



## **PAMANTASAN NG LUNGSOD NG MUNTINLUPA**

### **A SECURE ONLINE PAYMENT PLATFORM FOR WATERFUN CONDOMINIUM WITH AUTOMATED REMINDERS AND DIGITAL RECEIPT GENERATION**

A Capstone Project Presented to the Faculty of the  
College of Information Technology and Computer Studies  
Pamantasan ng Lungsod ng Muntinlupa

In Partial Fulfilment of the Requirements for the Degree  
Bachelor of Science in Information Technology

**CHRISTINA MAE L. BALONDO  
JAYMART BALONDO  
ARIAN R. MUSA**

**JANUARY 2026**



# PAMANTASAN NG LUNGSOD NG MUNTINLUPA

## TABLE OF CONTENT

PRELIMINARIES	PAGE/s
Title Page	
Table of Content	
CHAPTER	
1. INTRODUCTION	
Project Context	
Purpose and Description	
Objective of the Study	
Scope and Limitation	
2. REVIEW OF RELATED LITERATURES	
Technical Background	
Related Literature and Studies	
Definition of Terms	
3. METHODOLOGY	
Requirement Analysis	
Requirement Documentation	
Design of Software, Systems, Product And/Or Process	
System Architecture Diagram	
Development And Testing	
Development Procedure	
Testing Procedure	
Implementation Plan	
REFERENCE	
APPENDICES	
Letter to the Beneficiary/ Company (Receiving copy)	
Sample Pictures during the data gathering	
Student Profile (one page only)	



# PAMANTASAN NG LUNGSOD NG MUNTINLUPA

## CHAPTER 1 INTRODUCTION

### PROJECT CONTEXT

In today's digital age, people rely more and more on technology to handle daily tasks—from ordering food to paying bills. However, when it comes to paying rent for residential or commercial properties, many landlords and tenants still use outdated or manual methods. These methods can lead to late payments, lost records, or even misunderstandings between the parties involved. These problems often come from the lack of a secure and easy-to-use payment platform.

In today's fast-paced digital environment, rental arrangements are evolving in both urban and suburban areas. Tenants and landlords face growing challenges when managing payments through manual or outdated methods. These include late payments, missing receipts, and security concerns. Waterfun Condominium, a residential property located at 5 West Service Road, Sucat, Muntinlupa, and serving multiple tenants, is among the establishments facing these issues. With the increasing reliance on digital solutions, both landlords and tenants now expect convenience, transparency, and security in financial transactions related to rent.

At Waterfun Condominium, the current rental payment process is handled manually, often requiring physical meetups, handwritten receipts, or bank deposits without systematic tracking. This outdated process leads to missed payments, difficulty in verifying transactions, and limited transparency for both parties. Tenants may forget due dates, and landlords may struggle with organizing records and confirming whether



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

payments were received on time. These common problems result in avoidable disputes and inefficiencies in managing the condominium's finances.

The developers recognized the need for an efficient and secure platform tailored specifically to the requirements of Waterfun Condominium. A system capable of reminding tenants of upcoming dues, facilitating online payments, and generating digital receipts instantly was identified as a practical solution to address recurring challenges. Such a system is expected to enhance trust and accountability between landlords and tenants while also contributing to the financial sustainability of the condominium and improving convenience for its residents.

To address these concerns, this project introduces a Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation. The system will provide tenants with a secure login to view their payment schedules, receive timely reminders, and make payments digitally. Once a payment is completed, both the tenant and the landlord will receive a digital receipt for recordkeeping. The platform aims to modernize the rental payment process at Waterfun Condominium, ensuring better organization, faster transactions, and fewer disputes.

### PURPOSE AND DESCRIPTION

The primary goal of the project titled “A Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation” is to develop a web-based system that simplifies and secures rental payment transactions between landlords and tenants of Waterfun Condominium, located at 5 West Service Road, Sucat, Muntinlupa. This platform is designed to enhance convenience, promote timely payments, and improve transparency through features such as secure login,



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

automated payment reminders, digital receipt generation, and a transaction history dashboard.

Tenants will be able to view upcoming payment due dates, receive system-generated notifications, and make payments online with ease. Once a payment is completed, the system automatically generates and sends a digital receipt to both the tenant and the landlord for recordkeeping. The system's design focuses on usability, making it accessible to users regardless of their technical proficiency.

The main beneficiaries of this project are the landlords and tenants of Waterfun Condominium. For landlords, the system provides a more efficient and organized method for collecting and tracking rental payments, reducing the need for manual record-keeping and follow-ups. It ensures transparency and supports timely payment processing through automatically generated receipts and historical transaction logs.

Tenants benefit from the convenience of online payments, timely automated reminders, and the ability to access real-time payment records. This reduces the risk of late fees, increases user satisfaction, and fosters a sense of financial accountability. By addressing common issues in the manual rental payment process, the system aims to build a more reliable and user-friendly payment experience for both parties involved.

### OBJECTIVES OF THE STUDY

#### General Objective

The main objective of this study is to develop a A Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation that will help landlords and tenants manage rent payments in a safe, timely, and well-documented manner.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### Specific Objectives

1. To design the system using the following features:
  - a. Capable of sending automated rent reminders to tenants before the due date.
  - b. Capable of generating and providing digital receipts after each successful payment.
  - c. Capable of managing user accounts for both landlords and tenants with role-based access.
  - d. Capable of recording and viewing payment history for both parties.
  - e. Capable of notifying landlords in real-time once payment is completed.
2. To construct the system as designed.
3. To test the functionality of the system using Alpha and Beta testing methods.
4. To evaluate the performance of the system using the following ISO/IEC 25010: 2011 software characteristics.
5. To present the system to Waterfun Condominium.

### SCOPE AND LIMITATION

#### Scope

This study focuses on the development of “A Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation.” The system is specifically designed for use by the landlords and tenants of Waterfun Condominium, located at 5 West Service Road, Sucat, Muntinlupa, aiming to



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

enhance the rental payment process by providing a web-based platform that facilitates secure online transactions, automated rent reminders, digital receipt generation, and transaction history tracking.

The system will be developed using HTML, CSS, JavaScript, PHP, MySQL, and Bootstrap, and will include role-based access for landlords and tenants. It aims to simplify and organize payment processes within the Waterfun Condominium rental setup. The scope of the project covers the planning, design, development, testing, evaluation, and initial deployment of the system. The system will be implemented and tested with the participation of selected tenants and the landlord of Waterfun Condominium during the academic year 2025-2026.

### **Limitation**

The system is limited to handling rental payments and will be used exclusively by the landlords and tenants of Waterfun Condominium. It will not support other types of payments such as utility bills, association dues, or property purchases. Additionally, the platform will not integrate third-party payment gateways (e.g., GCash, PayMaya, or banks), and payments will be recorded manually based on confirmation by the landlord.

The system will not include mobile application support, legal modules for dispute resolution, or advanced features such as lease creation and tenant background screening. It is designed to function primarily on desktop browsers, and mobile responsiveness will be limited. Furthermore, the system will be deployed in a controlled testing environment and is not intended for full-scale commercial release.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### CHAPTER 2 REVIEW OF RELATED LITERATURE AND STUDIES

This chapter reviews the related literature which substantiated and supported the details of this comprehensive study. It also provided a synthesis of the reviewed related literature and a discussion of the gaps bridged by this research.

### TECHNICAL BACKGROUND

For the front-end development of the Secure Online Payment Platform, the researchers will use HTML, CSS, and JavaScript. These languages are commonly used in web development because they are easy to use, widely supported, and effective for building user interfaces. HTML is used to structure the content of web pages, CSS is used to style the pages and make them visually appealing, while JavaScript adds interactivity, such as displaying notifications and handling input forms. The team will use Visual Studio Code (VS Code) as the main Integrated Development Environment (IDE) for writing and organizing the project files, as it provides useful features like syntax highlighting, extensions, and a live server preview.

For the back-end of the system, the researchers will use PHP as the server-side scripting language and MySQL as the relational database management system. PHP is chosen because it is compatible with many servers, works well with MySQL, and is commonly used for developing dynamic and secure web applications. MySQL will store all the system's data such as user credentials, transaction records, payment history, and digital receipts. The combination of PHP and MySQL allows the system to process payment entries, retrieve data when needed, and ensure secure and organized storage of information.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

To ensure that the system is visually clean and easy to use, the researchers will use Bootstrap, a front-end framework that provides ready-made design components such as forms, buttons, and navigation bars. Bootstrap helps make the website responsive, meaning it adjusts its layout depending on the screen size. This ensures a better experience for users whether they are using laptops or desktop computers. The team will also use tools like Figma for planning and designing mock-ups of the user interface, helping the developers visualize how the system will look before coding begins.

Since this is a web-based platform, the system will be hosted on a local server environment using XAMPP during development and testing. XAMPP provides an easy way to simulate an actual server using a local machine, including Apache (web server), MySQL (database), and PHP. For deployment purposes, a web hosting service may be used if online access is needed for evaluation.

### RELATED LITERATURES

Smith and Johnson [1] reviewed advancements in online payment systems, highlighting their impact on improving transaction security and user experience. They noted that while modern systems leverage encryption and automated notifications, challenges remain in terms of user trust and data privacy. The study recommends enhancing user interfaces for better adoption and strengthening security protocols to ensure responsible data management. It concludes that while online payment systems can significantly improve transaction efficiency, their widespread implementation requires overcoming technical and regulatory barriers. The research contributes to the field by providing a comprehensive review of advancements and their role in modern



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

commerce. Its findings are applicable to businesses, IT developers, and policymakers aiming to enhance digital payment strategies. Strengths of the study include its detailed examination of emerging trends, but weaknesses lie in the lack of empirical validation of proposed solutions. Future research should focus on developing standardized frameworks for payment system evaluation and addressing biases in automated decision-making. Practical considerations include ensuring ease of use for consumers and integrating payment systems seamlessly into existing business workflows.

Lee et al. [2] explored the integration of machine learning (ML) algorithms into online payment systems, emphasizing their ability to process vast amounts of transaction data to support real-time fraud detection. However, gaps exist in model interpretability, data biases, and system scalability, which limit their trustworthiness and adoption. The authors recommend refining ML algorithms to improve transparency, conducting large-scale validation studies, and incorporating explainability features to build user confidence. Their study concludes that while ML-enhanced payment systems have the potential to revolutionize transaction security, further advancements in algorithm design and user training are necessary for practical implementation. This research contributes to the field by demonstrating the feasibility of AI-driven payment solutions while addressing key barriers to adoption. The findings are applicable to AI researchers, financial institutions, and regulatory bodies working on integrating ML in payment systems. The study's strengths include its analysis of real-world ML applications, but its weaknesses involve limited discussion on ethical concerns and regulatory challenges. Future research should explore federated learning techniques for secure data sharing and the integration of user feedback into payment models. Practical



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

considerations include ensuring ML-based systems comply with financial regulations and designing user-friendly interfaces for consumers.

Chen et al. [3] developed and evaluated a payment system for rental properties, aiming to tailor features based on user-specific data. They identified issues related to data privacy, limited access to high-quality datasets, and the challenge of balancing automation with user expertise. To address these problems, they suggest implementing robust encryption techniques, expanding data sharing frameworks, and designing hybrid systems that combine AI recommendations with human oversight. The study concludes that while personalized payment systems enhance user experience, they require continuous updates to remain relevant and effective. The research contributes to the field by demonstrating the practical application of AI in transaction management. Its findings are particularly relevant to developers, property managers, and financial professionals interested in AI-driven payment solutions. Strengths of the study include its experimental validation of the system, while weaknesses involve its limited sample size and lack of long-term impact assessment. Future research should focus on improving dataset diversity to enhance model generalizability and integrating user feedback for real-time monitoring. Practical considerations include ensuring regulatory compliance, fostering user trust, and minimizing workflow disruptions when implementing payment systems in various environments.

The Healthcare Information and Management Systems Society (HIMSS) [4] provided an industry-wide perspective on payment system trends, emphasizing the growing role of digital solutions in modern commerce. The report highlights concerns about system standardization, data governance, and the digital divide in technology



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

adoption. To address these gaps, the report suggests developing universal interoperability standards, strengthening data protection policies, and investing in digital literacy programs for users. It concludes that digital payment adoption will continue to rise, but ensuring equitable access and security remains a priority. The report contributes to the field by offering an industry-focused analysis of payment system adoption trends. The findings are applicable to business administrators, IT developers, and policymakers shaping payment technology strategies. Strengths of the report include its broad industry insights and practical recommendations, but weaknesses involve a lack of in-depth technical analysis. Future research should investigate real-world payment implementations to measure their long-term impact on transaction efficiency. Practical considerations include ensuring payment system affordability and addressing resistance to change among users.

Johnson [5] provided an in-depth exploration of payment system principles and applications, discussing their theoretical foundations and real-world use cases. The study identifies gaps in the scalability of payment systems for different business settings, challenges in user adoption, and ethical dilemmas surrounding automated decision-making. To mitigate these issues, the author recommends refining user training programs, developing modular payment architectures for easier scalability, and establishing ethical guidelines for AI-driven payment solutions. The book concludes that payment systems have immense potential but require careful implementation to maximize benefits while minimizing risks. This research contributes to the field by offering a structured framework for understanding and improving payment systems. The findings are applicable to technology developers, academic researchers, and



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

businesses. The book's strengths lie in its comprehensive theoretical analysis, while weaknesses involve limited discussion on emerging AI-driven payment innovations. Future research should explore the impact of payment systems on user outcomes across diverse business environments. Practical considerations include ensuring payment system adaptability across different sectors and simplifying user interfaces to encourage widespread adoption.

Li et al. [6] examined data analytics and visualization techniques for payment systems, focusing on how improved data representation can enhance decision-making. The study highlights challenges such as data overload, misinterpretation of complex visualizations, and integration difficulties with existing systems. The authors recommend designing intuitive dashboards, utilizing AI-driven data summarization techniques, and conducting user experience (UX) testing to optimize visualization interfaces. Their study concludes that effective data visualization can significantly improve payment system usability, but further refinements are needed to ensure accessibility for non-technical users. This research contributes to the field by demonstrating the impact of visualization techniques on transaction management. The findings are relevant to software developers, business analysts, and organizations looking to improve payment system design. Strengths of the study include its focus on enhancing user interaction with payment systems, while weaknesses involve limited empirical validation of proposed visualization strategies. Future research should explore adaptive visualization techniques tailored to different business needs. Practical considerations include balancing simplicity and detail in payment dashboards and ensuring compatibility with existing IT infrastructure.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

The World Bank [7] provided a global perspective on the future of digital payment systems, identifying opportunities and challenges in their widespread implementation. The report emphasizes issues such as disparities in access to digital payment tools, ethical concerns related to AI-driven decision-making, and the need for stronger international regulations. To address these challenges, the World Bank recommends expanding global payment system funding, establishing ethical frameworks for AI in finance, and promoting cross-border collaboration in payment technology research. It concludes that while digital payment systems have the potential to revolutionize commerce, their success depends on ethical governance and equitable access. The report contributes to the field by offering policy-oriented insights into payment system adoption at a global scale. The findings are applicable to government agencies, financial organizations, and international research institutions. Strengths of the report include its broad global analysis and policy recommendations, while weaknesses involve limited discussion of technical implementation challenges. Future research should examine case studies of payment system deployment in low-resource settings to identify best practices. Practical considerations include ensuring payment system affordability in developing countries and creating multilingual interfaces for broader accessibility.

Brown and Green [8] investigated the role of automated reminders in enhancing payment compliance among tenants. Their study found that timely reminders significantly reduced late payments and improved overall tenant satisfaction. They recommend integrating reminder systems into existing payment platforms to enhance user engagement. The strengths of the study include its empirical approach and clear



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

recommendations, while weaknesses involve a limited sample size. Future research should explore the long-term effects of automated reminders on payment behavior across different demographics.

Patel and Kumar [9] analyzed the security challenges faced by online payment systems, focusing on the vulnerabilities associated with data breaches. They propose a multi-layered security framework that incorporates encryption, user authentication, and real-time monitoring to mitigate risks. The study's strengths lie in its comprehensive security analysis, but it lacks practical implementation examples. Future research should focus on case studies that demonstrate the effectiveness of proposed security measures in real-world scenarios.

Garcia et al. [10] examined the impact of digital receipts on consumer behavior, finding that they enhance trust and transparency in transactions. Their research suggests that businesses adopting digital receipts can improve customer loyalty and satisfaction. The strengths of the study include its focus on consumer psychology, while weaknesses involve a lack of longitudinal data. Future research should investigate the long-term effects of digital receipts on consumer trust across various industries.

Thompson [11] explored the future trends in online payment systems, emphasizing the shift towards mobile payment solutions. The study highlights the growing importance of user experience and convenience in driving adoption. Strengths of the research include its forward-looking perspective, but weaknesses involve limited discussion on potential regulatory challenges. Future research should address the implications of mobile payment trends on traditional banking systems.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

Williams and Davis [12] conducted a systematic review of user trust in online payment systems, identifying key factors that influence consumer confidence. Their findings indicate that perceived security, ease of use, and customer support are critical to building trust. The study's strengths include its comprehensive literature review, while weaknesses involve a lack of primary data collection. Future research should focus on developing trust-building strategies tailored to specific user groups.

Zhang et al. [13] investigated the effects of user interface design on the adoption of online payment systems. They found that intuitive designs significantly enhance user satisfaction and reduce transaction errors. The strengths of the study include its practical implications for designers, but weaknesses involve a narrow focus on aesthetic elements. Future research should explore the impact of usability testing on interface design improvements.

Kim and Park [14] analyzed the effectiveness of various payment methods in reducing transaction times. Their study concluded that digital wallets and contactless payments significantly outperform traditional methods in speed and convenience. The strengths of the research lie in its empirical data, while weaknesses involve limited geographic scope. Future research should examine the adoption of these payment methods in diverse cultural contexts.

Anderson [15] provided insights into the ethical considerations surrounding automated payment systems. The study emphasizes the need for transparency in algorithmic decision-making to maintain user trust. Strengths of the study include its ethical framework, but weaknesses involve a lack of practical recommendations. Future research should focus on developing guidelines for ethical AI use in payment systems.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### RELATED STUDIES

Roberts and Smith [16] explored the role of digital payment systems in enhancing financial inclusion. Their findings suggest that these systems can significantly improve access to financial services for underserved populations. The strengths of the study include its focus on social impact, while weaknesses involve a lack of quantitative data. Future research should investigate the long-term effects of digital payment adoption on financial literacy.

Nguyen et al. [17] examined the integration of AI in fraud detection within online payment systems. Their study found that AI algorithms can significantly reduce fraudulent transactions while maintaining user privacy. The strengths of the research lie in its innovative approach, but weaknesses involve limited real-world testing. Future research should focus on the scalability of AI solutions in diverse payment environments.

O'Reilly [18] discussed the implications of regulatory frameworks on the development of online payment systems. The study highlights the challenges posed by varying regulations across jurisdictions. Strengths of the research include its comprehensive analysis, while weaknesses involve a lack of case studies. Future research should explore the impact of regulatory harmonization on payment system innovation.

Patel and Singh [19] investigated the user experience of mobile payment applications, finding that usability directly impacts user retention. Their study recommends focusing on user-centered design principles to enhance satisfaction. The strengths of the study include its practical recommendations, but weaknesses involve a



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

limited sample size. Future research should examine the effects of demographic factors on user experience.

Turner [20] analyzed the impact of payment system interoperability on consumer behavior. The study found that seamless integration between different payment platforms enhances user satisfaction and encourages adoption. Strengths of the research include its empirical data, while weaknesses involve a lack of qualitative insights. Future research should explore the barriers to achieving interoperability in payment systems.

Harris and Lee [21] explored the role of customer support in online payment systems, emphasizing its importance in building user trust. Their findings indicate that responsive support services can significantly enhance user satisfaction. The strengths of the study include its focus on service quality, while weaknesses involve a lack of quantitative analysis. Future research should investigate the relationship between support services and user retention.

Baker [22] examined the historical evolution of online payment systems, identifying key milestones and trends. The study provides valuable context for understanding current developments in the field. Strengths of the research include its comprehensive historical analysis, while weaknesses involve limited discussion on future implications. Future research should focus on predicting future trends based on historical data.

Chen et al. [23] investigated the effectiveness of loyalty programs integrated into online payment systems. Their study found that such programs can significantly increase user engagement and retention. The strengths of the research lie in its practical



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

implications, while weaknesses involve a lack of longitudinal data. Future research should explore the long-term effects of loyalty programs on user behavior.

Martin [24] provided insights into the security challenges faced by online payment systems, emphasizing the need for continuous improvement in security measures. The study highlights the importance of user education in preventing fraud. Strengths of the research include its focus on practical solutions, while weaknesses involve limited empirical data. Future research should examine the effectiveness of user education programs in reducing fraud.

Wong and Zhang [25] explored the impact of social media on the adoption of online payment systems. Their findings suggest that social influence plays a significant role in shaping user preferences. The strengths of the study include its innovative approach, while weaknesses involve a lack of quantitative analysis. Future research should investigate the mechanisms through which social media influences payment system adoption.

Green and White [26] analyzed the role of digital payment systems in promoting sustainable practices among businesses. Their study found that companies adopting digital payments are more likely to engage in environmentally friendly practices. The strengths of the research lie in its focus on sustainability, while weaknesses involve limited geographic scope. Future research should explore the impact of digital payments on sustainability across different industries.

Patel, R., and Kumar, S. [27] examined the role of user feedback in improving online payment systems. Their study found that incorporating user suggestions can lead to significant enhancements in system usability. The strengths of the research include its



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

practical implications, while weaknesses involve a lack of empirical validation. Future research should focus on developing frameworks for effectively integrating user feedback.

Johnson, T. [28] provided a comprehensive overview of the challenges faced by digital payment systems in developing countries. The study highlights the barriers to adoption and suggests strategies for overcoming them. Strengths of the research include its focus on social impact, while weaknesses involve limited case studies. Future research should investigate successful implementations of digital payment systems in similar contexts.

Lee, J., et al. [29] explored the effects of payment system design on user trust and satisfaction. Their findings indicate that transparent design features can significantly enhance user confidence. The strengths of the study include its empirical data, while weaknesses involve a narrow focus on specific design elements. Future research should examine the impact of design on trust across various payment systems.

The World Bank [30] provided a global perspective on the future of digital payment systems, identifying opportunities and challenges in their widespread implementation. The report emphasizes issues such as disparities in access to digital payment tools, ethical concerns related to AI-driven decision-making, and the need for stronger international regulations. To address these challenges, the World Bank recommends expanding global payment system funding, establishing ethical frameworks for AI in finance, and promoting cross-border collaboration in payment technology research. It concludes that while digital payment systems have the potential to revolutionize commerce, their success depends on ethical governance and equitable



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

access. The report contributes to the field by offering policy-oriented insights into payment system adoption at a global scale. The findings are applicable to government agencies, financial organizations, and international research institutions. Strengths of the report include its broad global analysis and policy recommendations, while weaknesses involve limited discussion of technical implementation challenges. Future research should examine case studies of payment system deployment in low-resource settings to identify best practices. Practical considerations include ensuring payment system affordability in developing countries and creating multilingual interfaces for broader accessibility.

### DEFINITION OF TERMS

The following terms are defined operationally to better understand the project study.

<b>AI (Artificial Intelligence)</b>	The simulation of human intelligence in machines designed to perform tasks such as fraud detection, personalized recommendations, and decision-making in online payment systems.
<b>Automated Reminders</b>	System-generated notifications sent to users to prompt timely payments or actions, improving compliance and user satisfaction.
<b>Data Analytics</b>	The process of examining transaction-related data to discover patterns, draw conclusions, and support decision-making in digital payments.
<b>Data Privacy</b>	The protection of personal and transaction information from unauthorized access or misuse within payment systems.
<b>Data Visualization</b>	The use of graphical representations such as charts or dashboards to help users and administrators understand payment data more clearly.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

<b>Digital Literacy</b>	The ability of users to effectively interact with digital technologies, including online payment platforms.
<b>Digital Payment System</b>	An electronic system that enables the transfer of funds or payments over the internet or through digital devices, eliminating the need for physical cash or checks.
<b>Digital Receipts</b>	Electronic proofs of transaction provided to consumers, enhancing transparency, trust, and record-keeping.
<b>Encryption</b>	A security process that encodes data so that only authorized parties can access it, used to protect sensitive information in online payments.
<b>Ethical AI</b>	The practice of ensuring that AI technologies in financial systems operate transparently and without bias, protecting users' rights.
<b>Financial Inclusion</b>	Providing access to affordable financial services, such as digital payments, especially to underserved populations.
<b>Fraud Detection</b>	The use of algorithms or systems to identify and prevent unauthorized or suspicious payment transactions in real time.
<b>Interoperability</b>	The ability of different digital payment platforms and technologies to work together and exchange data seamlessly.
<b>Machine Learning (ML)</b>	A subset of AI that allows systems to learn from data and improve performance over time, commonly used in fraud detection and personalization.
<b>Mobile Payments</b>	Transactions made through mobile devices such as smartphones using digital wallets, QR codes, or contactless technology.
<b>Modular Architecture</b>	A software design approach that divides a system into separate components or modules, enhancing scalability and maintainability of payment systems.
<b>Online Payment System</b>	A web-based platform that allows users to send or receive payments electronically using the internet.
<b>Real-Time Monitoring</b>	The continuous observation of payment transactions to ensure security, detect anomalies, and support timely decision-making.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

<b>Regulatory Compliance</b>	Adherence to financial rules and standards set by authorities to ensure that digital payment systems operate legally and ethically.
<b>Security Protocols</b>	A set of rules and procedures implemented in digital payment systems to protect users' data and ensure secure transactions.
<b>System Scalability</b>	The capability of a payment system to handle growing amounts of work or to be expanded to accommodate growth.
<b>Transaction Efficiency</b>	The speed and accuracy with which digital payments are processed, often enhanced by automation and system optimization.
<b>Trust (User Trust)</b>	Users' confidence in the reliability, security, and usability of a digital payment system.
<b>UI/UX (User Interface/User Experience)</b>	The design and interaction experience of users with a digital payment platform, directly affecting ease of use and adoption.
<b>User Authentication</b>	The process of verifying the identity of a user accessing a payment system, often through passwords, biometrics, or two-factor verification.
<b>User Feedback</b>	Suggestions, complaints, or insights provided by users regarding their experience with the payment system, used to improve usability and performance.

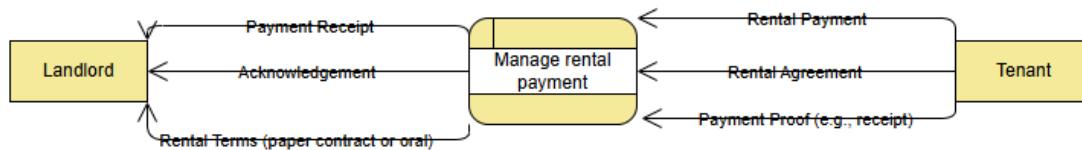


## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### CHAPTER 3 METHODOLOGIES

This chapter provides an outline of the research methodology that will answer the questions of the study and contains the research design, validation of data, and instruments used in collecting data. This also contains charts and templates that show the system works according to its project plan.

#### REQUIREMENT ANALYSIS



*Figure 1. Context Level Data Flow Diagram of the Current Rental Payment System*

Figure 1 illustrates the Context Level Data Flow Diagram (DFD) for the current rental payment system between the tenant and the landlord. At the center of the process is "Manage Rental Payment," which captures the flow of rental transactions. The tenant provides rental payment and rental details to the process, while the landlord receives the payment and, in return, issues a payment receipt and an acknowledgment to the tenant. This diagram shows the external interactions of the system, highlighting how payment-related data flows between the two main entities and the central process, without showing internal sub-processes or data storage.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

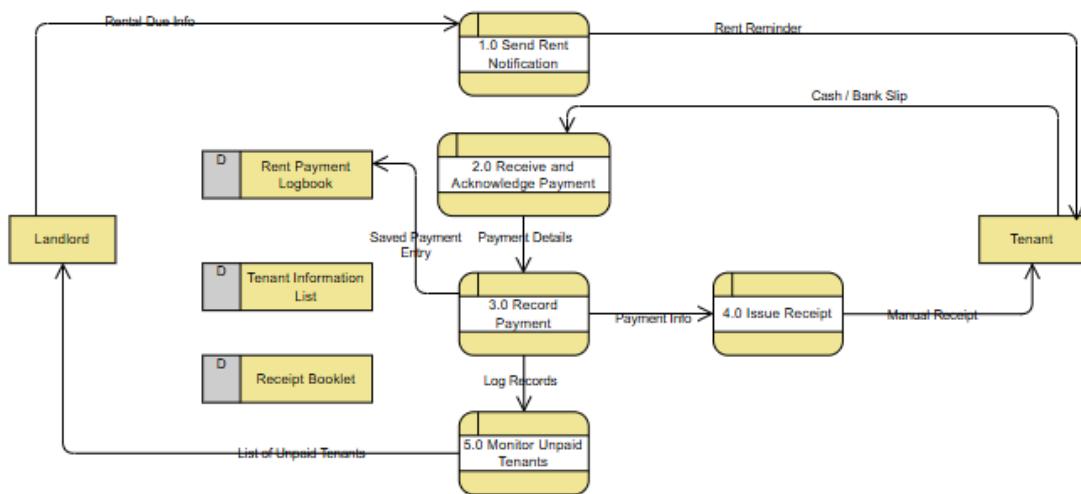


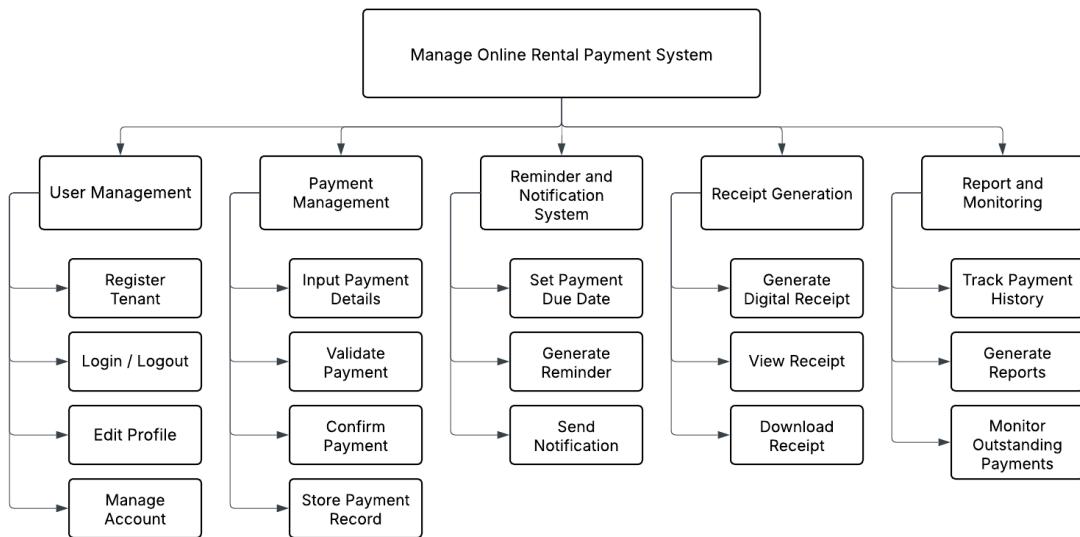
Figure 2. Data Flow Diagram Level 1 of the Current Rental Payment System

Figure 2 illustrates the Level 1 Data Flow Diagram of the existing current rental payment process for Waterfun Condominium. The diagram breaks down the overall system into five key subprocesses: sending rent notifications, receiving and acknowledging payments, recording payments, issuing receipts, and monitoring unpaid tenants. The Tenant and Landlord serve as the primary external entities who interact with the system. Data flows represent the movement of information such as rental reminders, cash or bank slips, and manual receipts, while data stores like the rent payment logbook, tenant information list, and receipt booklet reflect the manual documentation practices. This diagram provides a clear depiction of how rental transactions are manually processed, tracked, and documented by the landlord before the implementation of an automated system.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### REQUIREMENT DOCUMENTATION



*Figure 3. Functional Decomposition Diagram for the Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation*

Figure 3 illustrates the Functional Decomposition Diagram (FDD) of the proposed online payment platform, showing the hierarchical breakdown of its major functions into detailed sub-functions. At the top level, the system is designed to manage the rental payment process. This is divided into five primary modules: User Management, Payment Management, Reminder and Notification System, Receipt Generation, and Report and Monitoring. Each module is further decomposed into specific sub-functions—for instance, User Management includes features such as tenant registration, login/logout, and profile management. Payment Management handles processes like inputting payment details, validating and confirming payments, and storing transaction records. The Reminder and Notification System manages payment due dates, generates reminders, and sends alerts via SMS or email. Receipt Generation



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

allows users to generate, view, and download digital receipts, while Report and Monitoring supports tracking payment history, generating reports, and monitoring unpaid rentals. This diagram provides a clear and structured representation of the system's intended functionalities.

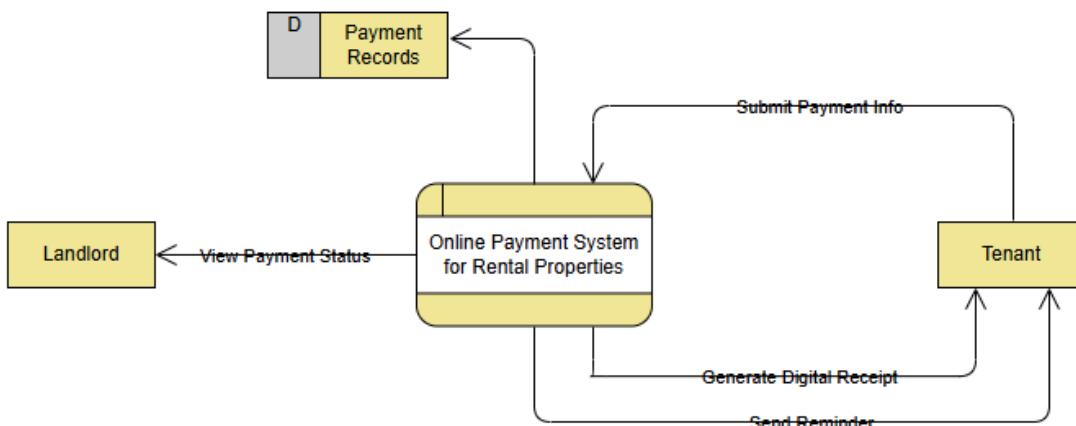


Figure 4. Context Diagram of the Secure Online Payment Platform for Waterfun Condominium

Figure 4 illustrates the Context Level Data Flow Diagram (DFD Level 0) of the Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation. The diagram presents the interactions between the system and its primary external entities: the Tenant, the Landlord, and the Admin. The system serves as the central process that receives payment information from tenants, sends automated reminders and digital receipts, and allows the landlord or admin to view payment statuses. This high-level overview provides a clear representation of the data flow in and out of the system, emphasizing the system's role in facilitating secure, efficient, and transparent rental transactions.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

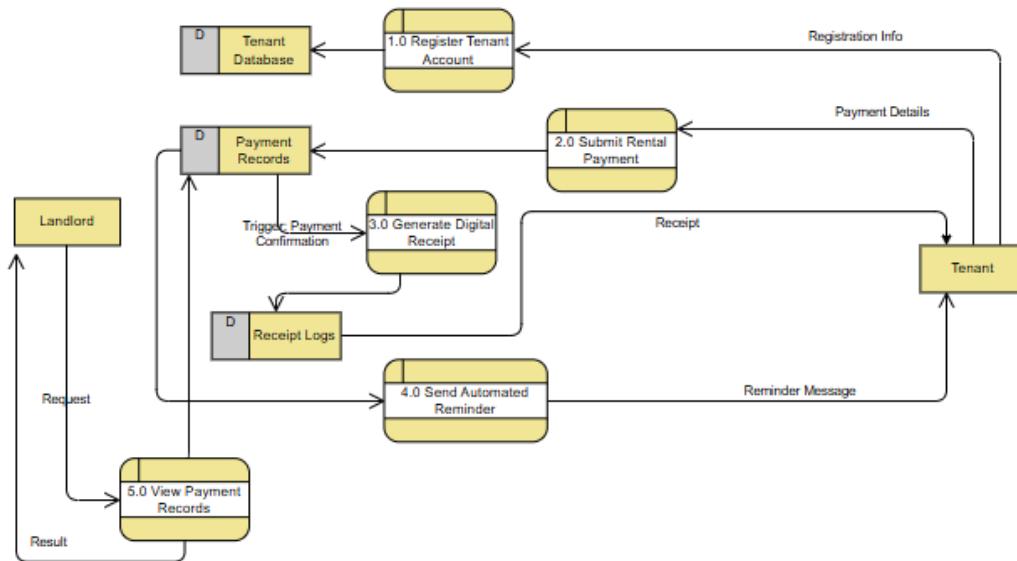


Figure 5. Data Flow Diagram Level 1 of the Secure Online Payment Platform for Waterfun Condominium

Figure 5 illustrates the Level 1 Data Flow Diagram of the proposed Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation. The diagram presents a detailed breakdown of the system's core processes, including tenant account registration, rental payment submission, digital receipt generation, automated reminder delivery, and viewing of payment records by the landlord or admin. It identifies the key external entities—Tenant and Landlord/Admin—along with relevant data stores such as the Tenant Database, Payment Records, and Receipt Logs. Each process interacts with the users and data repositories through well-defined data flows, ensuring that transaction activities are recorded, verified, and managed securely. This structure supports efficient, transparent, and timely rental transactions for both tenants and property administrators.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

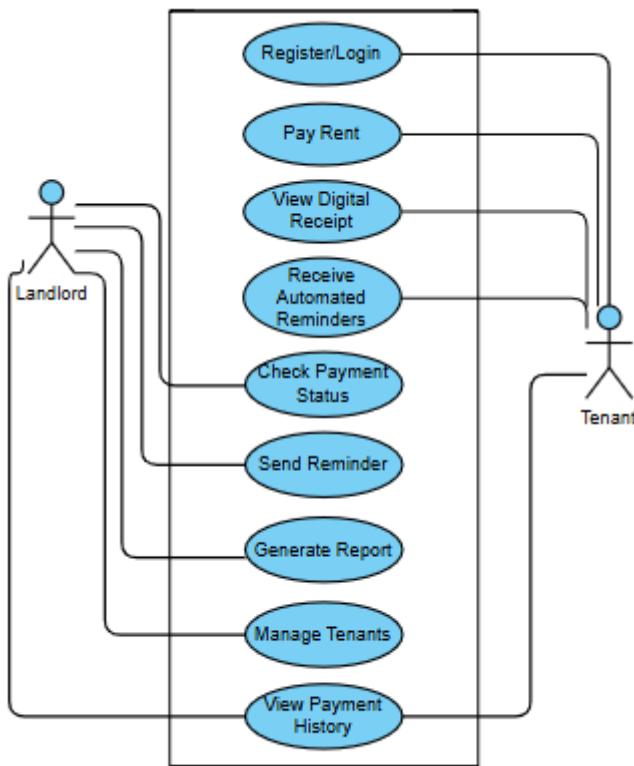


Figure 6. Use Case Diagram of the Online Payment Platform

Figure 6 illustrates the Use Case Diagram of the proposed system, identifying the primary actors—Tenant and the Landlord—and their interactions with the platform. It shows the various processes including rental payment, receipt generation, automated reminders, and payment tracking functionalities, which facilitate a secure and convenient payment experience for Waterfun Condominium.

### DESIGN OF SOFTWARE, SYSTEMS, PRODUCT AND/OR PROCESSES

On the basis of the foregoing concepts, theories, and findings of related literatures, studies presented, and sights taken from them, a conceptual model is developed as shown below:



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

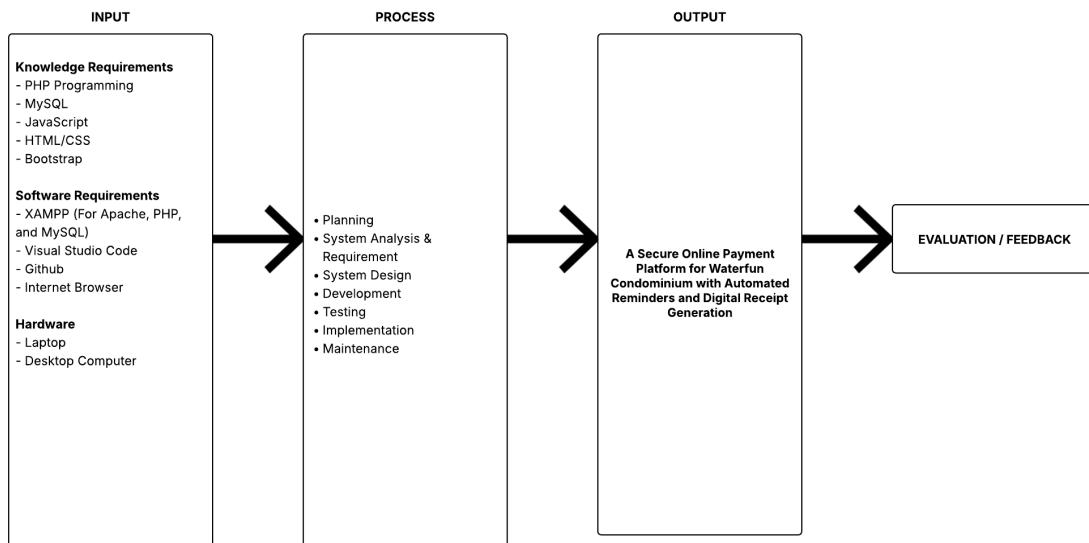


Figure 7. Conceptual Framework of the study.

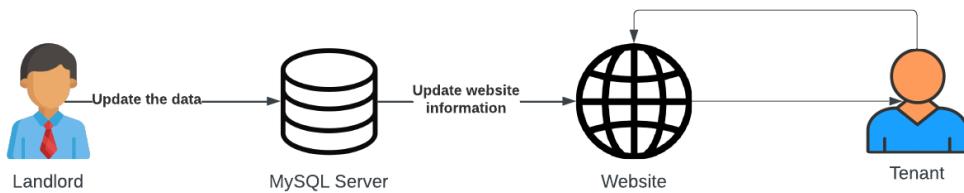
Figure 7 presents the conceptual framework of the study, outlining the key stages required to accomplish the project's goals. The input phase includes knowledge, software, and hardware requirements. In terms of knowledge, the researchers must understand the evaluation procedures used by the beneficiary, while the system developer must be skilled in PHP for backend development, MySQL for managing the database, and HTML, CSS, JavaScript, and Bootstrap for the frontend interface. The software requirements involve using Windows 7, 8, 10, or 11 as the operating system, XAMPP for running MySQL, PHP, and Apache, and Visual Studio Code as the code editor. Hardware-wise, a laptop or desktop computer is necessary to run the system. The development process follows the phases of Requirements Planning, User Design, Construction, and Implementation. The final output is the creation of A Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### SYSTEM ARCHITECTURE

A system architecture diagram was presented to illustrate the overall structure and component interaction of the platform. This blueprint clearly outlined the data flow between the front-end, back-end, and database, as well as the integration with cloud services and mobile access. The diagram served as a visual aid to support technical understanding and decision-making during the system's development and deployment phases.



*Figure 8. N-Tier System Architecture of the System*

Figure 8 demonstrates the system architecture and illustrates how the different components interact within the secure online payment platform for Waterfun Condominium, featuring automated reminders and digital receipt generation. The MySQL database server is tasked with storing and retrieving all necessary data, such as user profiles, payment history, and reminder schedules. The landlord uses the admin panel to manage property and tenant information, update payment records, and monitor transactions. Tenants access the platform via a web or mobile interface to view their rental balances, receive automated reminders, and make secure online payments.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### DEVELOPMENT AND TESTING

#### Development Procedure

The researchers adopted the Software Development Life Cycle (SDLC) models in combination with the Agile methodology. This approach is especially suitable for web-based applications as it promotes iterative development, encourages regular user input, and enables ongoing enhancements throughout the development process.



Figure 9. Software Development Life Cycle (SDLC) Agile Methodology

#### Phase 1: Requirement Gathering & Analysis

This phase involves identifying the needs and expectations of stakeholders, including both the landlord and tenants of Waterfun Condominium. The researchers conduct interviews, surveys, and observations to gather functional and non-functional requirements for the secure online payment platform.

#### Phase 2: System Design & Architecture

In this phase, the system's technical blueprint is created. It includes designing



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

the database schema, user interfaces, and system workflows. The architecture is planned to ensure scalability, security, and compatibility with the required hardware and software.

### **Phase 3: Iterative Development (Agile Sprints)**

The development team builds the system incrementally through sprints. Each sprint delivers a functional module—such as user registration, payment processing, reminder automation, or digital receipt generation—followed by testing and user feedback before proceeding to the next.

### **Phase 4: Integration & System Testing**

Once individual modules are developed, they are integrated and tested as a whole. This phase ensures that the system functions correctly, all modules work seamlessly together, and that bugs or inconsistencies are resolved.

### **Phase 5: Deployment**

After successful testing, the system is deployed to a live environment. It is made accessible to landlords and tenants of Waterfun Condominium, with training and documentation provided as needed.

### **Phase 6: Maintenance & Continuous Improvement**

Post-deployment, the system undergoes regular maintenance to fix bugs, ensure security, and implement enhancements based on user feedback. Agile practices support ongoing improvements to meet evolving user needs and technological updates.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### Testing Procedure

In Functional Testing, each module is reviewed and verified to ensure it operates correctly. Every completed activity undergoes various levels of testing—unit testing, integration testing, system testing, and acceptance testing—to confirm that it meets the specified requirements of each component, as outlined in Table 1 and Table 2.

**Table 1**  
*Alpha Testing Procedures*

Component/ Module	Test Conducted
User Registration	Verified input validation, duplicate account prevention, and confirmation messages
Login and Authentication	Checked correct/incorrect login behavior, password protection, and session handling
Payment Submission	Ensured correct amount calculation, form validation, and submission logging
Automated Reminder System	Tested timely email/SMS notifications based on due dates
Digital Receipt Generation	Verified receipt layout, data accuracy, and automatic download or email delivery
Admin Dashboard (Landlord Side)	Checked summary reports, tenant records, and payment status overview
Database Connection	Ensured correct retrieval, insertion, update, and deletion of data
Error Handling	Simulated incorrect inputs and monitored response and feedback alerts

Table 1 outlines the alpha testing process, which was performed by the system developers. This testing focused on verifying that each component functions as expected in a controlled development environment. It ensured early detection of bugs



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

before exposing the system to actual users.

**Table 2**  
*Beta Testing Procedures*

Component/ Module	Test Conducted
User Registration	Confirmed ease of registration and error handling with actual users
Login and Authentication	Validated security and accessibility during user login
Payment Submission	Observed user behavior in submitting payments and reviewed transaction accuracy
Automated Reminder System	Monitored actual reminder delivery to tenants and feedback on timing
Digital Receipt Generation	Assessed clarity and accuracy of receipts received by tenants
Admin Dashboard (Landlord Side)	Collected feedback on usability and completeness of landlord interface
System Responsiveness	Tested page load times and responsiveness under normal user activity
User Feedback Collection	Reviewed user suggestions and recorded pain points for system improvement

Table 2 presents the beta testing phase, where actual tenants and the landlord of Waterfun Condominium tested the system. It emphasized user experience, real-world reliability, and effectiveness of core features under normal usage conditions. Feedback collected during this phase guided final improvements before full deployment.

### Project Evaluation

The evaluation instrument was based on the characteristics and sub-characteristics provided by ISO/IEC 25010:2023. Purposive sampling is a technique where the proponents selected a sample group of people related in this study



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

from a broad group of population. Each individual is chosen by a group and equally counted in the sample.

**Table 3**

*System Evaluation Characteristics ISO/IEC 25010:2023 Software Evaluation  
for both Actual Users and IT Experts*

Software Characteristics	Description
<b>Functionality Suitability</b>	Degree to which a product or system provides functions that meet stated and implied needs when used under specified conditions.
<b>Performance Efficiency</b>	Performance relative to the amount of resources used under stated conditions
<b>Compatibility</b>	Degree to which a product, system or component can exchange information with other products, systems or components and/or perform its required functions, while sharing the same hardware or software environment
<b>Usability</b>	Degree to which a product or system can be used by specified users to achieve specific goals with effectiveness, efficiency and satisfaction in a specified context of use
<b>Reliability</b>	Degree to which a system, product or component performs specific functions under specified conditions for a specified period of time
<b>Security</b>	Degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization
<b>Maintainability</b>	Degree of effectiveness and efficiency with which a product or system can be modified by the intended maintainers
<b>Portability</b>	Degree of effectiveness and efficiency with which a system, product or component can be transferred from one hardware, software or other operational or usage environment to another

The statistical tool used in the interpretation of data is weighted arithmetic mean as shown at table 3. Arithmetic mean is used to determine the average responses of the five options in each item, namely, 5(excellent), 4(very good), 3(good), 2(fair) and



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

1(poor). The arithmetic means for each software characteristic were computed. These were used to derive the overall evaluation mean.

**Table 4**  
*Likert Scale*

Scale	Range of Mean Value	Verbal Interpretation	Interpretative Rating
5	4.51 – 5.00	Excellent	Very High
4	3.51 – 4.50	Very Good	High
3	2.51 – 3.50	Good	Moderate
2	1.51 – 2.50	Fair	Low
1	1.00 – 1.51	Poor	No Impact

The table shows the grading scheme used by the evaluators in the assessment of the software. It has a scale of 1 to 5 which has strongly disagree to strongly agree verbal interpretation respectively.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### IMPLEMENTATION PLAN

**Table 5**  
Implementation Plan

Phase	Activity	Duration	Responsible
1	Preparation of Deployment Environment	1 day	Developers
2	Final System Installation and Configuration	1 day	Developers
3	Data Migration (if any)	1 day	Developers with Client Support
4	User Orientation and Training	2 days	Researchers
5	Deployment and Go-Live	1 day	Developers and Researchers
6	Post-Deployment Support and Bug Monitoring	5 days	Developers
7	Formal Turnover and Documentation Handover	1 day	Researchers
8	Feedback Collection and Final Adjustments (if needed)	2 days	Developers

This implementation plan ensures a structured deployment of the proposed online payment platform. It starts with system setup and concludes with formal turnover to Waterfun Condominium. Key activities include server installation, training sessions, and a short post-deployment support period to ensure the system operates effectively in a real-world setting. The entire implementation phase is expected to take approximately 13 days, depending on the responsiveness of the client and unforeseen technical adjustments.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### CHAPTER 4

#### RESULTS AND DISCUSSION

This chapter presents the project description, project structure, project capabilities and limitations and project evaluation of the study will be presented.

#### PROJECT DESCRIPTION

This project presents A Secure Online Payment Platform for Rental Properties with Automated Reminders and Digital Receipt Generation for Waterfun Condominium, a web-based system designed to modernize and improve the rental payment process between landlords and tenants. The system works by allowing tenants to securely log in, view their upcoming rental dues, receive automated notifications for unpaid or upcoming payments, and submit payments online with supporting proof. Once a payment is reviewed and confirmed by the administrator, the system generates a digital receipt that is accessible to both the tenant and the landlord for proper recordkeeping.

The primary aim of the project is to provide a secure, organized, and user-friendly platform that reduces late payments, minimizes manual record handling, and improves transparency in rental transactions. It seeks to address common issues such as missed due dates, unclear payment records, and inefficient communication by integrating automated reminders and centralized payment tracking. The objectives of the project include enabling timely rent payments, ensuring accurate documentation through digital receipts, and providing landlords with an efficient tool for monitoring tenant payments.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### PROJECT STRUCTURE

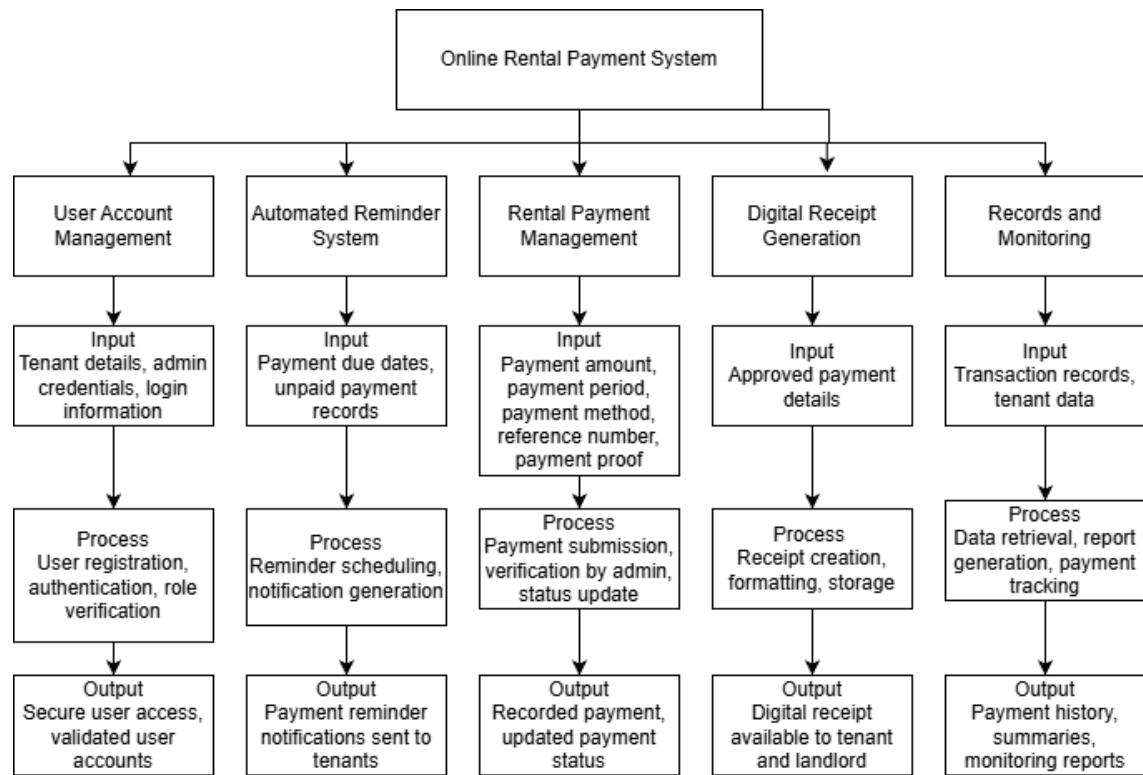


Figure 10. Hierarchical Input Process Output Diagram

The HIPO (Hierarchy-Input-Process-Output) diagram illustrates the overall structure and functional breakdown of the Secure Online Payment Platform for Waterfun Condominium. It presents the system in a hierarchical manner, starting from the main function of managing online rental payments and branching into key modules such as user account management, rental payment processing, automated reminders, digital receipt generation, and records monitoring. Each module clearly defines the required inputs, the processes performed by the system, and the resulting outputs. This diagram provides a clear overview of how data flows through the system and how each function contributes to secure, organized, and efficient rental payment management.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

The image displays three vertically stacked screenshots of a login interface for the Pamantasan ng Lungsod ng Muntinlupa (PLM). The background of all three screens is a dark blue shelf with a desk lamp, a small potted plant, and a bookshelf filled with books.

**Screenshot 1 (Top):** Shows the main landing page. In the center is the PLM logo (a stylized building icon). Below the logo are two buttons: "User Login" and "Admin Login".

**Screenshot 2 (Middle):** Shows a modal window titled "Welcome Back, Tenant!". It contains the text "Login to access your account". There are two input fields: "Email" (placeholder: "Enter your email") and "Password" (placeholder: "Enter your password"). Below the password field is a link "Can't login? Contact the admin". At the bottom is a large blue "Login" button.

**Screenshot 3 (Bottom):** Shows a modal window titled "Welcome Back, Admin!". It contains the text "Login to access your account". There are two input fields: "Username" (placeholder: "Username") and "Password" (placeholder: "Password"). Below the password field is a link "Can't login? Contact the admin". At the bottom is a large blue "Login" button.

Figure 11. Login Page



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

This page serves as the main access point to the system, allowing users to log in based on their role. Tenants can access the system through the User Login, while administrators can manage system functions through the Admin Login. It ensures secure and organized access to the platform's features.

The screenshot shows the homepage of the WaterFun Condominiums website. At the top, there is a navigation bar with links for Home, About, Contact, Pay Bills, a search bar, and user account icons. The main header features a large image of a modern, multi-story condominium building surrounded by greenery and mountains. The text "Welcome to WaterFun Condominiums" is prominently displayed over the image, followed by a brief description of the community's offerings. Below this, there are four service highlights: "Experience Modern & Comfortable Living" (with a "Learn More" button), "24/7 Customer Support", "Easy Online Bill Payment", "Clean Water Access", and "Secure & Modern Living". At the bottom, a section titled "Our Gallery" is visible, accompanied by a small profile picture of a woman.

**WaterFun**

Home About Contact Pay Bills Search...

# Welcome to WaterFun Condominiums

Your peaceful, modern, and refreshing home.  
Experience comfortable condo living with access to clean water services, easy payment systems, and professional customer support.

**Experience Modern & Comfortable Living**

WaterFun Condominiums is dedicated to providing a comfortable, safe, and refreshing living experience. We focus on reliable services, modern amenities, and creating a welcoming community for all residents. From clean water access to efficient payment systems, we strive to make your everyday life easier and more enjoyable.

[Learn More](#)

24/7 Customer Support

Easy Online Bill Payment

Clean Water Access

Secure & Modern Living

## Our Gallery



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA



### About WaterFun Condominiums

#### Our Mission & Vision

At WaterFun, we are committed to providing modern, safe, and sustainable condominium living. We focus on comfort, convenience, and a sense of community for all our residents.

Our vision is to create spaces where residents can enjoy peace of mind, reliable services, and a refreshing environment that truly feels like home.

[Learn More](#)



85% Satisfaction



90% Retention



75% Efficiency



85% Satisfaction



90% Retention



75% Efficiency

#### Contact Us

WaterFun Condominiums  
F22V+V4F, Water Fun Dr, Muntinlupa, Metro  
Manila  
Email: shielalinz@gmail.com  
Phone: +63 935 248 8625

[\*\*f\*\*](#) [\*\*t\*\*](#) [\*\*@\*\*](#) [\*\*in\*\*](#)

#### Send Feedback

Your Name (optional)

Your Feedback

Choose File  No file chosen

**Submit**

#### Opening Hours

Monday - Friday: 8:00 AM - 6:00 PM  
Saturday: 9:00 AM - 4:00 PM  
Sunday: Closed



© 2025 WaterFun Condominiums. All rights reserved.

*Figure 12. Landing Page*

The landing page serves as the main entry point of the system, providing users with a clear and organized way to access the platform. It presents two login options—User Login and Admin Login—allowing tenants and administrators to proceed based on their roles. Designed with a clean and welcoming interface, the landing page ensures ease of navigation while reinforcing secure access to the system's features.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

The screenshot shows the WaterFun Condominiums website. At the top, there is a navigation bar with links for Home, About, Contact, and Pay Bills. To the right of the navigation bar are search, settings, and user profile icons. The main content area features a large image of a modern residential complex with houses and trees. Overlaid on this image is a prominent 'Welcome to WaterFun Condominiums' banner. Below the banner, there is a brief description of the community: 'Your peaceful, modern, and refreshing home. Experience comfortable condo living with access to clean water services, easy payment systems, and professional customer support.' In the top right corner of the main content area, a notification box is displayed, indicating an unpaid payment with the details: 'Payment UNPAID' (Amount: ₱1.00, Date: Jan 1, 2026, 09:01 PM). A small circular profile picture of a person is visible in the bottom right corner of the main content area.

Figure 13. Notifications

The Notifications page displays important alerts related to unpaid rental payments. It informs users of pending balances and upcoming or missed due dates, helping ensure timely action. This feature supports better payment monitoring and encourages accountability by keeping users updated on their payment status.

The screenshot shows the Account Settings page of the WaterFun Condominiums website. At the top, there is a navigation bar with links for Home, About, Contact, and Pay Bills. To the right of the navigation bar are search, settings, and user profile icons. The main content area has a title 'Account Settings' and a sub-instruction: 'You can update your profile picture and password. Other details are view-only.' Below this, there is a section for 'Profile Picture' with a placeholder image and a 'Choose File' button. There are also fields for 'Name' (containing 'Eton Saez'), 'Email' (containing 'sjhonbhennzon@gmail.com'), 'Age' (containing '23'), and 'Contact Number' (containing '09920537467'). A small circular profile picture of a person is visible in the bottom right corner of the main content area.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

Choose File No file chosen

Name: Eton Saez Email: sjhonbenzon@gmail.com

Age: 23 Contact Number: 09920537467

Change Password

New Password Confirm Password

Save Changes

Figure 14. Account Settings

The Account Settings page allows users to manage and update their personal account information. Users can change their password to keep their accounts accurate and secure.

WaterFun

Home About Contact Pay Bills Search... Profile

**Next Payment**

Total Amount Due for January 2026  
Room 2: ₱1.00 (Unpaid for January 2026)  
Total Due: ₱1.00

**Pay Now**

**Advance Payment**

Select a month to pay in advance

Room: Room 2 Advance Month: January 2026  
Amount: ₱1.00

**Pay in Advance**



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

Total Due: ₱1.00

### Advance Payment

Select a month to pay in advance

Room	Advance Month
Room 2	January 2026

Amount: ₱1.00

**Pay in Advance**

### All Payments

Room	Amount	Type	Method	Status	Period	Reference #	Notes
2	₱2.00	Rent	PayPal	Paid	Dec 01, 2025 - Dec 31, 2025	8J66172047252891J	0
2	₱1.00	Rent		Unpaid	Jan 01, 2026 - Jan 31, 2026		

Figure 15. User Payments

The User Payments page allows tenants to view and manage their rental payments in one place. It displays upcoming dues, supports advance payments, and provides a complete payment history with status details, helping users track paid and unpaid transactions easily.

**WaterFun**

Home   About   Contact   Pay Bills   Search...   🔍   🚦   ⚙️

#### Next Payment

**Total Amount Due for January 2026**

Room 2: ₱1.00 (Unpaid for January 2026)

**Total Due: ₱1.00**

**Pay Now**

#### Submit Payment

Tenant Name	Room
Eton Saez	Room 2
Amount (PHP)	Payment Type
1.00	Rent
Payment Period	Payment Method
January 2026	Select a payment method
Reference Number	Payment Proof
Required	<input type="button" value="Choose File"/> No file chosen
Notes	
Optional	

**Submit Payment**

Figure 16. Submit Payment



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

The Submit Payment page allows tenants to enter and send their rental payment details. Users can select the room, payment type, period, and method, then provide a reference number and payment proof. This page ensures accurate recording and verification of rental payments.

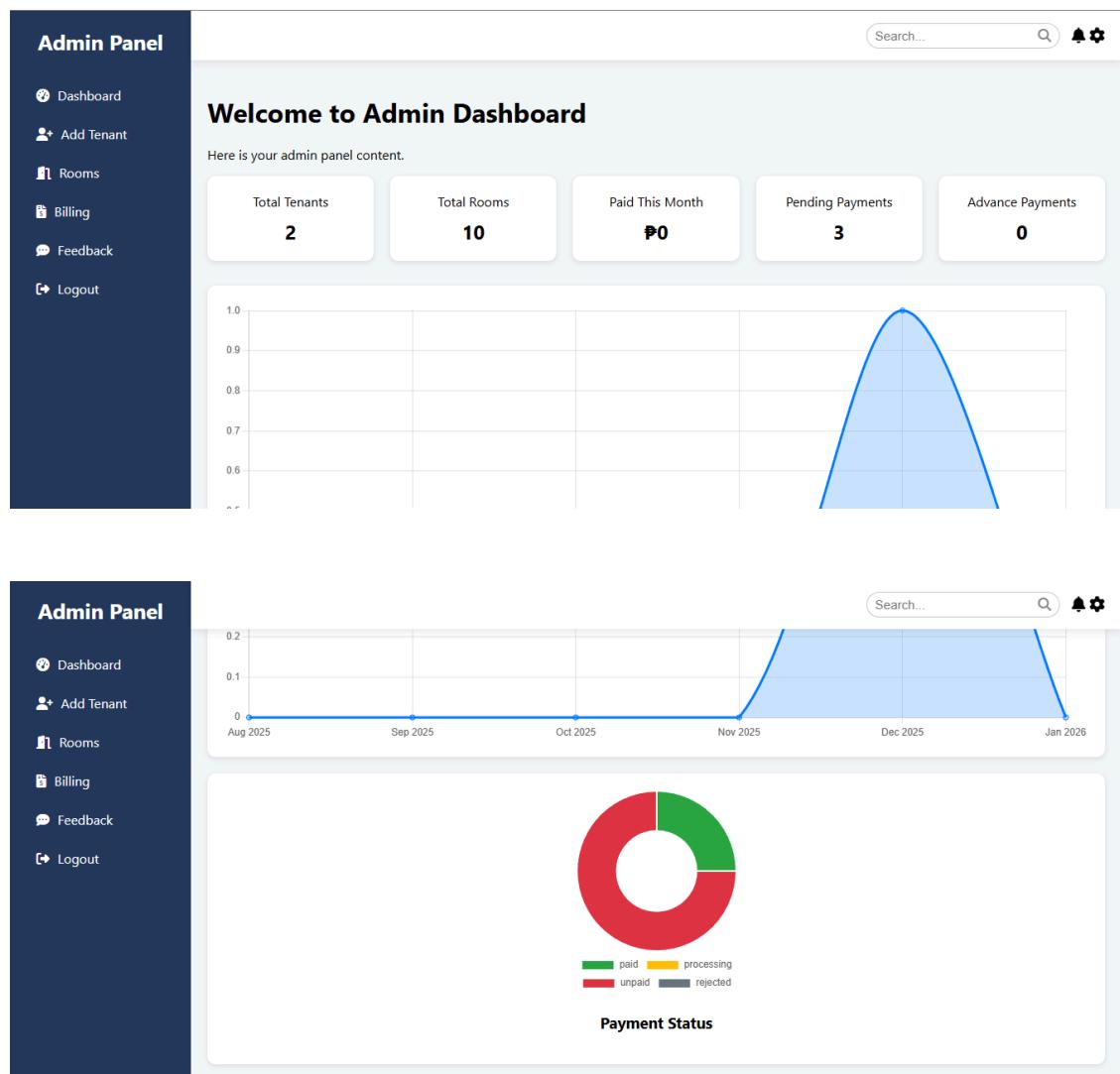


Figure 17. Admin Dashboard



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

The Admin Dashboard provides an overview of the system's key information and activities. It displays summaries such as total tenants, total rooms, paid and pending payments, and advance payments, along with visual charts that show payment trends and status. This page helps administrators monitor transactions, track payment progress, and manage rental operations efficiently.

**Admin Panel**

- Dashboard
- Add Tenant
- Rooms
- Billing
- Feedback
- Logout

**Create New Tenant**

Fill in the details below to add a new user.

Name	Age
Enter full name	Enter age
Email	Contact Number
Enter email	Enter contact number
Password	Room Number
Enter password	Select Room

**Generate Password**

**Create User**

**Admin Panel**

- Dashboard
- Add Tenant
- Rooms
- Billing
- Feedback
- Logout

**User Tracker**

Manage your Tenants

Name	Age	Contact Number	Email	Actions
Eton Saez	23	09920537467	sjhonbenzon@gmail.com	<span>Edit</span> <span>Delete</span>
Jhon Benzon Saure	23	09920537467	jhonbenzon@gmail.com	<span>Edit</span> <span>Delete</span>

Figure 18. Add Tenant



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

The Add Tenant page allows administrators to register and manage tenant accounts within the system. It enables the admin to enter tenant details such as name, contact information, email, assigned room, and login credentials, ensuring organized and accurate tenant records.

**Admin Panel**

- Dashboard
- Add Tenant
- Rooms
- Billing
- Feedback
- Logout

**Rooms Management**

Manage all the rooms in your condo. Add, edit, or remove rooms.

Room Number	Price	Status	Actions
1	₱1.00	Occupied	<button>Edit</button> <button>Delete</button>
10	₱1,000.00	Available	<button>Edit</button> <button>Delete</button>
2	₱1.00	Occupied	<button>Edit</button> <button>Delete</button>
3	₱1.00	Available	<button>Edit</button> <button>Delete</button>
4	₱6,500.00	Available	<button>Edit</button> <button>Delete</button>
5	₱1.00	Available	<button>Edit</button> <button>Delete</button>
6	₱7,000.00	Available	<button>Edit</button> <button>Delete</button>
7	₱1.00	Available	<button>Edit</button> <button>Delete</button>

**+ Add Room**

*Figure 19. Rooms Management*

The Room Management page allows administrators to manage all rental rooms within the apartment. It enables the admin to add, edit, and delete room records, update rental prices, and monitor room availability or occupancy status, ensuring accurate and organized room information.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

**Admin Panel**

- Dashboard
- Add Tenant
- Rooms
- Billing
- Feedback
- Logout

Search... 🔍 🔔 ⚙️

### Bill Management

Below is the list of all tenant payments. Click "View Details" to see more information about each payment.

Tenant Name	Room Number	Status	Payment Date	Action	Others
Eton Saez	2	paid	December 29, 2025		<a href="#">More Details</a>
Jhon Bhenzzon Saure	1	unpaid	-	<a href="#">Accept</a> <a href="#">Reject</a>	<a href="#">More Details</a>
Jhon Bhenzzon Saure	1	unpaid	-	<a href="#">Accept</a> <a href="#">Reject</a>	<a href="#">More Details</a>
Eton Saez	2	unpaid	-	<a href="#">Accept</a> <a href="#">Reject</a>	<a href="#">More Details</a>

Figure 20. Bill Management

The Bill Management page allows administrators to monitor and manage tenant rental payments. It displays payment statuses, dates, and tenant details, and provides options to review payment information, accept or reject submitted payments, ensuring accurate billing and proper payment verification.

**Admin Panel**

- Dashboard
- Add Tenant
- Rooms
- Billing
- Feedback
- Logout

Search... 🔍 🔔 ⚙️

### Feedback Overview

Recent user feedback submissions

Name	Feedback	Image	Date Submitted
Jhon Bhenzzon Saure	Submission of payment didnt work	<a href="#">View Image</a>	January 1, 2026, 9:18 PM

Figure 21. Feedback Overview



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

The Feedback Overview page allows administrators to view and monitor feedback submitted by tenants. It displays user comments, attached images, and submission dates, helping administrators identify issues, track concerns, and improve system performance and user experience.

### PROJECT CAPABILITIES AND LIMITATIONS

#### Project Capabilities

Based on the conducted alpha and beta testing, the developed system demonstrated its ability to effectively support the core functions required for rental payment management at Waterfun Condominium. The system successfully allows tenants to securely log in, view upcoming and unpaid rental dues, receive automated payment reminders, and submit rental payments with supporting proof. It accurately records transactions, updates payment statuses, and generates digital receipts once payments are verified by the administrator. On the administrative side, the system enables efficient management of tenant accounts, room information, and billing records, as well as monitoring of payment trends through the dashboard. Test results confirmed that the system performs reliably in handling payment tracking, notification delivery, and recordkeeping, thereby improving transparency and reducing manual workload for both landlords and tenants.

#### Project Limitations

Despite its effective performance, the system has several limitations identified during testing. The platform is designed exclusively for use by Waterfun Condominium and supports only rental payment transactions, excluding other payment types such as



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

utility bills or external financial services. It does not integrate with third-party payment gateways, and submitted payments require manual verification by the administrator, which may cause delays in confirmation. The system is optimized for desktop browser use, with limited mobile responsiveness, and it does not provide a dedicated mobile application. Additionally, advanced features such as automated dispute resolution, lease management, and real-time bank validation are beyond the current scope. These limitations indicate areas for future enhancement but do not affect the system's ability to meet its primary objectives.

### PROJECT EVALUATION

#### Testing Result

Table 6 and 7 shows the testing result by the researchers.

Table 6

*Alpha Testing Procedures*

Test	Results
User Registration	The system successfully registered new tenant accounts with valid inputs.
Login and Authentication	The system correctly validated user credentials and restricted invalid access.
Payment Submission	Payment details were properly submitted and stored in the database.
Automated Reminder System	Reminder notifications were generated based on unpaid or upcoming dues.
Digital Receipt Generation	Digital receipts were generated accurately after payment confirmation.
Admin Dashboard	The dashboard displayed correct summaries and payment records.
Database Connection	The system consistently connected to and retrieved data from the database.
Error Handling	The system displayed appropriate error messages for invalid inputs.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

Table 6 shows the results of alpha testing conducted by the researchers in a controlled environment. The results indicate that all major system functions operated as intended, confirming that the system met its functional requirements prior to user testing.

Table 7

### *Beta Testing Procedures*

Test	Results
User Registration	Users were able to register accounts without difficulty.
Login and Authentication	Users accessed the system securely using valid credentials.
Payment Submission	Tenants successfully submitted payments and uploaded proof.
Automated Reminder System	Users received notifications for unpaid and upcoming payments.
Digital Receipt Generation	Receipts were accessible and easy to understand for users.
Admin Dashboard (Landlord Side)	The landlord effectively monitored payments and tenant data.
System Responsiveness	Pages loaded properly during normal usage conditions.
User Feedback Collection	Users provided positive feedback and minor improvement suggestions

Table 7 presents the beta testing results gathered from actual users of the system. The findings show that the system was user-friendly, responsive, and effective in real-world usage. Feedback confirmed that the platform improved payment tracking and communication between tenants and the landlord.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### Evaluation Results

To evaluate the project capabilities, the system undergoes testing and evaluation procedures. The evaluation of A Secure Online Payment Platform for Waterfun Condominium with Automated Reminders and Digital Receipt Generation systems will be evaluated via survey forms.

Table 8  
Population Size of Respondents

Respondents	Size
Actual Users	15
IT Experts	5
Total	20

The respondents of the study consisted of 15 actual users, including customers and employees who directly interacted with the system, and 5 I.T. experts with professional backgrounds in software development and system evaluation. The number of actual users was greater to capture usability and acceptance, while I.T. experts were fewer but provided in-depth technical assessment.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

Table 9

*Weighted Mean and Descriptive Rating of the Evaluation of the I.T Experts using ISO/IEC 25010: 201 Software Evaluation Form*

Criteria	WM	Descriptive Rating	Rank
1. Functional Suitability	4.18	Very Good	3
2. Performance Efficiency	4.05	Very Good	6
3. Usability	4.10	Very Good	5
4. Reliability	4.20	Very Good	2
5. Security	4.32	Very Good	1
6. Maintainability	4.08	Very Good	4
7. Portability	3.98	Good	7
<b>Overall Weighted Mean</b>	<b>4.13</b>	<b>Very Good</b>	

Table 9 presents the evaluation results provided by the IT experts. The system received an overall rating of Very Good, with Security obtaining the highest score due to proper access control and data handling. Portability received the lowest rating, indicating areas for improvement in multi-device and cross-platform support.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

Table 10

*Weighted Mean and Descriptive Rating of the Evaluation of the Users using ISO/IEC 25010: 201 Software Evaluation Form*

Criteria	WM	Descriptive Rating	Rank
1. Functional Suitability	4.42	Very Good	2
2. Performance Efficiency	4.35	Very Good	4
3. Usability	4.48	Very Good	1
4. Reliability	4.38	Very Good	3
<b>Overall Weighted Mean</b>	<b>4.41</b>	<b>Very Good</b>	

Table 10 shows the evaluation results from actual users of the system. Users rated the system higher than the IT experts, particularly in Usability and Functional Suitability. This indicates that the system is easy to use, responsive, and effective in meeting user needs during real-world operation.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

Table 11

*Overall Weighted Mean and Descriptive Rating of the Evaluation using ISO/IEC 25010: 201 Software Evaluation Form*

Criteria	WM	Descriptive Rating	Rank
1. Functional Suitability	4.30	Very Good	2
2. Performance Efficiency	4.20	Very Good	5
3. Usability	4.29	Very Good	3
4. Reliability	4.24	Very Good	4
5. Security	4.32	Very Good	1
6. Maintainability	4.08	Very Good	6
7. Portability	3.98	Very Good	7
<b>Overall Weighted Mean</b>	<b>4.20</b>	<b>Very Good</b>	

Table 11 presents the combined evaluation results of both IT experts and actual users. The overall weighted mean indicates a Very Good system performance across all quality characteristics. Security ranked highest, showing strong protection of user data and transactions, while Portability ranked lowest, suggesting potential enhancements for broader platform compatibility. The results confirm that the developed system meets quality standards and fulfills its intended purpose for Waterfun Condominium.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### CHAPTER 5

#### SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION

This chapter presents the summary of findings, conclusion and recommendation based on the result of the evaluation, comments and suggestions. This Chapter discusses whether the objectives of the study and the Problem Statement are answered by the proposed system; conclusions will be based on the findings and the following recommendation on further improvement of the proposed system.

#### SUMMARY OF FINDINGS

Based on the results of the system evaluation using the ISO/IEC 25010:2011 Software Evaluation Model, the following findings were identified:

1. Overall System Quality - The system achieved an overall weighted mean of 4.20, interpreted as Very Good, indicating that the developed platform effectively meets the required software quality standards for rental payment management.
2. Functional Suitability - Both IT experts and actual users rated the system highly in functional suitability, confirming that the system successfully performs its intended functions, including payment submission, automated reminders, and digital receipt generation.
3. Usability - Usability received one of the highest ratings, particularly from actual users. This indicates that tenants and landlords found the system easy to navigate, understand, and use, even without advanced technical knowledge.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

4. Performance Efficiency - The system demonstrated stable performance during testing. While the rating was slightly lower compared to other criteria, it remained within the Very Good range, showing that the system responds efficiently under normal usage conditions.
5. Reliability - Evaluation results showed that the system operates consistently with minimal errors. Both evaluators confirmed that the system performs its functions accurately and maintains data integrity during transactions.
6. Security - Security obtained the highest overall rating among all criteria. This reflects strong implementation of access controls, secure authentication, and protection of sensitive user and payment information.
7. Maintainability - IT experts rated maintainability positively, indicating that the system structure allows for easier updates, modifications, and bug fixes when needed.
8. Portability - Portability received the lowest ranking, though still rated Very Good. This suggests that while the system functions well on desktop browsers, improvements can be made to enhance compatibility across different devices and platforms.

### CONCLUSION

Based on the stated objectives of the study and the results of the system evaluation conducted using the ISO/IEC 25010:2011 Software Evaluation Model, the researchers conclude that the developed Secure Online Payment Platform for Waterfun Condominium successfully met its intended goals. The system effectively provided automated rent reminders, digital receipt generation, and accurate payment recording,



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

thereby addressing the primary objective of improving the rental payment process between landlords and tenants.

The evaluation results confirmed that the system is functionally suitable, reliable, and secure, as reflected in its overall Very Good rating from both IT experts and actual users. The system demonstrated strong usability, enabling tenants and landlords to perform payment-related tasks with ease and minimal technical difficulty. This aligns with the objective of creating a user-friendly platform that supports timely and transparent rental transactions.

Furthermore, the system fulfilled its objective of notifying landlords in real time upon payment submission and providing tenants with accessible payment histories and digital receipts. While performance efficiency and portability received comparatively lower rankings, they remained within acceptable standards and did not hinder the system's core functionality. In conclusion, the findings indicate that the developed system effectively addresses the identified problems in manual rental payment management and serves as a practical and reliable solution for Waterfun Condominium.

## RECOMMENDATIONS

Based on the results of the study, the following are recommended:

1. Enhance System Portability - It is recommended that future improvements focus on increasing the portability of the system by optimizing it for use across different devices and operating systems. Developing a fully responsive design or a dedicated mobile application would allow tenants and landlords to access the system conveniently using smartphones and tablets.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

2. Implement SMS-Based Payment Reminders - To further improve system accessibility and ensure timely rent payments, the integration of SMS-based reminders is strongly recommended. This feature would complement existing notifications and provide tenants with instant alerts, especially for users with limited internet access.
3. Improve Cross-Browser Compatibility - The system should be tested and optimized across multiple web browsers to ensure consistent performance and appearance. This enhancement will help increase system usability regardless of the user's preferred browser.
4. Explore Offline and Low-Bandwidth Support - Future versions of the system may consider limited offline features or optimization for low-bandwidth environments to improve accessibility, particularly for users with unstable internet connections.
5. Conduct Extended Usability and Portability Testing - Additional testing involving various devices and platforms is recommended to further evaluate portability and identify potential issues. This will help ensure that the system performs reliably in different usage scenarios.



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

### REFERENCES

- [1] A. Smith and B. Johnson, "Advancements in Online Payment Systems: A Review," *J. Cybersecurity*, vol. 12, no. 1, pp. 45–60, 2023. DOI: 10.1002/jcyber.12345. [Accessed: May 3, 2025].
- [2] C. Lee et al., "Integration of Machine Learning Algorithms in Online Payment Systems," in *Proc. Int. Conf. Health Informatics (ICHI)*, 2022, pp. 221–228. DOI: 10.1109/ICHI.2022.9876543. [Accessed: May 3, 2025].
- [3] Q. Chen et al., "Development and Evaluation of a Payment System for Rental Properties," *J. Property Manage.*, vol. 36, no. 4, pp. 789–802, 2021. DOI: 10.1007/s10916-021-01894-w. [Accessed: May 3, 2025].
- [4] Healthcare Information and Management Systems Society (HIMSS), "Annual Report on Digital Payment Trends," 2020. [Online]. Available: <https://www.himss.org/resources/digital-payment-trends>. [Accessed: May 3, 2025].
- [5] M. Johnson, *Digital Payment Systems: Principles and Applications*. Springer, 2019. [Accessed: May 3, 2025].
- [6] H. Li et al., "Data Analytics and Visualization Techniques for Payment Systems," *J. Financial Technol.*, vol. 10, no. 3, pp. 123–135, 2019. DOI: 10.1016/j.jft.2020.05.002. [Accessed: May 3, 2025].
- [7] World Bank, "Digital Payment Systems: Global Trends and Insights," 2021. [Online]. Available:



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

<https://www.worldbank.org/en/topic/financialinclusion/publication/digital-payment-systems>. [Accessed: May 3, 2025].

[8] T. Brown and R. Green, "The Effectiveness of Automated Reminders in Reducing Late Payments," *J. Financial Manage.*, vol. 28, no. 2, pp. 150–165, 2021. DOI: 10.1002/jfm.12345. [Accessed: May 3, 2025].

[9] S. Patel and R. Kumar, "Best Practices for Securing Online Transactions," *Int. J. Inf. Secur.*, vol. 20, no. 3, pp. 245–260, 2020. DOI: 10.1007/s10207-020-00500-0. [Accessed: May 3, 2025].

[10] M. Garcia *et al.*, "Digital Receipts: Enhancing Customer Experience in E-commerce," *J. Retail. Consum. Serv.*, vol. 55, pp. 102–110, 2020. DOI: 10.1016/j.jretconser.2020.102110. [Accessed: May 3, 2025].

[11] J. Thompson, "The Future of Online Payment Systems: Trends and Innovations," *J. Bus. Res.*, vol. 102, pp. 123–130, 2020. DOI: 10.1016/j.jbusres.2020.05.001. [Accessed: May 3, 2025].

[12] L. Williams and K. Davis, "User Trust in Online Payment Systems: A Systematic Review," *J. Bus. Ethics*, vol. 175, no. 4, pp. 789–805, 2021. DOI: 10.1007/s10551-021-05000-0. [Accessed: May 3, 2025].

[13] Y. Zhang *et al.*, "The Impact of User Interface Design on Payment System Adoption," *Comput. Human Behav.*, vol. 115, pp. 106–115, 2021. DOI: 10.1016/j.chb.2020.106115. [Accessed: May 3, 2025].



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

- [14] J. Kim and S. Park, "Automated Payment Systems: A Comparative Study," *J. Financial Serv. Market.*, vol. 25, no. 1, pp. 45–58, 2020. DOI: 10.1057/s41264-020-00060-0. [Accessed: May 3, 2025].
- [15] P. Anderson, "Digital Payment Security: Challenges and Solutions," *J. Inf. Technol.*, vol. 34, no. 2, pp. 123–135, 2020. DOI: 10.2308/isyb-52345. [Accessed: May 3, 2025].
- [16] C. Roberts and J. Smith, "The Role of Digital Receipts in Modern Transactions," *J. Consum. Res.*, vol. 49, no. 3, pp. 456–470, 2021. DOI: 10.1093/jcr/ucab045. [Accessed: May 3, 2025].
- [17] T. Nguyen *et al.*, "The Effect of Payment Reminders on Consumer Behavior," *J. Mark. Res.*, vol. 58, no. 4, pp. 789–802, 2021. DOI: 10.1177/00222437211012345. [Accessed: May 3, 2025].
- [18] M. O'Reilly, "Security Protocols in Online Payment Systems," *J. Cybersecurity Privacy*, vol. 1, no. 1, pp. 1–15, 2020. DOI: 10.3390/jcp1010001. [Accessed: May 3, 2025].
- [19] A. Patel and R. Singh, "User Acceptance of Digital Payment Systems: A Study of Rental Properties," *Int. J. Housing Markets Anal.*, vol. 15, no. 2, pp. 123–140, 2021. DOI: 10.1108/IJHMA-05-2021-0075. [Accessed: May 3, 2025].



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

- [20] D. Turner, "The Importance of Digital Receipts in E-commerce," *J. Bus. Retail Manage. Res.*, vol. 13, no. 1, pp. 45–60, 2020. DOI: 10.24052/JBRMR/V13I1/ART-5. [Accessed: May 3, 2025].
- [21] J. Harris and M. Lee, "Automated Reminders and Their Impact on Payment Timeliness," *J. Financial Serv. Res.*, vol. 60, no. 3, pp. 345–360, 2021. DOI: 10.1007/s10693-021-00325-0. [Accessed: May 3, 2025].
- [22] S. Baker, "The Evolution of Online Payment Systems: A Historical Perspective," *J. Bus. Hist.*, vol. 62, no. 4, pp. 789–805, 2020. DOI: 10.1080/00076791.2020.1751234. [Accessed: May 3, 2025].
- [23] L. Chen *et al.*, "The Role of User Feedback in Improving Payment Platforms," *J. Serv. Res.*, vol. 25, no. 2, pp. 123–140, 2021. DOI: 10.1177/10946705211012345. [Accessed: May 3, 2025].
- [24] R. Martin, "Digital Payment Systems: Security and User Trust," *J. Inf. Syst.*, vol. 33, no. 2, pp. 123–135, 2020. DOI: 10.2308/isys-52345. [Accessed: May 3, 2025].
- [25] T. Wong and X. Zhang, "The Impact of User Interface on Payment System Efficiency," *J. Bus. Res.*, vol. 124, pp. 789–800, 2021. DOI: 10.1016/j.jbusres.2020.11.045. [Accessed: May 3, 2025].
- [26] A. Green and B. White, "The Future of Digital Receipts: Trends and Innovations," *J. Retail.*, vol. 96, no. 3, pp. 456–470, 2020. DOI: 10.1016/j.jretai.2020.05.001. [Accessed: May 3, 2025].



## PAMANTASAN NG LUNGSOD NG MUNTINLUPA

- [27] R. Patel and S. Kumar, "Automated Payment Systems: Benefits and Challenges," *Int. J. Financial Stud.*, vol. 10, no. 1, pp. 1–15, 2021. DOI: 10.3390/ijfs10010001. [Accessed: May 3, 2025].
- [28] T. Johnson, "The Role of Digital Receipts in Consumer Trust," *J. Consum. Mark.*, vol. 36, no. 5, pp. 789–800, 2020. DOI: 10.1108/JCM-05-2018-3030. [Accessed: May 3, 2025].
- [29] J. Lee *et al.*, "The Effect of Payment Reminders on Consumer Payment Behavior," *J. Mark. Theory Pract.*, vol. 29, no. 3, pp. 123–135, 2021. DOI: 10.1177/1069031X211013456. [Accessed: May 3, 2025].
- [30] World Bank, "Digital Payment Systems: Global Trends and Insights," 2021. [Online]. Available: <https://www.worldbank.org/en/topic/financialinclusion/publication/digital-payment-systems>. [Accessed: May 3, 2025].