Evaluating the Functional Efficiency Improvement of RSUD dr. Loekmono Hadi Kudus Website Redesign Using Black Box Testing

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Abstract

Background: Hospital websites are vital for public health information access. The previous RSUD dr. Loekmono Hadi Kudus website had significant usability and functional issues, with many features being non-operational, necessitating a redesign for better quality and user engagement.

Aims: This research assesses the improvement in functional efficiency of the RSUD dr. Loekmono Hadi Kudus website post-redesign, focusing on a quantitative comparison of functional integrity between the old and new versions through Black Box testing.

Methods: The website redesign followed the Design Thinking approach, focusing on understanding user needs and developing empathetic, user-centered solutions. Functional efficiency was evaluated through Black Box testing on ten core features representing the hospital website's main functionalities: (1) homepage navigation links, (2) automatic banner slide, (3) manual banner navigation buttons, (4) "About Us" dropdown, (5) main "Doctor" menu, (6) doctor search feature, (7) "Doctor Schedule" access, (8) "Facilities" dropdown, (9) detailed facility information access, and (10) "Service Tariff" dropdown for transparent service fee information.

Result: Black Box testing showed a profound improvement in functional efficiency. The redesigned website achieved 100% functional validity for all 10 tested features, a significant rise from the original's 30% operational rate for the same features.

Conclusion: Strategic Design Thinking application, meticulous development, and rigorous testing significantly enhanced the RSUD dr. Loekmono Hadi Kudus website's functional efficiency from 30% to 100%, enhancing reliable function execution and fostering better human-computer interaction.

A. Introduction

In the contemporary digital landscape, websites have become indispensable for public institutions, especially within the healthcare domain, serving as primary platforms for the wide and prompt dissemination of information (Murgia et al., 2024; Han et al., 2022). Hospitals like RSUD dr. Loekmono Hadi Kudus, a significant regional referral center, rely on their official websites to provide accessible details regarding services, medical personnel, and operational procedures, thus supporting broader public health objectives (Ramadya et al., 2022). The functional issues present in the previous version of the RSUD dr. Loekmono Hadi Kudus website had a significant impact on both user experience and the hospital's operational efficiency. One of the major problems was outdated information, including irregularly updated doctor schedules, service tariffs that did not reflect current rates, and invalid or

obsolete contact details. This led to confusion among patients and their families, particularly for those planning visits or attempting to confirm service availability prior to their arrival. In several cases, patients reported discrepancies between the information displayed on the website and the actual situation at the hospital, resulting in frustration and a diminished level of trust in the institution. Additionally, the poorly organized interface with unintuitive navigation structures and cluttered page layouts made it difficult for users to quickly find essential information. Critical features such as doctor search, installation locations, and service inquiry forms were often buried or inaccessible. This posed serious risks for users in emergency situations or those requiring timely information. Furthermore, recent studies highlight that digital health maturity, including the implementation of reliable information systems has a measurable influence on patient experience, operational efficiency, and population health outcomes (Woods et al., 2023).

The most critical issue, however, was the severely impaired functional efficiency of the site, where many core features failed to operate as intended. Several important pages encountered loading errors, navigation buttons were unresponsive, and online forms such as registration or inquiry submissions could not be completed. This not only hindered two-way communication between patients and the hospital but also increased the administrative burden on staff, as users were forced to contact the hospital directly via phone or visit in person just to obtain basic information. Overall, the combination of inaccurate information, user-unfriendly layout, and technical malfunctions created a poor digital experience for patients and their families. From an operational standpoint, it led to an increase in inquiries, complaints, and reliance on manual processes that could otherwise be streamlined through digital means. These challenges underscore the critical importance of a reliable and functionally sound hospital website as a tool for public communication and service delivery. This lack of functionality was quantitatively confirmed, with the legacy system showing that only a fraction of its features specifically 30% of 10 selected core functionalities, as later detailed in this paper were operating correctly, underscoring an urgent need for substantial improvements. A similar application of Design Thinking principles in healthcare innovation was demonstrated by Smiechowski et al. (2021), who emphasized that integrating end-user perspectives throughout the design process yields practical, patient-centered solutions for improving healthcare system experiences.

A functionally sound and efficient hospital website is essential for the clear delivery of information and the smooth accessibility of services. Dependable functionality ensures that users can navigate the platform and utilize its features without encountering technical barriers, which is vital for accessing critical health-related information. In response to these challenges, a thorough redesign of the website was initiated. This redesign effort was guided by the Design Thinking methodology, fostering a user-centric approach that placed the needs and experiences of end-users at the forefront of the development cycle. A primary goal of this redesign was to markedly improve the website's functional efficiency (Purwitasari et al., 2021). This paper, therefore, focuses on presenting and analyzing the results of the Black Box testing phase, which was systematically applied to quantify the improvement in functional efficiency of the RSUD dr. Loekmono Hadi Kudus website following its redesign (Azizah et al., 2024). Black Box testing was selected because it enables a thorough evaluation of system functionality by examining inputs and outputs, without requiring knowledge of the system's internal structure. This method is effective in detecting functional discrepancies and ensuring that each core feature operates according to specifications, particularly in the context of post-redesign evaluation (Al-alosi et al., 2021). The findings aim to offer an objective, empirical measure of the redesign's success regarding its technical performance, operational reliability, and its beneficial impact on human-computer interaction.

B. Research Methods

This investigation is a component of a more extensive website overhaul project for RSUD dr. Loekmono Hadi Kudus. The entire project adopted the Design Thinking approach for the redesign process, as elaborated in the foundational thesis. This methodological choice aligns with findings by Göttgens & Oertelt-Prigione (2021), who emphasized the effectiveness of human-centered design strategies including Design Thinking in health innovation projects. Their review highlights that DT approaches foster empathy, iterative problem-solving, and active user participation, making them suitable for digital transformation initiatives such as hospital website redesigns. The specific research detailed herein concentrates on the evaluative measurement of enhancements in functional efficiency realized through this redesign, making use of the Black Box testing technique (Parlika et al., 2020). The research design is evaluative and comparative, examining the differences in functional performance between two website

versions: the original (pre-redesign) and the new (post-redesign). The subject of this research was the official website of RSUD dr. Loekmono Hadi Kudus. The Black Box testing was carefully carried out by the Head of the IT department alongside the IT Division Team at the hospital, ensuring an assessment of functionalities by experts. To provide a clearer understanding of the steps involved in the evaluation, the overall testing workflow is visualized in a flowchart, Figure 1 Black Box Testing Flowchart for Functional Testing. This flowchart outlines the systematic process followed during Black Box testing, from feature selection to outcome verification, ensuring that each step was conducted consistently and thoroughly by the evaluation team.
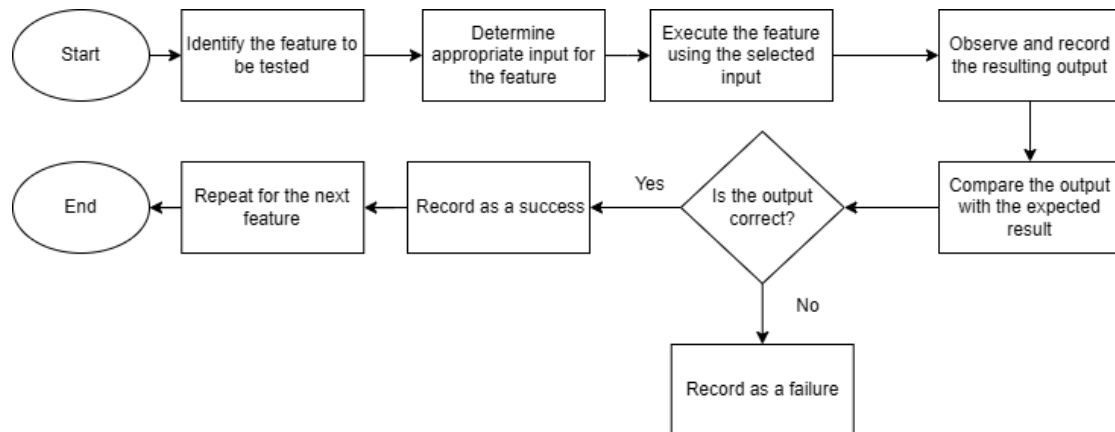

Figure 1. Black Box Testing Flowchart for Functional Testing

The flowchart illustrates the systematic steps involved in conducting Black Box testing. The process begins by identifying a specific feature to be tested, followed by determining the appropriate input based on the feature's intended function. Once the input is selected, the feature is executed, and the resulting output is both observed and documented. This output is then compared to the expected result to evaluate whether the feature performs as intended. If the output is accurate, the result is recorded as a success; if not, it is marked as a failure. The testing continues by repeating the same process for the next feature until all key components of the system have been evaluated. This approach ensures a consistent and objective assessment of the system's functional behavior from an end user's perspective, without requiring knowledge of the internal code structure.

This testing phase was conducted after the new website's development was completed. The methodology for evaluating functional efficiency involved the following three primary stages:
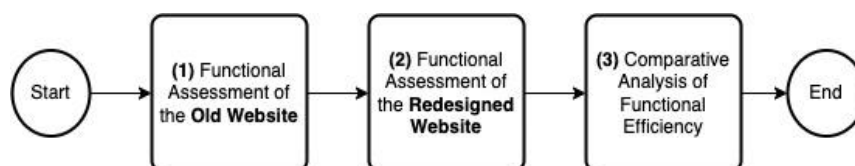

Figure 2. Research Methods Flow

1. **Functional Assessment of the Old Website:**

The initial methodological step was a comprehensive functional assessment of the existing (old) RSUD dr. Loekmono Hadi Kudus website. This involved employing the Black Box testing method to scrutinize a predefined set of 10 core features deemed critical for user interaction and information retrieval on a hospital platform. These features included: (1) Homepage navbar link, (2) Automatic banner slide, (3) Banner navigation buttons, (4) "About Us" dropdown functionality, (5) Main "Doctor" menu navigation, (6) Doctor search feature, (7) "Doctor Schedule" menu access, (8) "Facilities" dropdown access, (9) Accessing specific facility details, and (10) "Service Tariff" dropdown access. The selection of the ten core features for testing was based on their importance in meeting user information needs and their role in supporting the fundamental functionality of the RSUD dr. Loekmono Hadi Kudus website. These features include key navigation elements, (such as the homepage navbar and dropdown menus), access to essential information (including doctor schedules, doctor directories, and service facilities), as well as interactive

components that enhance user experience (such as search functions and banner navigation buttons). These features were chosen because they represent the most frequently accessed and functionally critical elements of the website, those that users, including patients, their families, and the general public, rely on to obtain relevant healthcare information. In other words, they reflect the core operational value of the hospital website in terms of accessibility, clarity of information, and system reliability. Moreover, this selection was guided by the principle of functional efficiency in the context of post-redesign evaluation. By focusing on features that span the main navigation structure and cover all public-facing content areas, the testing process provided a well-rounded, representative assessment of the overall quality and performance of the redesigned system.

For each feature, specific test scenarios and expected outcomes were developed. The IT team then systematically executed these scenarios, meticulously recording the actual performance of each feature. Based on a comparison with the expected outcomes, each feature's performance was classified as either "*Valid*" (functioning correctly) or "*Invalid"* (malfunctioning or non-functional). The culmination of this stage was the collection of performance data for the old website, which was then used to calculate its baseline functional efficiency score using the formula: (Sakinah et al., 2024)

Efficiency (%) = (Number of Valid Features / 10 Total Features Tested) × 100

This provided a quantitative measure of the old website's operational status.

2. Functional Assessment of the Redesigned Website:

The subsequent stage involved an identical functional assessment, this time applied to the newly redesigned version of the RSUD dr. Loekmono Hadi Kudus website. To ensure a direct and fair comparison, the same Black Box testing methodology, the same 10 core features, and the exact same test scenarios and expected outcomes utilized for the old website were employed. The hospital's IT team again executed these tests, documenting the actual behavior of each feature on the redesigned platform. Each feature was then classified as "*Valid*" or "*Invalid*" (Mahendra & Asmarajaya, 2022). This process yielded performance data for the redesigned website, allowing for the calculation of its functional efficiency score using the identical formula. This stage aimed to objectively measure the functional capabilities of the new system post-implementation of the Design Thinking-led redesign.

3. Comparative Analysis of Functional Efficiency:

The final methodological stage focused on a comparative analysis of the data gathered from the assessments of both the old and redesigned websites. This testing aimed to evaluate the core features of both the old and the new versions of the website. The goal was to identify any performance differences and ensure that the updates made to the site effectively enhanced the overall user experience, in line with Human-Computer Interaction (HCI) principles. A total of 10 features were tested, including menu navigation, search functionality, doctor information display, and access to service tariff details.

Each feature was tested by comparing the expected result with the actual result on both versions of the website. Based on this comparison, the features were marked as either "*Valid*" (functioning as expected) or "*Invalid*" (not functioning properly or not meeting expectations). The following tables summarize the results of this evaluation:

Table 1. Provides a Detailed Summary of These Findings

No.	Feature Tested	Expected Result	Actual Result (Old Website)	Status
1	Homepage Navbar Link	Navigates to Homepage	Navigates to Homepage	Valid
2	Automatic Banner Slide	Banner slides automatically	Banner slides automatically	Valid
3	Banner Navigation Buttons (Next/Back)	Banner navigates on click	Buttons non-functional	Invalid
4	"About Us" Dropdown Functionality	"About Us" page accessible	Link/navigation broken	Invalid
5	Main "Doctor" Menu Navigation	Navigates to Doctor section/page	Menu link non-functional	Invalid
6	Doctor Search Feature	Returns relevant doctor results	Search yields no results	Invalid
7	"Doctor Schedule" Menu	Displays doctor	Page/table fails to load	Invalid

No.	Feature Tested	Expected Result	Actual Result (Old Website)	Status
		schedule table		
8	"Facilities" Dropdown Access	"Facilities" page accessible	Navigates to Facilities	Valid
9	Accessing Specific Facility Details	Displays details of selected facility	Link to details broken	Invalid
10	"Service Tariff" Dropdown Access	Displays service tariff information	Page/table fails to load	Invalid

Table 2. Black Box Testing Results for Selected Features of the Redesigned Website

No.	Feature Tested	Expected Result	Actual Result (New Website)	Status
1	Homepage Navbar Link	Navigates to Homepage	Navigates to Homepage	Valid
2	Automatic Banner Slide	Banner slides automatically	Banner slides automatically	Valid
3	Banner Navigation Buttons (Next/Back)	Banner navigates on click	Buttons functional	Valid
4	"About Us" Dropdown Functionality	"About Us" page accessible	"About Us" page loads	Valid
5	Main "Doctor" Menu Navigation	Navigates to Doctor section/page	Navigates to Doctor page	Valid
6	Doctor Search Feature	Returns relevant doctor results	Search functional	Valid
7	"Doctor Schedule" Menu Access	Displays doctor schedule table	Schedule table displays	Valid
8	"Facilities" Dropdown Access	"Facilities" page accessible	Navigates to Facilities	Valid
9	Accessing Specific Facility Details	Displays details of selected facility	Facility details display	Valid
10	"Service Tariff" Dropdown Access	Displays service tariff information	Tariff information displays	Valid

Based on the comparative testing results between the old and new versions of the website, functional efficiency was calculated for both versions to measure the level of improvement or change. This analysis aimed to identify the actual impact of the redesign efforts on the overall functional performance and reliability of the website. The discussion of these comparative results further explores the implications of the differences observed, highlighting how effective the redesign was in addressing the functional shortcomings of the original platform and in enhancing the human-computer interaction experience for users. This comparative analysis serves as a key part of the research's findings on functional improvement.

The scope of this particular evaluation was strictly confined to the functional aspects ascertainable through Black Box methods. It did not encompass other usability dimensions, such as learnability, user satisfaction, or aesthetic appeal, which were evaluated using different methods (such as the System Usability Scale) within the larger thesis project.

C. Results and Discussion

1. Results

This section presents the results of the functional efficiency evaluation, based on the stages of research as previously described in the methodology section. The evaluation was carried out by applying the Black Box Testing method to assess the core functionalities of the website, both before and post- redesign process, which was based on the Design Thinking approach. The main focus of this evaluation is to identify the extent to which the functional issues found in the initial version of the website have been resolved, as well as to assess improvement in user efficiency in completing specific tasks. The presentation of the results is classified according to the testing stages and is complemented by visual

documentation and descriptive analysis to provide a comprehensive understanding of the impact of the redesign.

1.1 Functional Assessment of the Old Website

The initial phase of the Black Box testing focused on the pre-redesign version of the RSUD dr. Loekmono Hadi Kudus website. The 10 selected core features were systematically tested against the predefined scenarios. From these 10 features, only 3 were found to be "*Valid*," meaning they operated as expected. A significant 7 version featured classified as "*Invalid*," indicating critical failures in user interaction pathways and information accessibility. These non-functional features included issues with banner navigation, access to "About Us" information, doctor search and schedule display, and viewing details for facilities and service tariffs. The overall functional efficiency of the old website, based on these 10 core features, was calculated as:

(3 Valid Features / 10 Total Features Tested) × 100% = 30%

Figure 3 is the initial interface of the RSUD dr. Loekmono Hadi Kudus website before the redesign process was carried out. This version features a static layout and an information structure that had yet to fully address users' functional and aesthetic needs. It served as a reference point in identifying areas that required improvement during the evaluation phase.

Figure 3. Pre-Redesign

1.2 Functional Assessment of the Redesigned Website

Following the comprehensive redesign process, which was guided by the Design Thinking methodology, the new version of the RSUD dr. Loekmono Hadi Kudus website underwent the same rigorous Black Box testing protocol. The identical set of 10 core features was tested. The results indicated a perfect operational status: all 10 features were found to be "*Valid*," with no features categorized as "*Invalid*." This outcome signifies that all tested functionalities, including those previously problematic, were now operating correctly and reliably. The functional efficiency of the redesigned website was thus calculated as:

(10 Valid Features / 10 Total Features Tested) × 100% = 100%
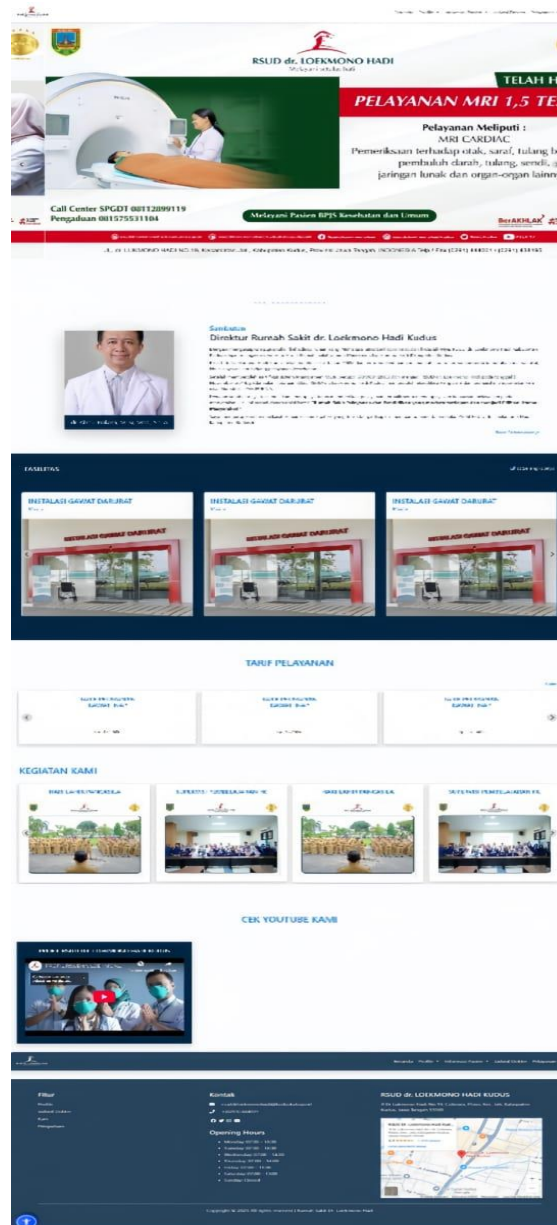

Figure 4. Post-Redesign

1.3 Comparative Analysis of Functional Efficiency

The data collected from testing both website versions allow for a direct comparison of their functional efficiencies. The old website demonstrated a functional efficiency of 30%, while the redesigned website achieved 100%. This stark contrast is summarized in Table 3.

Table 3. Comparative Functional Efficiency

Aspect	Old Website	Redesigned Website
Number of *Valid* Features	3	10
Number of *Invalid* Features	7	0
Total Features Tested	10	10
Efficiency (*Valid* %) (Calculated)	**30%**	**100%**

The transition from a 30% functional efficiency on the old platform to a flawless 100% on the redesigned website represents a significant achievement and serves as a direct testament to the efficacy of the redesign strategy.
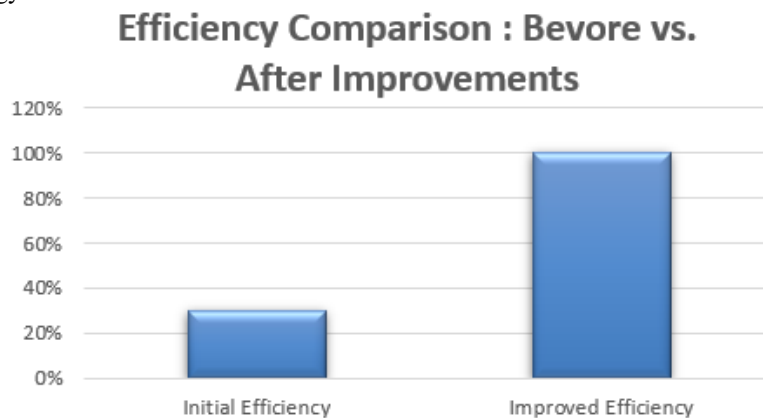
Figure 5. Efficiency Comparison Before and After Improvements

This marked improvement, particularly the adoption of the Design Thinking methodology, facilitated a deep understanding of existing pain points and guided the development of a system that is not only aesthetically improved but, more critically, functionally robust. The Black Box testing results offer clear, empirical validation that the redesigned website stands as a far more reliable and effective tool for users compared to its predecessor.

Achieving 100% functional efficiency for these core features carries substantial positive implications for the users. Patients, their families, and the wider community can now engage with the website with a higher degree of confidence, knowing that essential features are operational. This reliability streamlines access to vital health information, up-to-date doctor schedules, comprehensive service details, and other key hospital resources. A dependable website is crucial for fostering a positive user experience, minimizing the frustration often associated with non-responsive or broken digital elements. Such improvements are pivotal in building public trust in the hospital's digital services and its overall commitment to providing accessible healthcare information. The successful rectification of functional deficiencies directly tackles the previously identified "lack of efficiency in information delivery," ensuring the website now more effectively fulfills its role as a primary information and service hub.

This investigation adds to the growing body of evidence within Human-Computer Interaction (HCI) and web systems engineering. These findings are also consistent with Saad et al. (2022), who through a systematic literature review identified accessibility, usability, navigability, and reliability as essential usability features for healthcare websites. Their research emphasizes that comprehensive usability testing including task-based evaluation and error metrics, is critical for developing reliable digital health interfaces. This research showcases a tangible instance of substantial functional enhancement through a methodical, user-focused redesign. It particularly emphasizes the utility of Black Box testing as a straightforward yet powerful method for validating the operational effectiveness of web-based platforms in the public healthcare domain.

It is important to acknowledge that while Black Box testing provided a clear measure of functional correctness for the selected 10 features, this evaluation primarily determined whether these features operated as expected. The research did not extend to a granular analysis of the user experience nuances associated with these functions, which were explored through other methods as part of the broader thesis research.

Looking ahead, sustained monitoring of the website's functionality will be crucial. In line with the original thesis's recommendations, the introduction of additional, diverse features could further enrich the

user experience, provided that any such enhancements are accompanied by equally rigorous functional testing to maintain the website's integrity and efficiency.

2. Discussion

The increase in the functional validity of the RSUD dr. Loekmono Hadi Kudus website from 30% to 100% represents a highly significant improvement. This indicates that all core features of the site now function according to user needs, which directly impacts easier access to information and services for patients and their families. From the hospital's perspective, this improvement can reduce user complaints, accelerate digital service processes, and enhance public trust in the hospital's digital platform. The success of this improvement is closely related to the application of the user-centered Design Thinking methodology. This approach aligns with Paton et al. (2021), who advocate for the integration of predictive HCI modeling with human-centered design to develop digital health systems that are both functionally effective and safe for clinical use. These results are consistent with Patrício et al. (2019), who emphasized that service design approaches whether decision-making support, participatory sense-making, or institutional transformation can significantly enhance healthcare innovation when aligned with user needs and technological integration. Their framework supports the notion that involving users in the redesign of digital health services contributes directly to systemic improvement in service delivery and user experience. These findings also echo Knighton (2025), who emphasized that embedding innovation and Design Thinking in healthcare development fosters interdisciplinary collaboration, empathy-based problem solving, and user empowerment. Structured innovation programs, as highlighted in the OJIN article, demonstrate that practical design methods can reshape digital healthcare tools to address real-world patient and provider needs just as this website redesign aimed to achieve. This approach enables the development team to understand the real needs of users through stages of empathy, problem definition, ideation, prototyping, and testing. As a result, various functional issues such as unintuitive navigation, unresponsive search features, and online form failures were identified and iteratively improved with user involvement, ensuring that the solutions were not only technically valid but also aligned with user interaction patterns. These results are further supported by Liu & Park (2024), who emphasize that optimizing usability indicators such as navigation clarity, responsiveness, and content relevance is key to improving user engagement and functionality in medical websites. Their model highlights Trust and Security, Basic Performance, and Features as critical elements, aligning with the functional goals targeted in this website redesign. These findings also resonate with broader academic insights. Zhao et al. (2024) highlight that Human-Computer Interaction (HCI) research in healthcare has increasingly focused on optimizing user experience, functionality, and safety in digital systems factors that align with the objectives and outcomes of this study's website redesign.

These findings align with recent studies that emphasize the effectiveness of Design Thinking in information system development, especially in the healthcare sector (Altman et al., 2018). Recent research demonstrates that a user-centered approach can significantly improve engagement, satisfaction, and the quality of digital products (Saparamadu et al., 2021). This research reinforces evidence that Design Thinking not only enhances the visual and user experience aspects but also improves the functional performance of systems a critical factor in public service settings such as hospitals. The discussion of the research results can be detailed into four main components: (1) Interpretation of results, where the increase in functional validity from 30% to 100% indicates significant improvements in technical issues and user experience; (2) Comparison with previous studies, confirming consistency with recent literature that promotes Design Thinking as an effective method in system development; (3) Practical implications, where the improved functional efficiency positively impacts the quality of healthcare services and hospital management efficiency; and (4) Limitations and suggestions for future research, noting that this research was limited to functional testing and did not evaluate overall system performance or long-term impacts, indicating the need for further studies.

Overall, this research underscores the importance of integrating the Design Thinking methodology in the development of hospital information systems to produce websites that are not only attractive and easy to use but also reliable and efficient in supporting modern healthcare services.

2.1 Implications

The findings of this study demonstrate significant implications for digital transformation within healthcare institutions. The enhancement of functional efficiency from 30% to 100% directly improves information accessibility for patients and their families, allowing seamless access to doctor schedules, service tariffs, and hospital facilities. This improvement reduces dependency on manual information

inquiries, thereby lowering the administrative burden and improving service delivery. Moreover, the results underscore the strategic relevance of user-centered design principles, particularly Design Thinking, in redesigning public service platforms. Implementing such methodologies can significantly improve user interaction, system reliability, and institutional trust in healthcare digital services (Altman et al., 2018; Zhao et al., 2024).

2.2. Research contribution

This study contributes to the growing body of research in Human-Computer Interaction (HCI) and digital health systems by providing empirical evidence that combining Design Thinking with Blackbox testing can produce significant functional improvements in healthcare websites. Specifically, it demonstrates that user-centered iterative development processes are not only beneficial for usability but also for technical performance validation. The methodology used here—focusing on core feature evaluation through input-output verification—offers a replicable model for similar institutions aiming to assess and improve their digital platforms effectively (Paton et al., 2021; Saad et al., 2022).

2.3 Limitations

Although the results are promising, this study is subject to several limitations. First, the evaluation was confined to functional testing using Blackbox methods and did not include a comprehensive usability analysis such as task efficiency, user satisfaction, or aesthetic appeal. Second, the focus was limited to 10 core features and may not represent the complete functional spectrum of the website. Third, the research was conducted in a single hospital setting, which may restrict the generalizability of findings to other healthcare contexts or institutions with different digital maturity levels (Saparamadu et al., 2021).

2.4 Suggestions

Future research should incorporate broader usability assessments, such as System Usability Scale (SUS) surveys, user behavior analysis, and heuristic evaluations to gain a more holistic understanding of the redesigned system's performance. Longitudinal studies are also recommended to evaluate the long-term stability and scalability of the platform. Additionally, expanding this methodology to other regional or national healthcare institutions could promote a standardized framework for digital improvement. Feature development should continue in phases, including online queuing systems, chatbot assistance, and electronic health record integration, ensuring each enhancement undergoes rigorous functional and usability testing (Göttgens & Oertelt-Prigione, 2021; Liu & Park, 2024).

D. Conclusion

The comprehensive redesign of the RSUD dr. Loekmono Hadi Kudus website, thoughtfully steered by the Design Thinking methodology, has led to a striking and objectively verified enhancement in its functional efficiency. Rigorous Black Box testing demonstrated that the revamped website attained 100% functional validity across 10 selected core features. This outcome signifies a critical improvement from the 30% functional validity recorded for the previous website for the same features. This finding directly addresses and satisfies the research aim concerning the evaluation of the redesigned website's operational efficiency. The substantially improved functional reliability now ensures that users can access information and utilize the website's services with greater efficacy and confidence. This, in turn, markedly elevates the overall user experience and strengthens the hospital's capability for delivering digital services effectively. This research robustly affirms that a systematic, user-centric redesign strategy, complemented by thorough and objective functional testing, is paramount for creating effective, efficient, and dependable hospital websites that genuinely serve the needs of their community.

E. Acknowledgment

F. Author Contribution Statement

SM was responsible for the conceptualization of the research, the primary research including the website redesign process, data collection through Black Box testing, data analysis, and the drafting of the initial

manuscript. MAG provided supervision throughout the project, offered critical feedback on the methodology and findings, and contributed to the review and editing of the manuscript. Both authors have read and approved the final version of the manuscript for submission.

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