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Analysis of Priority-Based Communication Feature Using UI/UX Design Thinking Model: A Case Study of WhatsApp

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ABSTRACT

The rapid growth of instant messaging applications has significantly transformed the way individuals communicate in both personal and professional contexts. However, the increasing volume of incoming messages often leads to information overload, making it difficult for users to distinguish between important and less relevant conversations. This study aims to design and implement a priority-based communication feature using a Design Thinking approach, with WhatsApp as a case study. Unlike conventional chronological message ordering, the proposed system allows users to manually define priority contacts through a "High Priority Mode" feature, enabling important conversations to be automatically positioned at the top of the chat list. In addition, the system introduces visual differentiation in notifications to highlight messages from priority contacts. A prototype interface is developed to support intuitive configuration and improve usability.

The results indicate that the proposed feature enhances message visibility, reduces the risk of overlooking important communications, and improves overall user efficiency. This study demonstrates that a user-centered, rule-based approach can provide a practical and effective solution for managing communication priorities in messaging applications.

KEYWORDS: Communication Priority-Based; Design Thinking; Messaging System; Thematic Analysis; UI/UX; WhatsApp

1. Introduction

1.1. General Background

The widespread adoption of instant messaging applications has reshaped communication patterns in modern society. Platforms such as WhatsApp enable users to exchange messages in real time, supporting both personal interactions and professional coordination. Despite these advantages, the increasing intensity of communication has introduced new challenges, particularly in managing large volumes of incoming messages.

In most messaging applications, conversations are displayed based on chronological order, where the most recent message appears at the top of the chat list. While this approach is simple and intuitive, it does not necessarily reflect the importance or urgency of a message.

As a result, critical conversations may be overlooked, especially when they are buried among less relevant messages. This issue becomes more significant for users who rely heavily on messaging platforms for work, coordination, or decision-making. Previous studies have explored various aspects of messaging systems, including notification management, message classification, and interface design.

However, many existing approaches still rely on static mechanisms and do not provide flexible control for users to define communication priorities according to their needs. As a result, users often experience difficulty in managing important conversations effectively.

In addition, the application of Design Thinking in system development has gained attention as a method to ensure that solutions are aligned with user needs. Design Thinking

emphasizes empathy, problem definition, ideation, prototyping, and testing, making it particularly suitable for addressing user experience challenges in communication systems.

Based on these considerations, this study proposes a priority-based communication feature developed using a Design Thinking approach. The objective is to design a system that allows users to define and manage communication priorities through a simple and intuitive interface, while also providing visual differentiation to support faster decision-making. By focusing on WhatsApp as a case study, this research aims to address the gap between system functionality and user needs in modern messaging applications.

1.2. Problem Identification

Based on the background and previous studies discussed, the problems in this research can be identified as follows:

a. Existing messaging applications still rely on chronological ordering, which does not accurately represent the importance or urgency of conversations, causing users to overlook critical messages.
b. There is a lack of integration between user behavior analysis and user-centered design approaches in developing adaptive communication ranking systems that effectively support user decision-making.

1.3. Research Objectives

Based on the identified problems, this study aims to develop a solution that improves message management in instant messaging applications through a more adaptive and user-centered approach. Specifically, the objectives of this research are:

a. To design and develop a priority-based communication ranking model that is capable of dynamically identifying and ranking conversations based on their level of importance and urgency.
b. To enhance communication efficiency by ensuring that high-priority messages are more visible and accessible to users.

1.4. Gap Analysis

a. Existing messaging systems still rely on chronological ordering, which does not reflect the importance or urgency of conversations.
b. Dynamic communication ranking mechanisms are still limited and not widely implemented in messaging applications.
c. The integration of Design Thinking in developing communication ranking systems is not yet optimal, as most approaches focus more on technical aspects than user experience.
d. d. There is a lack of visualization mechanisms that help users easily identify and interpret message priority.

1.5. Scope

a. Research Focus
The study is limited to WhatsApp as the case study for implementing a priority-based communication feature only by subject selected. Other messaging platforms are not included in this research.

b. Feature Scope
The research focuses on the design and implementation of a “High Priority Mode” feature, which allows users to manually assign priority contacts, rank messages based on importance, and provide visual differentiation in notifications. It does not cover automated AI-based message prioritization or backend message processing outside the prototype interface.

c. User Interaction and Evaluation
The study emphasizes user-centered design, usability, and interface interaction within the prototype. It does not include a full-scale deployment or long-term behavioral analysis of all WhatsApp users.

2. Literature Review

Several studies have explored the development of mobile applications and user experience design, particularly in the context of Human-Computer Interaction (HCI).

[1] Caro-Alvaro et al. (2025), in their study *"Measuring the Effects of Usability Recommendations for Mobile Instant Messaging Apps on User Performance and User Behaviour,"* investigated how usability recommendations impact user performance and behavior in mobile messaging applications. Their findings indicate that applying specific usability guidelines significantly improves task performance and user satisfaction. However, the study mainly focuses on messaging applications and does not address adaptive or personalized interfaces in broader application domains.

[2] Anantya et al. (2024) proposed *"UI/UX Design Modeling on Chatting and Forum Applications Using Design Thinking,"* which emphasizes the use of the design thinking methodology in developing user-centered interfaces. Their research successfully produced a prototype with high usability scores based on SUS evaluation. Nevertheless, the study is limited to static interface design and does not incorporate adaptive mechanisms or real-time personalization based on user context.

[3] Liu et al. (2024) in *"Enhancing User Engagement through Adaptive UI/UX Design: A Study on Personalized Mobile App Interfaces,"* introduced an adaptive UI/UX framework that dynamically adjusts interface elements based on user data and contextual factors. The results showed significant improvements in user engagement, satisfaction, and task completion rates compared to non-adaptive systems. Despite its comprehensive approach, the study focuses primarily on mobile learning applications and does not extensively explore implementation in other domains.

[4] Revi (2021) studied priority-based message queue processing using software threads, showing promising potential for real-time application performance. The method of separating messages into queues by priority allows critical messages to be transmitted immediately while the main program continues executing using lightweight threads and frameworks such as QT. Message transmission can be handled asynchronously via RESTful APIs, improving responsiveness and reducing system overhead (Wheeler et al., 2008; Falsafi & Wood, 1999). However, challenges remain in managing dynamic workloads and ensuring low latency when message volumes are high.

[5] Fischer et al. (2023) investigated the application of ChatGPT in design thinking, demonstrating promising potential. Integrating ChatGPT in all phases of design thinking from empathizing and defining problems to ideation and prototyping can support the generation of structured insights, diverse ideas, and draft solutions. However, limitations exist in providing deep emotional understanding, accurate market data, and contextual consistency, highlighting the necessity of human involvement to maintain empathy-driven and meaningful outcomes.

[6] Bittner & Shoury (2019) studied the digitalization of the Empathy Map method within Design Thinking using a facilitator chatbot named Ava. The study showed that chatbots can partially replace human facilitators by proactively and reactively guiding teams, organizing session flows, and providing instructions and examples. Initial evaluations using the Wizard of Oz method indicated high acceptance, participant motivation, and effectiveness in generating customer insights, although limitations were observed in flexibility and contribution storage.

[7] Permadi et al. (2025) developed the *Utama Assistant* chatbot for academic, IT, and financial information services at Widyatama University to address the limitations of conventional services that are not available 24 hours and are less responsive. The development employed the Design Thinking methodology with Empathize, Define, Ideate, Prototype, and Test stages, allowing the identification of user needs, development of innovative solutions, and refinement of the prototype based on feedback. Initial surveys indicated that most students required quick and accurate access to information at any time, and the chatbot prototype received positive responses. This study demonstrates that integrating good UI/UX with a Design Thinking approach can enhance user experience, facilitate information access, and support more effective academic services.

[8] Mahardika et al. (2025) in *"Design of the HealthyQue Mobile Application for Hospital Registration Based on Android Using the Design Thinking Approach and UML Modeling,"* developed a mobile application to address inefficiencies in hospital registration processes. Conventional registration methods often lead to long queues, patient discomfort, and increased administrative workload. To tackle these issues, the researchers applied the Design Thinking methodology—including empathize, define, ideate, prototype, and test stages—to deeply understand patient and staff needs. System modeling was implemented using Unified Modeling Language (UML), including use case, activity, sequence, and class diagrams, to structure application workflows and relationships. The resulting HealthyQue application provides features such as online registration, doctor schedule checking, and real-time queue notifications. Findings show that integrating Design Thinking with UML modeling can produce user-centered and technically robust solutions, improving hospital service efficiency and patient satisfaction. Limitations include testing with a limited user group, suggesting further studies across multiple hospital settings for broader validation.

[9] Erikson & Hidayat (2024) in *"Consumer Profile Analysis Using Empathy Map at Prove Fragrance Startup,"* investigated declining sales of a local perfume brand (Prove) by analyzing consumer profiles using the Empathy Map tool. Despite market segmentation and targeting, sales did not increase, indicating a gap in understanding actual consumer needs and preferences. Using a descriptive qualitative approach with field observations and interviews, the study employed empathy mapping—covering seeing, hearing, thinking & feeling, saying & doing, customer pain, and customer gain—to uncover deeper consumer insights. Results showed preferences for the Sequoia variant due to long-lasting fragrance and elegant design, while some expressed dissatisfaction with the Aoife variant. Consumers also sought extensive product information before purchasing and raised concerns about packaging damage, lack of BPOM registration, and limited e-commerce accessibility. The study demonstrates that Empathy Map analysis can reveal nuanced consumer perceptions and provide strategic insights for product positioning and marketing, though it is limited by focusing on a single startup and a small sample size, suggesting the need for broader quantitative validation.

[10] Kiamul Lailia et al. (2023) in *"Redesigning the Chat Feature Interface of WhatsApp Application with Design Thinking Method,"* addressed usability issues in WhatsApp's chat feature, particularly the merging of personal and group chats in a single tab, which often caused missed or misdirected messages. Using the Design Thinking methodology, the study followed five iterative stages: empathize, define, ideate, prototype, and test. During the empathize phase, 30 respondents were surveyed, leading to the creation of user

personas and a customer journey map. Solutions in the ideate phase included adding a separate tab for group chats and a custom group feature to organize chats by priority and preference. High-fidelity prototypes were developed in Figma, applying Gestalt principles (proximity, similarity, and law of Prägnanz) to enhance visual clarity. Usability evaluation via the System Usability Scale (SUS) using Maze yielded a score of 85 ("Excellent" with grade B), indicating strong user acceptance and satisfaction. The study demonstrates that a structured design thinking approach, combined with user-centered validation, effectively addresses UI/UX issues and improves user experience in messaging applications.

Based on these previous studies, it can be concluded that although Design Thinking, UI/UX design, and system modeling have been widely applied to improve application usability and performance, a research gap remains in integrating priority-based communication features with user behavior analysis in instant messaging applications. Therefore, this study aims to address this gap by analyzing and designing a priority-based communication feature using a Design Thinking approach, specifically in the context of messaging platforms such as WhatsApp.

3. Research Methodology

This study adopts a qualitative approach to explore user experiences and challenges in managing communication within messaging applications. The research aims to develop a priority-based communication feature using a user-centered approach.

The data are analysed using thematic analysis to identify patterns and insights from user responses. Furthermore, Design Thinking is applied as a problem-solving approach to transform user insights into a practical solution through iterative stages, including empathize, define, ideate, prototype, and test.

3.1 Data Collection

Data were collected through open-ended questionnaires distributed to selected WhatsApp users. This study employs purposive sampling, where respondents are chosen based on their relevance to the research context.

Further details regarding respondents are presented in the Design Thinking section, particularly in the Empathize stage.

3.2 Analysis Method

The data were analysed using thematic analysis to identify patterns and recurring themes from user responses. The analysis process includes data familiarization, coding, categorization are represented in define, then theme development are represented in ideate step of design thinking.

3.3 Problem Identification

Identifying issues related to message overload and the limitations of chronological message ordering in messaging applications.

3.4 Design Thinking Implementation as Advance Model

Applying the Design Thinking stages, including empathize, define, ideate, prototype, and test, to ensure that the system is aligned with user needs and provides an intuitive user experience.

3.5 Prototype Development

Designing a user interface that visualizes message priority using visual indicators such as color coding and ranking order to improve usability.

3.6 Evaluation Method

The evaluation was conducted using a questionnaire distributed to the same respondents who participated in the initial data collection.

The questionnaire includes open-ended questions to capture user feedback regarding ease of use, clarity of the interface, and the

usefulness of the priority-based communication feature. The collected feedback is then analyzed to determine whether the proposed solution addresses user needs and improves communication management.

4. Results Thematic Analysis in Design Thinking Model

4.1. Empathize Map

A questionnaire was distributed to 5 respondents as a sample user, via link https://forms.gle/S5pEAMR91oFnBw4D7.

The questionnaire asking about: "WhatsApp is a communication platform that is quite popular in Indonesia. Currently, WhatsApp organizes the chat list based on the most recent incoming messages, so messages are not well coordinated based on their level of importance.

There are many reasons why message importance is valuable and needs to be prioritized. Sometimes, people are too busy to reply to all messages, and sometimes they are not in a good mood. In addition, communication becomes less efficient because more time is needed to identify which messages are important and which are not.

What is your opinion, how do you feel, what do you think, and what do you do when an important message comes into WhatsApp with the current application (without a priority feature)?"

There are 5 responses represented in the Empathize maps.

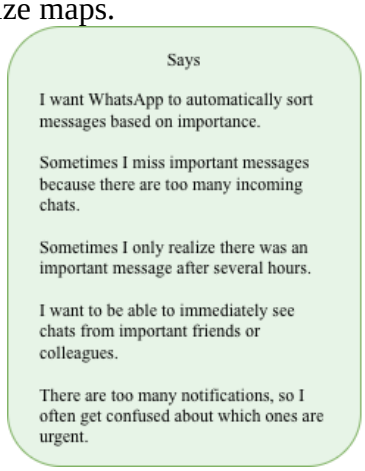

Figure 1. Empathize maps (Says)

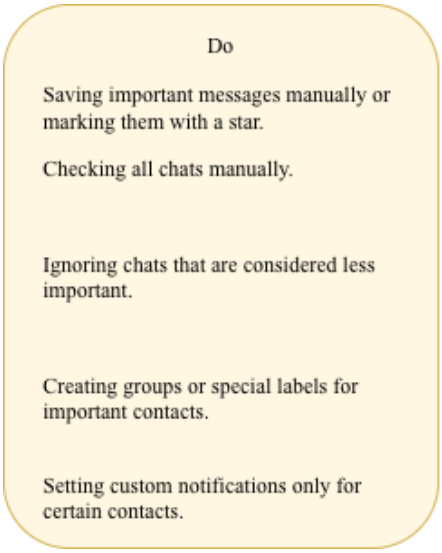

Figure 2. Empathize maps (Do)

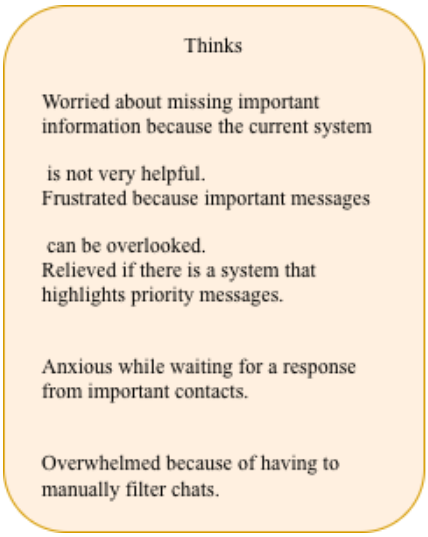

Figure 3. Empathize maps (Thinks)

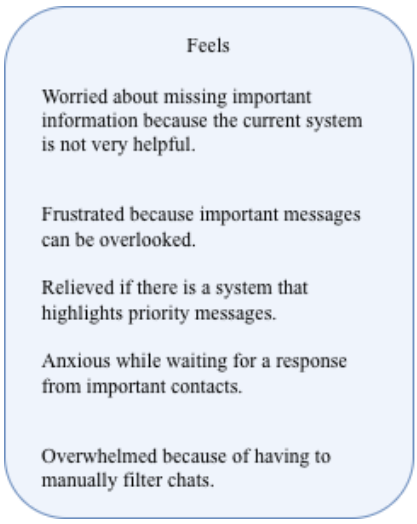

Figure 4. Empathize maps (Feels)

4.2. Define

The core problem is that existing messaging systems rely on chronological ordering, which does not reflect the importance or urgency of conversations.

4.2.1 Data Familiarization

In the data familiarization stage, all user responses collected from the questionnaire were reviewed and analyzed to understand user experiences, behaviors, and challenges in managing messages. The responses were grouped based on the empathy map dimensions, including Says, Thinks, Feels, and Does.

From the data, it is observed that users frequently experience difficulty in identifying important messages due to the high volume of incoming chats. Users often express concern about missing important information and feel overwhelmed by the need to manually filter conversations.

In terms of behavior, users attempt to manage important messages by manually marking chats, checking conversations repeatedly, and setting custom notifications. However, these actions are considered inefficient and do not fully solve the problem.

Overall, the data indicate that current messaging systems do not effectively support message prioritization, leading to frustration, anxiety, and reduced communication efficiency.

Table 1. Code, Category and Theme in Thematic Analysis

No	Code	Category	Theme
1	fear of missing messages	message awareness issue	Difficulty in identifying important messages
2	frustration	negative user experience	Difficulty in identifying important messages
3	message overload	high message volume	Difficulty in identifying important messages
4	communication anxiety	emotional impact	Ineffective message prioritization
5	manual message management	manual handling behavior	Ineffective message prioritization
6	inefficient checking	inefficient user behavior	Ineffective message prioritization
7	manual organization	workaround behavior	Ineffective message prioritization
8	notification customization	partial solution usage	Ineffective message prioritization
9	missed important messages	communication failure	Need for priority-based communication feature
10	delayed awareness	delayed response issue	Need for priority-based communication feature
11	need prioritization	user requirement	Need for priority-based communication feature
12	need automation	user expectation	Need for priority-based communication feature
13	notification overload	notification issue	Need for priority-based communication feature

4.2.2 Coding

In the coding stage, user responses were reviewed to identify key statements and assign labels that represent specific issues, behaviors, and user needs in managing messages. These codes capture recurring patterns such as message overload, missed important messages, and manual message handling, and serve as the foundation for further categorization and theme development in the analysis process.

4.2.3 Categorization

In the categorization stage, the identified codes were grouped based on similarities to form broader categories that represent related user issues and behaviors. For example, codes such as message overload, missed important messages, and fear of missing messages were grouped under message-related issues, while codes such as manual message management and inefficient checking were categorized as user behavior patterns. These categories help to organize the

data and provide a clearer structure for developing overarching themes.

4.3. Ideate

In the ideate stage, potential solutions are generated based on the identified themes to address the key challenges in communication management.

4.3.1 Theme Development

These themes reflect key patterns in user behavior and challenges in managing communication, including difficulty in identifying important messages, ineffective message prioritization, and the need for a priority-based communication feature. These themes serve as the foundation for defining the problem and developing solutions in the Design Thinking process.

4.3.2 System Scenario

This design is developed based on the findings from the thematic analysis, which highlight key issues such as difficulty in identifying important messages, ineffective message prioritization, and the need for a priority-based communication feature.

The proposed system is implemented as a prototype feature integrated into the main chat interface of a messaging application to enable users to manage communication priority in a more structured and intuitive way. In the default view, users access the chat list as usual, with an additional feature labeled **"Set Up Priority**" that allows them to configure their communication preferences easily. When selected, the system navigates to a dedicated settings page that includes a toggle feature called **"High Priority Mode"**, which can be activated or deactivated based on user needs.

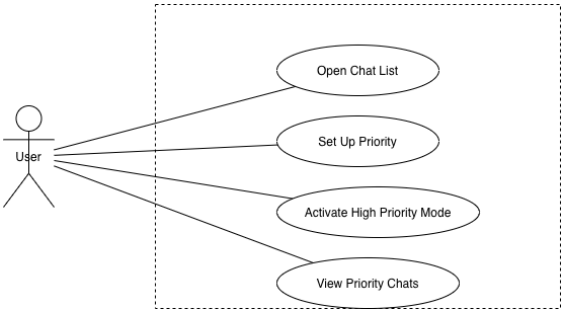

Figure 3. UML Usecase Diagram

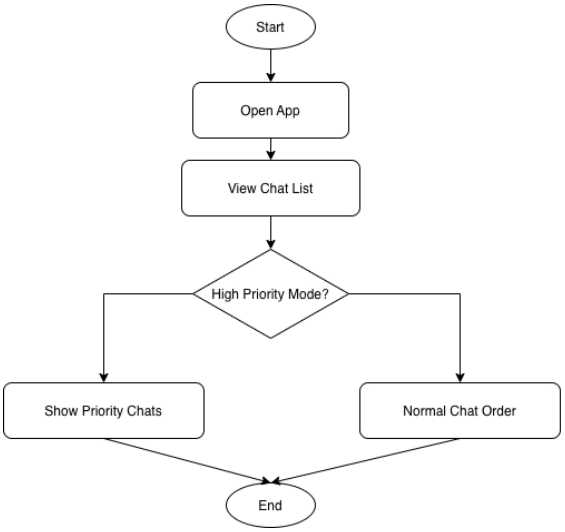

Figure 4. UML Activity Diagram

4.3.3 Priority Configuration Mechanism

When the High Priority Mode is activated, an input form dynamically appears, allowing users to define priority contacts. Users can manually enter or select contacts such as "Manager," "Mother," "Father," or other important individuals.

Once the configuration is confirmed, the system automatically processes the selected contacts and assigns them a higher priority level. This prioritization directly affects how conversations are displayed in the main chat interface.

4.3.4 Chat List Reordering Result

After activation, the system reorganizes the chat list based on the defined priority. Conversations from selected priority contacts are automatically positioned at the top of the chat list, regardless of message recency.

4.3.5 Notification Differentiation

In addition to chat list reordering, the system introduces visual differentiation in notifications, where messages from high-priority contacts are displayed using distinct visual cues such as different colors or highlighted pop-up notifications, allowing users to immediately recognize important messages without needing to open the application, while standard messages from non-priority contacts use default notification styles; this implementation enhances user awareness and reduces response time for critical communication.

4.3.6 Prototype

The prototype of the priority feature is integrated into the chat app, allowing users to set important contacts and activate *High Priority Mode*. Messages from these contacts appear at the top of the chat list, and their notifications are highlighted, helping users see important messages quickly.

Figure 5. Prototype Priority Button

In the chat list view, incoming messages are displayed with the most recent ones at the top. Above the list, there is now a button that allows users to configure settings so that chats from important contacts are always placed at the top.

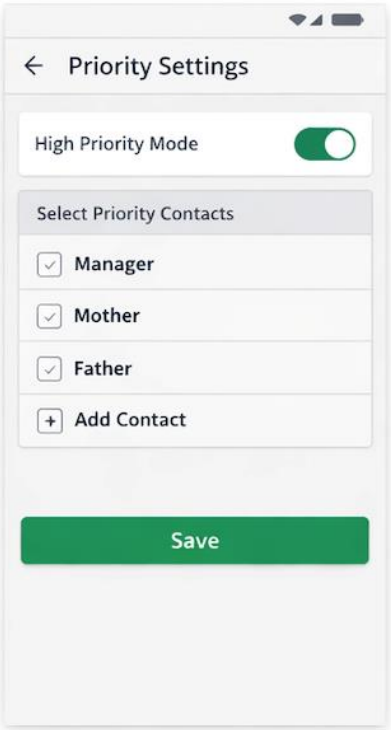

Figure 6. Prototype Priority Settings

The Priority Settings interface provides a simple and intuitive way for users to manage communication priorities within the messaging application. It includes a *High Priority Mode* toggle that enables or disables the prioritization feature. When activated, users can select or add important contacts such as a manager, family members, or other key individuals through a checklist interface. After confirming the selection by pressing the *Save* button, the system automatically assigns a higher priority level to these contacts. As a result, conversations involving selected contacts are consistently displayed at the top of the chat list, improving message visibility and helping users respond more efficiently to important communications while reducing the need for manual filtering.

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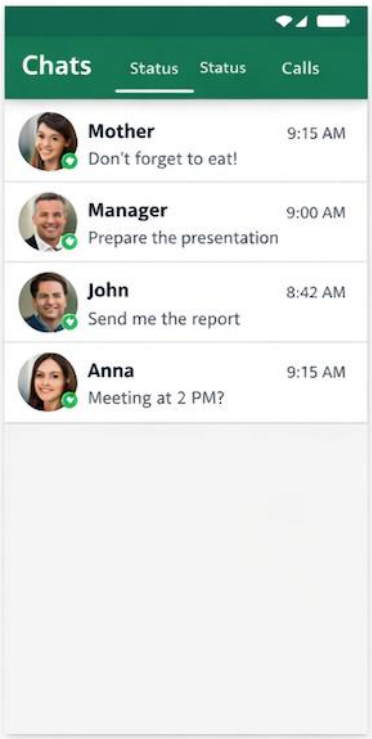

Figure 7. View Chat List after Priority Set (on Top)

Figure 8. Notification Differentiation

The chat list interface demonstrates the implementation of the priority-based messaging system, where conversations are organized not only by recency but also by importance. In this view, messages from priority contacts such as "Mother" and "Manager" are displayed at the top of the list, ensuring they are immediately visible to the user. Each prioritized contact is visually indicated, allowing users to quickly distinguish important conversations from regular ones. Meanwhile, non-priority chats, such as those from "John" and "Anna," appear below, maintaining the standard chronological order. This approach enhances user efficiency by reducing the risk of overlooking critical messages and supports faster response times to high-priority communications.

The notification interface illustrates how the priority-based system enhances user awareness of important messages in real time. In this view, messages from priority contacts, such as "Mother," are highlighted prominently at the top with a distinct visual style, making them immediately noticeable compared to regular notifications like those from "David." This differentiation allows users to quickly identify urgent or significant communications without needing to unlock the device or open the application. By emphasizing priority messages through visual cues and positioning, the system effectively reduces the risk of missed important information and improves responsiveness to critical interactions.

4.4. System Advantages

The proposed system offers several advantages:

a. Enables direct user control over communication priority
b. Improves visibility of important conversations

c. Enhances notification awareness through visual differentiation

4.5. Evaluation

The evaluation was conducted using a questionnaire distributed to users through gforms: https://forms.gle/bcs7jNM5tQXaebsA7 to assess the usability and effectiveness of the proposed feature.

Table 2. Evaluation Feedback

No	Evaluation Aspect	User Response Summary	Interpretation
1	Ease of Use	Most users found the feature easy to use	The system is user-friendly
2	Interface Clarity	Users stated the interface is clear and simple	Good UI design and understandable flow
3	Message Visibility	Important messages are easier to identify	Improves message awareness
4	Usefulness	Users felt the feature is helpful	Supports communication efficiency
5	Risk Reduction	Users reported fewer missed important messages	Reduces communication failure
6	Overall Satisfaction	Users expressed positive feedback	High user acceptance
7	Suggestions	Some users want automation and customization	Opportunity for future improvement

5. Conclusion

The proposed system allows users to manually assign high-priority contacts, ensuring that important messages are more visible and accessible. Based on the evaluation results, users responded positively to the proposed feature, indicating that it is easy to use, clear, and helpful in managing important messages. The feature improves message visibility and reduces the risk of missing critical communications.

Furthermore, users expressed overall satisfaction with the system, although some suggested the addition of automated prioritization and more flexible customization features. These findings indicate that the proposed user-centered approach effectively enhances communication efficiency while still offering opportunities for further development.

Future messaging applications could integrate more advanced adaptive mechanisms, such as AI-based prioritization, to automatically identify important messages based on user behavior. In addition, further development can focus on enhancing customization features to provide more flexible user control in managing communication priorities.

Users are encouraged to actively manage and update their priority contacts to maintain the effectiveness of the High Priority Mode feature. Regular adjustments based on communication needs can help improve message organization and responsiveness.

Future research is recommended to involve a larger number of respondents to improve the validity and generalizability of the findings. In addition, the scope of respondents can be more specific, such as based on age, communication needs, work background, and user experience levels, to obtain more focused insights.

Furthermore, future studies can refine the analysis process by providing a more structured and seamless integration between thematic analysis and the Design Thinking framework. Researchers may also consider applying more advanced models or alternative approaches to enhance the effectiveness of system development and evaluation.

In terms of data presentation, future research should provide more comprehensive and structured data visualization, such as detailed thematic tables, coding frameworks, and clear mapping between user insights and system design decisions. This will strengthen

the transparency, clarity, and reliability of the research findings.

References

[1] S. Caro-Alvaro, E. García-López, A. García-Cabot, and A. Mavri, "Measuring the Effects of Usability Recommendations for Mobile Instant Messaging Apps on User Performance and User Behaviour," International Journal of Human–Computer Interaction, vol. 41, no. 1, pp. 608–626, 2025, doi: 10.1080/10447318.2024.2303553.

[2] A. R. Anantya, A. B. Wijaya, and S. Suliswaningsih, "UI/UX Design Modeling on Chatting and Forum Applications Using Design Thinking", *JMTT*, vol. 3, no. 2, pp. 64–76, Aug. 2024.

[3] Liu, Y., Tan, H., Cao, G., & Xu, Y. (2024). Enhancing User Engagement through Adaptive UI/UX Design: A Study on Personalized Mobile App Interfaces. *World Journal of Innovation and Modern Technology*, *7*(5), 1–21. https://doi.org/10.53469/wjimt.2024.07(05).01

[4] Kurikaparambil Revi, B. (2021). *Priority Based Message Queue Processing Using Software Thread*. www.ijfmr.com

[5] Fischer, H., Dres, M., & Seidenstricker, S. (2023). Application of ChatGPT in Design Thinking. *Application of Emerging Technologies*, *115*. https://doi.org/10.54941/ahfe1004312

[6] Bittner, E. A. C., & Shoury, O. (2019). *Designing Automated Facilitation for Design Thinking: A Chatbot for Supporting Teams in the Empathy Map Method*. https://hdl.handle.net/10125/59463

[7] Permadi, R. H., Aftaviani, F., & Muslim, A. F. M. (2025). UI/UX Design Using Design Thinking Method for the Information Service Chat Bot Application at Widyatama University. *JUSTINFO | Jurnal Sistem Informasi Dan Teknologi Informasi*, *2*(1), 179–185. https://doi.org/10.33197/justinfo.v2i1.1251

[8] Mahardika, F., Ripai, R., Shandy, S. V., Fazar Sidik, Pari, R. A., & Muhammad, K. (2025). Design of the HealthyQue Mobile Application for Hospital Registration Based on Android Using the Design Thinking Approach and UML Modeling. *Blend Sains Jurnal Teknik*, *4*(2), 397–408. https://doi.org/10.56211/blendsains.v4i2.1287

[9] Erikson, D. H., & Hidayat, A. M. (2024). Consumer Profile Analysis Using Empathy Map At Prove Fragrance Startup Analisis Profil Konsumen Menggunakan Empathy Map Pada Startup Prove Fragrance. *COSTING:Journal of Economic, Business and Accounting*.

[10] Kiamul Lailia, S., Venica, L., & Studi Mekatronika dan Kecerdasan Buatan, P. (2023). Perancangan Ulang Antarmuka Fitur Obrolan pada Aplikasi WhatsApp dengan Metode Design Thinking Redesigning The Chat Feature Interface of WhatsApp Application with Design Thinking Method. *Jurnal Teknologi Dan Informasi (JATI)*, *13*. https://doi.org/10.34010/jati.v13i2