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Improving the UI/UX Design Quality of the Informatics Engineering Study Program Website at Universitas Bina Darma Using the Design Thinking Method

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Abstract: Rapid advances in information technology have transformed multiple sectors, particularly education, where digital platforms play an increasingly vital role in academic operations. Study program websites now serve as primary channels for information dissemination and communication between institutions and their stakeholders. Yet the Informatics Engineering Study Program website at Universitas Bina Darma faces notable usability problems affecting both interface design and user experience quality. A heuristic evaluation survey of 100 students identified several critical issues: absent active menu indicators that hinder navigation tracking, unattractive visual layouts that reduce user engagement, and ambiguous icons and terminology that create confusion during interaction. To address these challenges, researchers employed the Design Thinking framework—a user-centered methodology that emphasizes empathy, ideation, and iterative testing. The framework guided the development of a redesigned prototype, which underwent rigorous evaluation through the Maze platform across four distinct user task scenarios covering key website functions. Test outcomes demonstrated 100% task completion rates among participants, with an average usability score of 89, placing the design in the excellent category. The redesigned interface delivers substantially improved user experience through enhanced navigation clarity, better visual hierarchy, and more intuitive interaction patterns. These improvements establish a solid groundwork for continued development and eventual implementation of systems, offering practical solutions that can be adapted for similar academic website redesign projects.

Keywords: User Interface Design; Academic Website; Usability Evaluation; Design Thinking Method; Prototype Testing.

1. Introduction

In recent years, information technology has rapidly developed and has a major impact on the development of information systems and applications in various fields. Information technology can change how a person accesses and processes information, and at the same time, it can improve the quality and practicality of activities carried out in everyday life. The development of technology can be felt in various aspects of life today, such as political, economic, cultural, artistic, and especially educational aspects. The advancement of technology is always in line with scientific knowledge, therefore the two elements create an ever-evolving civilization [1][2]. One form of technology that is widely used in education is an academic website as a means of communication and information. The academic website of the Informatics Engineering Study Program at Universitas Bina Darma is one of the academic websites that provide information about academic activities such as curriculum, class schedules, announcements, student activities, and lecturer works. The development of an academic website is very important to consider the quality of the User Interface (UI) and User Experience (UX).

To measure user perceptions regarding the quality and usability of the Informatics Engineering academic website, a study was conducted on active students from 2021 to 2024 using a survey method. Based on Slovin's formula calculation, 79 respondents were obtained but were added to 100 respondents for better representation. The assessment was carried out by distributing a questionnaire developed based on the Heuristic Evaluation method which is commonly used to find usability problems based on existing principles in designing user interfaces. Based on the results of data processing from the questionnaire distributed to students, several usability problems were obtained which often became complaints from users such as: there is no indicator showing that the menu is active; unattractive layout design; unclear icons and language; no search feature; no FAQ page; Based on the Severity Rating table, these problems are included in level 3 problems where usability problems are quite serious and need to be resolved immediately or with high priority.

In order to solve the problems that were mentioned, the research uses Design Thinking, which is a methodology based on human-centered design that deals with understanding user needs and developing iterative designs. This approach has five stages: empathize, define, ideate, prototype, and test. By following these stages carefully, the research intends to create a new version of the website that looks good and works easily for users. The main goal of this study is to enhance the quality of UI/UX design on the Informatics Engineering Study Program website through applying Design Thinking. In this process, it also aims at developing a high-fidelity prototype and creating an initial reference for future system implementation and development—especially when moving the prototype into a complete digital product.

The scope is limited to study program websites, excluding university or faculty-wide platforms. Respondents were active students within specified academic years. The evaluation only considers interface problems based on heuristic principles, with the end product being a tested prototype rather than an operational system. Testing was done on a small scale for initial feedback toward improvement. Previous studies have given valuable insights that build the conceptual and methodological foundation of this research. For instance, used Design Thinking to redesign a university website gaining usability of 74.8 from System Usability Scale (SUS)—meaning good acceptance by users [3]. Likewise, was about redesigning an Open Library website in Telkom University influenced by personality type who got high usability results assessed by SEQ and UAT tests [4]. Other relevant studies were conducted by [5] in redesigning Giwang Sumsel mobile application using Design Thinking which got an SUS score of 80.225 in "Excellent" category meaning the design of this application is acceptable and user-friendly. These studies support Design Thinking as a credible framework for UI/UX design improvement as well as serve valuable references guiding approach and implementation of this research.

2. Related Work

Previous studies provide an essential conceptual and methodological foundation for this research. Through a critical review of prior works, researchers gain insights into approaches, methods, and results achieved in similar studies, which in turn guide the strategy and focus of the investigation. Several relevant studies have applied the Design Thinking methodology to improve user interface and user experience across various digital platforms, demonstrating its effectiveness in addressing usability challenges. Prayogo *et al.* (2024) conducted research titled "Redesigning the UI/UX of a University Website Using the Design Thinking Method" which applied the Design Thinking approach to improve the usability of a university website. The prototype was tested with 20 participants using the System Usability Scale (SUS), which consisted of 10 evaluation items. Test results showed an SUS score of 74.8, categorized as good, indicating that the redesigned prototype met usability standards suitable for implementation, although there remained room for further improvement [3]. In a similar vein, Puspitaningrum *et al.* (2023) in their study "Redesign of the UI/UX of the

Open Library Website of Telkom University Based on the Influence Personality Type Using the Design Thinking Method" focused on tailoring the design to match user personality traits. The resulting prototype was evaluated through Usability Testing using the Single Ease Question (SEQ) metric, achieving an average score of 6.8, reflecting that most users experienced ease and comfort when interacting with the system. The User Acceptance Test (UAT) produced satisfactory results, particularly among users with the influence personality type, who found the new design more intuitive and aligned with their needs [4]. Armiani and Ibadi (2024) in their study "Redesign of the Giwang Sumsel Mobile Application UI/UX Using the Design Thinking Method" focused on mobile application interface development. The prototype was tested online using the Maze platform and the SUS method, resulting in an SUS score of 80.225, corresponding to grade A- and falling into the Excellent and Acceptable categories, indicating that the redesigned UI/UX was not only suitable for use but also capable of delivering a highly positive user experience [5].

Additional studies have reinforced the effectiveness of Design Thinking in various institutional contexts. Wibowo and Pratama (2023) in their research entitled "Evaluation and Redesign of Website User Interface Using the System Usability Scale and Design Thinking Method (Case Study: Department of Communication and Informatics of Gianyar Regency)" found that after testing the proposed design solution, it achieved an average usability score of 88.78, falling into the high-quality category (Grade Scale A), indicating that the improvements and redesign efforts significantly enhanced the usability and user experience of the Diskominfo Gianyar website [15]. Adha *et al*. (2023) in their study titled "UI/UX Design of the Ogan Lopian Application of Diskominfo Purwakarta Using the Design Thinking Method" demonstrated positive response to the new design, achieving a SUS score of 93.5, which falls within the Acceptable range on the Acceptability Range scale. The design process using the design thinking method proved effective in understanding user needs and creating solutions that address those needs [16]. Aulia *et al*. (2024) in their research entitled "Redesign of the UI/UX of the UNMUL E-Learning Website Using the Design Thinking Method" demonstrated that the user interface and user experience designs produced through the Design Thinking method were user-friendly, with high satisfaction levels in usability testing—achieving a usability score of 86 for the lecturer prototype and 80 for the student prototype—as well as a positive experience classified as Excellent in the User Experience Questionnaire [17].

Further evidence of Design Thinking's iterative improvement capability is shown in several studies. Phoa *et al*. (2024) in their study entitled "Re-Design UI/UX Website Jahitku Using the Design Thinking Method" employed the System Usability Scale (SUS) test. The initial redesign received a SUS score of 48.125, considered low with a "Poor" rating. However, after repeated testing, the score improved to 78.775, with an adjective rating of "Good" and a grade scale of "B," above the average SUS score, demonstrating that the Jahitku website experienced significant improvement in user experience [18]. Trivinita *et al*. (2024) in their research entitled "Design and Evaluation of Dental and Oral Health Education Website Using Design Thinking" concluded that the process and stages of designing the dental and oral health education website using the design thinking approach were carried out effectively in accordance with user needs, evidenced by the usability assessment achieving a SUS score of 76.8, falling into the Good and Acceptable categories. These findings were further supported by the research questionnaire's instrument validity test, which demonstrated good validity, as well as reliability test results confirming the data's reliability [19]. Nabiil *et al*. (2024) in their study entitled "Re-Design User Interface Website Infokerja Using the Design Thinking Method" collected data through questionnaires and evaluated using the System Usability Scale (SUS) method. Testing results, involving 52 respondents, showed an average SUS score of 83.7, indicating high user satisfaction and demonstrating that the design thinking-based redesign successfully improved the user experience, simplified navigation, and accelerated the process of finding information [20].

The integration of Design Thinking with other methodologies has also shown promising results. Hardi and David (2024) in their research entitled "UI/UX Design of the Sigmawave Website Using the Design Thinking and Design Sprint Methods (Case Study of PT. Blue Silo Pte. Ltd)" demonstrated that the integration of Design Thinking and Design Sprint methodologies improved the quality of the interface and user experience on the Sigmawave platform. The combination of these two methods was designed to overcome obstacles in the design process while increasing user satisfaction, with results showing that the combination of the user-based problem-solving approach of Design Thinking with the speed of prototyping and iteration of Design Sprint made significant contributions in producing interface designs aligned with user needs [21].

From these studies, it can be observed that the Design Thinking methodology is consistently applied in designing and testing digital interfaces for both websites and mobile applications. However, most research still emphasizes overall design improvements without giving specific attention to primary navigation elements, such as the navigation bar (navbar), which plays a crucial role in determining the effectiveness of user interaction. This research aims to address that gap by applying Design Thinking specifically to the design of a program study website's navigation bar and evaluating it through Maze Usability Testing using three key metrics: Screen Usability Score, Mission Usability Score, and Maze Usability Score. The approach is expected

to produce a navigation design that is not only visually appealing but also effective, efficient, and satisfying for users.

3. Research Method

This research was conducted over a period of four months, from April to July 2025, at the Directorate of Information Systems and Technology (DSTI) of Universitas Bina Darma. This location was selected due to DSTI's role in developing and managing the university's digital infrastructure, making it an appropriate setting for a study focused on user interface and user experience (UI/UX) improvements. The research employed a systematic approach combining Heuristic Evaluation and Design Thinking methodology to identify usability issues and develop effective design solutions.

3.1 Data Collection

To identify user needs and usability problems, researchers employed a combination of qualitative and quantitative methods, including observation, online questionnaires, and interviews. The observation aimed to review the structure and functionality of the current website interface. A questionnaire based on Heuristic Evaluation principles was distributed to 100 active students from the 2021 to 2024 cohorts using Google Forms. The sample size was determined using Slovin's formula, which initially suggested 79 respondents, but was expanded to 100 to ensure more representative results and increase data reliability. Following the questionnaire distribution, interviews were conducted with selected participants to further explore their pain points and expectations regarding the system's interface and user experience. This triangulation of methods ensured comprehensive understanding of user needs and existing usability problems.

3.2 Heuristic Evaluation

Heuristic Evaluation (HE) was used as a usability inspection method to assess the current website's interface against ten widely accepted usability principles proposed by Jakob Nielsen (1994). These principles include visibility of system status, match between system and real-world conventions, user control and freedom, consistency and standards, error prevention, recognition rather than recall, flexibility and efficiency of use, aesthetic and minimalist design, help users recognize and recover from errors, and help and documentation [6]. Each usability issue identified through this evaluation was rated using a Severity Rating Scale, which ranges from 0 (no usability issue) to 4 (critical issue requiring immediate resolution). This method enabled researchers to prioritize usability problems based on their impact and urgency. The results from this evaluation served as the foundation for defining key problems to be addressed in the redesign phase [7]. The evaluation results from 100 respondents were calculated using the formula $\Sigma Hx = 1 \times x + 2 \times x + 3 \times x + 4 \times x + 5 \times x$, where each heuristic principle (H1 through H10) was assessed individually. Table 1 presents the aggregated scores for each heuristic principle, revealing the most problematic areas in the current interface design.

Table 1. Heuristic Evaluation Results

	*ΣHx = 1*x + 2*x + 3*x + 4*x + 5**									
Evaluation HE	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10
	210	278	308	206	291	253	246	188	333	235

To determine the severity level of each heuristic principle, the Severity Rating was calculated using the formula $Sv = \frac{\Sigma Hx}{n}$, where *n* represents the number of respondents (100). The results, presented in Table 2, show that H9 (Help users recognize, diagnose, and recover from errors) received the highest severity rating of 3.33, followed by H3 (User control and freedom) at 3.08, and H5 (Error prevention) at 2.91. The average severity rating across all heuristic principles was 2.548, which when rounded equals 3, indicating moderate to serious usability problems requiring high-priority resolution.

Table 2. Severity Rating Analysis

Severity Rating	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	Average
$Sv = \frac{\Sigma Hx}{n}$	2.1	2.78	3.08	2.06	2.91	2.53	2.46	1.88	3.33	2.35	2.548
Rounded Value	2	3	3	2	3	3	2	2	3	2	3

3.3 Design Thinking Method

To develop a solution that directly responds to users' needs, the research employed the Design Thinking methodology, a user-centered approach that emphasizes empathy, creativity, and iterative testing. Design

Thinking provides a solution-based approach to problem-solving through a series of structured and clear methods that facilitate innovation and user satisfaction [8][9]. The methodology consists of five interconnected stages that guide the design process from problem identification to solution validation. Each stage builds upon the previous one, creating a comprehensive framework for addressing usability challenges. The process consisted of the following five stages:

1) Empathize
   Understanding user challenges through insights gathered from questionnaires and interviews to capture user behavior, expectations, and frustrations. This stage involved analyzing the responses from 100 students to identify common pain points and user needs. Researchers conducted in-depth interviews with selected participants to gain deeper understanding of their experiences and expectations when interacting with the current website interface [10].
2) Define
   Analyzing and synthesizing the findings from the empathize phase to formulate a clear and concise problem statement reflecting the users' main concerns. Based on the heuristic evaluation results and user feedback, researchers identified key usability issues including absent active menu indicators, unattractive visual layouts, unclear iconography and language, and missing essential features such as search functionality and FAQ pages. These problems were prioritized according to their severity ratings and impact on user experience [11].
3) Ideate
   Generating a variety of creative solutions through brainstorming sessions to address the identified problems and enhance the overall user experience. Researchers explored multiple design alternatives focusing on improving navigation clarity, visual hierarchy, iconography consistency, and feature accessibility. This stage involved sketching initial concepts and discussing potential solutions with stakeholders to ensure alignment with institutional goals and technical feasibility [12].
4) Prototype
   Developing high-fidelity UI/UX prototypes using Figma to visualize the new website design and layout. These prototypes were designed to be both functional and aesthetically improved, incorporating solutions developed during the ideation phase. The prototype included redesigned navigation bars with clear active menu indicators, improved visual layouts with better color schemes and typography, intuitive iconography with consistent design language, and additional features such as search functionality and FAQ sections. The high-fidelity nature of the prototype allowed for realistic user testing and accurate evaluation of the proposed design solutions [13].
5) Test
   Conducting usability testing using the Maze platform, an online tool that enables remote usability testing and provides quantitative metrics for design evaluation. Test participants were assigned four specific navigation tasks: accessing the "Faculty" page, viewing "News Details," exploring the "Curriculum" section, and downloading "Guidelines" documents. The usability evaluation employed three core metrics provided by Maze: Screen Usability Score (measuring individual screen effectiveness), Mission Usability Score (assessing task completion success), and Maze Usability Score (providing overall usability assessment). These metrics offered comprehensive insights into the prototype's effectiveness and identified areas requiring further refinement [14].

4. Result and Discussion

4.1 Results

4.1.1 Empathize

In the Empathize phase, researchers gathered user insights through surveys and interviews to gain a comprehensive understanding of the needs, challenges, and expectations regarding the Informatics Engineering Program website at Universitas Bina Darma. A survey was conducted with 100 active students using a questionnaire based on Jakob Nielsen's Heuristic Evaluation principles. The results indicated that most usability aspects of the website scored a Severity Rating of 3, suggesting significant usability issues. These included the absence of active menu indicators, a lack of search functionality, and suboptimal visual design and content structure. To complement the survey findings, in-depth interviews were conducted with three users representing different usage patterns and academic levels. The results reinforced the presence of issues in navigation clarity, information accessibility, and the need for additional features such as a FAQ page and search bar. The collected data was then synthesized into a user persona, serving as a reference for designing user-centered solutions based on real user needs. This persona captured key demographic information, behavioral patterns, goals, frustrations, and technology proficiency levels, providing a holistic view of the target user group.

4.1.2 Define

In this stage, researchers analyzed data from the Empathize phase to identify and define core user problems. Insights from both surveys and interviews were reviewed to determine whether user concerns pointed to issues requiring design intervention. The problems were then categorized to clarify the main challenges while considering users' needs and expectations. This systematic analysis enabled researchers to prioritize issues based on their severity and impact on user experience.

1) Pain Points

Key usability barriers—such as unclear navigation, lack of a search feature, and poor visual hierarchy—were identified as pain points. These highlight critical friction areas in the user experience that must be addressed in the redesign. Specifically, users reported difficulty in locating specific information due to the absence of visual indicators showing their current position within the site structure. The lack of a search function forced users to navigate through multiple pages to find desired content, increasing task completion time and user frustration. Additionally, the inconsistent visual hierarchy made it challenging to distinguish between primary and secondary information, leading to cognitive overload.

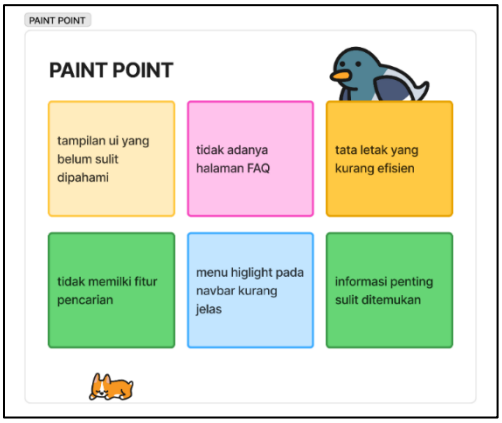

Figure 1. Pain Point Analysis

2) How Might We

From the defined problems, a series of "How Might We" (HMW) questions were developed to frame potential design opportunities. These questions serve as a guide for ideation, encouraging user-centered solutions that directly respond to the identified needs. The HMW questions included: "How might we improve navigation clarity so users always know their current location?", "How might we enable users to quickly find specific information without extensive browsing?", "How might we create a visual hierarchy that guides users naturally through content?", and "How might we design an interface that is both aesthetically pleasing and functionally efficient?" These questions transformed identified problems into actionable design challenges.

Figure 2. How Might We Questions

4.1.3 Ideate

In the Ideate phase, researchers generated a variety of creative concepts in response to the problems previously identified. The primary goal of this stage was to develop ideas that effectively address user needs while remaining feasible within technical and resource constraints. Various techniques were applied to explore

potential solutions, followed by a selection and refinement process aligned with the design context. During this phase, Solution Ideas were formulated to collect initial concepts, while the Prioritization Idea method was employed to determine the most feasible and impactful solutions.

1) Solution Ideas

The Solution Ideas stage involved designing alternative solutions derived from findings in the earlier stages. These ideas were developed through brainstorming sessions involving researchers and stakeholders, complemented by literature review of best practices in academic website design. The emphasis was placed on innovation and efforts to optimally fulfill user requirements. Proposed solutions included implementing breadcrumb navigation and active menu indicators to improve wayfinding, adding a prominent search bar with autocomplete functionality, redesigning the visual hierarchy using consistent typography and color schemes, creating a comprehensive FAQ section addressing common user queries, and developing a mobile-responsive design ensuring accessibility across devices.

Figure 3. Solution Ideas

2) Prioritization Ideas

The Prioritization Ideas stage aimed at evaluating and ranking the generated ideas based on systematic criteria. The assessment focused on two key aspects: the level of impact on users and the feasibility of implementation. Each solution was plotted on a two-dimensional matrix where the vertical axis represented user impact (low to high) and the horizontal axis represented implementation feasibility (difficult to easy). This process ensured that the selected ideas had the highest potential to deliver both effective and efficient solutions. Solutions falling in the high-impact, high-feasibility quadrant were prioritized for immediate implementation, while those in other quadrants were scheduled for future iterations or reconsidered based on resource availability.

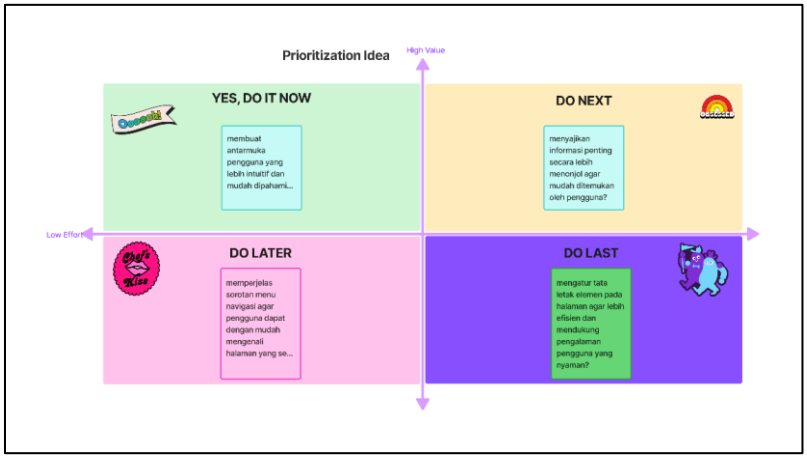

Figure 4. Prioritization Ideas Matrix

4.1.4 Prototype

The Prototype stage aimed to visualize the initial system design based on the prioritized ideas. The design system was developed by focusing on user interaction flow (user flow), consistent visual identity (colors, typography, icons), and structured interface components to ensure readability, intuitive navigation, and

optimal user experience. This stage transformed abstract concepts into tangible design artifacts that could be tested and refined.

1) Design System

The design system established a comprehensive set of guidelines and reusable components to ensure consistency across all interface elements. This system served as the foundation for both low-fidelity and high-fidelity prototypes, enabling efficient design iteration and maintaining visual coherence throughout the website.

a) Colors

The color scheme employs #163784 as the primary color and #FFFF00 as the secondary color, each with gradients ranging from 10% to 100%. The primary color was selected to align with Universitas Bina Darma's institutional identity while providing sufficient contrast for readability. Black (#000000) and white (#FFFFFF) are applied in three gradient variations (base, light, dark) to maintain visual contrast and readability across different interface elements. The color palette was tested for accessibility compliance, ensuring adequate contrast ratios meeting WCAG 2.1 AA standards.

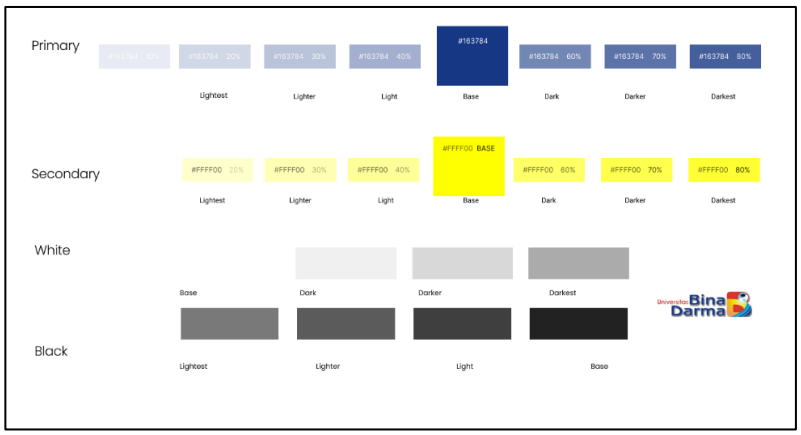

Figure 5. Color Palette

b) Typography

The design employs the Poppins font family in Regular, Medium, Semibold, and Bold weights, with sizes ranging from 10 to 58 pt. This typeface was chosen for its modern, clean, and highly legible appearance, making it well-suited for digital interfaces that prioritize readability and aesthetics. Poppins offers excellent screen readability due to its geometric structure and open letterforms, reducing eye strain during extended reading sessions. The typographic hierarchy was established with clear distinctions between headings (H1-H6), body text, captions, and labels, ensuring consistent information architecture across all pages.

c) Components

The user interface components include navigation bars, headers, footers, buttons, form elements, cards, icons, and other supporting elements. Each component is designed to enhance the user experience by enabling faster, more intuitive, and efficient navigation. Components were developed following atomic design principles, starting from basic atoms (buttons, input fields) to complex organisms (navigation systems, content sections). This modular approach facilitates maintenance and ensures scalability as the website evolves. All components were documented with usage guidelines, states (default, hover, active, disabled), and responsive behavior specifications.

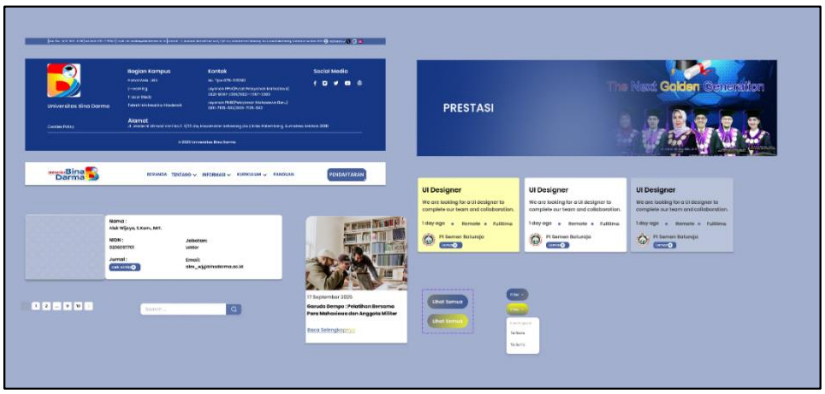

Figure 6. UI Components

d) Icons

The icons employ an outline style, consisting of simple lines without fill, conveying a clean, minimalist, and professional appearance. This style supports navigation, search functions, and status indicators with a clear yet unobtrusive look, enhancing the intuitive and modern feel of the interface. The icon set was designed with consistent stroke width (2px), corner radius, and grid alignment (24×24px base) to maintain visual harmony. Each icon was tested for recognizability at various sizes to ensure clarity across different screen resolutions and viewing distances.

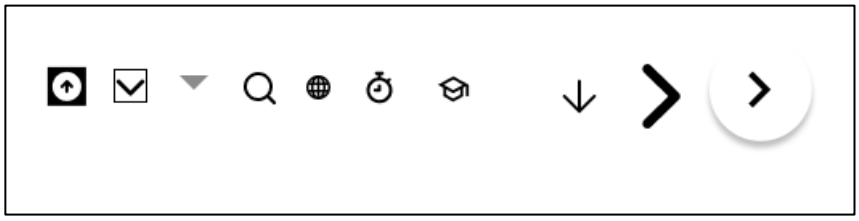

Figure 7. Icon Set

2) Low-Fidelity Wireframe

The Low-Fidelity Wireframe represents an initial interface design that focuses on content structure and layout without complex visual details. In this study, the wireframes cover key pages such as the Dashboard, History, Vision & Mission, Teaching Staff, Achievements, Facilities, Accreditation, News, Graduate Profiles, Curriculum, Academic Guidance, Partnerships, MBKM (Merdeka Belajar Kampus Merdeka), Announcements, and Guidelines. Each page was designed to map the information flow and core functions, serving as a preliminary reference before developing the High-Fidelity Wireframe. The wireframes were created using basic shapes and placeholder content to emphasize layout and functionality over aesthetics. This approach allowed for rapid iteration and feedback collection from stakeholders without investing significant time in visual design. Key considerations during wireframe development included content prioritization, navigation patterns, information hierarchy, responsive grid systems, and user task flows. The wireframes were reviewed with representative users to validate the proposed structure before proceeding to high-fidelity design.

Figure 8. Low-Fidelity Wireframes

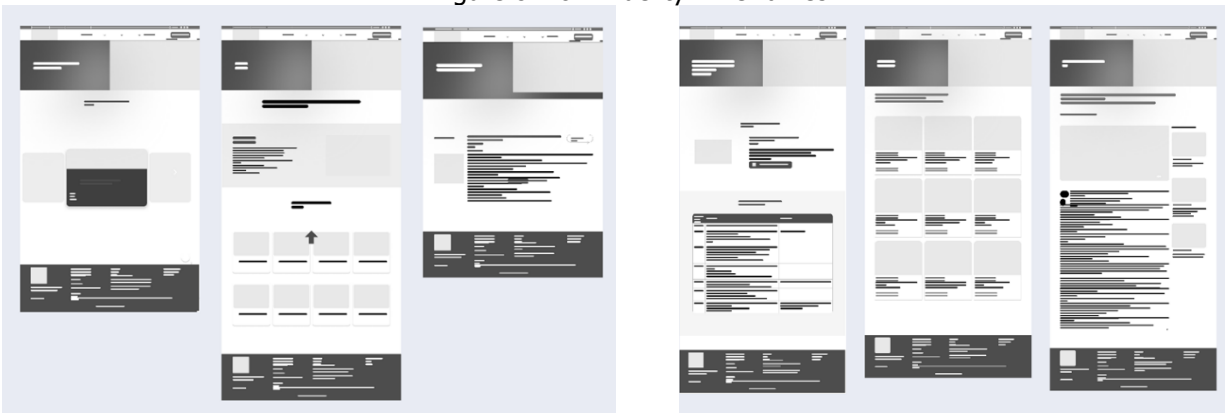

Figure 9. Low Fidelity Wireframe

3) High-Fidelity Wireframe

The High-Fidelity Wireframe represents an interface design with visual details and interactive elements closely resembling the final product. In this study, it includes key pages such as the Landing Page, History, Vision & Mission, Teaching Staff, Achievements, Facilities, Partnerships, MBKM, Accreditation, Announcements, News, Job Vacancies, Graduate Profiles, Curriculum, Academic Guidance, and Guidelines. Each page incorporates the defined color schemes, typography, icons, and UI components, along with navigation, imagery, and tailored content to enhance the overall user experience. This design serves as a direct blueprint for the implementation stage. The Landing Page features a header containing the university logo and quick access links, a main navigation bar with dropdown menus for major sections, and a prominent "Registration" button linking to the online admission form. The hero section includes a large banner image showcasing campus life, accompanied by a search bar enabling quick information retrieval. The main content area presents a welcome message from the Head of the Study Program, a brief history of the program, vision and mission statements, and a news carousel highlighting recent announcements and achievements. The bottom section contains a frequently asked questions (FAQ) accordion and a footer with the university's official contact information, social media links, and site map.

Figure 10. Landing Page Design

This page presents a comprehensive narrative of the Informatics Engineering Study Program's history, accessible via the "About" menu. The navigation bar includes a highlight feature to indicate the active menu item, providing clear visual feedback of the user's current location. The hero section provides a visual cue of the current page through a banner image and page title. The content is organized chronologically, detailing the program's establishment, major milestones, curriculum evolution, and achievements over the years. This design enhances navigation clarity and ensures users access the intended information efficiently.

Figure 11. History Page Design

This page presents the Vision and Mission of the Informatics Engineering Study Program in a clear and structured format. The navigation bar includes a highlight feature to indicate the active menu, while the hero section displays the page title as a positional indicator. The Vision and Mission content is separated into two distinct sections with supporting icons and brief explanations for clearer and more structured comprehension. The Vision section outlines the program's long-term aspirations, while the Mission section details specific objectives and strategies to achieve the stated vision. This separation enhances readability and allows users to quickly grasp the program's direction and values.

Figure 12. Vision & Mission Page Design

This page falls under the "About" menu category, featuring an active navigation bar indicator and a hero section indicating that the content lists lecturers of the Informatics Engineering Study Program at Universitas Bina Darma. Each lecturer is displayed in a card format containing a professional photo, full name, NIDN (National Lecturer Identification Number), academic position, specialization area, email address, and a link to their SINTA (Science and Technology Index) profile for viewing research publications and citations. A pagination feature is implemented at the bottom to maintain layout neatness and facilitate navigation through the complete lecturer list. Users can also filter lecturers by specialization or academic rank using dropdown menus positioned above the card grid.

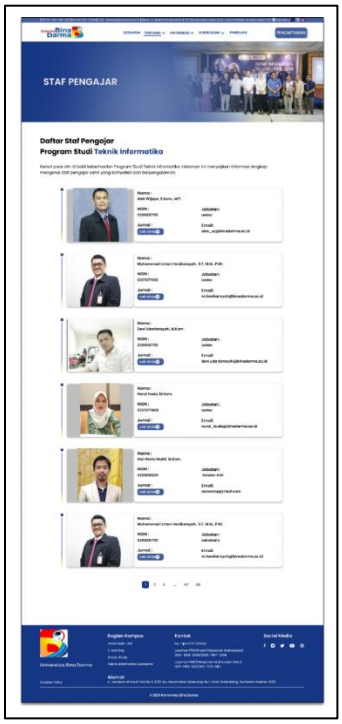

Figure 13. Lecturers Page Design

This page, accessible under the "About" menu, features an active navigation bar indicator and a hero section displaying the page title. It outlines the Informatics Engineering Study Program's commitment to fostering academic and non-academic achievements, supported by statistical data presented in an infographic format showing the number of awards by category and year. The page concludes with a detailed list of awards earned by students and lecturers at local, national, and international levels. Each achievement entry includes the competition name, achievement level (winner/runner-up), participant names, supervising lecturer, and year. This comprehensive presentation demonstrates the program's excellence and motivates prospective students (Figure 14).

Figure 14. Achievements Page Design

Figure 15. Facilities Page Design

This page showcases the facilities of the Informatics Engineering Study Program at Universitas Bina Darma, each presented with a descriptive title, brief explanation of its purpose and capabilities, and high-quality supporting visuals. Facilities highlighted include computer laboratories equipped with modern hardware and software, networking laboratories for hands-on practice, multimedia studios for digital content creation, library resources with extensive IT collections, and collaborative learning spaces. A swipe navigation feature allows users to explore facility details interactively through an image carousel, helping them better understand the program's environment and resources. This visual-rich presentation provides prospective students with clear expectations of the learning infrastructure (Figure 15). This page presents collaborations between the Informatics Engineering Study Program and domestic or international institutions aimed at enhancing education quality, research opportunities, and student career development. Partner logos are displayed visually in a grid layout with swipe navigation for exploring the complete list. Each partnership entry includes the partner institution's logo, name, country of origin, and collaboration type (academic exchange, research collaboration, internship program, or industry partnership). Clicking on a partner logo reveals additional details about the collaboration scope and benefits for students. This transparency demonstrates the program's commitment to providing global exposure and professional networking opportunities (Figure 16).

Figure 16. Partnerships Page Design

This page introduces the "Merdeka Belajar Kampus Merdeka" program for the Informatics Engineering Study Program at Universitas Bina Darma, starting with an overview of its objectives, benefits, and alignment with national education policy. Available programs are presented in card format, including the program title, duration (in semesters or months), eligible semesters for participation, brief description, and application requirements. Programs featured include student exchanges, internships/work placements, teaching assistance in education units, research projects, humanitarian projects, entrepreneurial activities, independent study/projects, and village development projects. This structured presentation helps students choose programs based on their interests, career goals, and current study stage.

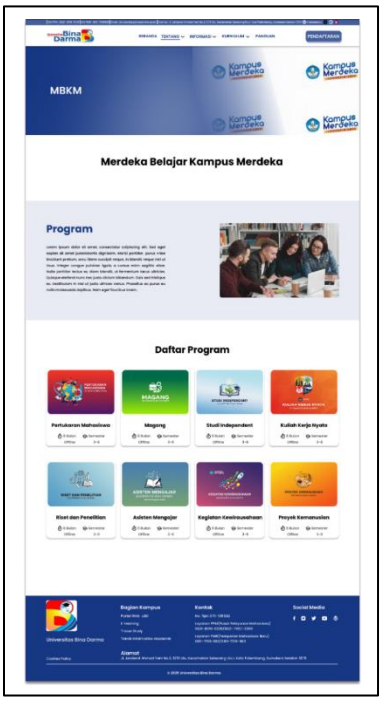

Figure 17. MBKM Page Design

This page displays the international accreditation status of the Informatics Engineering Study Program, complete with accreditation body information, validity period, and a download button for official accreditation certificates and documents. The page emphasizes the program's quality recognition at the international level, enhancing its credibility and attractiveness to prospective students. Self-evaluation report details are presented

in a scrollable table format showing assessment criteria, scores, and evaluator comments for clarity and easy access. This transparency demonstrates the program's commitment to continuous quality improvement and accountability to stakeholders.

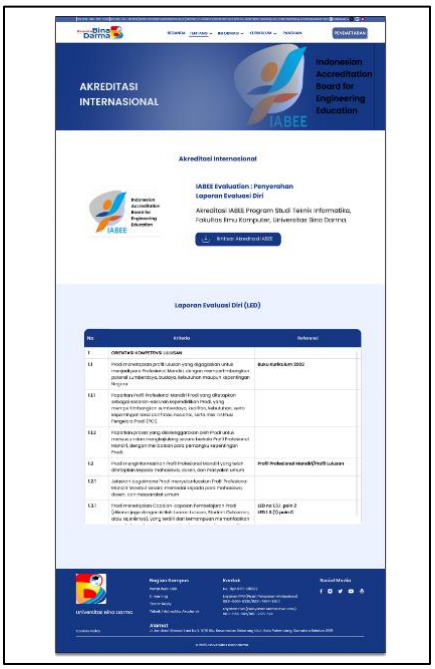

Figure 18. Accreditation Page Design

Under the "Information" menu, this page lists official announcements in a concise card format including announcement title, publication date, category tag (academic, administrative, event, or general), and supporting thumbnail images. A "summary–full view" system allows users to read brief excerpts on the main page and click "Read More" to access complete announcement details on a dedicated page. Pagination is implemented at the bottom to keep the layout organized and navigation simple, with options to display 10, 20, or 50 announcements per page. A filter function enables users to sort announcements by category, date range, or keyword search, improving information accessibility.

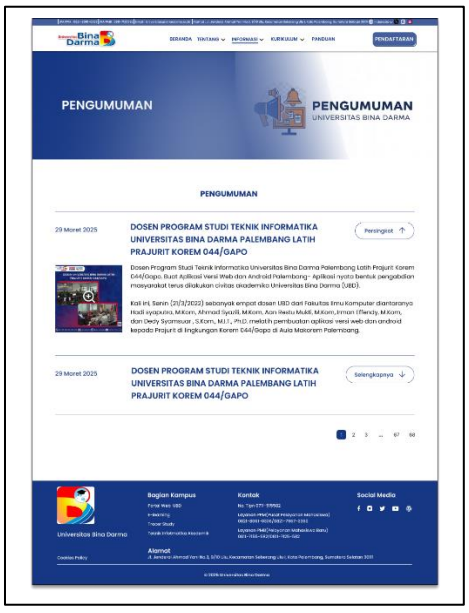

Figure 19. Announcements Page Design

This page presents the latest news related to the Informatics Engineering Study Program in a responsive card layout with thumbnail images, headlines, publication dates, and brief excerpts. A filter button positioned at the top allows users to sort news by category (academic events, student achievements, research publications, community service, or general news) and date range. Clicking a news card opens the news detail page, which features the full article with formatted text, embedded images or videos, author information, and publication

metadata. A "Related News" section at the bottom suggests additional articles based on category or tags, encouraging further exploration and keeping users engaged with program activities.

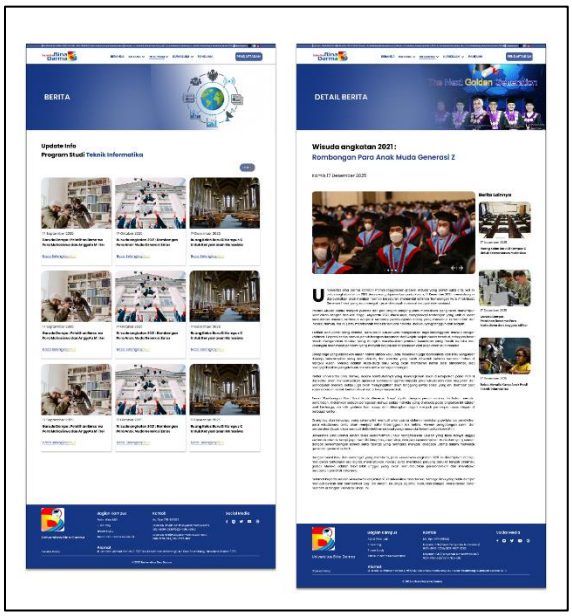

Figure 20. News Page Design

This page provides job and internship listings relevant to Informatics Engineering students and alumni in an organized card format. Each listing shows the position title, company name and logo, brief job description, posting date, work system (Work From Home/office/hybrid), employment status (full-time/part-time/internship/contract), required qualifications, and application deadline. A "View Details" button leads to a comprehensive job description page with application instructions and contact information. Filter options enable users to narrow listings by job type, work system, experience level, and location. This feature supports career development and strengthens connections between the program and industry partners.

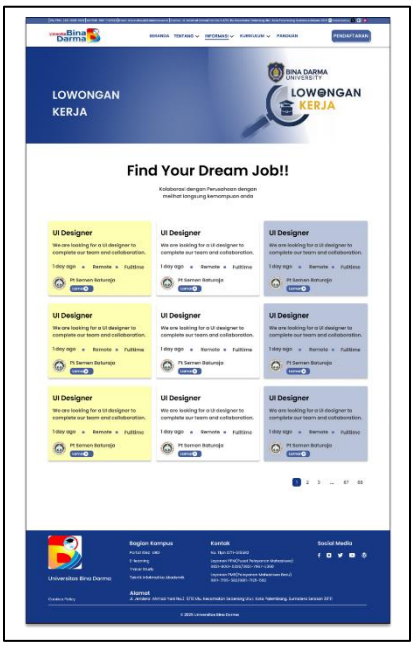

Figure 21. Job Vacancies Page Design

This page outlines the competencies, learning outcomes, and career pathways for Informatics Engineering graduates from Universitas Bina Darma. It describes how graduates are prepared for diverse roles such as Software Engineer, Data Scientist, Database Engineer, Network Engineer, UI/UX Designer, System Analyst, Cybersecurity Specialist, and technology entrepreneurship. Each career path is accompanied by a description of required skills, typical job responsibilities, and industry demand. The page also highlights the program's curriculum alignment with industry needs and professional certification preparation. This comprehensive

overview demonstrates graduate readiness to compete and innovate in the digital era, providing prospective students with clear career expectations.

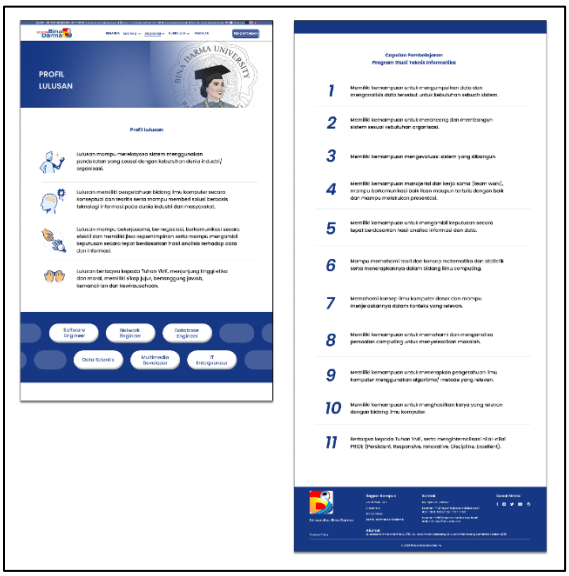

Figure 22. Graduate Profile Page Design

This page presents the comprehensive learning structure of the Informatics Engineering Study Program at Universitas Bina Darma, consisting of two main sections: Course Distribution and Specialization Courses. The Course Distribution section displays courses organized by semester (semesters 1–8) in a tabular format showing course codes, names, credit hours (SKS), prerequisites, and course types (mandatory/elective). The Specialization Courses section outlines available concentration tracks such as Software Engineering, Data Science, Network and Security, or Multimedia and Game Development, along with their respective course offerings. Interactive elements allow users to expand course details to view learning objectives, topics covered, and assessment methods. These features assist students in planning their academic journey and selecting concentrations aligned with their interests and career goals.

Figure 23. Curriculum Page Design

This page lists academic advisors assigned to active students, organized by cohort year and student ID range. Information is displayed in a card format containing the advisor's name, photo, contact information, office hours, and a list of assigned students (accessible only to logged-in students for privacy). The page also provides downloadable academic advising guidelines, semester planning templates, and frequently asked questions about the advising process. A search function enables students to quickly locate their assigned advisor by entering their student ID. The structured layout enables quick access to advisor information, facilitating effective academic guidance and student support.

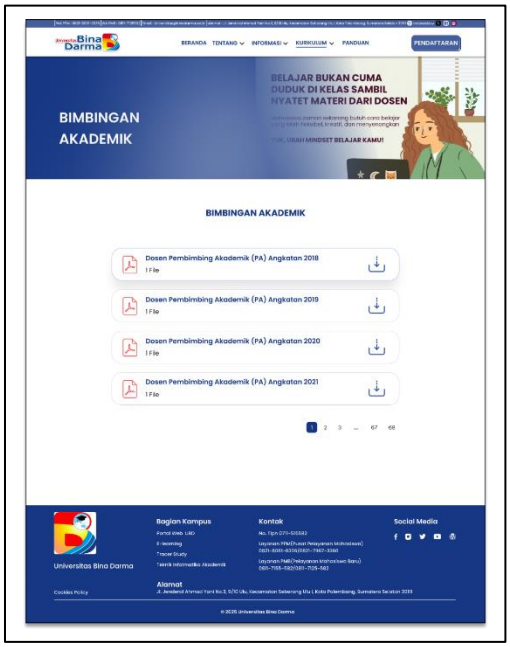

Figure 24. Academic Advising Page Design

This page offers various academic and administrative guidelines essential for student success, presented in an organized card format. Each guideline document is represented by a card showing the document title, brief description, page count, file format (PDF), file size, last update date, and a download icon. Categories include academic regulations, thesis writing guidelines, internship procedures, final project guidelines, course registration instructions, scholarship application procedures, and student conduct codes. A search bar and category filter enable users to quickly locate specific guidelines. The design prioritizes clarity and ease of navigation, ensuring students can access necessary information efficiently and reducing administrative inquiries.

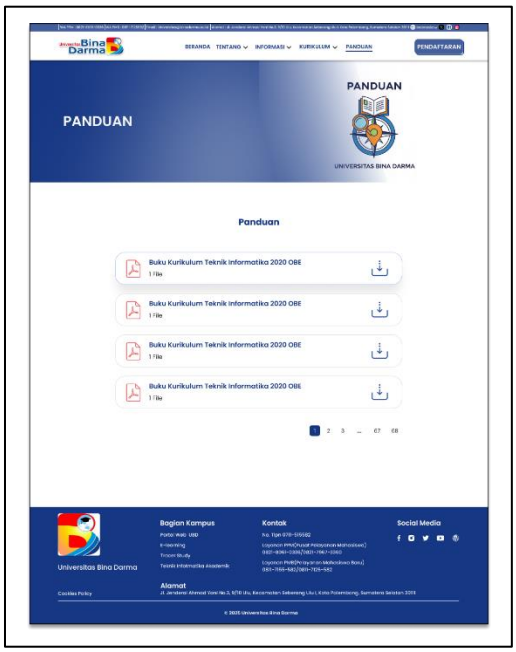

Figure 25. Guidelines Page Design

4.1.5 Test

The usability evaluation was conducted using Maze-based Usability Testing to assess the effectiveness, efficiency, and user satisfaction of the prototype's navigation bar design. Maze is an online platform that enables remote usability testing and provides quantitative metrics for evaluating design quality. The testing involved 30 participants representing the target user group (active students from various cohorts), who were assigned four specific navigation missions designed to evaluate key website functions. The four navigation missions tested were: (1) accessing the Teaching Staff page from the homepage through the "About" menu, (2) viewing News Details by selecting a news article from the homepage news section, (3) exploring Specialization Courses within the Curriculum page, and (4) downloading Guidelines documents from the Guidelines page. Each mission was designed to test different aspects of navigation clarity, information architecture, and task completion efficiency. Participants completed the missions independently without researcher intervention, simulating real-world usage scenarios. Three key metrics were applied to evaluate usability: Screen Usability Score (measuring individual screen effectiveness based on misclick rate and time spent), Mission Usability Score (assessing task completion success rate, path efficiency, and user confidence), and Maze Usability Score (providing overall usability assessment by aggregating all metrics into a single score ranging from 0 to 100). The Maze Usability Score is interpreted as follows: 0-40 (Poor), 41-60 (Fair), 61-80 (Good), and 81-100 (Excellent). Testing results showed impressive performance across all missions. Mission 1 (Teaching Staff) achieved a 100% completion rate with an average completion time of 8.2 seconds and a misclick rate of 2%. Mission 2 (News Details) achieved a 100% completion rate with an average completion time of 6.5 seconds and a misclick rate of 1%. Mission 3 (Specialization Courses) achieved a 100% completion rate with an average completion time of 12.3 seconds and a misclick rate of 3%. Mission 4 (Guidelines) achieved a 100% completion rate with an average completion time of 9.1 seconds and a misclick rate of 2%. Overall, the Maze Usability Score reached 89, placing the prototype in the "Excellent" category. This score indicates that the prototype meets usability criteria at a high level and is ready for further development toward implementation. The high completion rates across all missions demonstrate that the navigation structure is intuitive and users can accomplish their goals without significant obstacles. The low misclick rates indicate clear visual hierarchy and well-positioned interactive elements. The relatively short completion times suggest efficient information architecture and effective use of navigation patterns.

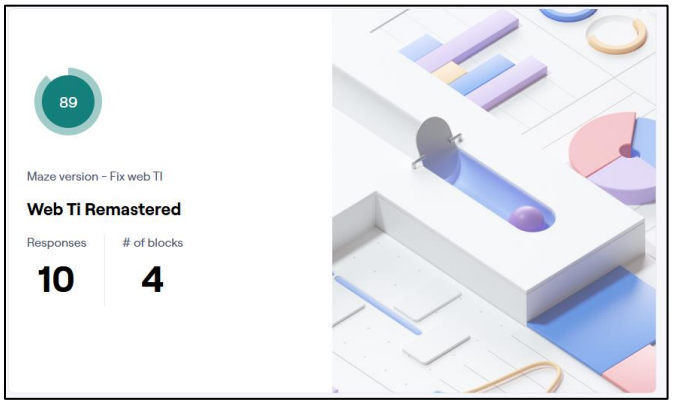

Figure 26. Maze Usability Score Results

These findings demonstrate that the designed navigation provides an intuitive, efficient, and consistent user experience. The active menu indicators successfully addressed the wayfinding issues identified in the Empathize phase, allowing users to maintain awareness of their location within the site structure. The improved visual hierarchy guided users naturally through content, reducing cognitive load and decision-making time. The addition of search functionality and clear content categorization enabled quick access to specific information without extensive browsing. The excellent usability score validates the effectiveness of the Design Thinking methodology in producing user-centered design solutions. By systematically progressing through the empathize, define, ideate, prototype, and test stages, researchers were able to identify genuine user needs, generate appropriate solutions, and validate design decisions through empirical testing. The iterative nature of the process allowed for continuous refinement based on user feedback, resulting in a final prototype that significantly improves upon the original website design. However, some areas for future improvement were identified through user comments and behavioral observations during testing. Several participants suggested adding a site map for comprehensive navigation overview, implementing breadcrumb navigation on deeper pages for easier backtracking, and enhancing mobile responsiveness for smaller screen sizes. These recommendations will be incorporated into subsequent design iterations to further optimize the user experience.

4.2 Discussion

The results state that the Design Thinking methodology was able to solve the usability problems found on the Informatics Engineering Study Program website at Universitas Bina Darma. The first Heuristic Evaluation showed an average Severity Rating of 2.548 (rounded to 3), which means there are moderate to serious usability problems that need high-priority resolution. The most critical issues are identified in H9 with a severity score of 3.33, H3 at 3.08, and H5 at 2.91. This finding is in line with Handayani (2021) who emphasized that heuristic evaluation can identify critical usability barriers that directly impact user satisfaction and task completion efficiency [6]. The five systematic stages of Design Thinking allowed researchers to convert problems into effective design solutions so that the final Maze Usability Score became 89 which means this prototype is categorized as "Excellent". The redesigned navigation bar and interface components directly addressed the pain points identified during the Empathize phase. The implementation of active menu indicators resolved the wayfinding problem, enabling users to maintain constant awareness of their location within the site structure, which contributed to the 100% mission completion rate across all four usability tests. The low misclick rates (1-3% across missions) further validate the effectiveness of clear visual feedback and intuitive navigation patterns. The addition of a prominent search bar addressed the information accessibility issue, while improved visual hierarchy through consistent application of Poppins typography system and strategic use color palette enhanced content scannability reduced cognitive load. Average task completion times between 6.5 seconds to 12.3 seconds indicate that users could accomplish their goals efficiently without unnecessary delays or confusion, which means this dual-navigation approach successfully accommodates different user preferences as well search behaviors.

Comparing with the existing literature, it is noted that the Maze Usability Score of 89 in this study is at least comparable if not better than the results of similar studies. Adha *et al*. (2023) had an SUS score of 93.5 [16], Nabiil *et al*. (2024) reported 83.7 [20], Armiani and Ibadi (2024) attained a score of 80.225 [5], and Wibowo and Pratama (2023) gained a value of 88.78 [15]. These studies consistently produced high usability scores further strengthening the argument that Design Thinking can serve as an effective methodology for redesigning academic websites. This study, however, focused on optimizing just one element—the navigation bar design—rather than undertaking a complete website redesign; hence deeper optimization was possible in critical components which might have led to such excellent usability performance results. This research builds on Prayogo *et al* work (2024), who obtained an SUS score of 74.8 [3]; it proves that more detailed testing with four specific missions involving 30 participants yields stronger data than general usability testing with fewer participants.

The Design Thinking methodology was very effective because it was user-centered and iterative in nature. The Empathize phase combined quantitative surveys with qualitative interviews, which provided comprehensive insights that might have been missed by either method alone; this aligns with recommendations by Raschintasofi and Yani in 2023 regarding the importance of triangulating data sources [8]. The Define phase's pain points and "How Might We" questions turned raw user feedback into actionable design challenges, which encouraged creative problem-solving rather than merely addressing symptoms. The Ideate phase's prioritization matrix evaluated ideas based on user impact and implementation feasibility to avoid pursuing creative but impractical solutions—particularly important in academic settings with resource constraints. The Prototype phase progressed from low-fidelity wireframes to high-fidelity designs allowing iterative refinement without premature commitment to visual details thus reducing development time and costs while the Test phase used Maze platform which provided objective quantitative metrics through a three-metric approach (Screen Usability Score Mission Usability Score Maze Usability Score) giving granular insight as well as an overall quality assessment.

This research presents various theoretical contributions to the UI/UX design of academic websites. The first is the demonstration of the combination of Heuristic Evaluation with Design Thinking methodology as an effective one. It shows how heuristic evaluation can inform and, in fact, strengthen the Empathize and Define phases by using objective prioritization criteria that complement subjective user feedback. Second, it emphasizes focusing on particular interface components rather than trying to do a full-scale overhaul of the website; this suggests that such targeted interventions could lead to significant improvements in usability for institutions with limited resources. Thirdly, it validates Maze platform usage for academic website usability testing by demonstrating its advantages over traditional methods due to its ability to track paths taken by users measure their completion times identify misclicks and calculate comprehensive usability scores. Fourth, it helps better understand how Design Thinking principles apply specifically to an academic context where there are multiple user types served by a single website containing different content types which need frequent updating.

Research findings have some practical implications for universities and educational institutions. First, this study gives a methodology that can be repeated by other institutions to document each stage of Design Thinking and specify tools (Google Forms, Figma, Maze) so as to provide a practical roadmap for similar projects. The design system created—with palettes of colors, rules about typography, libraries of components,

and sets of icons—could act like a template for other programs within academia; thus proving functional excellence goes hand in hand with aesthetic excellence. Even though it took much time, the comprehensive Empathize phase prevented an expensive mistake since it ensured that design solutions were based on real user needs instead of assumed problems—this is very relevant for institutions operating under budget constraints. The quantitative metrics (89 Maze Usability Score, 100% mission completion rates, low misclick rates) provide concrete justification for allocating resources to UI/UX improvements and can be incorporated into institutional performance indicators. Further study has shown that rigorous UI/UX research could be undertaken in academic settings using accessible tools as the entire four-month research process used mostly free or low-cost resources. Several limitations must be taken into account despite positive findings. First, 30 participants were involved in the usability testing, and all of them were current students at Universitas Bina Darma; therefore, generalizability to other user groups such as prospective students, alumni, faculty members, or administrative staff may be limited. The testing was specifically on navigation tasks and did not test other important aspects like content quality and accuracy of information or loading speed and mobile responsiveness. It was a prototype that was tested and not the fully implemented version of the website; hence actual user experience might differ when interacting with production systems that include integration of databases, content management systems, and performance optimization. It took place in a controlled environment with assigned missions which do not fully represent real interactions since users have unclear goals or browse casually. Four months is not enough time to conduct a longitudinal study that would determine if usability scores are maintained over time since users get familiar with the interface and content changes over time too. Also, the study only focused on desktop interface design without any detailed mobile usability testing despite increased usage of mobile devices for accessing academic information.

In light of these findings and limitations, several recommendations for future research are made. Longitudinal studies should monitor usability metrics and user satisfaction for extended periods after implementation to see if high initial scores hold up long term or new problems arise. Comparative studies should take the redesigned website through its paces alongside other academic program websites so that performance can be benchmarked against best practices from different institutional contexts. Investigate the relationship between website usability and tangible outcomes such as student enrollment, efficiency in seeking information, or reduction in administrative workload to bolster the business case for UI/UX investments. Future studies should look at how emerging technologies like AI-powered chatbots, personalized content recommendations, or voice-based navigation fit into Design Thinking methodology. Research should look at what works best for keeping design quality high over time as multiple contributors update content; this includes strategies for content management, training programs, and governance structures. Design Thinking methodology should be applied to other parts of academic digital infrastructure like learning management systems, student information systems, or mobile apps. Studies should look into cultural and linguistic factors in academic website design for schools with diverse student populations since design elements that work well for one cultural group may not work so well for another. The study confirms that academic institutions can significantly improve their online presence by systematically implementing user-centered design principles. The Maze Usability Score of 89 shows that an excellent user experience is possible even with the typical constraints found in academic environments. As digital platforms increasingly become the main channel for educational delivery and institutional communication, investing in rigorous UI/UX design is crucial for institutional success. Heuristic Evaluation combined with Design Thinking offers a strong framework to identify usability problems and create viable solutions, while extensive usability testing through platforms like Maze provides objective evidence of design quality. This paper makes a contribution to theoretical knowledge and practical steps toward better usability on academic websites and sets up a basis for future research and practice in this field.

5. Conclusion and Future Research

The redesign of the navigation bar for the Informatics Engineering Study Program website at Universitas Bina Darma, developed using the Design Thinking framework, has effectively addressed usability issues identified in the initial evaluation. The research systematically progressed through five Design Thinking stages—empathize, define, ideate, prototype, and test—transforming problems into design solutions. The first Heuristic Evaluation revealed an average Severity Rating of 2.548 with critical issues in error recovery (H9: 3.33), user control and freedom (H3: 3.08), and error prevention (H5: 2.91). Usability testing on the Maze platform with four navigation missions—accessing Teaching Staff, viewing News Details, exploring Specialization Courses, and downloading Guidelines—was performed for a redesigned interface that achieved a 100% task completion rate with 30 participants. The prototype demonstrated low misclick rates (1-3%), efficient completion times (6.5-12.3 seconds), and an overall Maze Usability Score of 89 categorized as "Excellent." Results like these indicate significant improvements in navigation clarity, interface aesthetics, and

overall user experience; they show that the prototype is both effective and efficient while providing a strong foundation for further development and implementation.

Subsequent research should enlarge the scope of usability evaluation to include the whole website so that consistency across all modules and pages can be ensured. Studies should also involve a larger number of users who are more diverse: prospective students, alumni, faculty members, and administrative staff in order to accommodate various user requirements and perspectives. Cross-platform optimization tests on desktop, tablet, and mobile devices are essential to ensure consistent user experience across different screen sizes and usage contexts. Also advanced evaluation tools such as eye-tracking and behavioral analytics can be used for deeper insights about user interactions which go beyond traditional usability metrics. Longitudinal studies tracking usability metrics over extended periods would assess whether high initial scores are maintained as content evolves. These directions help ultimately support the creation of a more comprehensive adaptable user-centered academic website serving diverse stakeholder needs.

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