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BOARDING LOCATOR: A PROXIMITY-BASED BOARDING HOUSE FINDER

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Abstract: Boarding houses in the Philippines continue to serve as an affordable and practical lodging option for students, workers, and families who cannot afford permanent housing. While many tenants prioritize safety, security, and basic amenities, existing online systems primarily provide information on location and facilities, without verified data on safety, availability, or legitimacy of the properties. This gap can expose tenants to unsafe or substandard housing, highlighting the need for a more reliable and transparent solution. This study presents the development of a Boarding Locator: A Proximity-Based Boarding House Finder, a web and mobile application designed to address these challenges. The system integrates navigation services to provide accurate boarding house positions, updates on room availability, verified listings to ensure legitimacy, and a review system that filters out misleading or fake reviews. The system allows tenants to search for nearby boarding houses based on preferences such as price, amenities, and location, while landlords can efficiently manage their properties and monitor bookings. Notifications between admins, landlords, and tenants enhance communication regarding booking status, property changes, or availability updates. The system's functionality, usability, reliability, security, maintainability, and portability were evaluated using the ISO/IEC 25010:2011 SQuaRE quality model, with assessments provided by IT experts and tenants familiar with boarding house accommodations. Results indicated that the system is highly functional, secure, and user-friendly, providing a trustworthy platform for both tenants and landlords. The study concludes that the system significantly improves the accessibility, safety, and convenience of finding boarding houses while supporting landlords in effective property management.

Keywords: Boarding houses, Proximity-based locator, Tenant and landlord, Boarding house locator, Navigation.

I. INTRODUCTION

Boarding houses in the Philippines continue to serve as an essential and affordable housing option for students, workers, and families who are unable to secure permanent residences (Cubero *et al.*, 2024). These accommodations play a vital role in supporting individuals who migrate to urban and educational centers in pursuit of academic and economic opportunities. Tenants often prioritize boarding houses that are licensed, compliant, and well-maintained, as these directly influence their safety, security, and overall quality of living (Gurung, Tejares, & Sionosa, 2024). Beyond affordability, a secure and properly managed boarding house contributes significantly to occupants’ welfare, privacy, and well-being, making it an important component of daily life (Ubat *et al.*, 2024).

For many students, off-campus housing represents more than just temporary shelter; it functions as a home environment that fosters independence, financial responsibility, and academic focus (Cubero *et al.*, 2024). Basic living standards such as access to clean water, proper sanitation, sufficient lighting, and adequate ventilation are fundamental expectations in boarding house facilities (Ubat *et al.*, 2024). Additionally, the presence of functional amenities including reliable electrical systems, hygienic facilities, and effective security measures has been shown to enhance tenants’ quality of life and sense of safety (Ampuan *et al.*, 2024). When these essential standards are consistently met, tenants report improved stability and productivity in both academic and professional activities (Gurung *et al.*, 2024; Ubat *et al.*, 2024).

Despite the importance of these factors, existing boarding house search systems often remain limited in scope, primarily focusing on location and basic amenities while lacking verified and reliable information regarding safety, compliance, and legitimacy. This gap exposes tenants to potential risks, including misleading listings, unsafe living conditions, and unverified landlords. The absence of a centralized and trustworthy platform makes it difficult for users to make informed decisions when selecting suitable accommodations.

The development of a proximity-based boarding house locator system presents a viable solution to these challenges. By integrating GPS-enabled search functionality with verified boarding house data, such a system can provide accurate location tracking, real-time vacancy updates, and authentication of legitimate properties. Furthermore, incorporating a structured review mechanism that filters out fraudulent or misleading feedback can enhance transparency and build user trust. These features collectively aim to improve not only convenience but also the safety and reliability of the housing search process.

Building on this concept, the proposed system seeks to deliver a more comprehensive and user-centered platform that supports both tenants and landlords. By providing accurate, verified, and up-to-date information, the system enables tenants to identify safe, affordable, and accessible boarding houses that meet their needs. At the same time, landlords benefit from improved visibility, better management tools, and opportunities to enhance their services based on user feedback. Ultimately, the implementation of this platform is expected to promote a more transparent, efficient, and trustworthy boarding house ecosystem.

II. MATERIALS AND METHODS

Research Design

The descriptive developmental technique, which is the methodical study of designing, creating, and carefully evaluating programs, procedures, and products that must meet standards or criteria, was employed by the researchers. This approach was used in the development of the Boarding Locator: A Proximity-Based Boarding House Finder System to ensure that the system meets user requirements and quality standards.

Sample Size

Table 1.0 Sample Size

Participant	Population	Sample
Landlords/Landladies	16	13
Tenants	54	43
Total Size	70	56

Table 1.0 presents the breakdown of the total population involved in the study, which consists of 70 individuals, 16 landlords/landladies and 54 tenants from boarding houses in Victorias City. From this population,

the researchers selected a total of 56 participants, 13 landlords/landladies and 43 tenants, using purposive sampling. Raosoft was utilized to determine the appropriate total sample size, using 90% confidence level, 5% margin of error and 50% population proportion. Participants were chosen based on their direct involvement in the boarding house setting, ensuring that the data gathered reflects accurate, experience-based insights relevant to the development of the Boarding Locator: A Proximity-Based Boarding House Finder system.

Sampling Technique. The researchers used the purposive sampling method to ensure that each respondent has knowledge and relevance to the boarding house experience and the process that occurred within. This technique was appropriate for the study because both tenants and landlords/landladies share direct, lived experiences with boarding house accommodations, making their input essential for accurately evaluating and refining the system. The researchers assigned a unique number to each potential participant. The gathered respondents are selected by their time availability and are currently residing in boarding house within Victorias City. By selecting tenants who are currently residing in boarding houses and landlords who actively manage them, the researchers gathered reliable, experience-based feedback that reflects real challenges in locating, managing, and living in boarding house accommodations.

Respondents of the Study. The participants were specifically chosen from among the tenants and landlords in boarding houses within the area of Victorias City, Negros Occidental. The tenants have direct experience and feedback regarding the boarding houses where they reside, making their insights valuable for evaluating the system. Their perspectives help identify common issues related to location, safety, pricing, and amenities. The landlords, on the other hand, provide information on property management, booking processes, and the challenges they face in reaching potential tenants. Together, these respondents offer a comprehensive understanding of the boarding house environment, which is essential for the development and improvement of the Boarding Locator: A Proximity-Based Boarding House Finder system.

Research Instrument. In this study, the researchers utilized a combination of researcher-made and standardized survey questionnaires to gather data. The researcher-made questionnaire was specifically designed to capture localized insights related to the boarding experiences of students from Colegio De Sta. Ana De Victorias, while the standardized items were adopted to ensure reliability and consistency in measuring common factors associated with boarding house living. To assess the quality of the developed system, an evaluation instrument based on the ISO/IEC 25010:2023 Systems and Software Quality Requirements and Evaluation (SQuaRE) Quality Model was employed. The evaluation focused on key usability attributes of the system, including usefulness, user satisfaction, ease of use, and ease of learning.

Reliability and Validity of Research Instrument. Cronbach's Alpha was selected as the reliability measure for our research instrument in Manapla, Negros Occidental. This measure is appropriate when the items in the instrument evaluate different aspects of a construct, rather than being scored as right or wrong. Cronbach's Alpha is a widely recognized reliability coefficient that assesses the internal consistency of a psychometric test score, indicating how well the items within the instrument are interconnected and consistently measure the same construct. By employing Cronbach's Alpha, the study seeks to evaluate the reliability of the research instrument by analyzing the consistency and accuracy of its items in measuring the intended construct.

To determine the validity of the research instrument, the researchers used the Raosoft Sample Size Calculator to ensure that the number of respondents was statistically adequate and representative of the target population. Raosoft considers parameters such as the margin of error, confidence level, and population size, enabling the researchers to verify that the sample size was sufficient to produce valid and generalizable results. By establishing an appropriate sample size through Raosoft, the study ensured that the collected responses accurately reflected the perceptions and experiences of tenants and landlords within Victorias City. The system developed by the researchers underwent expert validation, where three IT specialists reviewed the questionnaire to evaluate its clarity, relevance, alignment with the research objectives, and suitability for assessing the system. Their feedback confirmed the content validity of the instrument, ensuring that each item effectively measured its intended construct. The combined use of Raosoft for determining sampling adequacy and expert evaluation for establishing content validity strengthened the overall accuracy, credibility, and trustworthiness of the research instrument.

Chávez & Canino (2005) construct a systematic approach for translating and adapting research instruments while adhering to the latest methodological standards in cross-cultural research to achieve cultural equivalency. One key parameter they emphasized is content equivalence, which assesses whether each item's content is relevant and meaningful within the cultural context of the studied population. This involves evaluating whether the instrument accurately captures phenomena that are recognized as real and significant by

members of the ethnic or cultural groups being studied. Chávez & Canino (2005) recommended employing a procedure connected to rational analysis, commonly used to gather evidence of content validity during instrument development, to ensure the appropriateness and relevance of the translated and adapted instrument for the target cultural group.

Data Gathering Procedure. For the purpose of the proposed research, the researchers employed several data collection methods to obtain the necessary information. The tools used for gathering data are as follows:

Interview. The researchers conducted interviews with landlords and tenants to acquire relevant data. A researcher-made questionnaire served as the guide during the interviews.

Internet Research. The researchers collected data from reputable online sources. This included related research works, prior studies, and similar systems that provided valuable insights for the study.

Survey Questionnaire. A researcher-made questionnaire was distributed to landlords and tenants to gather their feedback and experiences. The survey focused on collecting information about boarding houses, booking management, and user experiences.

Data Analysis Procedure. The data analysis procedure is a systematic process that is used to analyze and interpret data. The procedure typically involves several steps, which include:

Data Collection. The first step in any data analysis procedure is to collect the relevant data. This involves gathering data from a variety of sources, such as surveys, questionnaires, interviews, and related studies.

Data Cleaning. Once the data has been collected, it is needed to be cleaned and organized to ensure that the data is accurate and complete. This may involve removing duplicates, correcting errors, or filling in missing data.

Data Exploration. The next step is to explore the data to identify any patterns, trends, or relationships that might exist. This involves creating visualizations, such as graphs or charts, or performing statistical analyses.

Data Analysis. Once the data has been explored, the next step is to perform a more detailed analysis. This may involve using statistical methods to test hypotheses, identify correlations, or make predictions.

Interpretation. The final step in the data analysis procedure is to interpret the results of the analysis. This may involve drawing conclusions, making recommendations, or presenting the findings in a report or presentation.

It is significant to remember that the specific data analysis method chosen will rely on the kind of data being examined as well as the study's goal or research topic. Different research issues may call for different sorts of analyses depending on the type of data being analyzed. To guarantee that the results are credible and valid, it is also crucial to make sure that the data analysis technique is carried out in a systematic and thorough manner

The descriptive developmental technique, which is the methodical study of designing, creating, and carefully evaluating programs, procedures, and products that must meet standards or criteria, was employed by the researcher.

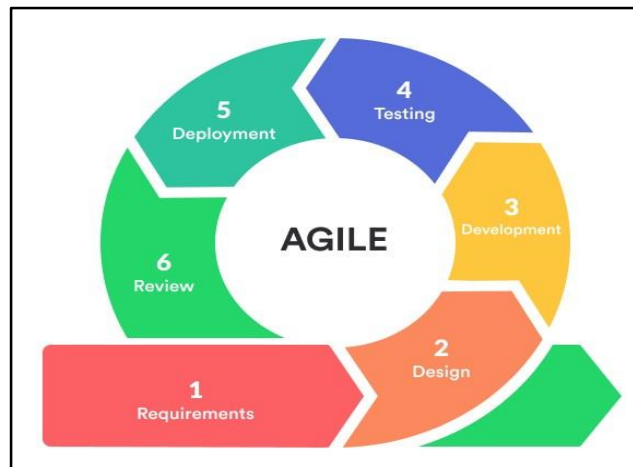


Figure 8. Software Development Life Cycle

Figure 8 shows the methodology utilized in the development of the proposed system. The researchers applied the Agile Approach Model process in the System Development Life Cycle. This model is known for its flexibility, making it suitable for handling changes during the development process. The methodology involves dividing the project into prioritized requirements and completing them step by step in a repeating cycle.

Requirements In this phase, the system requirements were gathered and analyzed. It included identifying user needs, system functions, and data requirements. For the Boarding Locator: A Proximity-Based Boarding House Finder System, the focus was on features such as proximity-based search, detailed boarding house information (location, pricing, amenities), room availability, booking functions, and a user-friendly interface.

Design. In this phase, the system architecture and specifications were created. It covered the design of an intuitive user interface, the structure of the database for efficient data storage, and the flow of user actions for searching, viewing, and booking boarding houses. This served as the blueprint of the system.

Development. In this phase, the system was built based on the design. It included programming the main features such as user registration and login, search, calibrated results, booking, and review integration. Backend and frontend development were carried out at the same time to speed up the process.

Testing. In this phase, the system was tested to ensure it meets both functional and non-functional requirements. The process included checking proximity-based search results, validating the booking process, verifying data consistency, ensuring compatibility across devices, and testing the review feature for clarity and responsiveness.

Deployment. In this phase, the system was configured and released into the production environment. The system was made accessible to users, server settings, database connections, and security measures were finalized to ensure smooth and secure operation.

Review. In the final phase, the system was evaluated based on user feedback and overall performance. Feedback was gathered from actual users to identify issues, areas for improvement, and possible new features. This input was used to refine system functions and guide future development updates in line with the agile process.

III. RESULTS AND DISCUSSION

After thorough evaluation of the experts and respondents, the following are discovered:

Table 1. *Level of User Acceptability in terms of Boarding Locator: A Proximity-Based Boarding House Finder*

Criteria	Mean	Interpretation
Display a list of boarding houses.	5	Strongly Agree
Provide navigation directions to the selected boarding house.	4.67	Strongly Agree
Show available rooms within each boarding house.	5	Strongly Agree
Allow tenants to rate and review their boarding experience.	5	Strongly Agree
Allow landlords to add boarding houses and rooms	5	Strongly Agree
Help landlords organize bookings, boarding houses, and tenant lists	5	Strongly Agree
Grand Mean	4.95	Strongly Agree

Table 1 shows that the Boarding House Locator System was rated “Strongly Agree” across all criteria by the respondents. In terms of displaying a list of boarding houses, the system achieved a mean of (5.00), implying that users can easily view available boarding options. The system’s ability to provide navigation directions to the selected boarding house obtained a mean of (4.67), indicating that users can reliably locate their chosen boarding house. In terms of showing available rooms within each boarding house, the system achieved a mean of (5.00), which implies that users are well-informed about room availability. The feature that allows tenants to rate and review their boarding experience also received a mean of (5.00), suggesting that users can effectively share feedback and experiences. Additionally, the system’s capability to help landlords organize bookings, boarding houses, and tenant lists gained a mean of (5.00), indicating efficient management functionality. Overall, the system obtained a grand mean of (4.95), which is interpreted as “Strongly Agree.” This implies that the respondents found the system highly useful and that the proposed features are necessary for the system’s design and implementation.

Table 2. *Level of User Acceptability in terms of determining the quality of the developed system based on ISO/IEC 25010:2011 Systems and Software Quality Requirements and Evaluation (SQuaRE) Quality Model*

Characteristic	Mean	Interpretation
Functional Suitability	4.89	Strongly Agree
Performance Efficiency	4.67	Strongly Agree
Compatibility	4.83	Strongly Agree
Usability	4.72	Strongly Agree
Reliability	5	Strongly Agree
Security	4.73	Strongly Agree
Maintainability	5	Strongly Agree
Portability Characteristics	4.78	Strongly Agree
Grand Mean	4.82	Strongly Agree

Table 2 shows the results of the IT experts’ evaluation of the system’s quality based on ISO/IEC 25010:2011 System and Software Quality Requirements and Evaluation (SQuaRE) Quality Model. In terms of Functional Suitability, the system received a mean of (4.89), indicating that the system effectively meets the specified requirements and fully supports the needs of the stakeholders. In terms of Performance Efficiency, the system obtained a mean of (4.67), which shows that the system performs efficiently and responds well under given conditions, although minor improvements may further enhance its performance. In terms of Compatibility, the system received a mean of (4.83), indicating that it can operate effectively in different environments and coexist with other systems without issues. In terms of Usability, the system gained a mean of (4.72), which indicates that it is user-friendly, easy to learn, and accessible to its intended users. In terms of Reliability, the system achieved a perfect mean score of (5.00), showing that it performs consistently and can be highly trusted by its users. In terms of Security, the system obtained a mean of (4.73), indicating that it provides strong protection of data and ensures that only authorized users can access the system. In terms of Maintainability, the system also received a perfect mean of (5.00), demonstrating that it is highly maintainable, with strong modularity, reusability, and ease of modification and testing. In terms of Portability, the system received a mean of (4.78), indicating that it can be easily adapted, installed, and transferred across different platforms or environments. Overall, the system achieved a grand mean of (4.82), which is interpreted as Strongly Agree. This

result indicates that the developed system meets the required quality standards and performs excellently across all evaluated criteria.

Table 3. Level of user acceptability in terms of the usability of the developed system in terms of usefulness, satisfaction, ease of use, and learning.

Criteria	Mean	Interpretation
Effectiveness	5.00	Very Good
Efficiency	5.00	Very Good
Satisfaction	4.84	Very Good
Freedom from Risk	4.78	Very Good
Context Coverage	5.00	Very Good
Grand Mean	4.92	Very Good

Table 3 shows user feedback on the system's usability. Effectiveness, Efficiency, and Context Coverage all received the highest rating of 5.00 (Very Good). This indicates that users found the system to be highly effective, efficient, and capable of covering all necessary functions and requirements. Satisfaction obtained a mean of 4.84 (Very Good), showing that users were very pleased with their overall experience while using the system. Meanwhile, Freedom from Risk received the lowest rating of 4.78 (Very Good). Although still interpreted as very good, this suggests that there is slight room for improvement in terms of data security and minimizing potential risks. Overall, the system achieved a grand mean of 4.92 (Very Good), indicating that users have a very positive perception of the system's usability.

IV. SUMMARY OF FINDINGS

Based on the detailed presentation, discussion, interpretation, and analysis of research findings, the following summary is hereby presented:

- In terms of helping user locate nearby boarding houses using proximity-based features, the system was rated 4.8 which is interpreted as very good.
- In terms of providing accurate and relevant information such as location, price, and amenities, the system was rated 4.9 which is interpreted as Very Good.
- In terms of delivering useful search results and location-based filtering, the system was rated 4.8 which is interpreted as Very Good.
- In terms of flexibility in accommodating different user preferences and search criteria, the system was rated 4.7 which is interpreted as Very Good.
- The quality of the developed system, as evaluated by three IT experts using ISO/IEC 25010:2011, achieved a grand mean of 4.5 (*Very Good*) across all eight software quality characteristics.
- The usability evaluation by end-users achieved a grand mean of 4.92 (Strongly Agree) across effectiveness, efficiency, satisfaction, freedom from risk, and context coverage.

V. CONCLUSIONS

The results of the alpha and beta testing activities and evaluation were positively proven. Therefore, the researchers concluded that:

- The Boarding Locator: A Proximity-Based Boarding House Finder enables users to search and display boarding houses based on preferences and amenities.
- It can provide a map location of the boarding houses listed and help navigate to the nearby boarding house.
- The system displays available rooms within the boarding house and booking. Tenants can leave reviews based on their experience in the boarding houses they stayed.
- The system enables landlord to add their boarding house and list their available rooms. Also, process booking, list of tenants, and boarding house for landlords.

VI. RECOMMENDATIONS

- It is highly recommended to improve the navigation system to ensure that routes to boarding houses are optimized for distances under 30 meters. This will enhance user convenience and ensure efficient movement within the city.
- It is advisable to implement an integrated notification system between admins, landlords, and tenants. Notifications should inform users of property removals, booking updates, and room availability, ensuring timely communication and reducing misunderstandings.

3. It is highly suggested to streamline the booking system by including drop-down menus for changing booking status (confirmed, pending, or cancelled) and adding the location or address for each room. This feature will reduce booking errors and improve user clarity.
4. It is highly recommended to revise the admin dashboard to display a list of landlords and their respective boarding houses, view current tenants per property, and allow only viewing of confirmed bookings and reviews. This will clarify admin responsibilities and prevent redundant access.
5. It is highly suggested to maintain the landlord dashboard for efficient property and tenant management while ensuring that landlords receive timely notifications regarding bookings, room availability, and system updates.
6. It is advisable to implement a review system that allows tenants to provide feedback on boarding houses while restricting admin access to viewing reviews only. This ensures the reliability and integrity of tenant feedback.
7. It is highly recommended to display login notifications on the map page, improving user awareness and enhancing system accessibility.
8. It is advisable to provide clear prompts for room availability, pricing, and amenities. This will help tenants make informed decisions and increase transparency between landlords and clients.
9. It is highly suggested to explore future enhancements such as AI-based recommendations for available rooms, automated reminders for tenants, and analytics for landlords to monitor occupancy trends and tenant feedback. These improvements will further enhance the functionality and user experience of the system.

CONFLICTS OF INTEREST

The authors declare that for this article they have no actual, potential or perceived conflict of interests. Financial disclosure: The research work is funded by the researchers.

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