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Optimal UI/UX Design Through Lean UX Methodology: MTI Pay Case Study

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ABSTRACT

This research explores the transformative journey of MTI Pay in response to the challenges posed by technology and globalization in the competitive banking industry. The study delves into the impacts of these global shifts, emphasizing the emergence of numerous startup companies and the imperative for businesses to innovate within limited resources. In addressing this, MTI Pay introduces a super bank, leveraging advanced technology to create a personalized and easily accessible banking experience. The design process of MTI Pay employs the Lean UX method, a contemporary approach to user experience development rooted in Agile principles. This method, focusing on user-centric design, iterative development, and efficiency, aligns with the need for adaptability in a rapidly changing technological landscape. The study concludes with optimism about the positive impact of implementing Lean UX, anticipating improved user experiences and overall system enhancement. In essence, MTI Pay strategically positions itself to thrive in the evolving banking industry, with a commitment to innovation, adaptability, and user satisfaction. The research underscores the significance of such strategic approaches in navigating the complexities of modern banking within a globalized and technologically advanced era.

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1. INTRODUCTION

In a competitive world, the banking sector must confront the challenges of implementing technology to attract and facilitate users in utilizing services and provide a better experience for customers. MTI Pay is a solution that emerges within the community with the determination to transform the traditional banking model. Using advanced technology, MTI Pay aims to provide a more personalized and easily accessible banking experience, tailored to the individual needs of each customer.

In this era, the rapid development of technology and globalization is undeniable. This has brought significant changes to the way people live across the globe. One of the impacts of globalization and rapid technological advancement is the intensification of competition in the banking industry. With the evolution of technology and the economy, an increasing number of startup companies are emerging. Therefore, to survive, these new businesses must be able to produce the best products, albeit with limited resources of cost and time. To address this challenge, businesses are starting to seek ways to endure. In response, MTI Pay introduces a super bank that enables the application to overcome these obstacles.

In this era, the rapid development of technology and globalization is undeniable. This has brought significant changes to the way people live across the globe. One of the impacts of globalization and rapid technological advancement is the increasing competitiveness in the banking industry. With the evolution of technology and the economy, numerous startup companies are emerging. Therefore, to survive, these new businesses must be able to produce the best products, albeit with limited resources of cost and time. To address this challenge, businesses are starting to seek ways to endure. In response, MTI Pay introduces a super bank that enables the application to overcome these obstacles.

The design process development in the MTI Pay system uses the Lean UX method, which is a modern approach to user experience development. Based on the Agile development foundation, Lean UX has a user-centered approach that focuses on reducing unnecessary processes generated during the development cycle and enhancing user experience through multiple iterations without spending excessive time on documentation. The selection of the Lean UX method is deemed appropriate because it can improve the user experience through several iterative steps. Additionally, this method also focuses on user satisfaction with the developed application. It is expected that the implementation of this method will have a positive impact on the existing system in MTI Pay.

Here are similar studies to the research conducted previously. The goal is to ensure that this research has a comprehensive analysis and discussion, as well as to highlight the differences with previous studies. In this context, 15 previous research journals relevant to the research object are presented. Some examples of these journals include:

1. 1. Analysis and Development of User Interface and User Experience Based on Lean UX Methods in Mobile Academic Information System Applications

This study discusses the analysis and improvement of the User Interface (UI) and User Experience (UX) of the Academic Information System (SIA) Mobile application at Muhammadiyah University of Jember based on the Lean UX method. The research results indicate that after redesign and improvement based on expert design assumptions, there is a significant improvement in the UI and UX scales based on the analysis using the User Experience Questionnaire (UEQ). Although there are still aspects that can be categorized as neutral, this study successfully provides recommendations for a better UI appearance. The Lean UX method, which includes assumption declarations, Minimum Viable Product (MVP)

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creation, experiments, and feedback research proved to be effective in improving the UEQ score for the UMJ Mobile SIA application, which is a mobile-based academic information system application owned by the Muhammadiyah University of Jember.

1.2. UI/UX Design for the Latest Waste Bank Information System (SI B'stie) Kebumen Gemilang Sejahtera Using the Spiral Model Method

The paper presents the development of a prototype information system for the KGS Garbage Bank using the spiral model methodology, which encompasses planning, analysis and design, prototype construction, and system testing. The system, named SI B'STIE, is designed with a user-friendly UI/UX and caters to various users including customers, administrators, community waste bank groups, and visitors. It provides essential information about the business profile, activities, and products of the waste bank. Moreover, the system streamlines the management of data, transaction processing, and reporting for waste bank administrators, enhancing efficiency and ease of use. Black-box testing was employed to ensure the functionality of forms and menus, with results indicating that the system operates effectively. The paper also emphasizes the significance of the 3R approach in waste management and the critical role of user experience in the development of such information systems.

1.3. Implementation of Design Thinking in the Android-based UI/UX of the Banjarejo Digital Waste Bank

This article discusses the application of Design Thinking and the System Usability Scale (SUS) in the development of the Rumah Sampah Digital Banjarejo (RSDB) mobile application, an Android-based digital waste bank platform. The research outlines the Design Thinking methodology, which includes stages such as Empathize, Define, Ideate, and Prototype, and details the creation of wireframes, mockup designs, and application features. Usability testing of the RSDB application yielded a SUS score of 71.43, categorizing it as "Acceptable" with a "Grade B" and a "Good" rating, indicating that users find the application easy to understand and use effectively. The application aims to enhance efficiency, simplify transactions, and boost community participation in waste management. The article serves as a comprehensive reference for computer research on the integration of user-centered design in digital and web-based projects, emphasizing the importance of usability and user experience in application development.

1.4. Implementation of the Lean UX Method and its Positive Effects on Android-Based Educational Game Development Chemical Bond Material

This study explores the application of the Lean UX methodology in the development of an Android-based educational game focused on the topic of Chemical Bonds, aiming to enhance students' interest and achievement in understanding abstract chemistry concepts. The research methodology encompassed data collection, assumption declaration, creation of a Minimum Viable Product (MVP), experimentation, and feedback collection. The findings revealed that the educational game developed using Lean UX positively impacted students' learning achievements, particularly in the subject of Chemical Bonds. The final stage of development included an Anova test to analyze post-test data, confirming the game was free of errors or bugs. The game's implementation in two classrooms showed a positive effect on students' learning achievements, with several iterations required to ensure the game met user needs and produced the desired features. The references cited in the study cover a range of topics, including educational technology development, Android-based learning media,

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virtual laboratory needs analysis, educational games as learning tools, interactive learning model development, and user interface design and usability testing in educational applications.

1.5. Lean UX Applied PSSUQ to Evaluate Less-ON UI/UX Analysis and Design

This paper from the International Journal of Advances in Data and Information Systems explores the application of Lean UX methodology in evaluating the UI/UX design of a digital startup named Less-ON, which provides tutoring services. The research encompasses a comprehensive approach including a literature review, needs analysis, design, implementation, testing, and conclusion. The usability of the Less-ON UI/UX was assessed using the Post-study System Usability Questionnaire (PSSUQ), which measures system usefulness, information quality, interface quality, and overall satisfaction. The results indicated that the system was highly acceptable to users across all measured aspects. The study emphasizes the significance of user-centered design for the success of digital startups and was supported by The Directorate of Research Technology and Community Service (DRTPM) of the Ministry of Education and Culture of the Republic of Indonesia.

1.6. Lean UX and Design Sprint Methods in Creating and Developing Aryanna Applications

This paper explores the application of Lean UX and Design Sprint methodologies in the development of the Aryanna mobile application during an internship at PT Inovasi Realita Nusantara. It highlights the efficiency of these methods in saving time and costs in the UI/UX design process, enabling startups to compete more effectively. The development process involved stages of Think, Make, and Check, along with a Brand Overview to understand the brand's character and positioning. After two revisions, the application was well-received by 90% of users who participated in usability testing. The paper also emphasizes the importance of soft skills in the competitive business environment and discusses the differences between academic methods and real-world practices, noting that while university-taught methods are robust for research and design, a practical understanding of coding is essential for designers to effectively realize their designs.

1.7. Application of the Lean UX Method in Web-Based E-Learning Application Development at SMAS – AL – Fityan

This paper presents the development of a web-based e-learning application tailored for a high school, specifically SMAIT Al-Fityan School Medan, using the Lean UX method. The development process was driven by the urgent need for an effective online learning platform due to the COVID-19 pandemic. The researchers conducted a literature review, stated assumptions, and built a Minimum Viable Product (MVP). They identified essential functional requirements and evaluated the system's usability with the Software Usability Measurement Inventory (SUMI). The e-learning system was found to be efficient and successful in facilitating the educational process between teachers and students. The paper concludes with suggestions for future enhancements, including the addition of new features and the development of a mobile application, and provides a bibliography of sources used.

1.8. Career Consultation Mobile Application UI Development Using Lean UX Method

This study, published in Jurnal Ilmiah Teknologi dan Komputer Vol. 3, No. 1 April 2022, investigates the usability of an online career consultation website using a standardized

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questionnaire and identifies shortcomings in dependability and novelty. In response to survey results, the authors developed a mobile application prototype named "Konsul Aja," consisting of 14 pages designed based on user feedback and needs. The research methodology encompassed data collection, reliability and validity testing, MVP wireframe and prototype creation, feedback and research, experimentation, and new design development, with a focus on Lean UX, user interface (UI), user experience (UX), human-computer interaction, and questionnaires for UX evaluation. The study highlights the importance of UI and UX in the success of mobile applications, especially considering the rising global smartphone usage and the variety of mobile app functions.

1.9. Career Consultation Mobile Application UI Development Using Lean UX Method

This paper presents a study on the design and development of a prototype for insurance and Last Wish features within the Bank Jago mobile application, utilizing the User Centered Design (UCD) methodology with a focus on usability. The research process included specifying the context of use, and requirements, creating design solutions, and evaluating the design. A questionnaire was distributed to 20 selected respondents to assess their perception of the prototype, which revealed a high level of acceptance, particularly for the insurance and Last Wish features. The study concluded that while the prototype met usability principles and could potentially assist users in financial planning, further design improvements and development are necessary. The research, published in the Jurnal Teknologi Informasi dan Komunikasi (JTIK), emphasizes the importance of user-centered approaches in UI/UX design to ensure user satisfaction and effective user experience.

1.10. User Interface (UI) Design on the Kopra Mandiri Application Dashboard (Other Bank Case Studies)

This open-access article presents the enhancement of the Bank Mandiri Dashboard application's User Interface (UI) using the ADDIE method, aimed at improving customer access to financial information and overall satisfaction. The UI redesign was implemented using web technologies such as HTML, CSS, JavaScript, React JS, and Antd for the Front end, and Java with Spring Boot for the Back end. A notable feature introduced is the "Other Bank/External Account Information," which allows customers to view their balance and transaction information from other banks within the dashboard. User trials were conducted to gather feedback, which indicated an increase in accessibility and convenience for customers managing their financial information. The paper suggests further improvements, including code optimization for the dashboard menu and regular updates to enhance security and maintain compatibility with evolving technology.

1.11. UI UX Analysis and Design Development of Less On Digital Startup Prototype by Lean UX

This research paper presents the development and evaluation of a digital startup prototype for a private tutoring service called Less-ON, focusing on UI/UX design using the Lean UX methodology. The study, set in Indonesia, highlights the significance of UI/UX for startup success and employs a research method that includes needs analysis, design, implementation, and testing with the System Usability Scale (SUS). The Less-ON mobile application prototype scored 85.53 on the SUS, indicating above-average usability and a positive user experience. The paper suggests the potential for further improvements through additional research and user testing, having gathered feedback from 52 respondents during

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the development process, which included stages such as observation, assumption declaration, MVP site map creation, and prototyping.

1.12. FDW Store E-Commerce Application Design using the Lean UX Method

This paper presents the development and testing of the FDW Store application prototype, an e-commerce platform designed to enhance the user interface (UI) and user experience (UX) for business owners. Utilizing the Lean UX method, which includes stages such as Declare Assumptions, Create an MVP (Minimum Viable Product), Run an Experiment, and Feedback and Research, the study aimed to create an intuitive and comfortable user interface. The FDW Store offers services like mobile credit for various operators, online game top-ups, and online bank payments. User testing yielded positive feedback, indicating that the prototype is a viable solution for business owners. The paper suggests that future research could employ the Guerrilla method to gather direct user data for further refinement of the design.

1.13. UX UI/UX Redesign of the Academic Information System Website at XYZ University Using the Lean UX Method

This paper discusses the redesign of the Ventela website using the Lean UX method to enhance user experience. A literature review was conducted to identify issues with the website's UI and UX, leading to assumptions and priorities for the redesign, which focused on creating an attractive interface, incorporating necessary features, and ensuring an intuitive website flow. The redesign included pages such as login, home, about, size chart, FAQ, contact us, and products. Data was collected through questionnaires, literature, and observation, revealing user issues such as a limited navigation bar, unappealing visuals, and the absence of a search feature. The Lean UX method was employed to design a Minimum Viable Product and test it with users, resulting in significant improvements in appearance, functionality, user experience, and increased product sales conversions. Feedback from 22 respondents post-redesign indicated a positive reception, with high ratings for design, usability, information readability, and accessibility, confirming that the website's redesign successfully addressed the identified issues.

1.14. Redesigning the UI/UX Design of the Pyramid Jaya Clinic Website Using the Lean UX Method

This paper details the application of the Lean UX methodology to redesign the UI/UX of the Klinik Piramida Jaya website, which had been closed due to the absence of a developer contract. The study followed Lean UX steps from data collection through questionnaires and interviews to creating problem statements, assumptions, hypotheses, and proto-personas, and testing a Minimum Viable Product (MVP) consisting of user flow and wireframes with potential users. The usability of the redesigned website was evaluated using the System Usability Scale (SUS), which indicated that the design was user-friendly and met user needs. The research aimed to facilitate user registration and information retrieval on the clinic's website, and the findings confirmed that the Lean UX approach was effective in creating a directed and user-centered design process, ultimately resulting in a prototype that improved the user experience for clinic appointment bookings.

1.15. Android UI/UX Design Tuition Payment Application Lean UX Method Case Study of the Al-Manshur Foundation

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This study focuses on the design of a web-based school fee payment application using the Lean UX methodology. The research resulted in a prototype that was tested by 21 users and received positive feedback. The findings underscore the importance of UI/UX design as a crucial step in application development. The paper concludes with a recommendation for future research to further develop the prototype design for both desktop and web versions and to enhance the prototype design in the future. The references included in the study cover topics related to information system design and user experience. Additionally, the journal discusses the UI/UX design for an Android-based school fee payment application, initiated by the Al-Manshur Foundation, which employed the Lean User Experience model. The initial phase involved creating wireframes for the prototype concept, which were then developed into a working prototype to serve as a reference.

2. METHODS

The following is the research methodology, which encompasses the stages carried out by the author in the study. The author opted for an implementative approach in its development. These stages include data collection, outcomes, assumptions and hypotheses, design, creating the Minimum Viable Product (MVP), research and learning, and concluding with conclusions and recommendations. The research method employed can be seen in the following diagram.

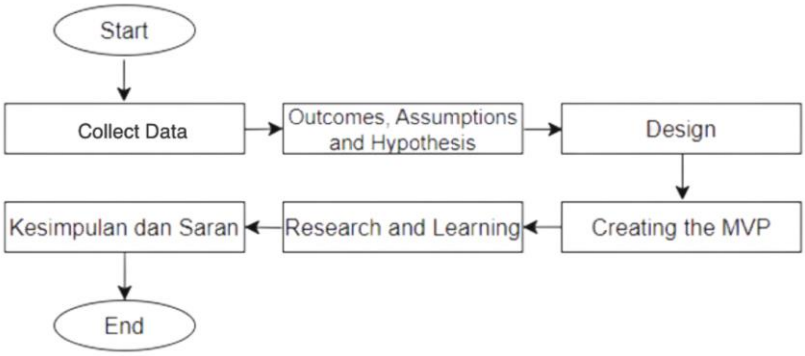

Figure 1. Diagram Research Methodology

2.1. Collect Data

In this stage, the author conducted data collection using the interview method. Through these interviews, the researcher aimed to gain a better understanding of the perspectives, experiences, needs, and personal views of users. The interviewees in this study were users who had previously used banking applications for an extended period.

Additionally, the researcher also conducted a literature review to identify relevant studies previously conducted. The sources of information used as references included scholarly journals, websites, and the results of the interviews conducted.

2.2. Outcomes, Assumptions and Hypothesis

In Lean UX, the outcomes, assumptions, and hypotheses process is one of the development steps of MTI Pay in the Lean UX method, which details the experiments to be conducted to test assumptions and achieve the desired outcomes. To create meaningful outcomes, the author designs the requirements needed by the user to be developed

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according to the target audience. The assumption declaration will contain an initial overview of the product to be developed. From these assumptions, the author can formulate hypotheses.

2.3. Design

In the design stage of Lean UX, the author engages in product design and hypothesis testing. The implementation at this stage involves creating sketches and wireframes to generate feedback.

2.4. Creating the MVP

In this stage, there is a follow-up to the design process, which involves the implementation of the creation of sketches and wireframes in the form of mockups. This process aims to obtain a visual representation of the user interface and user experience (UI/UX) of the MTI Pay system. In the design development, the author utilizes the Figma application. The author also creates prototypes in the design, making it easier for users to understand the user flow within the system, and obtaining feedback from users.

2.5. Research and Learning

This stage focuses on testing. The primary goal of the Lean UX process is to gain insights and feedback comprehensively. The author will pose several questions related to the system so that they can evaluate and measure the success of the system. evaluations to ensure that the developed system aligns with the expectations and needs of the users.

2.6. Lean UX

Lean UX is a design management system designed to assist in design through team collaboration, iterative processes, and frequent contact with users. In this system, there is a collaboration between the IT team and the Design team, aiming to shorten the handoff time of prototypes from the design team to the IT team.

3. RESULTS AND DISCUSSION

In this section, it contains the results of the research conducted, along with the discussion of the research design as outlined earlier. The results presented are the outcomes of the stages in the Lean UX method, including data collection, outcomes, assumptions and hypotheses, design, creating the Minimum Viable Product (MVP), research, and learning.

3.1. Collect Data

In this stage, the author collected information related to the design development of the MTI Pay system, and one of the methods used was interviews. The respondents in these interviews were users who had previously used banking applications for an extended period. In conducting data collection, the author established several criteria to obtain the best results. The following respondent criteria can be seen in Table 1 :

Table 1 Respondent Criteria

No	Questions
1	Aged 18-55 years old
2	Occupation as a student or employee anywhere
3	Residing in all regions of Indonesia
4	Proficient in Bahasa Indonesia as a native language

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5	Understanding of digital technology
6	Interest in the development of digital technology in banking
7	Have experience using banking applications

3.2. *Outcomes, Assumptions and Hypothesis*

This stage is derived from the previous stage, namely the data collection stage through interviews. From the interview results, there are several focuses that the author will use as considerations in the development of the MTI Pay system, including:

1. Transaction, including Fund transfers (local, international, others), Wallet for any purpose, Shariah-compliant interest, Multi-people wallet, and Insurance feature.
2. Islamic content: Sadaqah feature, Zakat feature, Islamic education content, Prayer reminder & Fajr Sadaqah reminder.
3. Gamification: Design focus for ease of use and attractiveness, Promo page for enjoyment, Animation when using the application, and Mini-games.

The users of the MTI Pay system to be developed are the general public with an average age ranging from 18 to 55 years. They are millennial and Gen Z users, generations proficient in using technology.

After the author successfully formulates assumptions about user needs, the next step is to determine hypotheses as a basis for creating visual designs. Table 2 below explains the hypotheses for the visual design of MTI Pay.

Table 2. Visual Design Needs

Component	Description
Color Palette	Color Palette used in the design to create a specific atmosphere and build brand identity
Typography	Selection and arrangement of fonts used to convey messages clearly and enhance visual appeal
Iconography	The use of icons or symbols to represent actions or information in an intuitively.
Layout	Arrangement of elements in the user interface, including contrast, white space, and component distribution.
Whitespace	White space between design elements to improve readability and enhance layout.
Responsive Design	Design that can adapt to various screen sizes and devices.

3.3. Design

This session focuses on the results of the design implementation, which is divided into two main parts: MVP Implementation and Feedback Response.

3.4. Creating the MVP

This stage begins with the creation of a low-fidelity model transformed from the previous stage. The low-fidelity model is created using the Figma application. Examples of the creation of a low-fidelity model for an educational game can be seen below.

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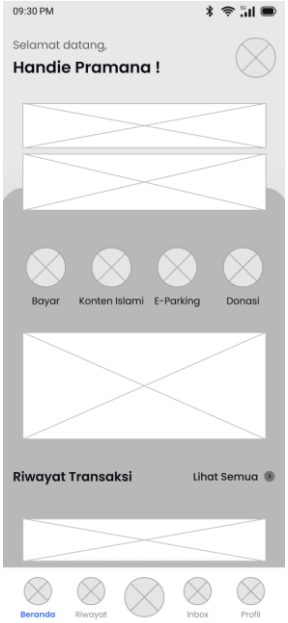

Figure 2. Low Fidelity

Figure 3. Login Page

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Figure 4. Verification Page

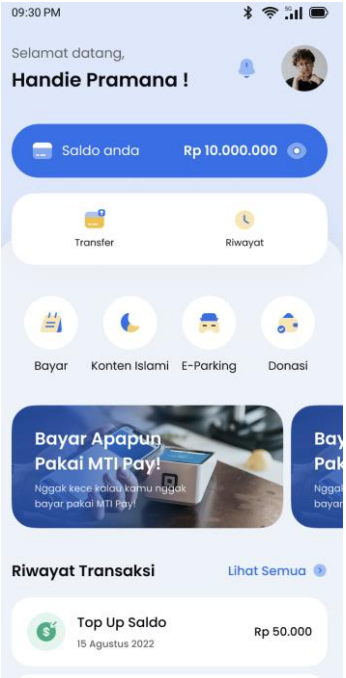

Figure 5. Home Page

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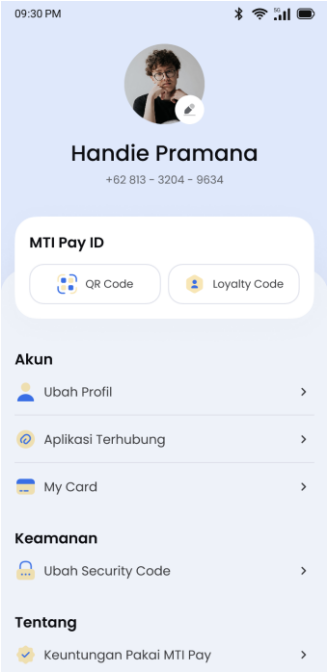

Figure 6. Profile Page

Figure 7. Notification Page

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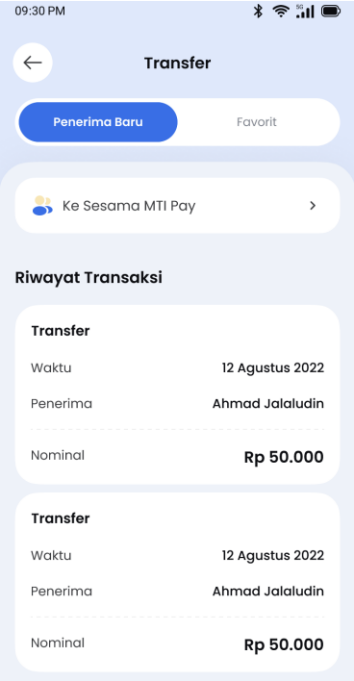

Figure 8. Transfer Page

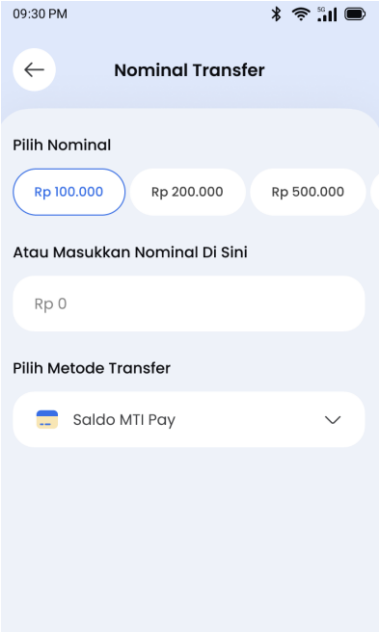

Figure 9. Transfer Detail Page

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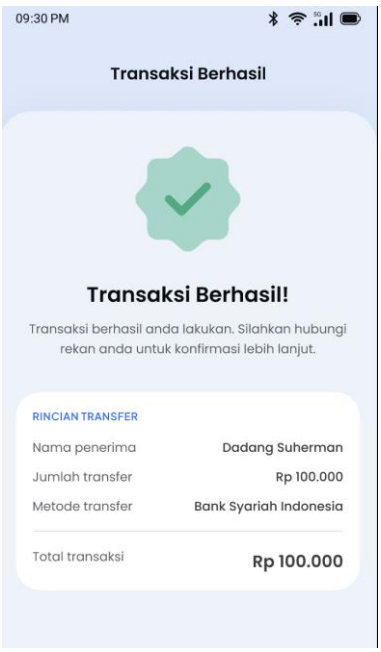

Figure 10. Transfer Success Page

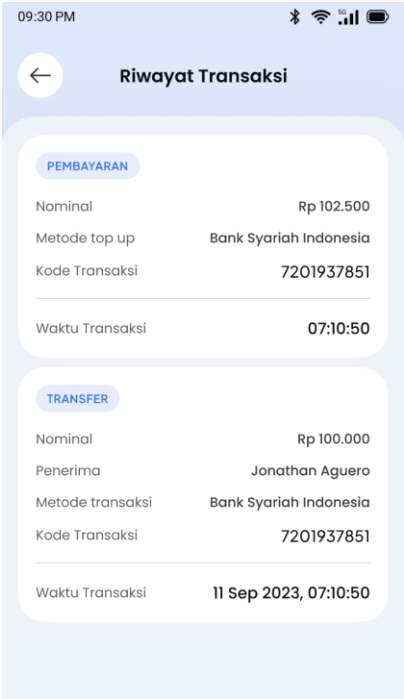

Figure 11. History Page

3.5. Research and Learning

In the next stage, there is feedback provided by respondents from a questionnaire similar to the previous stage, where this respondent feedback can serve as an evaluation for the development of the next research application. The following respondent feedback can be seen in Table 3.

Table 3. Feedback

No	Description
1	The design appearance is quite good and easy to understand for laypeople.

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2	The use of colors may need a little improvement to be more ingrained in the consumer's mind.
3	The presentation of information and the navigation sequence are easy to understand and learn.
4	The provided features are simple and meet the needs, so their utilization is very optimal.
5	In my opinion, it's okay, but some icons still are difficult to understand.
6	The prototype design is really good, from the design to the layout, it's neat and pleasing to the eye, and its features are easy to use.
7	Everything is already quite good, perhaps the use of font sizes could be improved to make it more visible.
8	Maybe some features like frequently searched recommendations could be added to make it more user-friendly.
9	love the features, perhaps the use of brighter colors could make the vibes look more cheerful.
10	Efficient and effective for its features, maybe the use of colors could be in pastel colors(?).

4. CONCLUSION

In conclusion, MTI Pay emerges as a solution to address the challenges faced by the banking sector in the competitive landscape of technology and globalization. The rapid evolution of technology and the emergence of numerous startup companies have intensified competition in the banking industry. To thrive in this environment, businesses, including MTI Pay, must adapt by providing innovative and user-centric solutions.

MTI Pay's introduction of a super bank, leveraging advanced technology for a more personalized and easily accessible banking experience, reflects a strategic response to the changing landscape. The incorporation of the Lean UX method in the design process demonstrates a commitment to user satisfaction and continuous improvement. This method, with its focus on reducing unnecessary processes and iterating based on user feedback, is poised to enhance the user experience in the MTI Pay system.

The implementation of Lean UX is well-aligned with the need for efficiency and effectiveness in product development, especially in a rapidly evolving technological landscape. By prioritizing user-centered design and iteratively refining the application, MTI Pay aims to stay competitive and meet the evolving needs of its users.

In summary, MTI Pay's strategic approach to technology, user experience, and design methodologies positions it to not only survive but thrive in the dynamic banking industry. The emphasis on innovation, adaptability, and user satisfaction sets the foundation for MTI Pay's success in providing a superior banking experience in the era of globalization and rapid technological advancement.

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