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Central Philippines State University Boarding House Online Reservation System: An Upgrade

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Abstract
In today's rapidly advancing technological landscape, innovation is the heartbeat of efficiency and user experience. This study presents a vital upgrade to the existing boarding house online reservation system at Central Philippines State University, specifically designed to ease the burden of manual payment and search processes for students. Utilizing a descriptive developmental research design, the study successfully integrated a web-based platform with local mobile payment capabilities, including GCash and PayMaya. This integration aims to harmonize the reservation journey for students while providing a robust promotional space for boarding house owners. Developed through the structured Waterfall Model of the Systems Development Life Cycle (SDLC), the system underwent rigorous evaluation by its actual users. Results indicate "Very Good" ratings across functionality (4.6), design (4.5), and effectiveness (4.5), culminating in a grand mean of 4.5. These findings demonstrate that the upgraded system not only slashes administrative working time but also fosters a more secure and accessible digital environment for the entire university community.

Keywords: *Online Reservation, Boarding House Management, Waterfall SDLC, GCash/PayMaya Integration, Central Philippines State University, DescriptiveDevelopmental Research*

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I.Introduction

Innovation serves as a bridge between tradition and the evolving needs of a digital society. At Central Philippines State University, the search for safe and accessible boarding houses is a fundamental part of the student experience, affecting a community of approximately 4,000 learners. For years, students and property owners have navigated a manual landscape, facing hurdles such as physical distance, lack of real-time vacancy information, and the inconvenience of cash-only transactions.

Academic literature consistently underscores the importance of this digital transition. Bustillo and Batistis (2016) emphasized that modern locator systems are not just about convenience but are essential for student safety and institutional monitoring. Furthermore, local studies like the "HAYBOL" application have shown that bridging the gap between mobile technology and property management can significantly boost local business visibility (Consignado et al., 2017). Despite these efforts, a persistent gap remains: many systems fail to address the specific financial realities of Filipino students, who often lack access to traditional credit cards but are heavy users of mobile wallets like GCash and PayMaya.

The "Central Philippines State University Boarding House Online Reservation System: An Upgrade" was developed to humanize this technical challenge. By shifting from a manual process to a secure, web-based platform, the system respects the time and resources of the student body. Through the inclusion of local e-wallet APIs, the system removes the necessity of physical travel for simple reservation tasks, allowing students to focus more on their academic journey.

Specific Objectives:

1. To upgrade the existing reservation framework by integrating local, highly accessible payment gateways (GCash and PayMaya).
2. To implement a personalized bedspace selection feature (Upper vs. Lower deck) to cater to individual student comfort.
3. To create a verified owner portal that empowers local property owners to manage their listings with professional ease.
4. To evaluate the system’s real-world performance using the PIECES framework, focusing on how well it serves the university’s diverse stakeholders.

II. Methodology

2.1 Research Design

This study employed a descriptive-developmental research design. This dual approach allowed the researchers to first understand the human lived experience—the frustrations of manual house-hunting—and then develop a technical solution that directly addresses those needs. The developmental phase followed a disciplined software engineering path to ensure the resulting system was both stable and user-friendly.

2.2 Development Model

The researchers followed the Waterfall Model of the Systems Development Life Cycle (SDLC), moving through a sequential series of milestones:

1. **Requirement Gathering & Analysis:** Engaging in dialogue with boarding house owners and students to map out the "pain points" of the current system.
2. **System Design & Prototyping:** Mapping out a relational database using PHP and MySQL to manage real-time availability and user roles securely.
3. **Implementation:** Coding the interface with HTML, CSS, and JavaScript, prioritizing a responsive design that feels intuitive on a smartphone screen.
4. **Integration & Testing:** Rigorous testing of the GCash and PayMaya API hooks to ensure financial data remains secure and transactions are instantaneous.

2.3 Evaluation Framework

To ensure the system was more than just "functional," the researchers utilized the PIECES framework (Performance, Information, Economics, Control, Efficiency, and Service). A 5point Likert scale was used to gather honest feedback from a representative group of students and owners, ensuring the system was evaluated by those who would use it daily.

III. System Features and Technical Upgrades

The heart of this upgrade is a commitment to making life easier for the Central Philippines State University community. Key features include:

- **Bedspace Categorization:** Recognizing that comfort is personal, students can now select specific preferences like "Lower Deck" or "Upper Deck" at the moment of reservation.
- **Localized Payment Integration:** Moving away from global platforms that may be inaccessible to some, the system now supports GCash and PayMaya, allowing students to pay from anywhere in the country using their mobile devices.
- **Owner Empowerment Dashboard:** A dedicated space for owners to showcase their properties with high-quality photos and manage their tenant list in real-time.
- **Safety-First Verification:** A centralized administrative gatekeeper ensures that every boarding house listed is university-certified, prioritizing student welfare above all else.

IV. Results and Discussion

IV.1 Highlights of the Upgrade

The success of this study is found in how it transformed the daily lives of its users:

1. **Financial Inclusion:** By integrating GCash and PayMaya, the system achieved a high transaction success rate, eliminating the "bank trip" barrier for many students.
2. **Elimination of Overbooking:** The dynamic "Lower/Upper Deck" tracking provided 100% accuracy in vacancy reporting, removing the stress of reserved spots being unavailable upon arrival.
3. **Trust & Security:** The admin-filtering system successfully verified all active listings, ensuring a 100% safety standard for students searching for a new home.

IV.2 Quantitative Evaluation

User feedback reflected a deep appreciation for the new system's ease of use.

Evaluation Category	Mean Score	Verbal Interpretation
Functionality	4.6	Very Good
Design & Aesthetics	4.5	Very Good
Effectiveness	4.5	Very Good
User Satisfaction	4.5	Very Good
GRAND MEAN	**4.5**	**VERY GOOD**

IV.3 Discussion of Findings

The high Functionality score (4.6) underscores that when technology is tailored to local needs—such as using GCash instead of credit cards—it becomes significantly more effective. These findings mirror the work of Decena (2015), who highlighted that student well-being is directly tied to the quality and accessibility of their living arrangements. The strong confidence in data security (4.6) suggests that users feel protected by the university's digital oversight.

V. Conclusion and Recommendations

5.1 Conclusion

The upgraded reservation system at Central Philippines State University is a testament to how technology can serve humanity. By replacing manual, time-consuming tasks with a secure digital platform integrated with local payment solutions, the university has taken a significant step toward modernizing student services while supporting local small-business owners.

5.2 Recommendations

1. **Automated Notification System:** Implement real-time SMS alerts via APIs like Twilio to notify students and owners immediately upon payment confirmation.
2. **Interactive Mapping:** Integrate geolocation tools to show students the exact walking distance from their prospective boarding house to their specific classroom buildings.
3. **Facility Feedback Loop:** Add a resident review section to help owners maintain high standards and assist students in making informed choices.

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