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Research Article

Designing a Web-Based Inquiry Management Platform Using a Design Thinking Approach (Case Study : PQM Consultants)

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Abstract: Technological advancements and digital transformation have significantly impacted business management, including the consulting sector. PQM Consultants faces challenges in managing inquiries, which are still manually handled using Microsoft Excel. This manual process results in fragmented data, delays in accessing information, input errors, and difficulties in real-time monitoring of inquiry statuses. These issues affect operational efficiency, data transparency, and timely decision-making. This research focuses on developing a web-based inquiry management platform through the Design Thinking methodology, aiming to improve the efficiency and effectiveness of inquiry handling at PQM Consultants. Adopting a qualitative case study approach, the study gathers insights through in-depth interviews, direct observations, and document reviews involving consultants and support team members who are directly engaged in the inquiry process. Research participants consist of consultants and support team members directly involved in inquiry management. The study uses a Design Thinking approach, which focuses on solving problems through repeated refinement and actively involving users throughout the development process. This framework supports the development of creative solutions by deeply understanding user needs, defining key challenges, and continuously refining ideas through prototyping and testing (Costich 2021). The Empathize stage focuses on understanding user needs and challenges. The Define stage formulates the core problems specifically. The Ideate stage generates creative ideas as potential solutions. The Prototype stage develops an initial design of the platform, which is then tested during the Test stage to gather feedback for further refinement. The results indicate that the web-based inquiry management platform effectively addresses various challenges in managing inquiry data, such as access delays, input errors, and data fragmentation. The platform enables consultants to monitor inquiry statuses in real-time, access data transparently, and make faster and more accurate decisions.

Keywords: Design Thinking; Digital Platform; Digital Transformation; Inquiry Management.

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1. Introduction

In response to the rapid pace of digital change, many organizations are under pressure to shift from conventional workflows to more brilliant, more data-driven systems. This transformation is particularly critical in the consulting industry, where responsiveness and clarity in client engagement significantly influence business development outcomes. One of the most crucial internal processes within consulting operations is inquiry management which is the mechanism by which incoming service requests, client questions, and business opportunities are tracked, assigned, and followed up. Effective inquiry management supports operational efficiency and

serves as a strategic entry point for client relationship building and revenue generation. As consulting firms expand their client base and service offerings, managing inquiries accurately and transparently becomes a key differentiator in maintaining credibility and securing long-term engagements.

This research focuses on PQM Consultants, a productivity and quality management consulting firm established in 1987. For years, PQM has relied on manual tools such as Microsoft Excel, email, and WhatsApp to manage inquiries. While these tools may have sufficed under low-volume operations, they have increasingly become bottlenecks in the face of growing client engagement complexity, faster communication expectations, and cross-functional collaboration needs. The primary issues that emerge from these legacy methods include lack of traceability, status ambiguity, frequent miscommunication, and data fragmentation. These inefficiencies hamper internal coordination and delay timely responses to potential clients delay timely responses to potential clients, thereby affecting customer satisfaction and potential business outcomes.

Previous approaches to digitalizing inquiry handling, such as Customer Relationship Management (CRM) software emphasize external engagement features like sales tracking and marketing automation. However, such solutions often fail to accommodate internal coordination needs, are costly to implement, and lack user-specific customization (Buttle, 2006; Darmawan et al., 2022). Additionally, these systems often do not reflect the nuanced workflow and task delegation patterns within consulting firms. This gap underlines the need for lightweight, user-centered solution tailored specifically to the internal inquiry process.

This study takes a Design Thinking route, emphasizing iterative improvements and user-driven insights across multiple stages from empathy gathering to solution testing (Brown, 2009; Costich, 2021). Unlike conventional development models, Design Thinking emphasizes direct user involvement, problem reframing, and rapid feedback loops to ensure relevance and adoption. This paper presents the development journey of a web-based inquiry management platform grounded in Design Thinking, aiming to enhance internal visibility, reduce duplication, and promote timely decision-making.

Based on the background described above, this research is guided by the following research questions: (1) What are the main problems experienced by the consultant team in monitoring and accessing inquiry status from manual Excel-based data? and (2) What kind of digital platform-based solution can be proposed to overcome the inquiry management issues at PQM Consultants?

This study aims to identify the key challenges in the current manual inquiry management process and to develop a user-centered digital solution through the Design Thinking approach that addresses the specific needs of PQM Consultants.

2. Literature Review

2.1. Strategic Management

According to Hutabarat et al. (2023), strategic management involves a continuous cycle of analysis, planning, execution, and evaluation that helps organizations align their actions with long-term goals. It is crucial in aligning technological innovation with company vision and operational improvement. In the context of this study, the development of a digital inquiry management platform aligns with the company's strategic objective to enhance responsiveness and internal coordination. According to David and David (2015), the strategic management process involves three key stages: strategy formulation, implementation, and evaluation. This platform initiative supports all three, especially in operational execution and monitoring.

2.2 Digital Transformation

Digital transformation is integrating digital technologies such as cloud computing, dashboards, and real-time systems into all organizational functions (Siebel, 2019; Suharto, 2024). More than adopting new tools, it represents a shift in how data drives efficiency, decision-making, and service delivery. In this study, PQM Consultants embarks on digital transformation by developing

a centralized, web-based platform to replace manual inquiry handling. The transformation addresses common challenges, including resistance to change, skills gap, and data silos, while unlocking opportunities for process automation and enhanced transparency.

2.3 Innovation

Innovation refers to adopting new ideas, processes, or technologies to solve problems or create value. Rogers (1983) defines innovation as an idea or practice perceived as new and adopted by individuals or organizations. Kahn (2018) classifies innovation into product, process, and marketing innovations. This study contributes to process innovation by redesigning inquiry workflows using digital tools. According to Whittington (1958), innovation is a step-by-step process of creating and developing new ideas that lead to useful products or services. This process involves several key stages:

1. Idea Generation: The initial phase where new concepts are created to solve specific problems.
2. Market Consumption of the Offering: The product or service is introduced and evaluated based on consumer response.
3. Idea Exploitation: The idea is transformed into a tangible offering supported by a business model, which is adjusted based on market feedback.
4. Pivot: If the market response is unfavorable, companies may significantly alter the direction of the idea's development.

2.4 Design Thinking

The Design Thinking approach begins by exploring user perspectives and needs, making it an effective method for developing relevant and adaptive innovations. Uebernickel et al. (2020) highlight that this approach integrates cognitive, emotional, and experiential perspectives to generate innovative, functional solutions. According to Roterberg (2020), the Design Thinking process combines divergent and convergent thinking. The divergent phase explores various possible ideas without limitations, while the convergent phase narrows them down to the most relevant solutions based on insights and data. This balanced approach ensures that resulting solutions are both creative and practical. Design Thinking typically follows five main phases:

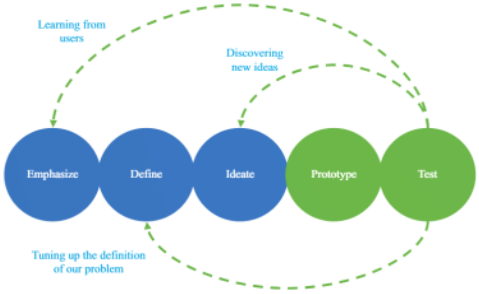

Figure 1. Design Thinking Process

Source: (Roterberg, 2020)

a. Empathize

This initial stage focuses on understanding users needs, behaviors, emotions, and pain points through direct engagement. interviews, observations, surveys, empathy maps, and persona creation are employed to gain deep insights. By stepping into the users shoes, designers can uncover latent needs and identify real challenges from the user's perspective.

b. Define

The collected data is synthesized in this stage to articulate a clear and focused problem statement. The aim is to reframe user observations into meaningful challenges. Tools such as the "How Might We" (HMW) question format are used to generate actionable and user-centered problem definitions. This phase sets the direction for ideation by establishing a shared understanding of the core issues.

c. Ideate
Once the problem is clearly defined, the team generates many possible solutions. Creativity is encouraged, and quantity is prioritized over immediate feasibility. Brainstorming sessions, mind mapping, and lateral thinking techniques help explore innovative ideas. Afterward, ideas are filtered based on criteria such as desirability, feasibility, and viability criteria to identify the most promising concepts.

d. Prototype
Selected ideas are brought to life through simple, tangible representations such as models, sketches, mock-ups, or digital simulations. Prototypes allow teams to visualize solutions, explore their functionality, and identify strengths and weaknesses early in the process. This hands-on experimentation helps refine ideas and align them more closely with user needs.

e. Test
In the final phase, actual users evaluate the developed prototypes to obtain feedback and identify areas for refinement. This iterative process helps validate assumptions, uncover usability issues, and refine the solution based on user input. Testing may lead to revisiting earlier stages to improve the outcome. It ensures that the final product or service is not only functional but also aligned with user expectations.

3. Proposed Method

This research employs a qualitative and exploratory case study at PQM Consultants to deeply examine the internal inquiry workflow and create a digital solution based on user-driven design principles. The qualitative approach is chosen to describe phenomena in detail and interpret user experiences naturally and contextually (Sekaran & Bougie, 2016), this study is classified as exploratory research, investigating practical problems in inquiry management to propose new digital solutions (Saunders et al., 2016).

It is based on the constructivist paradigm (Creswell et al., 2019), which emphasizes individual experiences and perceptions in the context of system fragmentation and data flow challenges; accordingly, the strategy used is a single case study, focusing on one organization and its specific inquiry process. The research was conducted in a non-contrived setting, meaning data were gathered from natural work activities without artificial control or manipulation. The unit of analysis in this study is individuals, specifically PQM's consultants and business support staff.

The level of researcher involvement is moderate interference, as the researcher guided users during the prototype testing phase while maintaining the natural context. Finally, the study uses a cross-sectional time horizon, where data were collected once during the design and validation phase, and theoretical development follows an inductive approach, where themes, patterns, and concepts emerge directly from field observations and interviews.

3.1. Research Process

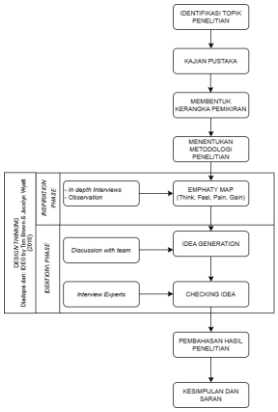

Figure 2. Research Process

This research tackled PQM Consultants' inquiry management, starting with topic identification and a literature review, leading to a conceptual framework and methodology selection for addressing manual, error-prone processes. The inspiration phase involved interviews and observations with the Consultant and MCD teams, using Empathy Maps to understand their needs. The ideation phase generated and validated innovative solutions through collaborative discussion and expert interviews.

Concept formulation yielded a medium-fidelity Figma prototype for a web-based inquiry management platform. The results discussion focused on core problems, proposed solutions, and the platform's effectiveness. Finally, conclusions and recommendations summarize findings and suggest further development to boost PQM's productivity, all within a design thinking framework.

3.2. Data Collection

Interviews

In-depth interviews were conducted with internal stakeholders, including Consultants and MCD staff at PQM Consultants. The objective was to explore the current inquiry management process, challenges in using Excel for data recording, and potential solution needs. A semi-structured interview format with open-ended questions allowed flexibility in exploring responses (Creswell et al., 2018). The list of interviewees is presented below.

Tabel 1. Interviewees

No	Narasumber	Criteria
1	*Subject Matter Expert* (SME)	• Has at least one year of active experience in compiling performance reports within the SME division • Has been actively engaged in managing inquiries for no less than one year
2	MCD	• Has at least one year of active experience in compiling performance reports within the SME division • Has been actively engaged in managing inquiries for no less than one year
3	Expert	• Possesses at least three years of experience in consulting management or inquiry process coordination. • Has regulary used digital platforms for data management for at least one year.

Supporting Documents

In addition to interviews, this study collected internal documents from PQM Consultants, such as Excel files used by the MCD team to record inquiries and by Consultants to compile performance reports. These documents helped illustrate workflow patterns and challenges not always explicitly conveyed during interviews. According to Creswell et al. (2018), collecting supporting materials such as internal notes, reports, and audio records enriches qualitative data from interviews and observations.

Observations

Observations were conducted directly at the work locations of the MCD and Consultant teams to monitor the inquiry management process. The researcher observed how data was entered in Excel, how reports were prepared, and how both teams interacted. Using a semi-structured approach (Creswell et al., 2018), the researcher documented the process without direct involvement,

enabling a better understanding of workflow dynamics and data-related issues that might not surface during interviews.

4. Results and Discussion

This study collected data from eight internal participants at PQM Consultants, selected based on their involvement in the manual inquiry process and its improvement efforts. These participants included consultants, support staff, and leaders who interact with inquiry flows daily. The research was structured using the five-phase Design Thinking framework: beginning with Empathize and ending with Test. In the initial Empathize phase, data were gathered through semi-structured interviews, direct observations, and review of organizational documents, including past inquiry records and communication formats.

These techniques allowed the researcher to obtain detailed insights and pain points from users. After data collection, the findings were reduced and synthesized into key insights that helped formulate clear and focused problem definitions. Subsequent phases involved collaborative ideation workshops, prototyping the web-based platform using Figma, and iterative testing to ensure the solution met user expectations. This structured yet flexible process ensured that the final platform addressed real-world operational challenges and improved accessibility, coordination, and traceability within PQM's internal consulting workflows.

Emphatize

This study, collected data from 13 internal staff members at PQM Consultants, including consultants, support teams, and supervisors. To illustrate recurring patterns of user challenges, five representative personas were developed during the Empathize stage. Data were gathered through semi-structured interviews, direct observations, and a review of internal documents. For instance, some users reported difficulty tracking inquiry status due to inconsistent Excel entries, lack of a centralized system, and scattered communication across WhatsApp and email. Others highlighted issues such as duplicated efforts, delayed responses, and the absence of real-time visibility. These insights were visualized using Empathy Maps and User Journey Maps and further synthesized into key problem definitions that shaped the following Design Thinking stages. These findings align with previous studies. Matheus, Janssen, and Janowski (2021) noted that manual data entry without standardized formats and centralized databases leads to poor data quality, frequent input errors, and delayed information. Similarly, Rosa (2022) found that using spreadsheets manually creates inconsistency, data loss during handovers, and lack of status tracking, increasing administrative burden. Khair et al. (2024) added that the absence of an integrated system causes duplicated work, increased data errors, and slower processes due to a lack of real-time synchronization. Together, these studies reinforce that the issues observed in this research are not isolated but relatively common consequences of manual, fragmented, and non-integrated workflows.

Define

1. Critical Problem Identification

The researcher conducted a validation process based on urgency and impact to identify which issue to prioritize. The most critical problem, confirmed by user input, was selected as the primary focus of the system design and is visualized in Figure 3. This aligns with Hidayatullah and Kusuma (2021), who emphasized the importance of user personas for understanding user needs. Nasution and Simargolang (2024) also found that non-integrated systems force manual data entry from multiple sources, increasing the risk of redundancy and slowing down processes due to the lack of synchronization. Similarly, Rajagopal and Balakrishnan (2024) noted that real-time data delays caused by non-interoperable systems hinder tracking and reduce data accuracy. Together, these studies support the need for an integrated, real-time system to improve efficiency and accuracy in inquiry management.

Penilaian Prioritas Masalah

Timestamp	Nama	Informasi data inquiry sering tidak akurat dan terlambat	Duplikasi dan ketidaksinkronan data antar platform	Sulit melakukan analisa data secara efisien dan real-time
5/12/2025 12:27:27	Ni Made Hindita	Prioritas 3	Prioritas 2	Prioritas 1
5/12/2025 12:28:27	Miky Nurhariadi	Prioritas 2	Prioritas 2	Prioritas 1
5/12/2025 12:41:40	Fauzan Rizky	Prioritas 3	Prioritas 2	Prioritas 1
5/12/2025 14:17:56	Ibrahim Nur Farabi	Prioritas 2	Prioritas 3	Prioritas 1
5/12/2025 19:04:54	Prasetio Aji	Prioritas 2	Prioritas 3	Prioritas 1
5/12/2025 19:38:22	Dian Ananda S	Prioritas 2	Prioritas 3	Prioritas 1
5/12/2025 20:11:10	Jarot Anorogo	Prioritas 3	Prioritas 1	Prioritas 2
5/12/2025 20:28:25	M. Rafly	Prioritas 3	Prioritas 2	Prioritas 1
5/12/2025 20:29:07	Yozie S	Prioritas 2	Prioritas 1	Prioritas 3
5/12/2025 21:17:05	Althaf Tibyan	Prioritas 2	Prioritas 1	Prioritas 1
5/12/2025 21:30:34	Istiqomah	Prioritas 3	Prioritas 1	Prioritas 2
5/12/2025 21:42:25	Riza	Prioritas 1	Prioritas 2	Prioritas 3
5/12/2025 21:44:06	Safira	Prioritas 2	Prioritas 1	Prioritas 3

Figure 3. Prioritization Results

2. Jobs to be Done

   Following the problem prioritization stage, the researcher formulated Jobs to Be Done (JTBD) to understand better user expectations in the context of their daily responsibilities. The JTBD framework shifts the focus from the platform as a product to the specific tasks users aim to accomplish. This approach enhances user experience and helps identify key functionalities that need to be prioritized during development. Furthermore, it supports more accurate user segmentation based on functional roles within the organization, ensuring system features align with actual workflow needs.

3. How Might We and Point of View

Tabel 2. POV and How Might We

Insight	Needs	Point of View	How Might We
Tasya, a consultant, faces challenges when analyzing operational data due to the need to work with Excel files compiled from various sources and sent via WhatsApp. These files often arrive late, are corrupted during download, or have inconsistent formats, requiring her to clean and standardize the data manually. This process is time-consuming and error-prone and disrupts her focus on generating strategic insights. Tasya needs a solution that can streamline her workflow, support data accuracy, and save time.	Tasya needs : A system capable of pulling data directly from the source and presenting it automatically, with standardized data validation and integration processes ready for analysis. She requires a real-time dashboard that is accessible at any time, analytical tools that minimize manual work while improving result accuracy, and a reliable system that supports her tasks without relying on manual file-sharing processes.	Tasya desires a system to save her time and effort in preparing reports and conducting data analysis. She envisions a smooth and efficient workflow through real-time access to clean, analysis-ready data without manual validation. Additionally, Tasya needs a user-friendly and reliable system that can support her in delivering high-quality insights to management.	Tasya desires a system to save her time and effort in preparing reports and conducting data analysis. She envisions a smooth and efficient workflow through real-time access to clean, analysis-ready data without manual validation. Additionally, Tasya needs a user-friendly and reliable system that can support her in delivering high-quality insights to management.

Ideate

In the ideation phase, various user-centered solutions were developed based on insights from the Empathize and Define stages. Using dot-voting and a follow-up Google Form survey, seven key ideas were selected, with the most favored being the development of an integrated dashboard. These concepts align with findings from Ambasht (2024), who emphasized that real-time data integration improves operational efficiency and supports faster, data-driven decision-making. Similarly, Gami et al. (2024) highlighted the value of dashboards with automated validation, error alerts, and user-adapted visual elements. Additional support comes from Alhamadi et al. (2022), who stressed that modern Business Intelligence dashboards

should be built with flexible architectures, support cross-platform data sources, and deliver real time insights. **(see Appendix A, Table A1 for the complete list of ideas).**

Prototype

After completing the ideation process, a high-fidelity prototype was designed using Figma in collaboration with the IT Team. The researcher worked closely with the team to ensure that the features conceptualized during brainstorming and validated by users were accurately implemented into the prototype. The resulting model, developed specifically for this research, is presented below and explains its core functionalities. **(see Appendix A, Figure A1 – Figure A5 for the Prototype).**

Testing

At this stage, the researcher conducted usability testing through a Focus Group Discussion (FGD) with four participants directly involved in the system development and one remote participant who reviewed the prototype via Figma and completed the System Usability Scale (SUS) questionnaire. During the FGD, participants explored the prototype while receiving a guided walkthrough, then filled out the SUS form and provided additional feedback.

The SUS evaluation scored of 88, placing the prototype in the "Excellent" category. This indicates that users found the system easy to use, efficient, and well-aligned with daily tasks. The assessment also referred to three key hypotheses: Desirability (user satisfaction), Viability (business alignment), and Feasibility (technical practicality).

Figure 4. System Usability Score
Source: Data compiled by the author, 2025

These findings are supported by Gonçalves et al. (2023), who found that performance dashboards integrating data in real time enhance usability, flexibility, and team efficiency. Similarly, Kongthanasuwan et al. (2023) concluded that interactive dashboards reduce manual processes, speed up analysis, and support faster, data-driven decision-making. Both studies reinforce the value of integrated dashboards in improving workflow accuracy and responsiveness.

5. Conclusions

Based on the findings of this study, several key challenges were identified in the existing inquiry management workflow at PQM Consultants, most notably, the absence of a centralized tracking system, unclear status visibility, and inconsistencies in data submission. The researcher employed the Design Thinking methodology to structure a user-centered problem solving approach. Each phase of the process, from empathy to testing, was represented in developing a prototype designed to meet real user needs. The resulting prototype was evaluated by informants during the testing phase using a usability assessment.

The System Usability Scale (SUS) testing results revealed a score of 88, indicating an "Excellent" level of usability. Participants responded positively to the enhanced features, particularly the dashboard view for inquiry tracking, improved user input interface, and clearer status indicators. In addition to the high usability score, users also offered valuable suggestions for improving

navigation flow, form field clarity, and system notifications. These inputs were promptly considered for further iteration in the development cycle, reinforcing the platform's alignment with user expectations and daily operational demands.

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Appendix A

Tabel A1. System Usability Score

How Might We (HMW)	Idea	High Value, Low Effort	High Value, High Effort	Low Value, Low Effort	Low Value, High Effort
How can we design an automated, real-time, and ready-to-use data analysis system so that consultants like Tasya can immediately perform analysis without the need for manual data processing and feel confident when presenting reports to management?	Create a comprehensive dashboard that includes detailed data such as name, email, phone number, and other relevant information.		X		
	Enable integration of data from various sources automatically and in real time.		X		
	Provide dashboard access to all PQM members.		X		
	Allow all PQM members to support each other and remind each other to complete or update data when necessary.	X			
	Include features to minimize typos and prevent duplicate entries, improving data quality and analysis efficiency.	X			
	Implement automated alerts (e.g., for approval delays).			X	
	Integrate inquiry data with CRM data for better cross-functional visibility.		X		
	Use color indicators (e.g., green and red) on the dashboard to reflect the status of each inquiry so teams can quickly identify which items are safe and which require immediate attention.	X			
	Implement an AI-based data analytics platform.		X		
	Deploy a Business Intelligence (BI) dashboard.		X		
	Standardize data formats and sources for each SME.	X			
	Open access to existing Google Sheets and pivot dashboards to enhance data completeness.			X	
	Use tools such as Looker Studio or Power BI for visualization.	X			
	Allow data updates not only by the MCD team but also by Consultants.	X			
	Add automatic notification or reminder features to detect incomplete data, unfilled fields, or newly submitted inquiries.	X			

How Might We (HMW)	Idea	High Value, Low Effort	High Value, High Effort	Low Value, Low Effort	Low Value, High Effort
	Provide customizable data visualizations based on each SME's specific needs.		X		
	Add a data-slicing feature for more flexible filtering and analysis.		X		

Appendix B

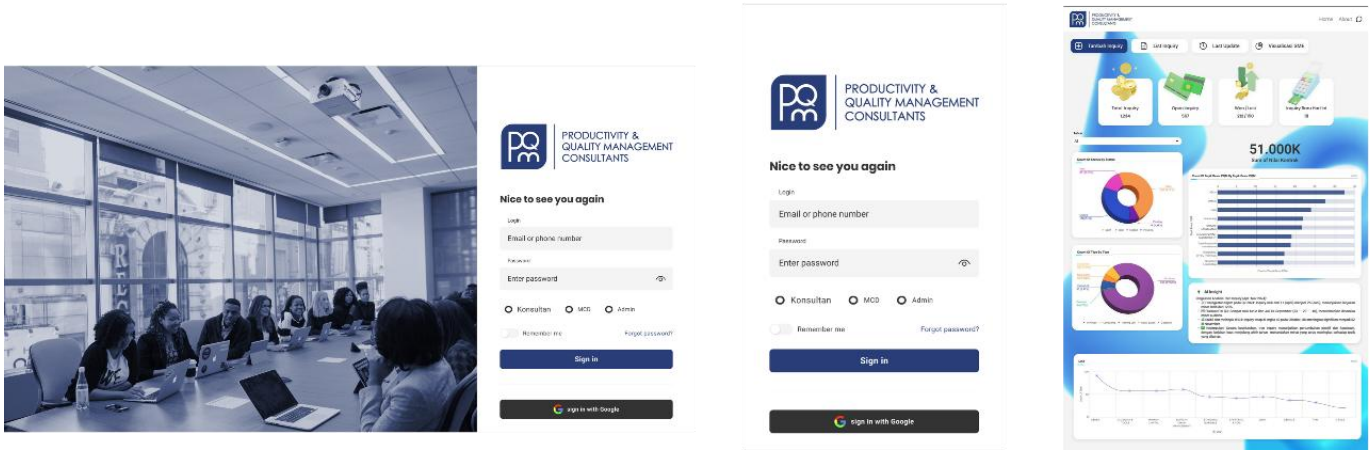

Figure A1.Mockup Login Page
Source: Data compiled by the author, 2025

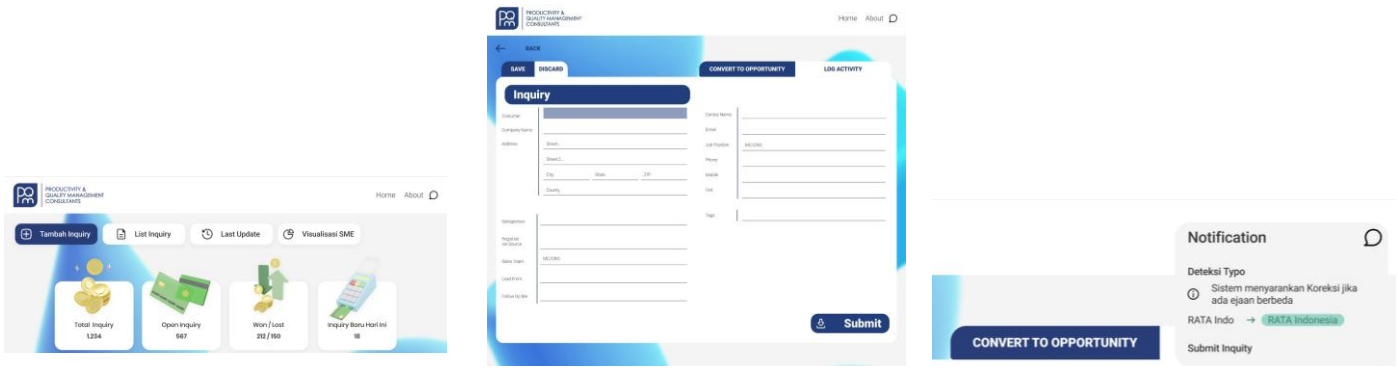

Figure A2. Mockup Input Inquiry
Source: Data compiled by the author, 2025

Figure A3. Mockup Search and Edit Inquiry

Source: Data compiled by the author, 2025

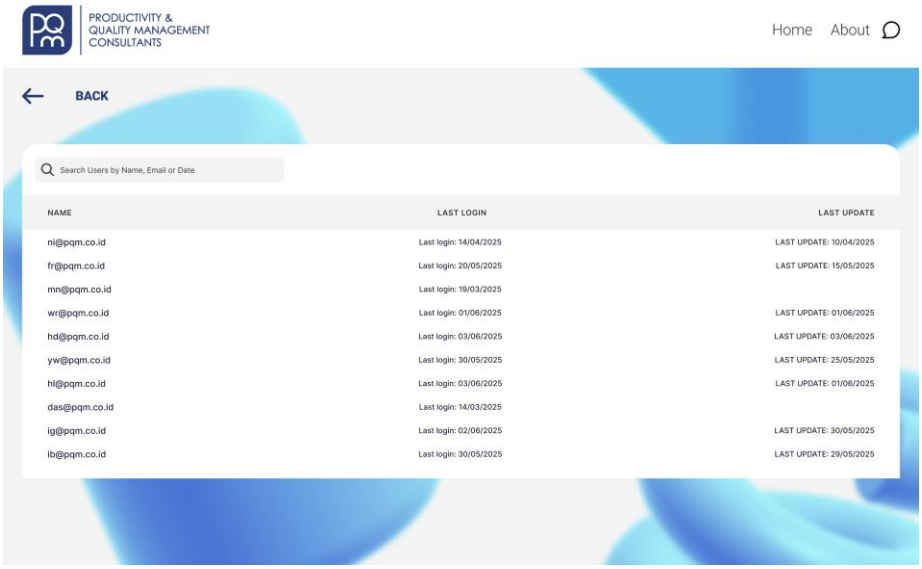

Figure A4. Mockup Last Update

Source: Data compiled by the author, 2025

Figur A5. Data Visualization

Source: Data compiled by the author, 2025