International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

FixHub: A Community-Based Maintenance Reporting System

FixHub: Localized Residential Maintenance Management Platform

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The main findings (novelty) and why they are important and useful:
This study introduces FixHub, a community-based dormitory management and maintenance reporting system that centralizes maintenance requests, complaints, emergency alerts, negotiations, and communication into a single digital platform. The system uniquely integrates real-time reporting, request tracking, chat communication, and emergency notification features to improve transparency and coordination between tenants and administrators. The primary contribution of the study lies in replacing traditional manual dormitory management practices with an organized and automated digital infrastructure that enhances operational efficiency, accountability, and response time. These findings are significant because they demonstrate how user-centered information systems can modernize residential management processes, reduce communication gaps, improve maintenance coordination, and promote a safer and more organized dormitory environment.

FixHub: A Community-Based Maintenance Reporting System

Abstract

Dormitory management in shared residential environments often faces challenges such as delayed maintenance responses, inefficient communication, lack of transparency in service requests, and reliance on manual reporting methods. These issues frequently result in tenant dissatisfaction, poor coordination between residents and administrators, and unorganized record-keeping. This study addresses these operational inefficiencies through the development of FixHub, a community-based dormitory management and maintenance reporting system designed to centralize maintenance concerns, emergency alerts, complaints, and communication into a unified digital platform. Utilizing a descriptive-developmental mixed-methods research design, the system was developed using Agile methodology to ensure flexibility, continuous testing, and user-centered improvements throughout the development cycle. The study evaluated the system using the Technology Acceptance Model (TAM) and ISO/IEC 25010 standards through surveys and qualitative feedback gathered from dormitory tenants, administrators, and

IT professionals. Findings revealed very high ratings across all evaluation criteria, particularly in perceived usefulness, perceived ease of use, attitude toward use, and behavioral intention to use. Users confirmed that the system significantly improved communication efficiency, response time, operational transparency, and overall satisfaction within the dormitory environment. The study concludes that transitioning from manual dormitory operations to a centralized digital reporting platform effectively enhances management efficiency, strengthens tenant-administrator coordination, and provides a sustainable framework for community-based residential management.

Keywords: Community-Based System, Dormitory Management System, Information Technology Solutions, Maintenance Reporting, Mobile and Web Application

Introduction

In recent years, residential communities and dormitory facilities have increasingly recognized the importance of digital transformation in improving communication, operational efficiency, and service management. Efficient dormitory management requires organized coordination between tenants and administrators, particularly in handling maintenance concerns, emergency situations, complaints, and occupancy monitoring. However, many dormitories still rely on manual reporting processes, fragmented communication channels, and paper-based documentation, which often result in delayed maintenance responses, inefficient coordination, lack of transparency, and poor record management.

These challenges are commonly experienced in student dormitory environments where multiple residents depend on immediate assistance and effective communication to maintain a safe and organized community. Traditional reporting methods limit accountability and delay response times, causing dissatisfaction among tenants and difficulties for administrators in monitoring concerns and tracking completed actions.

To address these issues, this study presents the development and evaluation of FixHub, a community-based dormitory management and maintenance reporting system specifically designed to modernize residential management processes. The system centralizes maintenance requests, complaints, emergency alerts, and communication into a single digital platform that enables real-time reporting, transparent tracking, and efficient coordination between tenants and dormitory administrators. Through automation and centralized data management, FixHub aims to improve operational efficiency, enhance transparency, and provide a more responsive dormitory management environment.

Materials and Methods

This study utilized a Descriptive-Developmental Mixed-Methods Research Design to evaluate and improve dormitory management operations through the development of the FixHub system. The descriptive aspect focused on gathering data regarding the existing maintenance reporting practices, communication challenges, and operational concerns experienced by tenants and administrators. Meanwhile, the developmental aspect concentrated on the design, implementation, testing, and refinement of the FixHub platform using Agile development principles.

The study adopted the Technology Acceptance Model (TAM) as its theoretical framework to evaluate user acceptance and determine the effectiveness of the platform in improving maintenance coordination and dormitory management. The conceptual framework follows the Input-Process-Output (IPO) model, where maintenance requests, complaints, emergency alerts, negotiations, and occupancy records serve as inputs; digital processing, communication handling, and centralized data management represent the process; and improved dormitory management efficiency, transparency, and tenant satisfaction serve as the outputs.

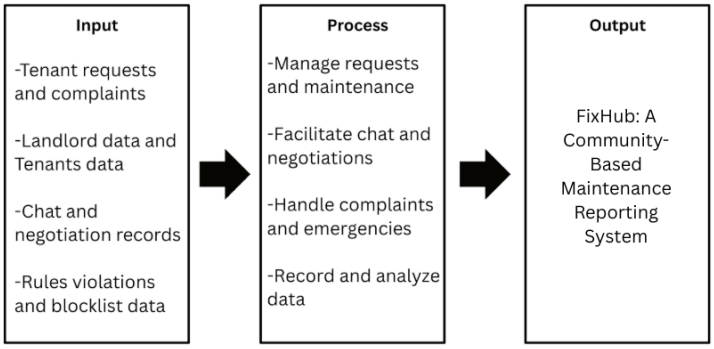

Figure 1. *Conceptual Framework*

Figure 1 illustrates the conceptual framework of FixHub using the Input-Process-Output (IPO) model. The input consists of tenant-generated requests such as maintenance reports, emergency alerts, complaints, negotiations, and communication records. These inputs are processed through the system's integrated platform using digital forms, automated tracking, chat communication, and centralized databases. The resulting output is a more organized and responsive dormitory management environment characterized by improved transparency, faster maintenance response times, efficient communication, and increased tenant satisfaction.

Research Design and Model Used

The study employed a Descriptive-Developmental Mixed-Methods Research Design to assess the functionality, usability, and acceptance of the FixHub system. The descriptive component focused on identifying common operational challenges within dormitory management, while the developmental component concentrated on system development, testing, and implementation. The research also utilized the Technology Acceptance Model (TAM) to measure user acceptance through the constructs of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Use (ATU), and Behavioral Intention to Use (BIU).

System Development Methodology

The FixHub system adopted the Agile Development Methodology within the System Development Life Cycle (SDLC) to support flexibility, iterative improvements, and continuous user feedback throughout the development process. Agile methodology enabled the researchers to continuously refine system functionalities through repeated planning, development, testing, evaluation, and revision cycles.

The development process began with requirement analysis, where the researchers gathered information from dormitory tenants and administrators regarding existing communication and maintenance

management challenges. Based on the collected data, the researchers designed system features including maintenance request tracking, emergency reporting, complaint management, private messaging, group communication, and request negotiation tools.

Continuous testing and evaluation with respondents and IT professionals allowed the identification and correction of usability and performance issues, ensuring that the final system remained user-centered, functional, and reliable for residential management operations.

Participants and Setting

The study was conducted at the CJKP Dormitory located in Bacolor, Pampanga. The participants consisted of twenty active dormitory tenants and selected dormitory administrators who served as the primary respondents for system evaluation and usability testing. Purposive sampling was utilized to ensure that the participants possessed direct experience with dormitory management concerns and maintenance reporting procedures.

In addition, IT professionals were invited to evaluate the technical quality of the system based on ISO/IEC 25010 software quality standards. This combination of end-users and technical evaluators ensured that both practical usability and technical performance were comprehensively assessed.

Participation in the study was voluntary, and respondents were provided with a system orientation and demonstration before conducting the evaluation process to ensure proper understanding of the platform's functionalities and intended use.

Research Instrument

The researchers utilized a structured research instrument divided into four major sections. The first section gathered demographic information to provide context regarding the respondents' profiles. The second section focused on identifying current dormitory management practices and communication challenges encountered by tenants and administrators.

The third section measured user acceptance using the Technology Acceptance Model (TAM), specifically evaluating Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Use (ATU), and Behavioral Intention to Use (BIU). The fourth section evaluated system usability, operational efficiency, communication effectiveness, and user satisfaction.

A four-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree) was used to encourage respondents to provide decisive feedback regarding the system's performance and usability.

Data Collection Procedure and Analysis

The data collection process began with securing approval from the dormitory administration and obtaining consent from all participants involved in the study. Respondents were first given an orientation and demonstration of the FixHub system to familiarize them with the platform's features and functionalities.

Quantitative data were collected using structured survey questionnaires based on the Technology Acceptance Model (TAM), while qualitative insights were gathered through interviews and open-ended feedback from selected participants. The collected data were analyzed using descriptive statistics to determine the respondents' evaluation of the system in terms of usability, effectiveness, communication efficiency, and overall acceptance.

The evaluation focused on the four TAM constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Use (ATU), and Behavioral Intention to Use (BIU).

Result and Discussion

The objectives of this study served as the foundation for the development and implementation of FixHub: A Community-Based Maintenance Reporting System. These objectives were specifically designed to address recurring challenges in dormitory operations, including delayed maintenance responses, fragmented communication, and lack of transparency between tenants and administrators.

Through the implementation of centralized reporting, real-time tracking, and integrated communication tools, the system aimed to improve operational efficiency, enhance coordination, and promote accountability within residential communities.

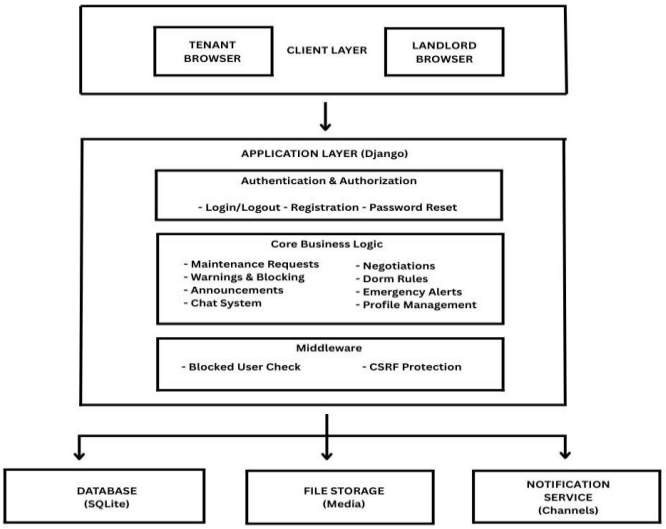

Figure 2: *System Architecture of FixHub*

The System Architecture of FixHub illustrates the interaction between tenants, administrators, and the centralized platform responsible for handling maintenance reports, communication, and emergency alerts. Tenants interact with the system through digital forms and communication modules to submit maintenance requests, complaints, emergency alerts, and negotiation concerns.

All submitted information is processed and stored within the centralized database, enabling administrators to monitor requests, prioritize tasks, assign actions, and track progress efficiently. The integrated chat and notification features support real-time communication between tenants and management, while the

administrator dashboard provides oversight for occupancy monitoring, complaint handling, and maintenance coordination.

This architecture promotes efficient data flow, centralized reporting, transparency, and scalability, allowing the system to accommodate increasing numbers of users and operational records while maintaining reliable system performance.

Evaluation of technical acceptability of the system using Technological Acceptance Model (TAM)

Perceived Usefulness (PU)

The evaluation of Perceived Usefulness (PU) revealed that respondents strongly agreed that FixHub significantly improves maintenance coordination, communication efficiency, transparency, and dormitory management operations. The system obtained a Final Grand Mean of 3.83, interpreted as Very High.

Respondents particularly emphasized the importance of data reliability, maintenance support, and transparency in improving communication between tenants and administrators. The findings indicate that the platform effectively addresses common dormitory management challenges by providing organized reporting and centralized information management.

Table I *Summary of Perceived Usefulness*

Characteristics	Grand Mean	Interpretation
Information Relevance	3.75	Very High
Maintenance Support	3.85	Very High
Accuracy of Information	3.80	Very High
Data Reliability and Trust	3.90	Very High
Transparency and Accountability	3.85	Very High
Timeliness of Updates	3.80	Very High
Final Grand Mean	**3.83**	**Very High**

Perceived Ease of Use (PEOU)

The system achieved a Final Grand Mean of 3.80 under the Perceived Ease of Use (PEOU) construct, interpreted as Very High. Respondents confirmed that the system's interface, navigation, and integrated communication features were easy to understand and operate.

The highest-rated indicator was Efficiency of Report Filtering, demonstrating the platform's ability to organize maintenance concerns efficiently. The findings suggest that the system successfully minimizes operational complexity while improving communication and reporting workflows.

Table II *Summary of Perceived Ease of Use*

Characteristics	Grand Mean	Interpretation
Clarity of Instructions and Notifications	3.80	Very High
Ease of Chatbot and Negotiation Features	3.75	Very High
Efficiency of Report Filtering	3.85	Very High
Ease of System Features Navigation	3.80	Very High
Final Grand Mean	**3.80**	**Very High**

Attitude Toward Use (ATU)

The evaluation of Attitude Toward Use (ATU) resulted in a Final Grand Mean of 3.81, indicating a Very High level of acceptance among respondents. The system received high evaluations for Problem-Solving Clarity and User Engagement, confirming that users viewed the platform as an effective solution for dormitory management concerns.

The findings demonstrate that respondents possess a positive attitude toward integrating digital management systems into their daily residential operations due to the system's accessibility, responsiveness, and communication efficiency.

Table III *Summary of Attitude Toward Use*

Characteristics	Grand Mean	Interpretation
Problem-Solving Clarity	3.85	Very High
Feature Completeness	3.80	Very High
User Engagement	3.85	Very High
Information Accessibility	3.75	Very High
Final Grand Mean	**3.81**	**Very High**

Behavioral Intention to Use (BIU)

The Behavioral Intention to Use (BIU) construct achieved a Final Grand Mean of 3.85, interpreted as Very High. Respondents expressed strong willingness to continue using the system due to its reliability, convenience, and effectiveness in improving communication and maintenance coordination.

Usage Persistence obtained the highest score, indicating that the respondents view FixHub as a sustainable and valuable dormitory management solution. Furthermore, high ratings in Digital Motivation and Referral Intention demonstrate strong user confidence and trust in the platform.

Table IV *Summary of Behavioral Intention to Use*

Characteristics	Grand Mean	Interpretation
Digital Motivation	3.85	Very High
Usage Persistence	3.90	Very High
Referral Intention	3.80	Very High
Final Grand Mean	**3.85**	**Very High**

Conclusion

Based on the findings of the study, it can be concluded that FixHub is a highly effective and acceptable dormitory management and maintenance reporting system that successfully addresses operational challenges within residential communities. The system demonstrated strong performance in improving communication efficiency, maintenance coordination, transparency, and overall tenant satisfaction.

The Technology Acceptance Model (TAM) evaluation revealed very high acceptance across all constructs, including Perceived Usefulness, Perceived Ease of Use, Attitude Toward Use, and Behavioral Intention to Use. Respondents recognized the system's value in streamlining maintenance workflows, organizing communication, reducing reporting delays, and promoting accountability between tenants and administrators.

The findings further indicate that centralized digital reporting platforms significantly contribute to operational efficiency and long-term sustainability in dormitory management. Overall, the study confirms that user-centered information systems such as FixHub can modernize traditional residential management practices and foster more organized, responsive, and transparent community operations.

Acknowledgement

The authors would like to express their sincere gratitude to all individuals and institutions who contributed to the successful completion of this study. Special appreciation is extended to the administrators and tenants of CJKP Dormitory for their participation, cooperation, and valuable feedback during the evaluation of the FixHub system.

The researchers also acknowledge the guidance and support provided by their research adviser and panel members for their constructive suggestions and continuous encouragement throughout the development and revision of the study.

The authors further express their gratitude to the University of the Assumption for providing the academic resources, technical support, and learning environment necessary for the completion of this research.

Finally, heartfelt thanks are extended to the researchers' families and friends for their patience, understanding, and unwavering moral support throughout the entire research process.

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