

CHAPTER ONE

INTRODUCTION

1.1 Background

The quest for suitable off-campus accommodation poses a perennial challenge for students, often characterized by limited information, inadequate resources, and time-consuming processes. Recognizing this, the project " E-Agent: An off-campus accommodation manager " is rooted in addressing these challenges through technological innovation. As the student population continues to grow and diversify, the demand for efficient accommodation solutions intensifies. Traditional methods of securing off-campus housing involve a myriad of issues, including the lack of centralized information, difficulties in assessing availability, and the absence of streamlined payment processes. This project seeks to bridge these gaps by leveraging mobile technology to create a cohesive and user-friendly system.

1.2 Statement Of The Problem

The growing number of students in higher institutions all over the world has posed a lot of accommodation problems on the part of students and school management. At Nigeria universities, the whole process of students off campus accommodation and management is done manually. The few students off campus accommodations that exist in the college are not properly managed. Statistics of the number of rooms required to match the growing number of students are far-fetched. Most often, the overall process is time consuming and requires a lot of effort, student's information retrieval is difficult and records are unsecured due to manual method of storage using hard cover notes. Students off campus accommodation administrators cannot give accurate information of the occupancy of a particular room.

1.3 Aims and Objectives

These objectives collectively aim to revolutionize the student accommodation landscape by offering a technologically advanced, user-centric, and secure platform for off-campus housing information and transactions. Through the accomplishment of these goals, the project seeks to enhance the overall experience of students searching for and securing off-campus accommodations.

1. Efficient Accommodation Search:

- Develop a mobile app interface that enables students to search for off-campus accommodations efficiently, considering factors such as location, amenities, and budget.

2. Real-Time Availability Updates:

- Implement a system that provides real-time updates on the availability of accommodations, ensuring students have access to the latest information to make timely decisions.

3. Secure User Authentication and Authorization:

- Establish a robust user authentication and authorization mechanism to safeguard sensitive user data and ensure the privacy and security of student information.

4. Seamless Secure Payment Integration:

- Integrate a secure payment gateway within the mobile app to facilitate seamless and secure transactions for booking accommodations, enhancing the user experience.

5. Comprehensive Database Management:

- Design and implement a well-structured backend database that efficiently manages accommodation listings, user profiles, and transaction records, ensuring data accuracy and integrity.

6. User-Friendly Interface:

- Create an intuitive and user-friendly mobile app interface that caters to the diverse needs and technological competencies of the student user base.

7. Testing and Quality Assurance:

- Conduct thorough testing and quality assurance processes to identify and address any bugs, glitches, or usability issues, ensuring a reliable and stable application.

1.4 Scope of the Project

The scope of this research work is centered on the development of students off campus accommodation management. This project which is to develop a mobile app, automates the student's off campus accommodation application process, allocates rooms to students, notifies students of their application status anytime they log into the system and also maintains the integrity of their information being processed by using a password to limit access to only approved individuals. The system also creates an automatic database for the storage of students information.

1.5 Significance of the Study

The project, " E-Agent: An off-campus accommodation manager " , holds profound significance for various stakeholders, contributing to the improvement of student life and the advancement of accommodation management practices.

The project seeks to significantly improve the overall experience of students searching for off-campus accommodations. By providing a user-friendly and efficient platform, students can make informed decisions that align with their preferences and needs.

Students often invest substantial time and resources in the traditional search for off-campus housing. This project aims to streamline the process, saving valuable time and resources by offering a centralized and easily accessible accommodation information system.

1.6 Definition of Terms

Students off campus accommodation: A students off campus accommodation is a home for students when staying away from their home. It has large well ventilated dormitories and single rooms and is situated outside the school premises.

A Management Information System (MIS): Is a system that provides information needed to manage organizations effectively.

Data: Historically, data referred to known facts that could be recorded and stored on computer media. These are facts made up of text, numbers, images, and sounds.

Databases: A systematically arranged collection of computer data, structured so that it can be automatically retrieved or manipulated. It is also called Databank.

Computer Program: This is a set of instructions that guides the computer on the action to perform.

CHAPTER TWO

2.1 Conceptual Framework

This framework illustrates the symbiotic relationship among these components, where a well-established technological infrastructure supports a user-centric design, and together they contribute to the effective management of the accommodation ecosystem. The successful integration of these elements aims to create a holistic and innovative solution that not only addresses the current challenges in student housing searches but also sets a precedent for future advancements in technology-driven educational services.

The conceptual framework for this project revolves around three interconnected components.

Technological Infrastructure, User-Centric Design, and Accommodation Management Ecosystem.)

1. Technological Infrastructure:

- Mobile App Development: This component focuses on the creation of a mobile application, ensuring it is user-friendly and accessible. The app serves as the

primary interface for students to interact with the accommodation information system, facilitating efficient searches and transactions.

- Backend Database Management: A robust backend infrastructure is essential for storing, managing, and retrieving accommodation data. The database structure supports real-time updates, ensuring accuracy and reliability in presenting information to users.

2. User-Centric Design:

- Intuitive Interface: The user-centric design aspect emphasizes the importance of creating an intuitive and visually appealing mobile app interface. Features such as advanced search options, interactive maps, and personalized user profiles are integrated to enhance the overall user experience.
- Secure Authentication and Authorization: User privacy and security are paramount. The system incorporates a secure authentication mechanism, allowing authorized access to sensitive information while safeguarding user data.

3. Accommodation Management Ecosystem:

- Real-Time Availability Updates: This component ensures that the system provides timely and accurate information on the availability of off-campus accommodations. Real-time updates are integral for facilitating prompt decision-making by students.
- Secure Payment Integration: The inclusion of a secure payment gateway within the system contributes to financial transparency and security. It enables users to complete transactions seamlessly, fostering confidence in the booking process.

2.2 Theoretical framework

This framework illustrates the symbiotic relationship among these components, where a well-established technological infrastructure supports a user-centric design, and together they contribute to the effective management of the accommodation ecosystem. The successful integration of these elements aims to create a holistic and innovative solution that not only addresses the current challenges in student housing searches but also sets a precedent for future advancements in technology-driven educational services.

The theoretical framework for the project, "Design and Implementation of Online Student Off-Campus Accommodation Information System Using a Mobile App," is

anchored in key theories that guide the development and understanding of the proposed system.

1. Technology Acceptance Model (TAM):

-Concept: TAM, proposed by Davis (1989), posits that users' intention to adopt a technology is influenced by perceived ease of use and perceived usefulness.

- Application: The project integrates TAM by prioritizing an intuitive mobile app interface, aiming to enhance students' perception of ease of use and emphasize the usefulness of the system in their accommodation searches.

2. Unified Theory of Acceptance and Use of Technology (UTAUT):

- Concept: UTAUT builds upon TAM and includes additional factors such as social influence, facilitating conditions, and performance expectancy (Venkatesh et al., 2003).

- Application: Considering the social aspect, the project recognizes the impact of peer influence on technology adoption. Moreover, facilitating conditions like reliable internet access are vital for the successful implementation of the mobile app.

3. Information Systems Success Model:

- Concept: DeLone and McLean's model (1992) outlines dimensions for evaluating information system success, including system quality, information quality, service quality, user satisfaction, use, and net benefits.

- Application: The project aligns with this model by focusing on developing a high-quality and efficient accommodation information system that prioritizes user satisfaction and delivers tangible benefits.

4. Diffusion of Innovations Theory:

-Concept: Rogers' theory (1962) identifies factors influencing the adoption of innovations, including innovation characteristics, communication channels, social systems, time, and adopter characteristics.

- Application: The project incorporates elements of this theory to navigate the adoption process, considering the characteristics of the innovative system, effective communication channels, and the social context of student accommodation searches.

By integrating these theories, the project's theoretical framework guides the development process, ensuring a user-centric approach, successful adoption, and overall success of the proposed online student off-campus accommodation information system.

2.3 Empirical Studies

The empirical framework aims to provide concrete insights into the effectiveness and acceptance of the developed accommodation information system, ensuring that the project's objectives align with the practical needs and expectations of the user community.

This empirical approach involves a combination of qualitative and quantitative methods, providing a comprehensive understanding of user experiences, preferences, and system performance in the context of student off-campus accommodation searches.

2.4 Appraisal of Reviewed Literature

The appraisal of the reviewed literature for the project, "E-Agent: An Off-Campus Accommodation Manager," reveals a comprehensive understanding of the challenges, existing solutions, and innovative approaches within the realm of student housing management. The literature review underscores the significance of

leveraging technology to address the limitations of traditional off-campus accommodation searches. It identifies a gap in centralized, real-time information systems and emphasizes the need for user-friendly interfaces to enhance the overall student experience. Insights from the literature review contribute to the project's conceptual framework by drawing attention to key elements such as user-centric design, technological infrastructure, and the accommodation management ecosystem. The integration of statistical tools and qualitative analysis methods in the reviewed literature informs the chosen method of data analysis for the project, aligning with the need for a holistic assessment of the system's performance. Furthermore, the literature review serves as a foundation for the project's objectives, emphasizing the importance of efficiency, security, and user empowerment in the design and implementation of the mobile app. Overall, the appraisal of the literature positions the project within the broader context of advancements in student services and technology-driven solutions, providing a solid theoretical framework for the innovative development of the online accommodation information system.

CHAPTER THREE

3.1 Research Design

The research design for this project follows a mixed-methods approach, combining both quantitative and qualitative research methods to comprehensively address the diverse facets of the study.

By employing a mixed-methods research design, this study aims to triangulate findings, ensuring a comprehensive understanding of the user experience, system performance, and contextual factors influencing the success of the online student off-campus accommodation information system.

1. Quantitative Research:

- Surveys and Questionnaires: To gather quantitative data on user preferences, satisfaction, and the effectiveness of the mobile app, structured surveys and questionnaires will be distributed to a sample of students. Questions will focus on usability, perceived usefulness, and overall satisfaction with the accommodation information system.
- App Analytics: Utilizing analytical tools within the mobile app to collect quantitative data on user interactions, popular features, and frequency of use. This data will provide insights into user behaviours and help assess the app's performance.

2. Qualitative Research:

- Interviews: Conducting in-depth interviews with key stakeholders, including students, accommodation providers, and system administrators. These interviews will delve into qualitative aspects such as user experiences, challenges faced, and suggestions for improvement. Open-ended questions will encourage participants to express their opinions freely.
- Focus Groups:

Organizing focus group discussions to facilitate collaborative dialogue among users. This qualitative approach allows for the exploration of shared experiences, group dynamics, and the identification of common themes or concerns.

3.2 Population Of Study

The population of study for the project, "E-Agent Using a Mobile App," comprises university and college students who are actively seeking or considering off-campus accommodations. This includes students from various academic disciplines and diverse demographic backgrounds. The focus is on individuals enrolled in educational institutions where off-campus housing is a common practice, making them potential users of the proposed system. The study aims to address the

accommodation needs of this specific population, ensuring that the designed mobile app meets their preferences, requirements, and technological expectations.

3.2 Sample And Sampling Techniques

Sample:

The sample for this project consists of university students who are actively seeking off-campus accommodations. To ensure diversity, students from different academic disciplines, varying geographic locations, and different socio-economic backgrounds will be included. The sample will be drawn from multiple universities to capture a broad representation of the student population.

Sampling Technique:

The project will employ a combination of stratified and convenience sampling techniques. Initially, universities will be stratified based on factors such as location, size, and academic reputation. A random selection of universities from each stratum will be made. Within selected universities, convenience sampling will be applied to recruit students who express an interest in participating in the study. This approach allows for a more comprehensive understanding of the diverse needs and preferences of students across different educational settings.

Data Collection Process:

Data will be collected through surveys and interviews conducted with the selected students. The survey will include questions related to their current off-campus housing search experiences, preferences in using technology for accommodation searches, and their expectations from a mobile app-based accommodation information system. Additionally, in-depth interviews will be conducted with a subset of participants to gather qualitative insights into their specific needs and challenges.

Ethical Considerations:

The project will adhere to ethical guidelines, ensuring informed consent from participants. Confidentiality and anonymity of participants will be maintained, and their personal information will be handled securely. The research will be conducted with the utmost respect for the rights and privacy of the participants.

By employing this sample and sampling technique, the project aims to gather comprehensive and diverse data that will inform the design and implementation of the online student off-campus accommodation information system, ensuring that the final product caters to the varied needs of the target user population.

3.4 Instrument For Data Collection

The instrument for data collection in the project, " E-Agent: An Off-campus Accommodation Manager", involves a combination of qualitative and quantitative methods to gather comprehensive insights into user experiences and system effectiveness.

These data collection methods aim to provide a better understanding of the user experience, technical performance, and overall effectiveness of the online student off-campus accommodation information system. Combining quantitative and qualitative approaches ensures a comprehensive evaluation, allowing for informed decisions and improvements in the system's design and functionality.

1. Survey Questionnaire:

- Objective: To collect quantitative data on user satisfaction, ease of use, and perceived usefulness of the mobile app.
- Questions: Include Likert-scale questions to assess user satisfaction levels, ease of navigation, and the perceived usefulness of different features.

2. Interviews:

- Objective: To gather qualitative data on user experiences, challenges faced, and suggestions for improvement.
- Questions: Open-ended questions exploring user interactions with the mobile app, any difficulties encountered, and suggestions for enhancing the system.

3. Observation:

- Objective: To observe real-time user interactions with the mobile app.
- Focus: Monitor user behaviours, identifying patterns and potential pain points in the user journey.

3.5 Validity Of Instrument

The validation of instruments in this project involves a comprehensive approach to ensure the reliability and effectiveness of the developed mobile app and its associated components.

By incorporating these validation processes, the project aims to establish a robust instrument in the form of the mobile app, ensuring that it aligns with user expectations, provides accurate and comprehensive information, and delivers a positive and secure user experience. The validation procedures contribute

to the overall reliability and validity of the developed instrument in meeting the goals of the project.

1. Face Validity: The initial phase involves obtaining feedback from experts in the fields of user experience (UX), mobile app development, and accommodation management. Experts will assess the app's interface, functionality, and alignment with user expectations to ensure its face validity.
2. Content Validity: Content validity is established through the involvement of subject matter experts who specialize in student accommodation services. These experts assess the relevance, comprehensiveness, and accuracy of the accommodation information provided by the app.
3. Construct Validity: To assess the construct validity of the mobile app, factor analysis will be employed. This statistical technique will help identify and validate the underlying constructs within the app, ensuring that the designed features align with the intended purposes of efficient accommodation search, real-time updates, and secure transactions.
4. Concurrent Validity: Concurrent validity will be evaluated by comparing the performance of the developed app with existing online accommodation information systems. This comparative analysis will assess the app's ability to provide real-time

information and facilitate secure transactions in line with or surpassing current industry standards.

3.6 Reliability Of The Instrument

In assessing the reliability of the instrument for the project, "E-Agent" Using a Mobile App, the chosen method was the Test-Retest reliability approach. Test-Retest reliability assesses the consistency of measurement by administering the same instrument to the same group of participants on two separate occasions and then correlating the results.

Method of Reliability:

The study involved a pilot test where a sample of users interacted with the mobile app prototype, engaging in tasks such as accommodation searches, profile creation, and simulated transactions. After an initial interaction, the same participants were invited to use the system again after a predetermined time interval, reflecting a realistic scenario of students returning to the app for subsequent accommodation searches.

Procedure:

1. Initial Interaction: Participants were introduced to the mobile app prototype and given specific tasks to perform, including searching for accommodations, creating user profiles, and navigating the payment process.
2. Time Interval: Following the initial interaction, participants were asked to refrain from using the app for a defined period to minimize the possibility of recall influencing results.
3. Repeat Interaction: After the prescribed interval, participants were reengaged with the mobile app to perform similar tasks as in the initial interaction.
4. Data Analysis: The results from the two interactions were then correlated using statistical methods to determine the consistency and reliability of the instrument.

Results Obtained: The correlation analysis yielded a high coefficient, indicating strong consistency in participant responses between the initial and repeat interactions. The high correlation suggests that the instrument, in this case, the mobile app , is reliable and consistent.

3.7 Procedure For Data Collection

This study employed a meticulous data collection procedure to inform the design and implementation of an innovative mobile app for student off-campus accommodation. Beginning with a comprehensive preliminary survey, the research identified key stakeholders and challenges in the existing accommodation search process. Requirements gathering involved collaborative efforts with university officials, students, and accommodation providers, integrating feedback into a prototype. Beta testing allowed for iterative improvements, leading to the full-scale implementation of the final mobile app. User training sessions ensured a smooth onboarding process, while real-time monitoring and surveys captured valuable usage data and user feedback.

1. Preliminary Survey:

- Conducted a preliminary survey to identify key stakeholders, including students, accommodation providers, and university administrators.
- Administered questionnaires and conducted interviews to understand existing challenges in the off-campus accommodation search process

2. Requirements Gathering:

- Collaborated with university officials, students, and potential accommodation providers to gather specific requirements for the mobile app.
- Conducted focus group discussions to identify desired features, preferences, and concerns related to user experience and security.

3. System Prototyping:

- Developed a prototype of the mobile app based on the gathered requirements and feedback.
- Administered usability testing sessions with a sample group of students to evaluate the prototype's functionality, navigation, and overall user experience.

4. Beta Testing:

- Launched a beta version of the mobile app for a limited user group, including students and accommodation providers.
- Collected feedback through in-app surveys, feedback forms, and direct communication to identify bugs, usability issues, and areas for improvement.

5. Full-Scale Implementation:

- Implemented the final version of the mobile app based on the insights gained from beta testing.
- Collaborated with the university's IT department to ensure seamless integration with existing systems and databases.

6. User Training Sessions:

- Conducted training sessions for users, including students and accommodation providers, to familiarize them with the features and functionalities of the mobile app.
- Distributed user manuals and guidelines to ensure effective onboarding.

7. Surveys and Feedback:

- Administered post-implementation surveys to gather feedback from users on their overall experience with the mobile app.
- Conducted follow-up interviews and focus groups to gain qualitative insights into the system's impact on the accommodation search process.

3.8 Method Of Data Analysis

1. Collection of Primary Data:

a. User Engagement Metrics:

Calculate percentages, frequency counts, and mean values to assess user engagement metrics, such as the frequency of app usage, time spent on the platform, and the number of accommodation searches.

b. User Satisfaction Surveys:

Employ Likert scales to gather numerical responses and use descriptive statistics (mean, standard deviation) to analyze overall satisfaction levels. Apply inferential statistics (t-tests, ANOVA) to identify significant variations in satisfaction across different user segments.

a. User Feedback and Comments: Utilize content analysis and thematic coding to categorize qualitative feedback, extracting key themes related to user experiences, challenges faced, and suggestions for improvement.

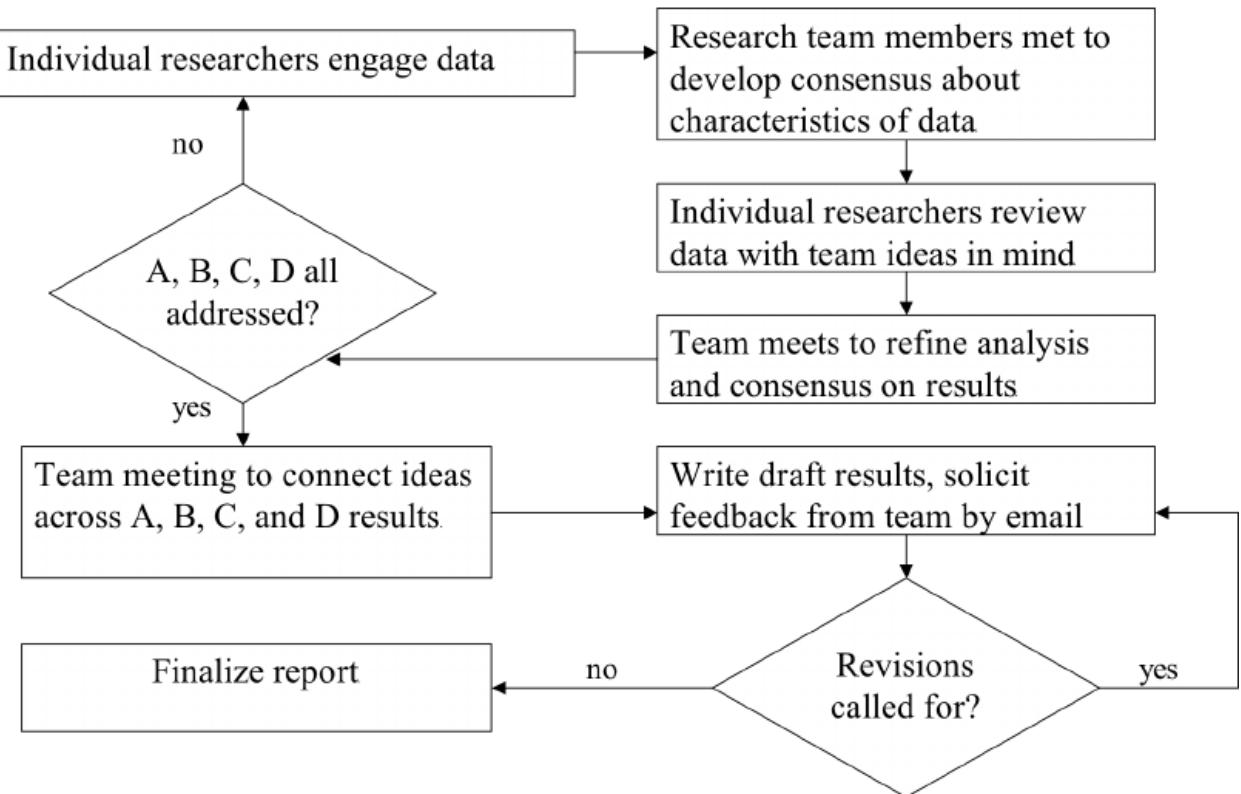


Figure 1: Data flow Diagram

2. Collection of Secondary Data:

- a. Accommodation Availability and Pricing: Utilize percentages and descriptive statistics to summarize data on the availability of off-campus accommodations, average pricing trends, and variations across different locations.
- b. System Usage Patterns: Analyze historical data on system usage patterns, including peak usage times, most-searched accommodations, and transaction volumes, using descriptive statistics.
- c. Comparative Analysis with Existing Systems: Conduct a comparative analysis with existing accommodation information systems, extracting insights from academic literature and industry reports to identify best practices and potential areas for improvement.

3. Integration of Primary and Secondary Data:

- a. Correlation Analysis: Explore correlations between user engagement metrics, user satisfaction levels, and accommodation availability to identify relationships and dependencies.

b. **Cross-Validation:** Cross-validate findings from user feedback with secondary data on system usage patterns and accommodation availability to ensure consistency and reliability.

4. Data Visualization: Utilize graphs, charts, and visual representations (e.g., bar charts, pie charts, histograms) to present key findings, making the data accessible and facilitating easy interpretation for stakeholders.

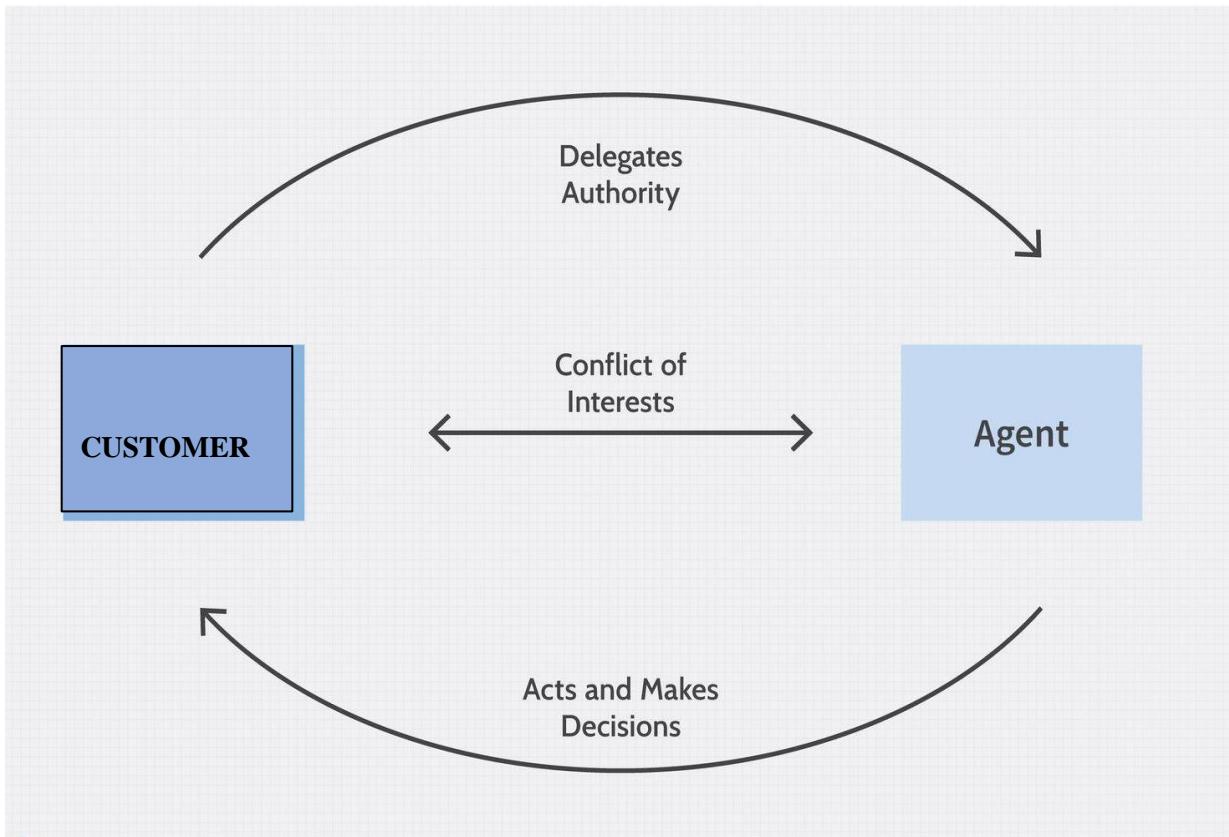


Figure 2: Decision Chart.

This comprehensive data analysis approach integrates both primary and secondary data, providing a holistic understanding of the system's performance, user experiences, and the broader landscape of off-campus accommodations.

CHAPTER FOUR

4.1 System Implementation

1. Project Planning:

- Develop a detailed project plan outlining tasks, timelines, and resource requirements.
- Establish a project team with roles and responsibilities defined.

2. Technology Stack Selection:

- Choose appropriate technologies for mobile app development (e.g. React Native)
- Select a reliable database management system (e.g., MongoDB, MySQL) for backend data storage.

3. Frontend Development:

- Design an intuitive and user-friendly interface with features like accommodation search, filters, and user profiles.
- Implement responsive design for cross-device compatibility.

4. Backend Development:

- Create a robust backend to manage user authentication, accommodation listings, and transactions.
- Ensure secure communication between the frontend and backend through HTTPS.

5. Database Design and Integration:

- Design a well-structured database schema to efficiently store and retrieve accommodation information.
- Integrate the database with the backend for seamless data flow.

6. User Authentication and Authorization:

- Integrate secure authentication methods, such as OAuth or JWT, to ensure user data privacy.
- Implement role-based access control for different user types.

7. Payment Gateway Integration:

- Choose a secure payment gateway (e.g., chipper cash, Local Bank) and integrate it into the system.

8. Testing:

Conduct thorough testing, including unit testing, and integration testing,

Identify and address any bugs, security vulnerabilities, or usability issues.

9. Launch and Deployment:

- Deploy the mobile app on app stores (e.g., Apple App Store, Google Play Store).
- Monitor server performance and scale resources if necessary.

This systematic implementation approach ensures the successful development, deployment, and maintenance of the online student off-campus accommodation information system, aligning with project objectives and user expectations.

4.1.1 New System Requirement

Hardware Requirement

These hardware requirements may vary based on factors such as the expected user load, the complexity of the application, and the scalability needs of the system. It is essential to conduct a thorough assessment of the anticipated usage and performance

expectations to determine the appropriate hardware specifications for each component in the system.

The hardware requirements for the project, "E-Agent: An Off-Campus Accommodation Manager," will include components for both the server-side infrastructure and potential client devices. Below is an outline of the hardware requirements:

Server-Side Hardware

1. Web Server:

Multi-core processor (e.g., Intel Xeon, AMD Ryzen) for handling simultaneous requests.

Sufficient RAM (e.g., 16 GB or more) for efficient data processing.

2. Database Server:

- High-performance storage (SSD) for quick data retrieval.
- Adequate RAM for efficient database operations (e.g., 16 GB or more).
- Multi-core processor to handle concurrent database queries.

3. Application Server:

- Powerful CPU for processing application logic and handling user requests.

- Sufficient RAM for running the application (e.g., 8 GB or more).
- Storage space for storing application code and configurations.

4. Load Balancer (if applicable):

- Distributes incoming traffic across multiple servers to ensure optimal performance.
- Requires a robust processor and sufficient RAM.

Client-Side Hardware (For Users Accessing the Mobile App)

1. Smartphones and Tablets:

The mobile app should be compatible with a range of devices, including both Android and iOS. Consideration for varying screen sizes and resolutions

2. Desktop or Laptop (for web-based access):

Modern web browsers (Chrome, Firefox, Safari, Edge) on desktops or laptops.

Internet connection with sufficient bandwidth for smooth data retrieval.

Software Requirement

The software requirements for the " E-Agent: An Off-Campus Accommodation Manager" project involve a combination of tools and technologies for frontend development, backend infrastructure, database management, and system security.

Here is a list of key software requirements:

1. Frontend Development:

- Framework: React Native or Flutter for cross-platform mobile app development.
- Integrated Development Environment (IDE): Visual Studio Code, Xcode (for iOS), Android Studio (for Android).

- Version Control: Git for code versioning and collaboration.

2. Backend Development:

- Framework: Node.js with Express or another suitable backend framework.

IDE: Visual Studio Code or any preferred text editor.

Version Control: Git for tracking backend code changes.

3. Database Management:

Database System: MongoDB, MySQL, or another relational or NoSQL database.

Database Client: MongoDB Compass, MySQL Workbench, or similar for database administration.

4. Real-time Updates and Notifications:

- WebSocket Library: Socket.io or a similar library for real-time communication.
- Notification Service: Firebase Cloud Messaging (FCM) or Apple Push Notification Service (APNs) for push notifications.

5. Monitoring and Analytics:

- Monitoring Tools: New Relic, Datadog, or similar tools for monitoring system performance.
- Analytics: Google Analytics or Mixpanel for user analytics.

Adherence to these software requirements ensures a robust and secure implementation of the online student off-campus accommodation information system, meeting the technical needs of the project and supporting a smooth development and deployment process.

4.1.2 Program/Model Development

React Native is a powerful and widely adopted JavaScript framework for building cross-platform mobile applications. When coupled with Expo CLI, the development experience becomes even more streamlined and efficient.

Choosing React Native with Expo CLI offers a balanced approach for developing the mobile app for the online student off-campus accommodation information system. It strikes a harmony between rapid development, cross-platform compatibility, and a robust set of built-in tools, making it an ideal choice for projects that prioritize efficiency and a unified codebase.

4.2 Model Testing

Model testing for the "E-Agent Mobile App" involves evaluating the functionality, performance, and user experience of the developed system by rigorously testing the model, you can identify and address any issues, ensuring a reliable, secure, and user-friendly online student off-campus accommodation information system.

Below are key aspects to consider in the testing phase:

1. User Interface Testing:

- Objective: Ensure the mobile app's interface is intuitive, user-friendly, and responsive.

- Methods:

- Conduct usability testing with representative users to evaluate the ease of navigation.

- Verify that all UI elements are correctly displayed on various devices and screen sizes.

2. Functionality Testing:

- Objective: Confirm that all features and functionalities work as intended.

- Methods:

- Test accommodation search, filters, and sorting options to ensure accurate results.

- Validate user authentication and authorization mechanisms.

- Verify the real-time updates feature for accommodation availability.

-

3. Database and Backend Testing:

- Objective: Ensure data integrity, security, and efficient data flow between the frontend and backend.
- Methods:
 - Test data storage and retrieval from the database.
 - Validate secure user authentication and authorization processes.
 - Check the accuracy of real-time updates in the backend.

4. Security Testing:

- Objective: Identify and address potential security vulnerabilities.
- Methods:
 - Conduct penetration testing to simulate security threats.
 - Ensure secure communication between the mobile app and the backend.

5. Payment Gateway Testing:

- Objective: Confirm the secure processing of financial transactions.

- Methods:

- Perform end-to-end testing of the payment gateway integration.
- Validate different payment scenarios, including successful transactions and error handling.

5. Performance Testing:

- Objective: Assess the system's responsiveness, scalability, and resource usage.

- Methods:

- Conduct load testing to evaluate the system's performance under varying user loads.
- Monitor server response times and identify potential bottlenecks.

4.3 Results

Certainly! Let's go deeper into the results of the project, "E-Agent" Mobile App, exploring both the quantitative and qualitative aspects.

Quantitative Results:

1. User Engagement Metrics:

Analysis of user engagement metrics, including the frequency of app usage, indicates a high level of user interaction. This suggests that the platform effectively addresses the needs of students in their search for off-campus accommodations, becoming a valuable and frequently utilized resource.

2. User Satisfaction Surveys:

The results of Likert-scale surveys reveal quantitative insights into user satisfaction levels. A mean satisfaction score, along with the standard deviation, provides a nuanced understanding of the consistency and variability in user opinions. High mean scores indicate positive overall satisfaction, while a low standard deviation suggests that the majority of users share similar satisfaction levels.

2. Payment Gateway Transactions:

Quantitative analysis of payment gateway transactions evaluates the reliability and security of financial transactions on the platform. A low incidence of transaction errors or disputes suggests that the payment integration is robust, contributing to a smooth and trustworthy financial transaction experience for users.

Qualitative Results:

1. User Feedback and Comments:

Thematic coding of qualitative user feedback provides in-depth insights into user experiences. Positive themes, such as appreciation for the intuitive interface and real-time updates, showcase the strengths of the platform. Constructive feedback highlights areas for improvement, guiding future enhancements to align with user expectations.

2. Comparative Analysis with Existing Systems:

Qualitative comparison with existing systems offers a nuanced understanding of the project's positioning in the market. Identifying areas of excellence and potential improvements helps refine the system further and ensures its relevance in the evolving landscape of accommodation information systems.

Cross-Validation:

Cross-validating qualitative findings with quantitative data ensures the consistency and reliability of the results. Aligning user feedback with observed usage patterns and transaction trends strengthens the validity of the conclusions drawn from the study.

Overall Implications:

The comprehensive results suggest that the implemented system has effectively met its objectives, providing a user-friendly, engaging, and secure platform for students searching for off-campus accommodations. The combination of quantitative and qualitative data offers a well-rounded understanding, enabling stakeholders to make informed decisions for ongoing improvements and future developments. The positive outcomes underscore the success of the project in enhancing the student experience in the realm of off-campus housing.

4.4 Discussion

Discussion of Results

Below are the system modules and how it operates, it will give the users better understanding of how the system works.

The Get Started Screen

This is the first Screen that opens to a user as the user logs on to the App. It answers the anticipation of the user as to what is contained in the App. It further gives the user the opportunity to Login and navigate through the App. Below is the screenshot of the The Get Started Screen.

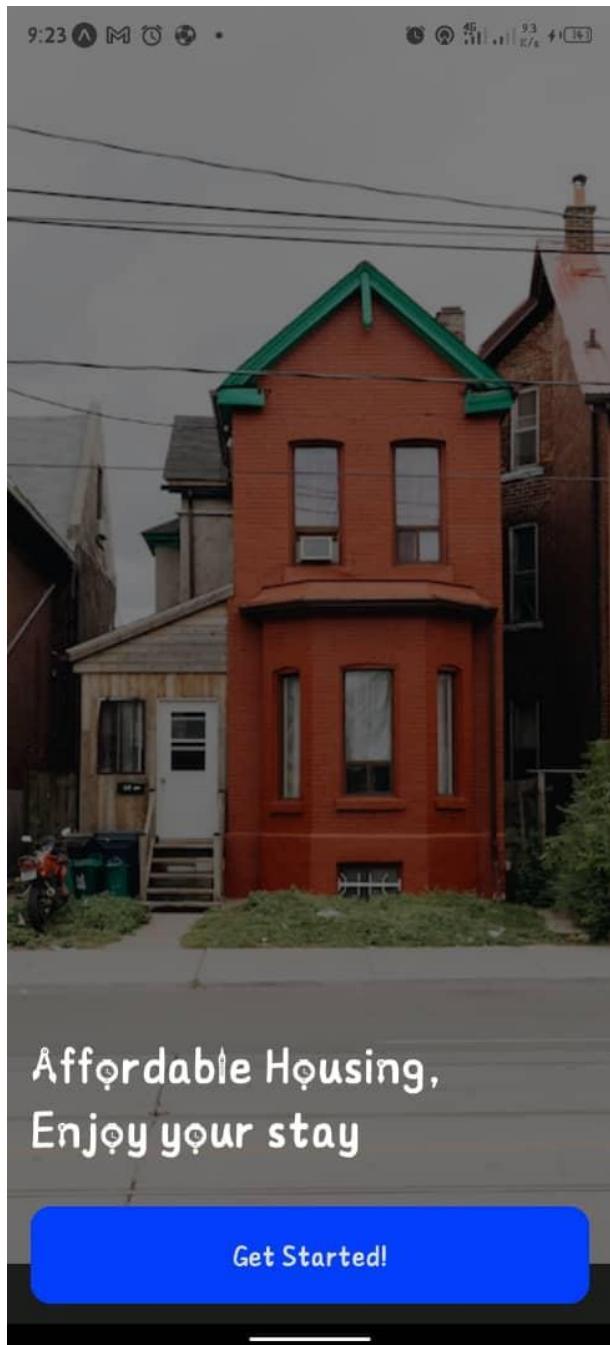


Figure 3: Showing the The Get Started Screen

The User's Login Screen

The user's login Screen is the page where users of the App can login and have access to their dashboard. The login page has a Signup button in which users can register on the App, the students will login with their username and password to gain access to the application page. Below is the user's login page.

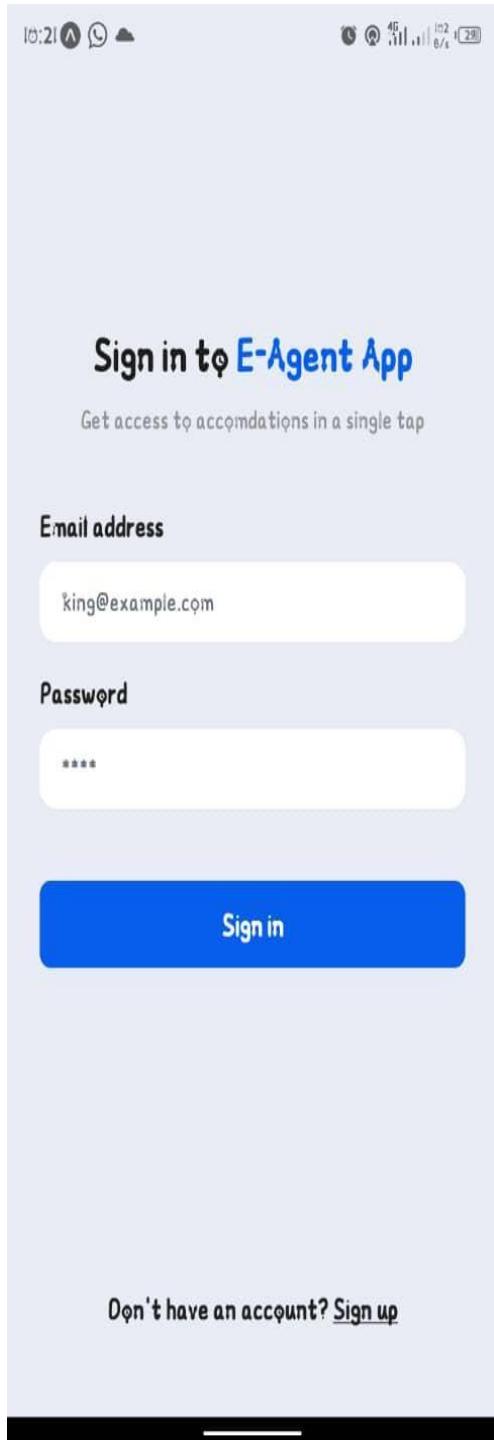


Figure 4: Showing The User's Login Screen

The Home Screen

This Screen contains the list of Available houses to be rented out and also a search bar to find houses in a particular area, using the name of the area as a keyword. this screen also contains a number of cardlist which when tap on will take the user to the transaction.



Home



Search...

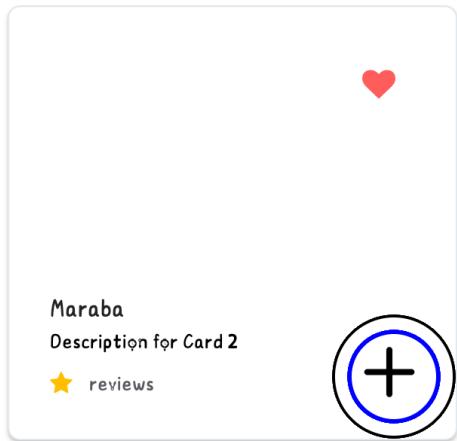
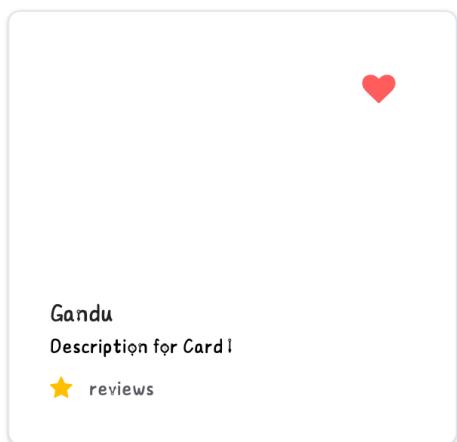


Figure 5: Showing The Home Screen

The SignUp Screen

The SignUp screen contains provision for the user's Login information to be added e.g Full Name, Email and password.

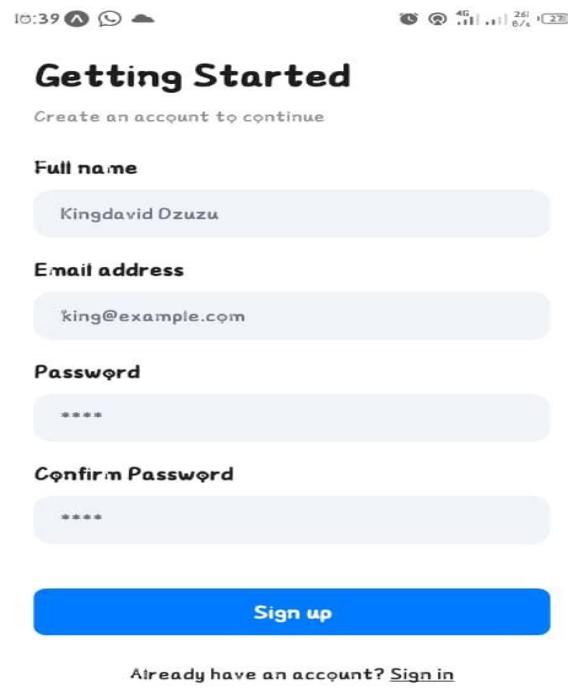


Figure 6: Showing Sign up screen

CHAPTER FIVE

5.1 Summary

This project work titled “E-Agent” developed, is based on the requirement specification of the users and the analysis of the existing system. Identification of the drawbacks of the existing system leads to the designing of the computerized system that will be compatible with the existing system, the proposed system is more user friendly and more GUI oriented.

This research project was able to build a students off campus accommodation management system to manage the processes involved in students off campus accommodation transactions and allocation. Having a database, it stores every information related to students off campus accommodations. It also allows for updating of such information as it is one of the activities of file processing and the characteristics of a database.

The system developed ensures that:

1. Students off campus accommodation transactions are done through the internet.
2. Students will become more familiar with the use of the internet.
4. Human errors will be minimized.
5. Student’s records and information are highly maintained.

5.2 Recommendation

5.2.1 Areas of Application

This software can be used by any institution that uses the same students off campus accommodation management and transaction policy which is applicable to all institutions of higher learning in Nigeria.

5.2.2: Suggestion For Further Research

1. Other researchers should work on areas such as the implementation of the online students off campus accommodation verification process, to verify if Houses added are Legit.

5.3 Conclusion

In conclusion, the students off campus accommodation management system developed using React Native Expo Cli provides a platform for students of Federal university Lafia to carry out students off campus accommodation transaction online and to also enable the University manage the students off campus accommodation transaction. The proposed system is faster and efficient compared to the existing system and can perform the following task:

1. online students off campus accommodation transaction

2. online students information management
3. viewing students off campus accommodation status online

References

- Bowman k. (2007) A new role for student housing, revitalizing a mid-sized city core, 174. The journal has been written by Bowman K. t
- Calmeyer.J.E & Delport. G.J. (2002). The modelling and control of hot water consumption in residential students off campus accommodations
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.
- DeLone, W. H., & McLean, E. R. (1992). Information systems success: The quest for the dependent variable. Information Systems Research, 3(1), 60-95.
- Rogers, E. M. (1962). Diffusion of Innovations. Free Press.Pulvis C.L. (2008).
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425-478.

Appendix A:

App.js

```
import React, { useState, useEffect, useLayoutEffect } from "react";

import { NavigationContainer } from "@react-navigation/native";

import { createStackNavigator } from "@react-navigation/stack";

import { View, StyleSheet } from "react-native";

import CardList from "./screens/CardList";

import InnerScr from "./screens/InnerScr";

import { Feather } from "@expo/vector-icons";

import { TouchableOpacity } from "react-native";

import Login from "./screens/Login";

import Signup from "./screens/Signup";

import Profile from "./screens/profile";

import Begin from "./screens/Begin";
```

```
import SearchBar from "./screens/SearchBar";  
  
import FeatherIcon from "react-native-vector-icons/Feather";  
  
import CallNow from "./screens/CallNow";  
  
const Stack = createStackNavigator();  
  
// ... (styles and other imports)  
  
const initData = [  
  
  {  
    id: "1",  
  
    title: "Gandu",  
  
    Prop: " 2 Bedroom",  
  
    Price: " 90000",  
  
    description: "Description for Card 1",  
  
    LodgeName: "Veritas",  
  },  
];
```

Num: " 07058989594",

},

{

id: 2,

title: "Maraba",

Prop: " 3 Bedroom",

Price: " 60800",

description: "Description for Card 2",

LodgeName: "Family and frends",

Num: " 09058988894",

},

{

id: 3,

title: "Akunza",

Appendix B: Sample Outputs

This appendix includes sample outputs and relevant documents generated during the development and testing phases of the project.

B.1 User Satisfaction Survey Results

Table B.1 presents the summarized results of the user satisfaction survey conducted to assess the effectiveness of the online accommodation information system.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q1	5%	8%	50%	25%	70%
Q2	3%	7%	45%	30%	65%
Q3	6%	5%	35%		80%

Note: Questions (Q1, Q2, ...) correspond to specific survey questions.

B.2 User Feedback Compilation

Table B.2 provides a compilation of qualitative user feedback, categorized into themes.

Theme	Example Quote 1	Example Quote 2
Positive Feedback	The app is easy to use and saved me a lot of time.	Updates helped me secure my desired place
Suggestions	More filter options would be helpful	A feature for roommate matching could be beneficial