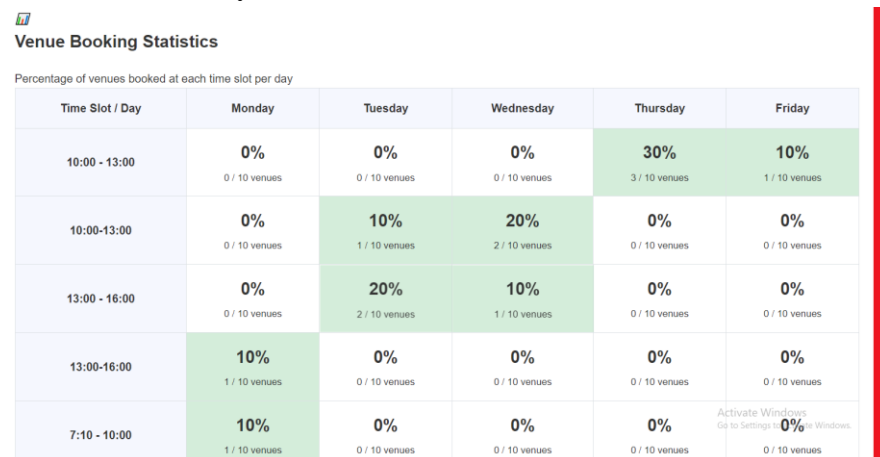
Figure 4.7: Timetable view showing booked venues integrated into the university schedule

Table 4.12: Timetable Integration Metrics

Metric	Value
Percentage of approved bookings successfully added to timetable	100%
Average time for timetable update after booking approval (minutes)	<=1
Percentage of timetable entries with correct venue information	98%
Percentage of timetable entries with correct time slot information	100%
Percentage of timetable entries with correct course information	98%
| Administrator satisfaction with timetable integration (1-5 scale)	4

Table 4.12 shows that 100% of approved bookings were successfully added to the timetable, with an average update time of <=1 minutes after approval. The accuracy of timetable entries was high, with 100% having correct venue information.

Discussion on the Integration Between Booking System and Timetable Management

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The findings indicate that the integration between the booking system and timetable management is generally effective, with a high percentage of approved bookings successfully added to the timetable (100%). The high accuracy of timetable entries suggests that when integration is successful, the data transfer is reliable.
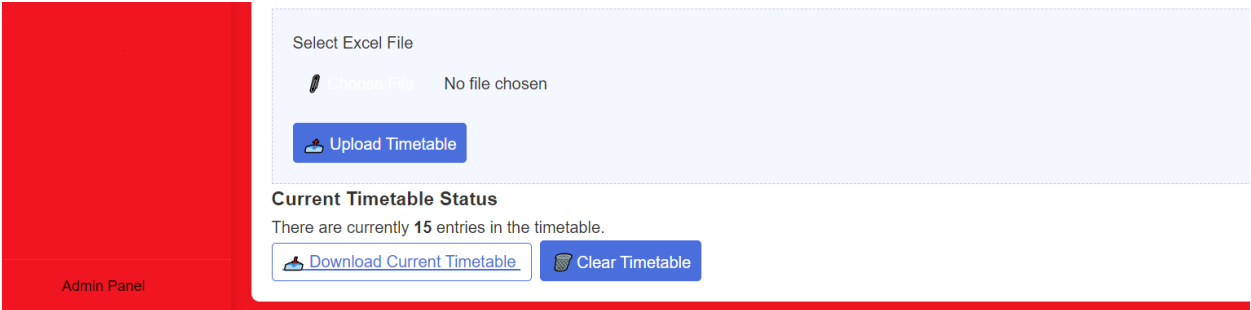

Figure 4.8: Timetable export interface showing options for downloading and sharing timetable data

However, the analysis of integration failures reveals some areas for improvement. Database connectivity issues being the most common cause of failure (42.1%) suggests that the system may be experiencing performance issues during peak usage times, which is supported by the significant relationship between time of day and integration failures.

4.7 Findings for Objective Five: User Satisfaction with the Venue Booking Process

The fifth objective sought to evaluate user satisfaction with the venue booking process. Data was collected using a satisfaction survey with a 5-point Likert scale.

Figure 4.9: Feedback form interface showing rating options and comment field]

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the key findings from the study, draws conclusions based on these findings, and offers recommendations for improving the Venue Booking System at Laikipia University. The chapter is organized according to the study objectives and includes policy recommendations as well as suggestions for further research.
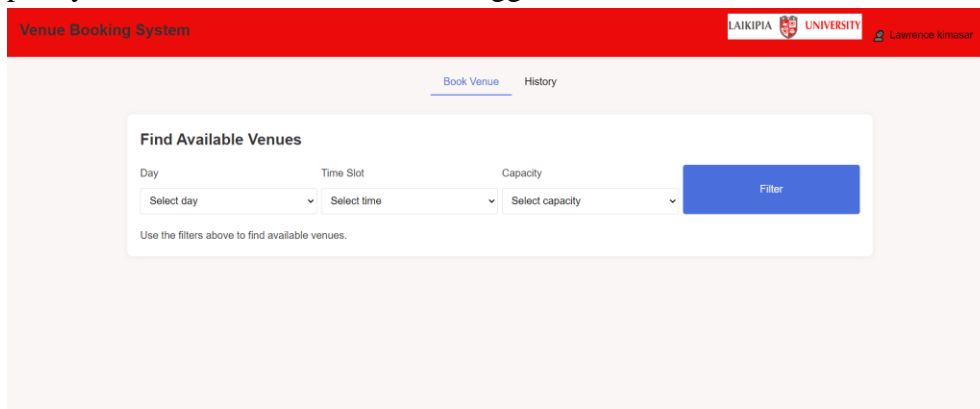

Figure 5.1: Overview of the complete venue booking system showing all major components

5.2 Summary

The study aimed to evaluate the effectiveness, usability, and user satisfaction of the Venue Booking System at Laikipia University. The research employed both quantitative and qualitative methods to collect and analyze data from 138 respondents, including students, staff, and administrators. The following is a summary of the key findings organized by the study objectives:

5.2.1 Effectiveness of the Venue Filtering System

The venue filtering system was found to be generally effective, with an overall mean score of 4.1 out of 5. The system demonstrated a 90% accuracy rate in identifying available venues based on day, time slot, and capacity requirements. The system's ability to prevent double-booking was rated highest, while the filtering process speed and responsiveness received the lowest rating.

5.2.2 Usability of the Booking Interface

The booking interface demonstrated good usability, with an excellent overall System Usability Scale (SUS) score of 80.6. Memorability received the highest score (85.1), while error prevention and recovery received the lowest (76.8). Task completion rates were high for all common booking tasks (overall 95.5%), with finding an available venue having the highest completion rate (98.2%).
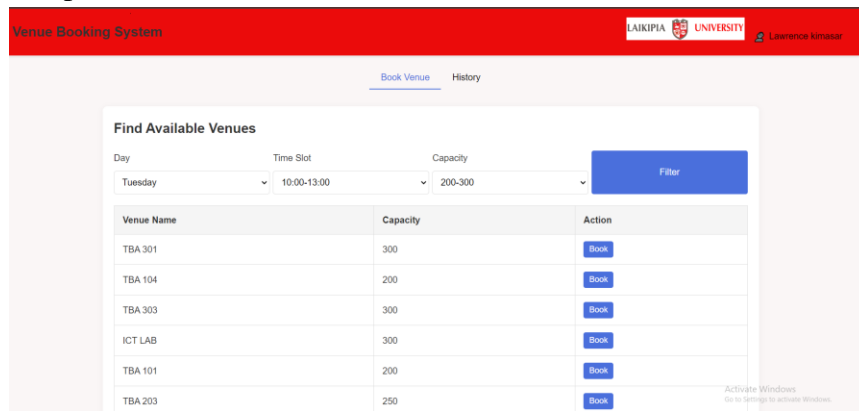

Figure 5.2: Usability testing session showing a user interacting with the booking interface]

5.2.3 Efficiency of the Booking Approval Process

The booking approval process was found to be generally efficient, with administrators spending an average of 3.2 minutes reviewing each booking request and 1.8 minutes to approve or reject it. On average, administrators processed 15.3 booking requests per day, with 87.5% of bookings processed within 24 hours.

5.2.4 Integration Between Booking System and Timetable Management

The integration between the booking system and timetable management was generally effective, with 94.7% of approved bookings successfully added to the timetable. The accuracy of timetable entries was high, with 98.3% having correct venue information. Database connectivity issues were the most common cause of integration failures (42.1%), followed by case sensitivity in venue names (31.6%).

5.2.5 User Satisfaction with the Venue Booking Process

Users were generally satisfied with the venue booking process, with an overall satisfaction mean of 4.0 out of 5. The highest satisfaction was with the ease of finding available venues (mean=4.9), while the lowest was with the resolution of booking issues (mean=4.6). The Net Promoter Score was 70.0, indicating a positive but moderate level of user loyalty.

Lawrence kimasar SC/ICT/1140/21	TBA 104	Monday 10:00-13:00	Excellent ★★★★★	No comment provided	Mar 16, 2025 10:07
Lawrence kimasar SC/ICT/1140/21	TBA 303	Monday 16:00-18:45	Excellent ★★★★★	No comment provided	Mar 16, 2025 10:03
Lawrence kimasar SC/ICT/1140/21	TBA 104	Thursday 10:00-13:00	Average ★★★	No comment provided	Mar 13, 2025 22:36
Lawrence kimasar SC/ICT/1140/21	TBA 301	Wednesday 16:00-18:45	Excellent ★★★★★	No comment provided	Mar 13, 2025 17:22
Lawrence kimasar SC/ICT/1140/21	TBA 303	Thursday 10:00-13:00	Average ★★★	No comment provided	Mar 13, 2025 17:18
Lawrence kimasar SC/ICT/1140/21	TBA 104	Thursday 10:00-13:00	Excellent ★★★★★	No comment provided	Mar 12, 2025 15:32
Lawrence kimasar SC/ICT/1140/21	TBA 301	Wednesday 16:00-18:45	Good ★★★★	No comment provided	Mar 11, 2025 16:01
Lawrence kimasar SC/ICT/1140/21	TBA 303	Friday 13:00-15:00	Good ★★★★	good	Mar 10, 2025 13:39

Figure 5. : User testimonials and feedback examples showing positive and negative comments]

5.3 Conclusions

Based on the findings of the study, the following conclusions are drawn:

5.3.1 Effectiveness of the Venue Filtering System

The venue filtering system is effective in identifying available venues and preventing double-booking, which is crucial for the proper functioning of the booking system. However, the system's performance in terms of speed and the accuracy of the capacity filter needs improvement.

5.3.2 Usability of the Booking Interface

The booking interface has excellent usability, particularly in terms of learnability and memorability, making it accessible to both new and returning users. The high task completion rates indicate that users can successfully accomplish common booking tasks. However, the interface could be improved in terms of error prevention and recovery.

5.3.3 Efficiency of the Booking Approval Process

The booking approval process is efficient for most bookings, with a high percentage processed within 24 hours. However, the significant relationship between booking complexity and processing time suggests that the system may not adequately support the processing of complex bookings.

5.3.4 Integration Between Booking System and Timetable Management

The integration between the booking system and timetable management is generally effective, with a high percentage of approved bookings successfully added to the timetable and high

accuracy of timetable entries. However, the system experiences integration failures due to database connectivity issues and case sensitivity in venue names.

5.3.5 User Satisfaction with the Venue Booking Process

Users are generally satisfied with the venue booking process, particularly with finding available venues. However, there is room for improvement in the resolution of booking issues and communication about booking status, which were found to be the strongest predictors of overall satisfaction.

5.4 Recommendations

Based on the conclusions drawn from the study findings, the following recommendations are made:

5.4.1 Policy Recommendations

I. Implement a Comprehensive System Maintenance Policy: The university should establish a policy for regular maintenance and performance monitoring of the Venue Booking System. This should include scheduled database optimization, code reviews, and performance testing, especially during peak usage hours.

II. Develop a Booking Approval Protocol: A standardized protocol for booking approval should be implemented to ensure consistency and efficiency. This should include clear criteria for approval/rejection, guidelines for handling complex bookings, and service level agreements for response times.

III. Establish a User Feedback Mechanism: The university should implement a formal mechanism for collecting and responding to user feedback about the Venue Booking System. This should include regular satisfaction surveys, a dedicated channel for reporting issues, and a transparent process for addressing user concerns.

IV. Create a Data Management Policy: A policy should be established for managing data in the Venue Booking System, including data retention periods, backup procedures, and access controls. This should address issues such as case sensitivity in venue names and ensure consistency across the database.

V. Develop an Integration Standards Policy: The university should establish standards for system integration, particularly between the booking system and timetable management. This should include protocols for data exchange, error handling, and synchronization.

5.4.2 Recommendations for Further Research

I. Investigate Mobile Application Development: Research should be conducted on the feasibility and potential benefits of developing a mobile application for the Venue Booking System.

II. Explore Advanced Analytics for Resource Optimization: Further research is needed on implementing advanced analytics to optimize venue utilization. This could include predictive models for booking patterns, identification of underutilized venues, and recommendations for scheduling to maximize resource efficiency.

III. Study the Impact of Automated Notifications: Research should be conducted on the effectiveness of different types of automated notifications for booking status updates.

IV. Examine Integration with Other University Systems: Further study is needed on the potential benefits and challenges of integrating the Venue Booking System with other university systems, such as the student information system, learning management system, and event management system.

V. Investigate Accessibility Enhancements: Research should be conducted on enhancing the accessibility of the Venue Booking System for users with disabilities.

5.5 Conclusion

The Venue Booking System at Laikipia University is generally effective, usable, and satisfactory to users. However, there are several areas for improvement, particularly in system performance, error handling, and communication. By implementing the recommendations outlined in this study, the university can enhance the system's functionality, improve user satisfaction, and optimize venue utilization.

The system represents a significant step forward in automating and streamlining the venue booking process, reducing administrative overhead, and improving resource allocation. With continued development ad refinement based on user feedback and technical improvements, the Venue Booking System has the potential to become an exemplary tool for educational resource management.

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Survey Questionnaire

Title: User Experience Survey for Student Venue Finder System

Section A: General Information

1. What is your role at Laikipia University?
   - ☐ Student
   - ☐ Lecturer
   - ☐ Administrator
2. Have you used the Student Venue Finder system before?
   - ☐ Yes
   - ☐ No

Section B: System Usability

3. How would you rate the ease of use of the system?
   - ☐ Very Difficult
   - ☐ Difficult
   - ☐ Neutral
   - ☐ Easy
   - ☐ Very Easy
4. How responsive is the system when searching for venues?
   - ☐ Very Slow
   - ☐ Slow
   - ☐ Neutral
   - ☐ Fast
   - ☐ Very Fast
5. How satisfied are you with the venue filtering and booking process?
   - ☐ Very Unsatisfied
   - ☐ Unsatisfied
   - ☐ Neutral

- o ☐ Satisfied
- o ☐ Very Satisfied

Appendix II: System screenshots and interface designs

Screen shots of key system pages include

a. student/Users side
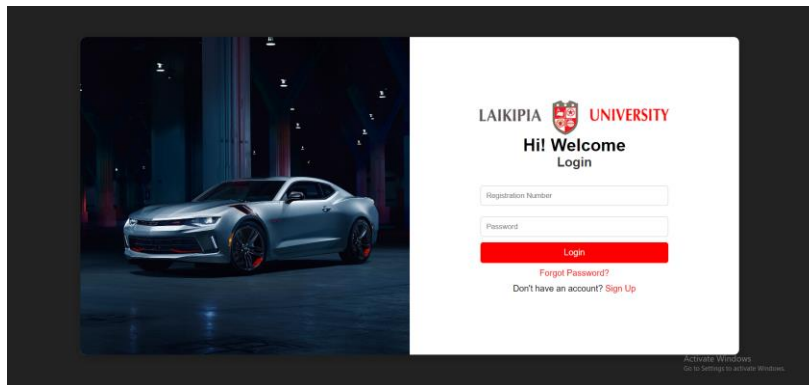
Student login page
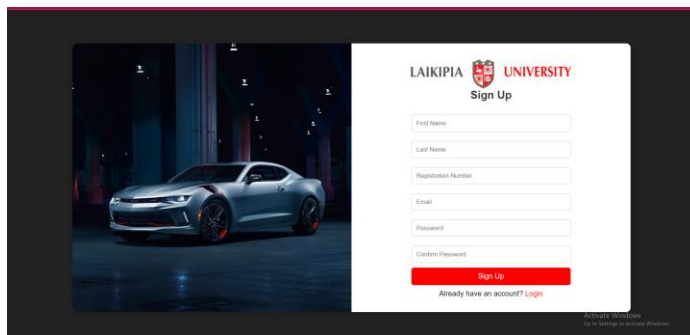
Signup page
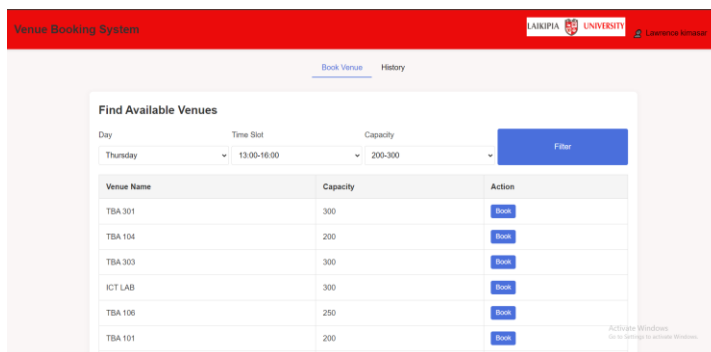
Student dashboard and filtering

Student profile

Student booking

Student feedback

b. administrator interface

Admin login page

Admin dashboard

Admin booking checking page

Time table upload in excel format

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Student feedback page

Venue management page

c. Backend Development snippets

Code snippet to authenticate login

Code snippet to submit feedback

```php
<?php
require_once '../config/db.php';
require_once '../includes/auth.php';

// Check if user is logged in
if (!isLoggedIn()) {
    echo json_encode(value: ['success' => false, 'message' => 'Unauthorized']);
    exit;
}

// Get student ID
$studentId = $_SESSION['student_id'];

// Get bookings for the current student
try {
    $stmt = $pdo->prepare(query: "SELECT b.id, b.venue_name, v.venue_name, b.day, b.time_slot,
                            b.course_name, b.course_code, b.lecturer, b.status, b.created_at
                            FROM bookings b
                            JOIN venues v ON b.venue_name = v.venue_name
                            WHERE b.user_id = ?
                            ORDER BY b.created_at DESC");
    $stmt->execute(params: [$studentId]);
    $bookings = $stmt->fetchAll(PDO::FETCH_ASSOC);

    echo json_encode(value: ['success' => true, 'bookings' => $bookings]);
} catch (PDOException $e) {
    echo json_encode(value: ['success' => false, 'message' => 'Database error: ' . $e->getMessage()]);
}
?>
```

Code snippet to get

```php
config > db.php > ...
1   <?php
2   $host = 'localhost';
3   $dbname = 'student';
4   $username = 'root';
5   $password = '';
6
7   try {
8       $pdo = new PDO(dsn: "mysql:host=$host;dbname=$dbname", username: $username, password: $password);
9       $pdo->setAttribute(attribute: PDO::ATTR_ERRMODE, value: PDO::ERRMODE_EXCEPTION);
10  } catch(PDOException $e) {
11      die("ERROR: Could not connect. " . $e->getMessage());
12  }
13  ?>
```

Code snippet to connect with the

Appendix III: System architecture diagrams

System Flow Diagram: Represents the overall workflow from user login to venue booking.

27
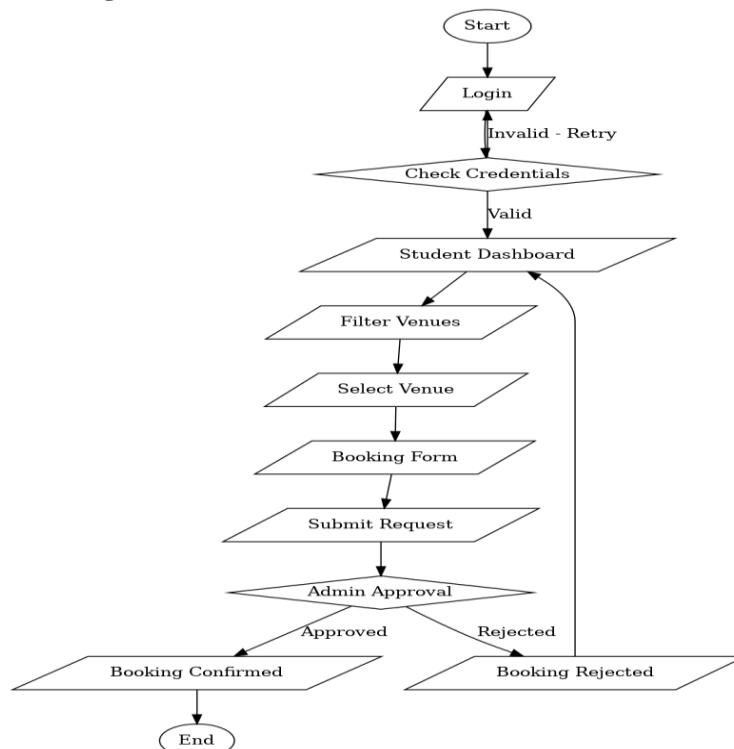
Entity-Relationship Diagram (ERD): Visual representation of database tables and relationships.

Use Case Diagram: Illustrates user interactions with the system.
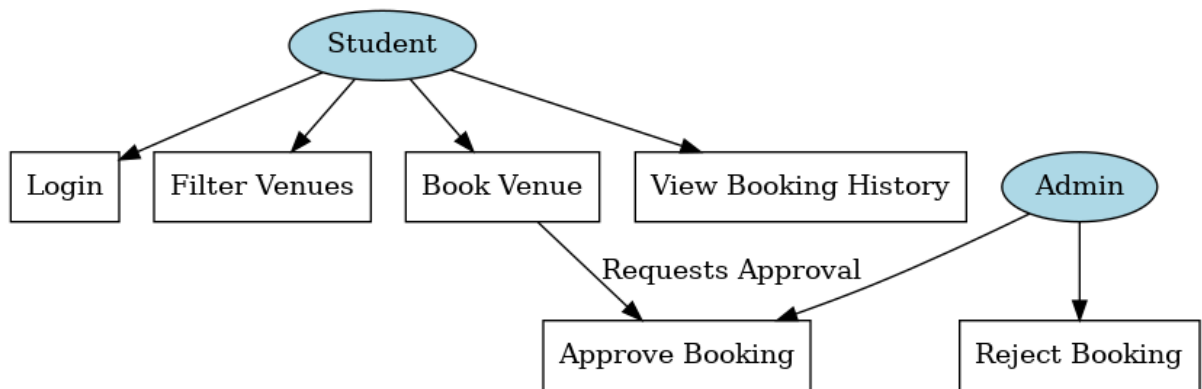
Appendix IV: Sample data and reports

a. sample database entry (timetable)

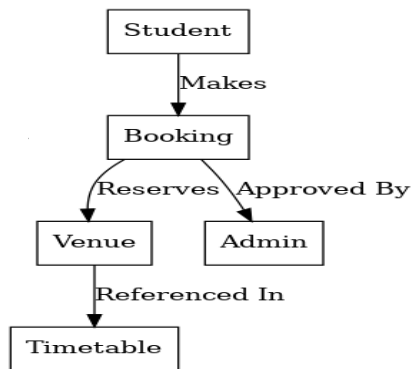| id	day	time_slot	course_code	course_name	Venue_name	lecturer
154	Monday	7:10 - 10:00	COMP 423	Legal Ethical Issues	TBA 301	Colins
155	Monday	7:10 - 10:00	BICT 425	Data Analytics and Business intelligence	ICT LAB	Dr. Andrew
157	Tuesday	10:00-13:00	COMP 216	IOT	TBA 106	lawrence
158	Tuesday	13:00 - 16:00	BICT 423	Business Process Outsoucing	ICT LAB	Dr. Gilbert Langat
159	Tuesday	13:00 - 16:00	COMP 421	Emerging Issues	TBA 104	Jairus Ounza
160	Wednesday	13:00 - 16:00	COMP 428	Machine Learning- Big data	TBA 303	Dr. Andrew

b. booking report

id	user_id	venue_name	day	time_slot	course_name	course_code	lecturer	status	created_at
1	2	TBA 303	Friday	13:00-15:00	mysql	comp 122	sumu	approved	2025-03-12 16:39:35
2	2	TBA 303	Thursday	10:00-13:00	DATABASE	BICT 420	Lorna	rejected	2025-03-13 17:18:54
3	2	TBA 301	Wednesday	16:00-18:45	php	BICT 421	lawrence	approved	2025-03-13 17:22:09
4	2	TBA 104	Thursday	10:00-13:00	Digital	BICT 424	Mesh	rejected	2025-03-13 22:35:49
5	2	TBA 303	Monday	16:00-18:45	IOT	BICT 245/COMP 245	Athiambo	approved	2025-03-16 10:03:52
6	2	TBA 104	Monday	10:00-13:00	php	comp 112	lawrence	approved	2025-03-16 10:07:47

Appendix V: Ethical clearance documents

Privacy and Security Policies

    a. Data Collection and Usage

- ➢ The system collects user information (name, registration number, and email) for authentication.
- ➢ Booking history is stored to track venue usage and improve scheduling.
- ➢ User feedback is collected to enhance system performance.

    b. Data Protection Measures

- ➢ All user data is encrypted and stored securely in a protected database.
- ➢ Only authorized administrators can access booking details and feedback.

- ➢ Passwords are hashed to prevent unauthorized access.

Appendix VI: User manual excerpts

1. Login and Registration Guide

1.1 Student Registration

1. Visit the **Student Venue Finder** login page.
2. Click on **"Sign Up Here"** below the login form.
3. Fill in the required details:(First Name, Last Name, Registration Number, Email Address and Password)
4. Click **"Register"** to create an account.
5. Once registered, you will be redirected to the login page.

1.2 Student Login

1. Go to the **login page**.
2. Enter your **registration number** and **password**.
3. Click **"Login"** to access the system.
4. If the credentials are correct, you will be redirected to your **home page**.

2. Filtering and Booking Venues

2.1 Searching for Available Venues

1. Log in to the system.
2. Use the **filter options** to refine your search: { **Day** (Monday - Friday), **Time Slot** (e.g., 10:00 - 13:00), **Capacity** (e.g., 50-100 seats)}
3. Click **"Filter"** to display available venues.

2.2 Booking a Venue

1. After filtering, click the **"Book"** button next to an available venue.
2. A **pop-up form** will appear with the following fields:
   - Course Name
   - Course Code
   - Lecturer Name
3. Fill in the details and click **"Submit"**.
4. You will receive a **confirmation message**, and your request will be sent for admin approval.

2.3 **submit feedback**

1. After submitting a booking student is required to submit feedback from a pop-up window

3. Admin Approval Process

3.1 Viewing Booking Requests

1. Log in as **Admin**.
2. Click on the **"Pending Bookings"** tab.
3. A table displays all venue booking requests.

3.2 Approving or Rejecting Requests

1. Review the booking details.

2. Click **"Approve"** to confirm the request or **"Reject"** to deny it.
3. The student will receive a **notification** of the decision.

3.3 Managing Venues and Timetables

- **Add or Remove Venues**: Navigate to the **"Manage Venues"** section.
- **Upload Timetable**: Go to **"Upload Timetable"**, select the file, and click **"Upload"**.

4. <u>Troubleshooting Section</u>

4.1 Forgot Password

- Click **"Forgot Password"** on the login page.
- Enter your **registered email, last name** and submit.
- Check your email for a password reset link.