

Student Accommodation Facilities Application Design Based on Persuasive Principles

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Abstract

This research explores the innovative intersection of technology, psychology, and user-centric design in the development of a complaint application tailored for student accommodation facilities. Recognizing the evolving landscape of higher education, the study focuses on addressing challenges in the current complaint resolution systems by integrating persuasive principles into the application design. This research aims to design a complaint application for student accommodation facilities that optimizes user engagement and enhances the overall experience by strategically incorporating persuasive design principles. The application design focuses around user psychology, creating a seamless and engaging interface that encourages active participation. The design aims to influence positive user behaviours, ultimately contributing to a collaborative and responsible complaint resolution culture within student accommodation facilities. The complaint application development takes place using Agile Model as a proof of the concept, ensuring that the persuasive design principles employed respect user autonomy and uphold responsible design practices. The iterative testing and optimization process allows for continuous refinement based on user feedback, ensuring the adaptability and effectiveness of the application over time. This research demonstrates a transformative solution to the challenges inherent in student accommodation complaint resolution. By integrating persuasive principles into the application design, it seeks to create a dynamic platform that not only meets the immediate needs of students but also contributes to a positive and supportive university environment.

Keyword: Student Accomodation, College Facilities, Application Design, Persuasive Principles

Introduction

In the ever-evolving landscape of higher education, the comfort and well-being of students play a pivotal role in shaping their academic journey. Central to this experience is the concept of student accommodation, a key element in fostering an environment that supports learning, personal growth, and overall satisfaction. As the demand for quality student housing continues to rise, it becomes imperative to address the challenges and concerns associated with accommodation facilities (Ishak et al., 2020). This research focuses on the development of a complaint application designed specifically for student accommodation

facilities, taking into account both the functional aspects and the incorporation of persuasive principles.

Student accommodation, often a significant component of a student's university experience, extends beyond the mere provision of living spaces (Omar et al., 2018). It encompasses a holistic approach to fostering a conducive environment for academic pursuits, social interactions, and personal development. Acknowledging the diverse needs and expectations of students, the research endeavours to explore innovative solutions that enhance the overall quality of student accommodation facilities.

College facilities, an integral part of the university ecosystem, further contribute to the overall student experience (Mohd Azul Mohamad Salleh et al., 2018). These facilities, ranging from academic resources to recreational spaces, shape the daily lives of students. The seamless integration of accommodation and college facilities is vital in ensuring a harmonious and enriching environment for students. The research recognizes the interconnectedness of these elements and aims to develop an application that not only addresses accommodation concerns but also considers the broader context of college facilities.

The application design is a crucial aspect of this research, emphasizing user-friendly interfaces and efficient functionalities (Othman et al., 2023). With the growing reliance on technology, designing an application that streamlines the complaint process and enhances communication channels is essential. The research delves into the intricacies of application design, ensuring that it meets the specific needs of students while providing a platform for effective issue resolution.

Moreover, the incorporation of persuasive principles adds a distinctive dimension to the research. Recognizing the significance of influencing attitudes and behaviours, the study explores how persuasive design can be embedded within the complaint application. By understanding the psychological factors that drive decision-making, the research aims to create an application that not only facilitates complaint submission but also motivates positive engagement and resolution.

Navigating Challenges in Student Accommodation: Integrating Persuasive Principles into Complaint Application Design

In today's dynamic educational landscape, student accommodation stands as a cornerstone of the holistic university experience. However, the accommodation facilities often grapple with a myriad of challenges, especially in the context of complaint resolution systems. This research recognizes the significance of addressing these challenges through the lens of innovative technology and persuasive design principles. By exploring the intersection of user-centric design, psychology, and modern technology, the study aims to revolutionize the way student accommodation grievances are reported, acknowledged, and resolved.

The current landscape of student accommodation facilities within universities is fraught with challenges, ranging from infrastructural issues to communication gaps between students and housing administrators (Omar et al., 2018). As the demand for quality student housing continues to surge, there exists a pressing need to address these challenges systematically.

In this context, the absence of a dedicated and effective complaint resolution system stands out as a significant hurdle in ensuring a seamless living experience for students.

The prevailing methods for reporting issues within student accommodation facilities are often outdated, cumbersome, and fail to harness the potential of modern technology (Mohd Azul Mohamad Salleh et al., 2018). Traditional paper-based complaint forms or email submissions lack the immediacy required for addressing urgent concerns, leading to delays in issue resolution. Additionally, the lack of a centralized platform results in scattered communication channels, making it challenging for both students and administrators to track, prioritize, and resolve complaints in a timely manner.

Moreover, the complexity of issues related to student accommodation often requires a nuanced understanding of the psychological factors influencing communication and conflict resolution (Martínez-Ramos et al., 2021). The current systems lack a strategic incorporation of persuasive principles, which could play a pivotal role in not only encouraging students to report issues but also in promoting positive behavioural changes that contribute to an overall improvement in the living experience.

The absence of an efficient, user-friendly, and persuasive complaint application design exacerbates these challenges. A well-designed application has the potential to streamline the complaint submission process, enhance communication between students and administrators, and, most importantly, create an environment that fosters trust and collaboration.

Therefore, the identified problem revolves around the inadequacies in the existing systems for addressing student accommodation facility complaints (Ishak et al., 2020). This research seeks to bridge the gap by designing an innovative application that not only addresses the technical aspects of complaint resolution but also leverages persuasive principles to encourage proactive reporting and cultivate a positive living environment within university accommodations. The goal is to develop a comprehensive solution that aligns with the evolving needs of both students and administrators, ultimately contributing to an enhanced overall student experience.

The integration of persuasive elements into the application design serves as a strategic approach to not only streamline the complaint process but also to instil positive behavioural changes among the student community (Daud et al., 2018). A comprehensive exploration of how the proposed application design can contribute to a more responsive, efficient, and student-centric complaint resolution system within university accommodations (Johan et al., 2021).

The realm of higher education has witnessed a paradigm shift, emphasizing the need for a supportive and enriching student living experience (Yusoff et al., 2022). Amid this transformation, the research embarks on a journey to address the often-overlooked challenges in student accommodation facilities. As the student population grows and diversifies, so do the complexities of ensuring a seamless living environment. By honing in on the intricacies of accommodation-related issues, the study acknowledges the pressing need for an advanced complaint resolution system.

Effective integration of persuasive principles in application design for students begins with a deep understanding of user psychology. Recognizing the motivations, preferences, and decision-making processes of students is crucial (Murillo-Muñoz et al., 2021). By tapping into psychological triggers such as social influence, reciprocity, and cognitive biases, designers can tailor the application to resonate with the target audience. For instance, incorporating elements that align with students' social identity or leveraging the power of testimonials can enhance the persuasive impact.

The user interface design (UID) is the gateway to any application, and its design significantly influences user behaviour (Häkkinen, 2019). To integrate persuasive principles successfully, the UID should prioritize clarity, simplicity, and intuitiveness. Clear calls-to-action, visually appealing design elements, and seamless navigation contribute to a positive user experience. Persuasive design principles, such as visual hierarchy and scarcity, can be strategically applied to guide users through the complaint submission process, making it not only efficient but also engaging (Johan et al., 2021).

Social proof, a powerful persuasive principle, leverages the influence of others to shape user behaviour (Nor Afifah Shafin et al., 2020). In the context of a complaint application for students, showcasing the collective participation of peers in reporting and resolving issues can instil a sense of community responsibility. Design elements such as real-time notifications of resolved complaints, user testimonials, or even badges for active participants can harness the persuasive impact of social proof, fostering a culture of collective problem-solving.

Trust is paramount in any application, especially when dealing with sensitive matters such as accommodation complaints. Persuasive design can be employed to build trust by ensuring transparency in communication and decision-making processes (Alqahtani et al., 2023). Clearly communicating how the complaint resolution system works, providing updates on the status of submitted complaints, and showcasing the expertise and authority of the administration can enhance the application's credibility. Trustworthy design elements, such as security badges or transparent data handling practices, contribute to a persuasive environment.

Reciprocity, the principle of mutual exchange, can be harnessed to encourage reciprocal engagement within the application (N. A. Shafin & Abdullah, 2018). Design features such as personalized feedback on submitted complaints, acknowledgment of user contributions, or even reward systems can trigger a sense of reciprocity. When users feel their engagement is valued and reciprocated, they are more likely to actively participate in the complaint resolution process, contributing to a positive and dynamic user-community relationship.

Integration of persuasive principles is not a one-size-fits-all endeavour. Designers should embrace an iterative testing and optimization approach. A continuous feedback loop involving user testing, data analysis, and design refinements ensures that the persuasive elements resonate effectively with the target audience (Murillo-Muñoz et al., 2021). By staying attuned to user feedback and adapting the application design accordingly, designers can fine-tune the persuasive elements for maximum impact, creating a dynamic and responsive user experience.

Method

The application development process for the Student Accommodation Facilities Complaint Application Design based on Persuasive Principles research adopts the Agile model to ensure flexibility, collaboration, and responsiveness throughout the development lifecycle. The development process applies the coding platform of Integrated Development Environment (IDE), Android Studio in Java, XML programming and Firebase database.

In the Agile methodology, the development process is divided into iterative cycles, known as sprints, allowing for incremental improvements and continuous feedback integration (Kortmann & Hartevelde, 2009). There are five phases for game design using agile model, as presented in Figure 1. The researcher begins by defining the project scope and identifying key features and user requirements. These requirements are then prioritized based on their importance and potential impact on user experience, allowing the team to focus on delivering the most valuable functionalities first.

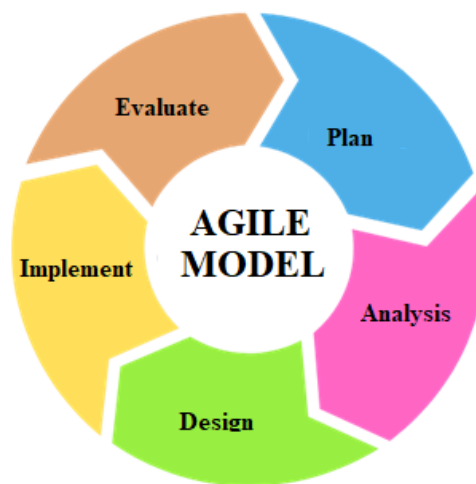


Figure 1 Agile model

Throughout the development process, the research team engages in regular collaboration and communication, both internally and with stakeholders, to ensure alignment with project goals and user expectations. Each sprint typically spans a short timeframe, typically two to four weeks, during which the team designs, implements, tests, and refines specific features of the complaint application. This iterative approach allows for rapid prototyping and validation of design decisions, enabling the team to adapt to changing requirements and user feedback effectively.

Non-functional requirements define the quality of the system and the constraints of the developed system. In general, non-functional requirements can also be used to evaluate system operation. The first quality criteria, applicability describes that the application can work without any errors and functions can be used properly and information can be saved. The design of the application interface must be simple, attractive and easy to understand. Second, efficiency. This shows that the application must run efficiently with fast speed. The time taken for information processing must be short and not interrupt the course of the application. Third, reliability. Every function that the user wants is accurate and can work well and smoothly. This can measure the extent to which the user has confidence in the implementation of the developed application.

Algorithm design is a process that needs to be followed to solve a specific problem using flow chart diagrams that illustrates the flow of a complaint application process. The use of flowcharts in algorithm design makes it easier for programmers to understand the program to solve a problem. Figure 2 shows the process flow implemented in the application from the beginning of the process to the end of the process.

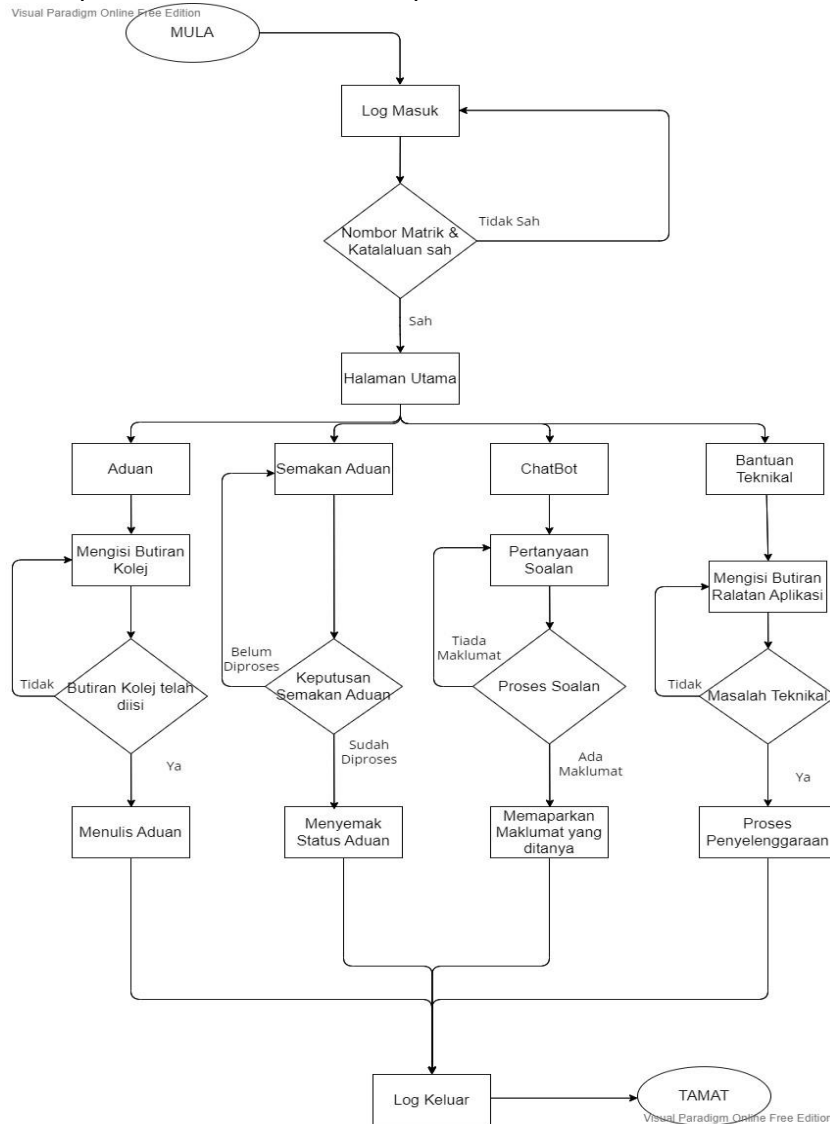


Figure 2 Module Flow Chart

Implementation and Results

The complaint application interface for student accommodation facilities is meticulously crafted to prioritize user engagement, ease of use, and accessibility. The login screen (Figure 3) serves as the gateway to the application, where users are prompted to securely authenticate their identities. This login interface emphasizes simplicity, offering traditional username and password entry alongside alternative authentication methods such as single sign-on integration with university credentials or biometric authentication. By prioritizing user authentication at the forefront of the interface, the application ensures a secure and personalized user experience from the outset, instilling confidence in users about the confidentiality of their complaints.

Once logged in, users are presented with a clear and intuitive main menu interface that serves as the central hub for navigating the application's functionalities. Figures 4 to 7 present the interface of each function in the main menu. The main menu provides easy access to essential features such as submitting a new complaint, reviewing the status of existing complaints, accessing technical support resources, and engaging with the ChatBot for real-time assistance. Each menu option is accompanied by descriptive icons and labels, enhancing user comprehension and facilitating seamless navigation within the application. Additionally, the main menu interface incorporates persuasive design elements such as visual cues and strategic placement of menu items to encourage users to explore and engage with the application's features proactively, fostering a sense of empowerment and agency in addressing accommodation concerns.

Within the complaint log interface, users can conveniently view a comprehensive record of their submitted complaints, including details such as the date of submission, status updates, and any associated correspondence or resolutions. The complaint log interface is designed for clarity and transparency, presenting information in a structured and easily digestible format. Users have the option to filter and search through their complaint history, facilitating quick access to relevant information and enabling efficient tracking of ongoing issues. Furthermore, the complaint log interface incorporates persuasive elements such as progress indicators and positive reinforcement messages to motivate users to continue engaging with the complaint resolution process actively, reinforcing their commitment to resolving accommodation issues.

When users wish to review the details of a specific complaint, they can access the complaint review interface, which provides a comprehensive overview of the issue's status, history, and any relevant updates. This interface is designed to facilitate informed decision-making and communication between users and administrators, empowering users to advocate for their needs effectively. Through clear and concise presentation of information, coupled with persuasive design elements such as urgency cues and expert endorsements, the complaint review interface encourages users to take proactive steps towards resolving their accommodation concerns.

For users in need of technical assistance or guidance, the application offers access to a dedicated technical help interface. Here, users can find comprehensive resources, including FAQs, troubleshooting guides, and contact information for technical support personnel. The technical help interface is designed to provide users with the information and assistance they need to navigate the application effectively and address any technical issues they encounter. Additionally, the interface incorporates persuasive elements such as user testimonials and success stories to instill confidence in users about the efficacy of the technical support resources available to them, encouraging them to seek assistance when needed.

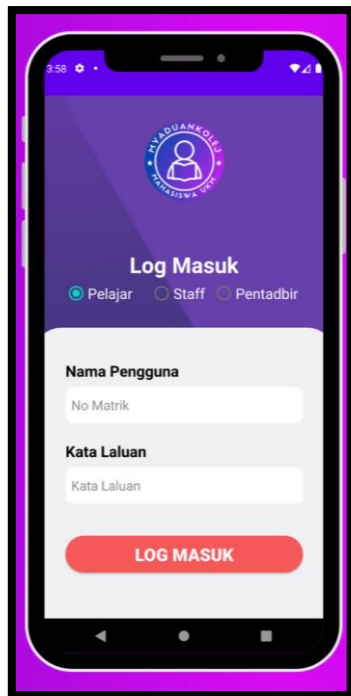


Figure 3 Login

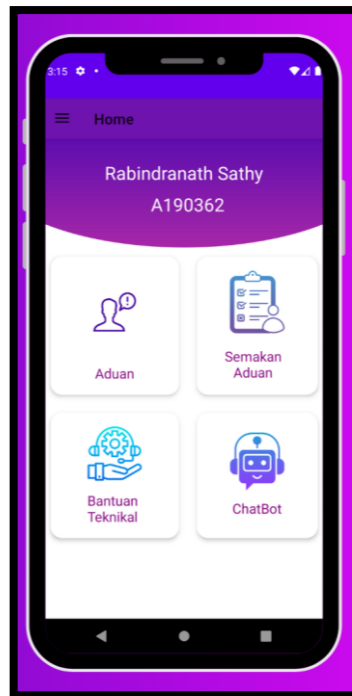


Figure 4 Main menu

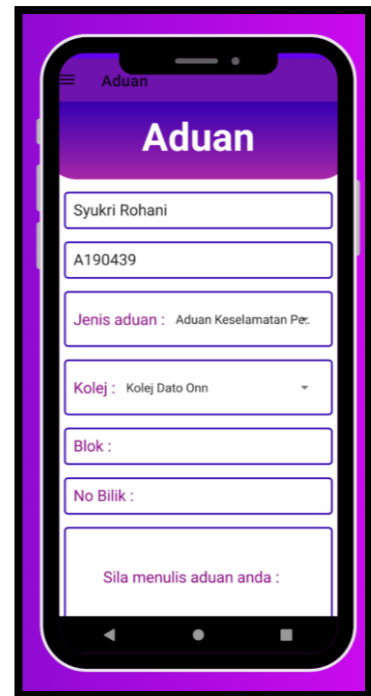


Figure 5 Complaint Page



Figure 5 Complaint Review

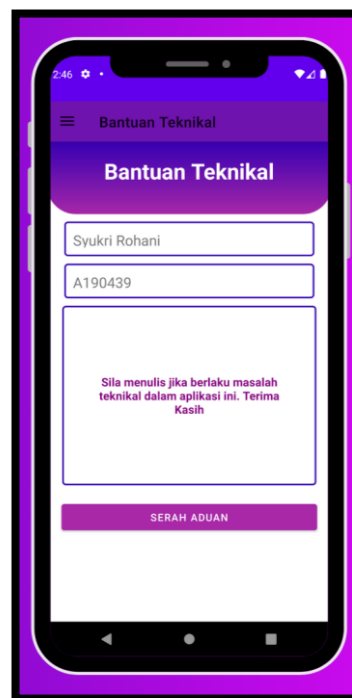


Figure 6 Technical Help

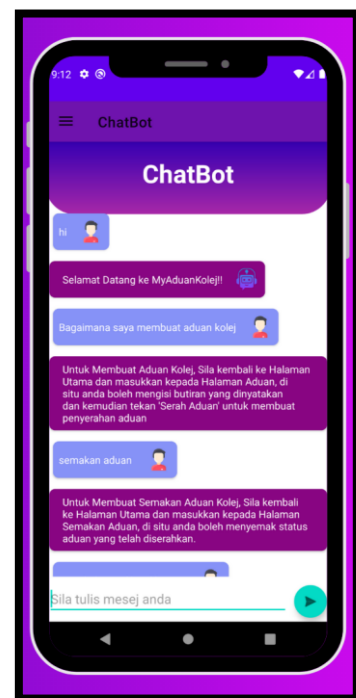


Figure 7 ChatBot

The Use Case Testing Techniques generate test requirements and test coverage. In addition, a unique ID is assigned for each test condition and test coverage. Table 1 shows the functionality found in the application. Also included in table 1 is the function ID, function details and risk level. For the assessment of application testing, the data obtained was analyzed through descriptive statistics using the mean score from the entire data. Table 2 shows the mean score interpretation scale for the usability test of the application. Table 3

displays the findings based on the respondents' evaluation of the application. The overall *mean* shows at the agreeable score level (*Mean* = 4.42). This shows that this application is easy to use based on the outlined *items* as well as in accordance with the user's needs with a persuasive application interface.

Table 1

Function matrix validation test

Function ID	Functional Details	Level of Risk
F001	Log in	Height
F002	Home Page Module	Medium
F003	Complaints Module	Height
F004	Filling Complaint Details	Height
F005	Grievance Review Module	Height
F006	Technical Assistance Module	Height
F007	Fill in Technical Support Details	Height
F008	ChatBot module	Height
F009	User Profile	Medium
F010	Upload a User Profile picture	Height
F011	Log out	Medium

Table 2

Mean Score Interpretation Scale

Score	Rates
Strongly disagree	1.00 – 1.50
Do not agree	1.51 – 2.50
Simple	2.51 – 3.50
Agreed	3.51 – 4.50
Strongly Agree	4.51 – 5.00

Table 3

Findings of Respondent Evaluation

No	Items	Min
1	Overall, I am satisfied with how easy it is to use the application.	4.33
2	The application is easy to manage from one activity to another.	4.54
3	I can complete the given task quickly and easily in this application.	4.40
4	I feel comfortable using this application.	4.46
5	How to use the application is easy to learn.	4.54
6	I believe I am faster and more productive by using this application.	4.33
7	This application can give a clear error message.	4.46
8	Every time I make a mistake in the application, I can solve it easily.	4.54
9	The information provided in the application is clear.	4.54
10	The information I need is easy to find.	4.46
11	The information seen was effective in helping me complete the task.	4.38
12	The arrangement of information on the application screen is clear.	4.38
13	The application interface is very attractive.	4.25
14	I like using the application interface.	4.50
15	The application has all the functions and capabilities I expect.	4.29
16	Overall, I am satisfied with the application.	4.34
	Overall Mean	4.42

Discussions and Conclusion

The exploration of integrating persuasive principles into the design of a student accommodation facilities complaint application reveals a multifaceted approach that holds promising potential for enhancing the overall user experience and fostering positive behavioral changes. The discussion revolves around key findings and considerations within the realms of user engagement, psychological triggers, ethical considerations, and the practical implications of persuasive design (Damayanti et al., 2022).

The application design, incorporating persuasive principles, has the potential to significantly impact user engagement. The user-centric interface, coupled with persuasive elements, aims to streamline the complaint submission process and create a positive interaction environment (Abd Rahman et al., 2023). Elements such as social proof, community influence, and reciprocal engagement mechanisms contribute to a sense of collective responsibility and participation. By understanding the psychological nuances of student behavior, the design encourages active involvement, turning the complaint resolution process into a collaborative effort.

The discussion delves into the impact of various psychological triggers on user behavior within the context of the complaint application. Social proof, reciprocity, and trust-building elements play a pivotal role in shaping user attitudes and actions. Leveraging these triggers effectively results in not only an increased willingness to report issues but also a sense of trust and community within the student population (Alqahtani et al., 2023). The application design, when aligned with these psychological principles, becomes a powerful tool for influencing positive user behaviors.

While persuasive design offers significant benefits, the discussion acknowledges the ethical considerations that must be navigated during the application design process (Ravichandran & Keikhosrokiani, 2022). Striking a balance between persuasion and user autonomy is crucial to ensure responsible and ethical design. Transparency, informed consent, and user empowerment are integral components of ethical persuasive design. By addressing these considerations, the research emphasizes the importance of creating a complaint application that not only persuades but also respects the rights and autonomy of its users.

In conclusion, the integration of persuasive principles into the design of a student accommodation facilities complaint application emerges as a promising avenue for revolutionizing the complaint resolution process. The synthesis of user-centric interfaces, psychological triggers, and ethical considerations forms the foundation for a comprehensive and impactful solution. The application design, rooted in an understanding of student behavior and motivations, seeks to not only address current challenges but also cultivate a positive and collaborative culture within university accommodation.

Moving forward, the research underscores the importance of continuous refinement and adaptability in response to user feedback. The iterative testing and optimization process allows for the fine-tuning of persuasive elements, ensuring that they remain effective and resonate with the evolving needs of the student population. By embracing ethical design practices and leveraging persuasive principles, the proposed complaint application aspires to contribute significantly to the improvement of student accommodation facilities and, consequently, the overall quality of the university experience.

This study contributes theoretically by extending the application of persuasive design principles into the domain of student accommodation, demonstrating how psychological triggers can be embedded in complaint systems to shape positive user behaviors. It enriches the literature on persuasive technology by moving beyond its traditional use in education and health, offering a new perspective on complaint resolution. Contextually, the research addresses inefficiencies in current student accommodation complaint mechanisms by designing and testing a user-centered, agile-based application that enhances communication, transparency, and responsiveness. Its significance lies in fostering a more collaborative, accountable, and supportive university living environment, thereby improving both institutional practices and the overall student experience.

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