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Research Article

Optimizing the Transmission of Church Information Through the Design Thinking-Based Church News Application

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Abstract: The church plays a crucial role in spreading Christian values and nurturing the growth of faith within its community. However, in the context of GPSI EFATA, there are several challenges in effectively conveying church information. These challenges include the unappealing presentation of physical congregation news, the accumulation of paper, and the limited distribution of information. In order to address these issues, this research project utilizes the Design Thinking method to develop a smartphone-based application for congregational news. The Design Thinking method consists of five stages: empathy, definition, ideation, prototype, and testing. During the empathy stage, the needs of the congregation are identified, particularly the need for more accessible and engaging information. The ideation stage then generates a solution in the form of a smartphone application. This application includes various features such as notifications, prayer schedules, financial reports, photo galleries, and management profiles. A prototype of the application was developed to meet these needs and was subsequently tested using a questionnaire. The results of the testing indicated that the application had an easy-to-understand interface, adequate features, and received suggestions for improvement. Overall, this smartphone application offers a modern and efficient solution to the challenges of delivering information within churches. It enhances accessibility and improves the quality of communication with the congregation.

Keywords: Design Thinking; User Interface; User Experience; Congregation News; Smartphone Application; GPSI EFATA

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1. Introduction

The Church is a religious institution that plays a vital role in fostering and spreading Christian values in society. As a representation of Christ's presence in the world, it is called to be a source of light and inspiration (Chandra et al., 2021). One of its main tasks is to preach the good news of the gospel and guide believers in their faith journey. Within local congregations, the Church provides teaching of God's Word, promotes fellowship, and develops ministry. To fulfill its role effectively, it must ensure that important information can be communicated to its congregation. One solution to improve the delivery of this information is through the use of information technology, such as applications. The rapid development of information technology has transformed the way we communicate and share information in society. The digital era allows for easy access, sharing, and dissemination of information through various digital media platforms (Iqbal et al., 2020). However, this also presents challenges for the Church in effectively conveying information to its congregation. The advancement of information technology has provided numerous opportunities for churches to communicate and build relationships with their congregations. Technology can be used to develop more effective, interactive, and engaging means of communication and learning. One way to utilize technology within the church context is through the development of a congregational news application (Josi & Andriyanto, 2020). This application can provide

many benefits for churches and congregations, such as efficiently conveying information about church activities, upcoming events, and important announcements in a more accessible manner. Additionally, the congregational news application can also be integrated with other features, such as worship schedules, financial information, management profiles, and galleries. GPSI EFATA is one of the Protestant churches in Nabire that has implemented a smartphone-based congregational news application to effectively communicate information to its congregation.

However, delivering congregational news information at GPSI EFATA presents several challenges. Firstly, the current presentation of congregational news lacks engagement and informativeness, making it difficult for congregations to effectively receive the information. Secondly, many congregations often forget or misplace the congregational news, resulting in missed updates and important information (Kamal et al., 2021; Lintarwati et al., 2022). Thirdly, the accumulation of paper in churches or congregational homes creates logistical and hygiene issues. Lastly, congregational newspapers have limitations in terms of physical distribution, production costs, and space to include all relevant information. Additionally, congregations struggle to access information outside of the worship schedule, highlighting the need for a more flexible and accessible solution (Masnur & Asra, 2021). To address these problems, the design thinking method is utilized in developing the congregation news application at GPSI EFATA. Design thinking is a user-centric approach to developing innovations, products, and services that begins with understanding user needs (Mulyani et al., 2021).

The purpose of this application is to enable congregations to receive fast and accurate information. With this application, congregations can access information anytime and anywhere. They will have the ability to receive reports on worship schedules, financial reports, management profiles, and various photos of church activities.

2. Literature Review

The development of expert systems and recommendation systems has become increasingly important in supporting intelligent decision-making processes across various domains (Yuswati, 2022). Expert systems are designed to replicate human expertise by integrating a knowledge base with inference mechanisms, enabling systems to provide solutions or recommendations based on predefined rules and domain knowledge (Bhowmik et al., 2021). In parallel, recommendation systems have evolved as intelligent tools that analyze user behavior and preferences to generate personalized suggestions, thereby improving user experience and engagement (Ricci et al., 2022).

Web-based implementation of these systems further enhances accessibility and scalability, allowing users to interact with decision-support applications in real time. Recent studies highlight that combining expert systems with recommendation techniques can significantly improve system accuracy and usability, especially in environments that require both rule-based reasoning and user preference analysis (Sharma & Gupta, 2023). Additionally, collaborative filtering and hybrid recommendation approaches are widely adopted to enhance personalization by leveraging similarities among users and historical interaction data (Aggarwal, 2021).

Despite these advancements, challenges remain in terms of system adaptability, data sparsity, and interpretability. Many existing systems focus either on rule-based expert systems or data-driven recommendation models, but lack integration between the two approaches. Therefore, the development of a web-based system that integrates expert knowledge with recommendation mechanisms is essential to provide more accurate, efficient, and user-oriented decision support solutions.

3. Method

This research utilizes the design thinking method, a human-centered problem-solving approach, to generate imaginative and innovative solutions. By employing this method, the enhancement of information system development can lead to the delivery of a favorable user experience (Nurhadi, 2020). The integration of design thinking into information system development facilitates a better understanding of user needs among developers. The research was carried out using the design thinking method in Figure 1, which encompasses five stages: empathize, define, ideate, prototype, and test. These stages empower developers to design systems that effectively and efficiently fulfill user needs and desires (Tabaleku, 2023).

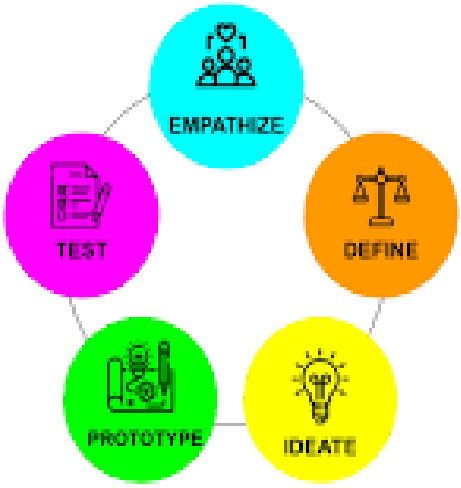


Figure 1. Design Thinking Method

3.1. Empathize stage

During this stage, the aim is to gain an understanding of the needs and preferences of the congregation in terms of accessing church information (Panjaitan et al., 2021). The perspective of the users is obtained through observations and interviews conducted in the initial design process.

3.2. Define stage

In this stage, the problems associated with the current delivery of church information are identified (Pramono & Napitulu, 2022). The challenges encountered are determined by analyzing the results of observations made during the empathy process.

3.3. Ideate stage

During this stage, brainstorming sessions are conducted to generate innovative concepts for designing congregational news (Rahayu et al., 2022).

3.4. Prototype stage

The prototype stage involves the creation of a model of the application, which is then tested for feasibility with users (Rochman et al., 2019). Feedback from users can be utilized to improve the application before its implementation.

3.5. Testing stage

In this stage, the developed applications are tested with users. Involving users at every stage of application development can enhance the adoption and acceptance rate of the technology (Setiawan et al., 2022).

4. Results and Discussion

The objective of this research was to apply the Design Thinking method in order to develop a smartphone-based congregational news application at GPSI EFATA. The subsequent sections will provide a detailed description of the process and findings for each stage of Design Thinking.

4.1. Empathize stage

At this juncture, the author conducted observational research at the GPSI EFATA church, situated at Jl.Frans Kaisepo. The observatory findings revealed several predicaments pertaining to the information dissemination process via the congregation's news. These issues encompassed a lack of information caused by the unappealing nature of the information delivery, as well as the accumulation of paper within the church premises, as the congregation frequently overlooked bringing the church news along. Following this, the author proceeded with an interview involving one of the congregants (secretary) and discovered that the

majority of the congregation necessitated easily accessible church news information, encompassing worship schedules, financial reports, management profiles, and photographs of church activities. By means of these interviews in Table 1, the author gained insight into the distinctive requirements of each congregation member.

Table 1. Questionnaire

No	Question
1	How do you receive congregational news information??
2	Do you often have trouble receiving such information?
3	Do you need an application that makes it easier to receive congregation news information??
4	What features do you expect in a smartphone?

4.2. Define stage

Based on the findings of the empathy process conducted earlier, the primary issue identified is the excessive accumulation of paper in the church, which leads to the ineffective communication of uninteresting information to the congregation. As a result, the congregation is not able to receive the information effectively.

4.3. Ideate stage

The process entails conducting brainstorming sessions to generate a diverse range of potential solution ideas. Among the suggested solutions are the development of a smartphone application equipped with a notification feature for disseminating essential information. Subsequently, a thorough evaluation and selection process is undertaken to identify the most appropriate solution that aligns with the congregation's requirements. Here are some ideas/solutions that you can get in Table 2.

Table 2. Ideas/solution

No	Ide
1	Creating a platform that provides information on congregation news
2	Creating a platform that provides information on congregation news
3	Creating features that can help congregations in accessing worship schedules and finances in each tribe, as well as features for management profiles and photos of congregation activities.
4	Providing various features that make it easier for congregations to access church information

4.4. Prototype stage

After conducting the processes of empathy, definition, and ideation, the subsequent step involves developing a prototype for the congregation news application. During this prototyping phase, the author employs a design thinking approach that encompasses a thorough understanding of the needs and expectations of the congregation. The primary purpose of constructing the prototype is to obtain feedback from users, which pertains to the functionality, usability, and suitability to their specific requirements. Within this prototype stage, the author constructs an initial view of the congregation news application, encompassing the menus to be featured, as well as the layout and design. Additionally, the author formulates a navigation flow for the application's usage, ensuring it can be easily operated by the congregation.

4.4.1. Prototype page

During the prototyping stage, all user interface pages in Figure 2 are interconnected to ensure the seamless functionality of each component. The purpose of this prototype is to bring to life the previously generated ideas and provide a visual representation of the intended application.

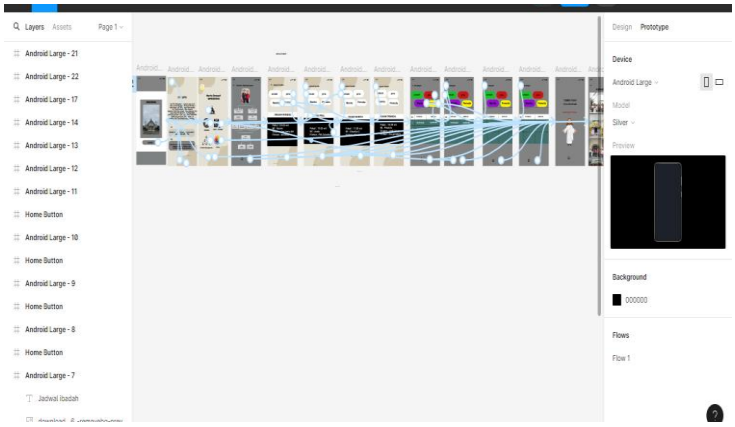


Figure 2. Screenshoot prototyping

4.4.2. Home, management structure

The main page is the first screen that users or congregations will see when they run the application. The home page offers various optional features, including services, financial reports, management structure, and a gallery. The management structure page in Figure 3 displays the administrators who are part of Gpsi Efata.

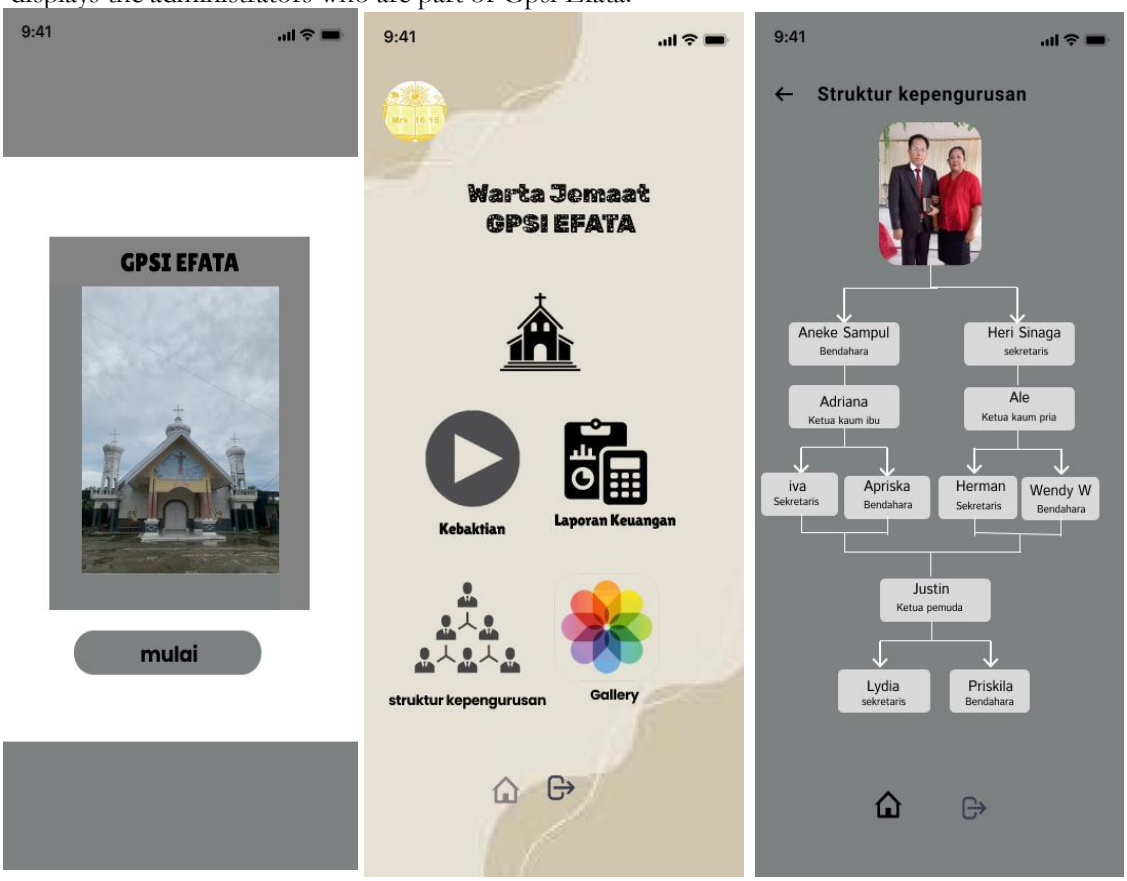


Figure 3. Home, Home Page, Management Profile

4.4.3. Worship Information Page

Worship information page in Figure 4, on this page, users can see the worship schedule with details every week, starting from Sunday morning worship, as well as the worship of fathers, mothers, and youth.

Figure 4. Worship Schedule Page

4.4.4. Financial information page

The financial information page in Figure 5 shows that Users can view financial information ranging from general finance to financial categories of men, mothers, and youth.

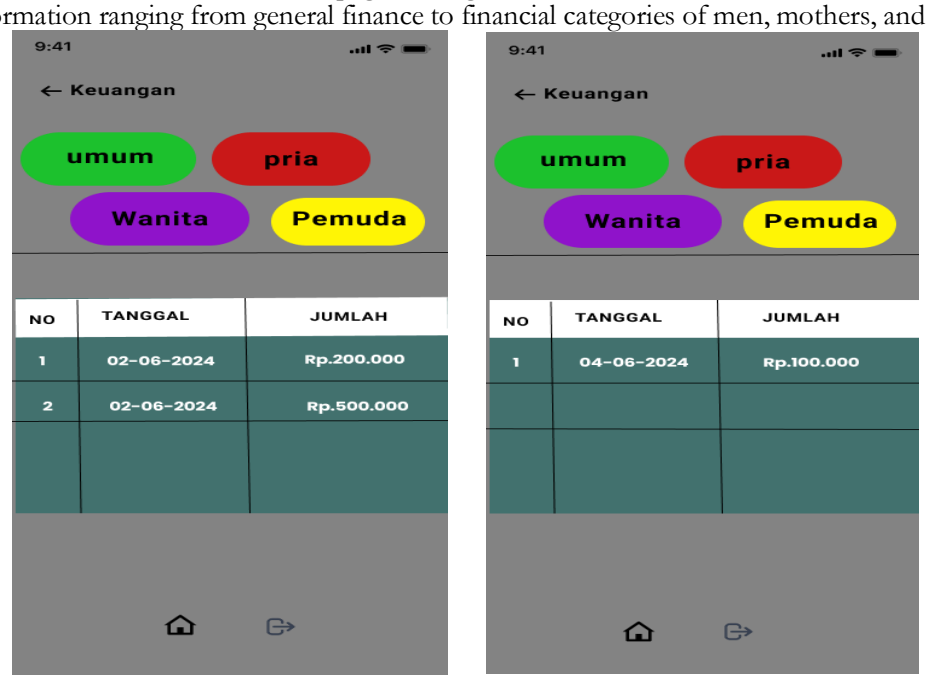


Figure 5. Financial Information Page

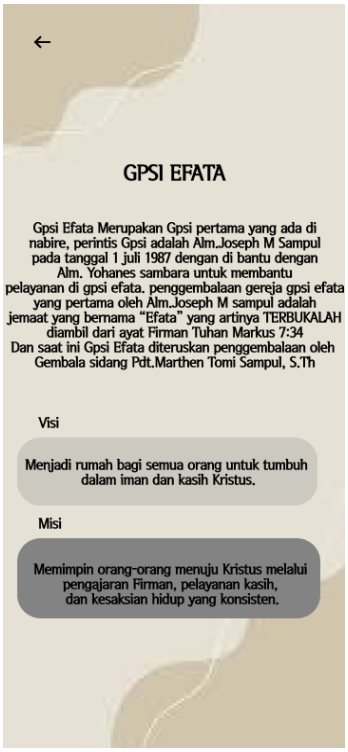
4.4.5. Gallery Page

The gallery page in Figure 6 shows that Users can see a display that contains various photos, including activities during joint worship and worship of each other.

Figure 6. Gallery Page

4.4.6. Mission vision page, Logout page

This page, in Figure 7, contains a brief history of when Gpsi was established, who was the pioneer of Gpsi Efata, vision and mission, and the logout page if you want to leave the application.



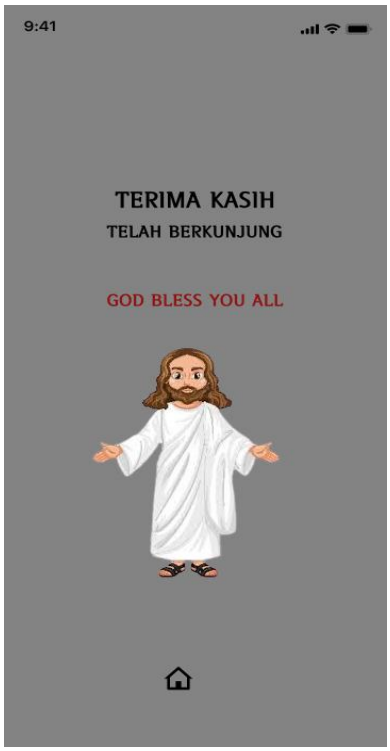


Figure 7. Historical information page, Log page

4.5. Test Stage with questionnaire

Involves testing prototypes by ten to fifteen members of the congregation of various ages. User feedback collection is done through interviews and questionnaires. The test results show in Figure 8 that the application interface is easy to understand and the features provided are sufficient for the needs of the congregation. Some of the improvement suggestions provided by users include the addition of emergency announcement and daily devotional features.

The test method carried out was a direct trial in the field involving 10 teachers and 10 students who were asked to give feedback about the application through a questionnaire with

8 questions to measure various aspects such as user interface, ease of use, and overall application functionality.

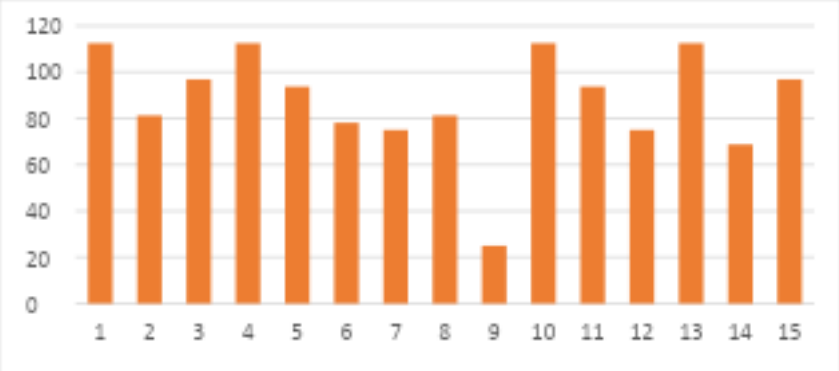


Figure 8. Testing Questionnaire Result

5. Conclusion

The empathy stage reveals that churches face challenges in effectively communicating information through physical congregational news. These challenges include a lack of appeal, excessive paper accumulation, and limitations in information distribution. The accumulation of paper not only poses logistical issues but also becomes a hygiene concern. Moreover, the delivery of uninteresting information leads to a lack of engagement from the congregation.

During the idea session, various potential solutions were proposed. One of the proposed solutions is the creation of a smartphone app that includes notification features for important information. The app could also integrate worship schedules, financial reports, photo galleries of church activities, and management profiles. These ideas aim to cater to the needs of the congregation in a more efficient and engaging manner.

Based on the generated ideas, application prototypes were developed. These prototypes consist of pages that provide worship information, financial statements, photo galleries, and management profiles. The design and navigation flow of the application were carefully planned to ensure ease of use and accessibility of information for the congregation.

Testing of the prototype was conducted by distributing a questionnaire to the congregation members. The feedback received indicated that the app's interface was easy to understand and the provided features were satisfactory. Some suggestions for improvement were made, including the addition of emergency announcements and daily devotionals. This valuable feedback serves as a basis for further enhancements before the app is fully implemented.

Overall, the smartphone-based congregation news application at GPSI EFATA offers an effective solution to the problem of church information dissemination. It provides a modern and easily accessible platform for the congregation, ensuring that they stay informed and engaged.

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