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Improving bank digital services using design thinking method

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ABSTRACT

The COVID-19 pandemic accelerated the shift to digital banking, exposing critical gaps in the infrastructure of Bank IRIS, a pseudonym for a prominent international bank operating in Jakarta. During the migration process, Bank IRIS customers' complaints were also piling up; these usually include but are not limited to issues on poor connectivity, repeated errors, and poor responses from the customer service representatives. Design thinking was applied in researching these problems through a structured process divided into five phases, namely: empathize, define, ideate, prototype, and test. In the Empathy phase, consumer interviews and feedback analysis showed that there were significant problems: frequent connectivity errors and poor service recovery. The core problems highlighted in the Define phase were issues of inadequate connectivity, frequent errors, and poor responses from customer service. Proposed solutions during Ideate included the use of CDN, AI-powered chatbots for real-time support, adoption of network indicator to decrease transaction risks, thorough staff training programs, and iterative feedback loop. During the Prototype phase, this research deployed a narrative prototype, presenting scenarios to research subjects that identified problems and provided solutions. Customers were actively contributing to the improvement of these proposals by providing their views in order to co-create feasible remedies. Finally, in the Testing phase, proposed solutions effectively addressed consumer pain points, enhanced customer satisfaction, and received positive feedback from stakeholders. This study gives actionable strategies to improve digital banking services and provides insights that can benefit other banks facing similar challenges in digital transformation..

KEYWORDS *Digital Banking, Design Thinking, Customer Satisfaction, UI/UX Principles, Narrative Prototype*

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INTRODUCTION

Beginning in late 2019, the COVID-19 pandemic significantly impacted economic and social systems globally. The lockdowns and social distancing measures enforced in Indonesia led to a transition from traditional in-person interactions to digital alternatives. In Indonesia, customers increasingly shifted toward digital platforms for conducting financial transactions. Naturally, the

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banking sector had to adapt as well. This abrupt change revealed weaknesses in the digital infrastructure of numerous financial institutions, including Bank IRIS.

Bank IRIS is a pseudonym for one of the top international banks in Jakarta, known for its wide array of financial services that encompass everything from corporate banking to foreign exchange and trade finance. Founded in the 1960s, Bank IRIS had originally used traditional face-to-face banking, focusing on building personal relationships with its clients. It has enjoyed a reputation for reliability and trustworthiness, especially among corporate customers who appreciate the personal touch. However, the COVID-19 pandemic compelled the institution to rush into adopting digital banking technologies, which exposed serious flaws in the current systems and processes.

This move towards digital banking was accompanied by a definite increase in the number of customer complaints for Bank IRIS. Some points that reflect the pain points were connectivity issues, very poor error management, and slow responses toward customer inquiries. Table 1 below outlines the year-over-year increase in complaints from 2018 to 2024:

Table 1. Increasing Number of Complaints for Bank IRIS

Year	Number of Complaints	Total Customers	Percentage of Complaints
2018	2	1,852	0.11%
2019	3	1,857	0.16%
2020	5	1,695	0.29%
2021	7	1,700	0.41%
2022	9	1,703	0.53%
2023	12	1,706	0.70%
2024	14	1,704	0.82%

This growing dissatisfaction underscores the urgency for Bank IRIS to address these issues through innovative and customer-centric solutions. The present research deals with the application of the Design Thinking framework to come up with structured and user-centred solutions for solving the customer needs.

RESEARCH METHOD

Design Thinking Framework

Design Thinking is a human-centered problem-solving approach that aligns user needs with technological possibilities and business goals to develop practical, effective solutions. Tim Brown (2009) defines it as "a discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into

customer value and market opportunity." The five stages of Design Thinking applied in this study are:

1. **Empathy**: Will be done through customer in-depth interviews and surveys about what pains them.
2. **Define**: The researcher will define the main problems from the results of the Empathy stage.
3. **Ideation**: These include proposing solutions based on the define part.
4. **Prototype**: It is at this stage, prototypes or early versions are being created to see the ideas and test their viability in reality. The prototype will be presented as a narrative prototype. Pioneer researchers Eric Spaulding and Haakon Faste developed, in 2013, the approach for employing the use of narrative prototypes as a potent design tool which marries prototyping with storytelling to explore user experiences in a contextual and engaging way. In narrative prototype, research subject is encouraged to procreate the solution with the researcher.
5. **Testing**: The testing part will be conducted by evaluating the output from the narrative prototype through distributed questionnaires.

UI/UX Framework

UI/UX design is crucial for developing digital platforms that are user-friendly, efficient, and enjoyable. The main principles of UI/UX, as discussed in Garrett's book (2010), include:

- Usability: Making sure the platform is easy to navigate.
- Functionality: This refers to the system's ability to perform its intended tasks effectively and reliably, fulfilling user needs without frequent errors or failures.
- Information Architecture: Organizing content logically for easy access.
- Visual Design: Improving aesthetic appeal while ensuring consistency.
- Accessibility: Ensuring services are usable for individuals with varying abilities.
- Responsiveness: The design should adapt seamlessly across all devices and screen sizes to provide a consistent experience.

These principles guided the creation of survey questions and the analysis of customer feedback in this research.

Customer Satisfaction

The conceptual definition of customer satisfaction is a degree to which the firm's offerings meet or exceed customer expectations. As phrased by Philip Kotler, customer satisfaction is described as "a person's feelings of pleasure or disappointment that result from comparing a product's perceived performance (or outcome) to expectations" (Kotler and Keller 128). If the performance meets or

exceeds the expectation, the customer would be satisfied; if it falls short, dissatisfaction results.

According to Kotler, several key variables determine customer satisfaction:

1. Product and Service Quality: According to Kotler, quality is a satisfaction driver and it forms the "totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs" (Kotler and Keller 129).
2. Customer Service: Effective and responsive customer service has a greater influence on satisfaction, especially when customers have a problem or need assistance of some kind (Kotler and Keller 130).
3. Price Fairness: Price is a dominant factor for customer satisfaction due to such fact that consumers constantly evaluate whether price is fair regarding the value they receive (Kotler and Keller 131).
4. Convenience refers to easy access and usage of services over digital platforms. Convenience leads to customer satisfaction in today's digital space, as noted by Kotler and Keller (132).
5. By addressing these factors through Design Thinking and UI/UX improvements, this study aims to enhance overall satisfaction with Bank IRIS's digital services.

RESULT AND DISCUSSION

Empathy

The Empathy phase focused on understanding consumer viewpoints and identifying pain issues in Bank IRIS's digital banking services. In-depth Interviews were conducted with two customers, one is the Bank's digital service frequent user and the other one is customer who had submitted complaint. The questionnaire participants consisted of five corporate clients, who all had submitted complaint before. Their responses highlighted some weaknesses in the bank's digital infrastructure.

Interview Results

Table 2. In-Depth Interview Results

	Interview I	Interview II
Main Purposes of using IRIS Digital Banking	Remittance (money transfer), Paying Bills, Checking Balance.	Tax payment, Time Deposit.
Main Problems	Slow connectivity (especially during peak hours), error in the middle of transaction, slow and ineffective customer service.	Poor connectivity (slow status update) and error (logged out suddenly due to connection time out).

Suggestions	Improve connectivity, pre-inform customers in instances of connection problem, train the customer service.	The use of A.I. chatbot for customer service
Other issues	No list of saved recipients, need improvement on responsiveness, more descriptive icons on the application.	Customer service not knowledgeable enough, outdated FAQ features.

Questionnaire Results

Table 3. Questionnaire Results

Question	Customer 1	Customer 2	Customer 3	Customer 4	Customer 5	Average
Usability	3	4	5	4	5	4.2
Functionality	1	2	2	2	2	1.8
Information Architecture	4	5	4	5	4	4.4
Visual Design	4	5	4	5	5	4.6
Accessibility	3	4	5	4	5	4.2
Responsiveness	3	4	3	4	4	3.6
Error Prevention and Feedback	2	2	2	1	2	1.8
Service Recovery	2	3	3	3	3	2.8
Simplicity	4	5	4	5	5	4.6
Respect	3	4	5	4	5	4.2
Resilience	2	3	3	3	3	2.8
Trustworthiness	4	5	4	5	5	4.6
Cultural Sensitivity	3	4	5	4	5	4.2
Content	4	5	4	5	5	4.6
Loyalty	2	3	3	3	3	2.8
Engagement	2	3	3	3	3	2.8
Recommendation	2	3	3	3	3	2.8

The result of the Cronbach's Alpha assessment of all the answer is 0.9647, which reflects excellent reliability.

Furthermore, the findings in questionnaire and interviews have also been confirmed with assessment of the company complain logs from 2023 – 2024 where frequent errors during customer transaction and poor customer service has been the frequent issues. Showing that during the period of increasing complaint, the adopted countermeasures have not been sufficient.

Define

The Define phase sought to clearly describe the problems defined during the Empathy phase. A series of interviews with two customers revealed key insights into customers' experiences with IRIS Digital Banking: both interviewees raised concerns over poor connectivity. Customer I further pointed at problems with

transactions and bad customer service, while in Customer II's case, he experienced unexpected logouts due to timeout.

This is further confirmed in the results of the questionnaire pointed out two main issues in Bank IRIS digital banking service:

1. Functionality Issues:
   - Participants rated "Functionality" with an average score of (1.8), reflecting a significant degree of dissatisfaction, mainly due to connectivity issues.
   - Also, for "Error Prevention and Feedback", the average rating was also 1.8, reinforcing the idea that the site failed in error handling and providing feedback.

2. Customer Service Shortfalls:
   - "Service Recovery" (2.8) reflects inadequate customer service responses when issues arise.
   - Scores for "Resilience" (2.8) indicate that the platform struggles under high traffic or unexpected situations.

The identified issues in functionality and customer service have ripple effects on other key areas, undermining overall user experience and trust in the platform. The issue of poor functionality, illustrated by the low scores in "Functionality" (1.8) and "Error Prevention and Feedback" (1.8), directly influences loyalty and engagement. This was evidenced by their relatively low ratings of (2.8). In customer service, weak "Service Recovery" and "Resilience" at (2.8) suggest that problems typically remain unsolved.

Key Findings

The key issues defined from the result of empathy are:

1. **Connectivity Issues**: Slow connection.
2. **Frequent Error**: Frequent transaction failures due to poor network infrastructure.
3. **Customer Service Gaps**: Slow response times and the staffs are not knowledgeable.

By framing these pain points in specific and actionable terms, the Define phase set the stage for ideating targeted solutions that directly address customer frustrations and operational inefficiencies.

Ideate

From ideation process, ideas acquired from customer interviews can be leveraged to build feasible solutions. This ideate part has been influenced by the procreation process in the Narrative Prototype stage. The ideas gathered from this part is of high value since it came from direct discussion with customers who are

the first-hand user of the banking services. Here are the proposed solutions to the problems:

The Connectivity Problem

This problem has been appeared all of the collected data, from interviews, questionnaire, and complain log. The explanation for this is IRIS Bank uses server based in Singapore. The source of the problems are several technical and network-related factors:

- Latency in Data Transmission: The geographical distance between the server in Singapore and the customers in Jakarta can introduce latency. While the physical distance is relatively short, inefficiencies in network routing or inefficient pathways can increase round-trip durations.
- Network Congestion: When internet exchange points or ISP networks connecting Jakarta and Singapore become crowded, it can lead to delays in data transfer. If these networks are widely used, particularly during peak times, the pace of data transfer will be reduced.

The good solution to address this issue is by implementing a CDN, or Content Delivery Network. A CDN consists of a network of servers placed in different geographical areas, aimed at providing material to users more effectively. It does this by caching copies of website assets—such as photos, videos, scripts, stylesheets, or even whole web pages—on many servers positioned across the globe. Deploy local servers in Indonesia to cache commonly accessed data and reduce latency. This solution has not been used by IRIS Bank to this date.

In parallel or alternatively, adding from in-depth interview result from customer, a **network indicator solution** could be added. This could be one simple solution that mitigate customer get into transferring fund while the connection with poor connection.

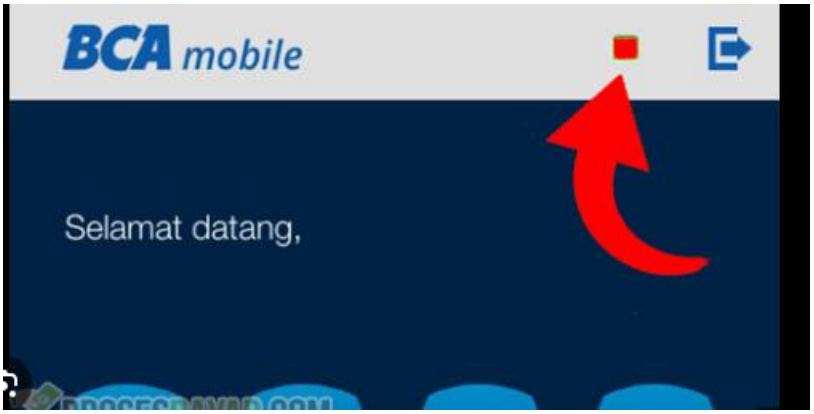

Figure 1. BCA Network Indicator

The Customer Service Problem

To solve the customer service difficulties at IRIS Bank, a complete approach should be devised. This involves the bank acting on the use of technology,

enhancing staff skills, and increasing service efficiency generally. The application of an AI-powered chatbot could massively enhance how general inquiries and issues are resolved in real time. With its advanced NLP, the chatbot provides quick answers, guides users through troubleshooting, and escalates the more complex cases to human employees where necessary. His approach not only improves response times for simple issues but also free's up human agents for more complex customer needs; this will ultimately improve the overall customer experience.

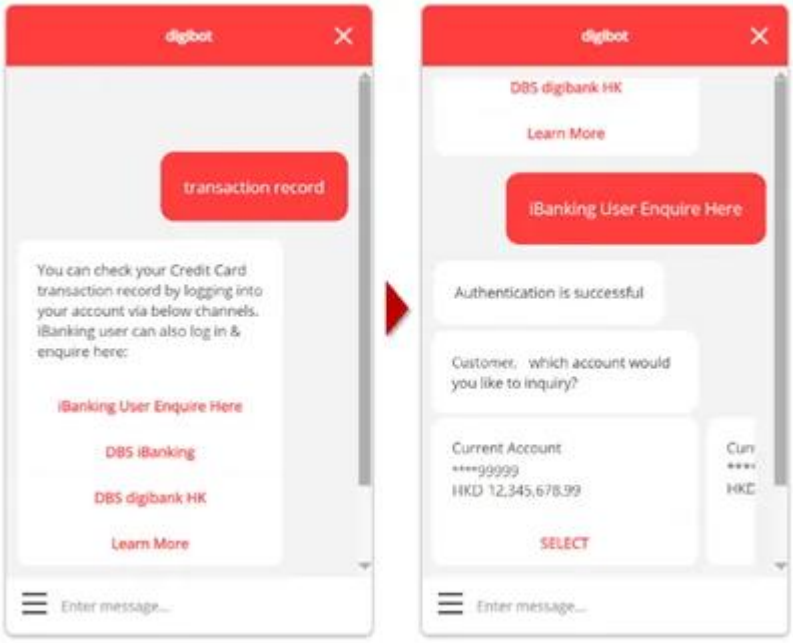

Figure 2. Bank DBS AI Chat Bot

Simultaneously, investing in comprehensive training programs for customer service personnel is crucial. Empowering staff with advanced problem-solving skills, knowledge of the bank's products and services, and techniques for managing high-stress situations can significantly enhance their ability to address customer complaints effectively. Following the interactional justice stated by Yuliana (2012), service recovery should give interactional justice to customer, meaning customer service should be able to offer empathy and responsiveness during the complaint process. Regular workshops, role-playing scenarios, and feedback sessions can assist agents remain adaptive and compassionate in their interactions. Training should also stress resilience, helping personnel to manage spikes in demand or unpleasant contacts without affecting service quality.

In addition to these strategies, creating a strong customer feedback loop can be crucial in addressing service-related issues. By setting up a system that allows customers to easily share their experiences and suggestions, the bank can pinpoint common problems and make targeted improvements. Using automated feedback collection tools along with data analytics can yield valuable insights into customer

feelings and trends in service performance. By regularly responding to this feedback, IRIS Bank can show its dedication to listening to customers and providing excellent service, which can help build greater trust and loyalty over time. Together, these approaches can greatly enhance the quality and responsiveness of customer support.

Table 4. Proposed Solutions

Solution	Details
Network Infrastructure Development	CDN Adaptation and upgraded network tools to assure reliability.
Connection Notification Display	Alerts users proactively about network issues..
AI Chatbot Assistance	Offers real-time support and improves response times.
Improved Customer Service	Comprehensive training to improve service quality.
Iterative Feedback Loop	Regularly collects customer insights for continuous improvement.

Narrative Prototype

The narrative prototype presents practical scenarios showcasing how the proposed solutions can enhance the customer journey and address common challenges:

Scene 1: Introducing the Problem

It's a hectic Monday morning, and Mr. Arif, a mid-level manager for a manufacturing company, starts the day with a very essential task: he needs to transfer funds to one of their key vendors through Bank IRIS's digital banking platform. Time is of urgency, and the vendor wants confirmation by 10 AM to release raw materials that are necessary for production. Mr. Arif checks on to the Bank IRIS program, and it drags along with delayed loading and transaction failures repeatedly. He gets frustrated and calls customer service, but the response is quite late, and the matter stays unresolved. He focuses on comparable historical incidents that have created delays and damaged relationships with vendors.

Customer Perspective: Pain Points: Slow connectivity, error-prone transactions, and unresponsive customer service. Emotional Impact: Frustration, loss of trust, and stress due to professional implications.

Scene 2: The Solution Emerges

Fast forward to six months later, Mr. Arif receives an email announcing significant improvements in Bank IRIS’s digital services, developed using a customer-centric Design Thinking approach. Intrigued, he decides to explore the changes.

Upon logging into the upgraded platform, he notices a clean, intuitive user interface. The application now features a network indicator that informs him of the quality of the connection, warning him of any potential errors while conducting transactions. Transactions are processed smoothly, even during peak hours, thanks

to the implementation of local servers and Content Delivery Networks (CDNs) to minimize latency.

Key Features: Improved Connectivity: Local servers ensure faster transaction processing and fewer outages. Connection notification: An alarm designed to inform customers in real-time of the latency or connection status before and during transactions, reducing uncertainty.

Scene 3: Tackling Errors and Recovery

One day, Mr. Arif faces a minor problem in the process of transferring money. Scared, he thinks that his remittance may fail. The system out there immediately detects the error and shows clear, actionable guidance on how to fix it. An AI-driven chatbot offers instant support to help him troubleshoot in real time. The chatbot escalates the problem to a human agent who calls him within minutes for further assistance.

Service Recovery Innovations: AI chatbot assistance: Quickly addresses straightforward issues. Customer support with empathy: Agents trained in advanced problem-solving and stress management to provide prompt and effective solutions for customers. Feedback loops: Automated follow-ups that request user feedback, fostering trust and promoting continuous improvement.

Scene 4: Enhancing Customer Service for Time Deposit Placement

Mr. Arif decides to try the features of time deposit placement. Guided processes allow him to easily do the task. Integrated live chat connects him with an informed representative, making the process clear and swift. Positive interaction solidifies his loyalty to Bank IRIS and enhances his recommendation to his colleagues.

Key Features for Time Deposit Placement: Guided Process: An intuitive step-by-step guide helps users seamlessly complete Time Deposit placements. Enhanced Customer Support: Updated training ensures that customer service representatives can provide accurate, comprehensive information. Real-Time Assistance: Integration of live chat for immediate support.

Scene 5: A Satisfied Customer Experience

The improved platform becomes an integral part of Mr. Arif's workflow. He quickly incorporates the enhanced platform into his work routine. Mr. Arif can manage transactions without a hassle, and his relationships with vendors go smooth due to timely payments. Sharing his positive feedback via an in-app survey, he mentions that Bank IRIS has outperformed his expectations. He feels encouraged enough to suggest the platform to his colleagues, adding to its growing reputation.

Customer Outcomes: More efficient; greater satisfaction. Heightened Bank IRIS brand loyalty. Positive word-of-mouth enhances the bank’s reputation.

This creation process of this prototype involved co-creation activity with customers. This prototype has been shown to the customers, and they have participated in modifying and approving the narrative.

Testing

In the testing phase, the solutions developed in the narrative prototype were tested against the initial pain points identified during the Empathy phase. Solutions tested included the following:

1. Development of network infrastructure (adaptation to CDN).
2. Implementation of a network indicator display in Bank IRIS's internet banking.
3. Deployment of an AI chatbot for real-time assistance.
4. Customer service training-Emotional Intelligence, Knowledge, and Speed.
5. Continuous feedback mechanism for improvements.

Testing was done by administering a structured questionnaire to five previously surveyed customers, two interview participants, and three Bank IRIS staff. The questionnaire was used to determine the effectiveness of each solution in solving the identified pain points. The questions ranged from usability and functionality to customer satisfaction and system improvements.

Table 5. Solutions Testing

Respondent	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Average
Respondent 1	5	5	5	5	5	5	5	5	5	5	5.00
Respondent 2	5	5	5	5	5	5	5	5	5	5	5.00
Respondent 3	4	4	4	4	4	5	4	5	5	5	4.40
Respondent 4	5	5	5	5	5	5	5	5	5	5	5.00
Respondent 5	4	4	4	4	4	5	4	5	5	5	4.40
Respondent 6	5	5	5	5	5	5	5	5	5	5	5.00
Respondent 7	5	5	5	5	5	5	5	5	5	5	5.00
Respondent 8	5	5	5	5	5	5	5	5	5	5	5.00
Respondent 9	4	4	4	4	4	5	4	5	5	5	4.40
Respondent 10	5	5	5	5	5	5	5	5	5	5	5.00

Mean was 4.86 for overall, which shows high levels of satisfaction with regard to implemented solutions. The responses also told stories aligning with the customer expectation on the solutions.

Statistical Reliability

Cronbach's Alpha was calculated to verify the reliability to validate that the data from the questionnaire is reliable, and the score stood at 0.9259, meaning highly reliable data. This reinforces the validity of the findings and the effectiveness of the suggested solutions.

CONCLUSION

This thesis is about the very important problem of growing customer complaints concerning Bank IRIS's digital banking services, especially after COVID-19. The research concluded that the Design Thinking method was effective in the identification of pain points and the provision of solutions for each particular issue within the bank's digital services. These issues included connectivity problems, such as slow connections; frequent errors stemming from inadequate network infrastructure; and gaps in customer service due to slow response times and insufficient staff knowledge.

The proposed solutions which are Implementing Content Delivery Networks (CDNs) for improved connectivity, AI-driven chatbots for better service recovery, redesigning the UI/UX with network indicator to improve usability and functionality, training on customer service.

Suggestion for Future Researcher

Future studies should focus on wider aspects of customer dissatisfaction in digital banking, focusing on diversified demographics and behavioral data. Exploring emerging technologies such as predictive analytics and blockchain may reveal opportunities to improve security and personalization. Longitudinal studies would be useful in assessing the long-term effectiveness of these solutions. Moreover, the continuous utilization of narrative prototypes has the potential to involve customers in co-creation by enhancing mutual understanding and pragmatic outcomes. Equally, future studies can be directed to test these solutions within diverse banking institutions to examine the real-world applicability of solutions to ensure that they would work consistently.

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