Development of a Fleet Management System Application: A Design Thinking Approach at a Property Company

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ARTICLE INFORMATION

ABSTRACT

The advancement of digital technology has become a crucial strategy for businesses, including Telkom Property, which operates in the fleet management industry. The company faces challenges related to cost efficiency, time efficiency, and security. This study aims to analyze the requirements for implementing a fleet management system application using the design thinking approach to support the company's efficiency programs. The design thinking methodology employed consists of five stages: (1) empathize, (2) define, (3) ideate, (4) prototype, and (5) testing. Data were collected through interviews with eight respondents, comprising five external and three internal stakeholders. The 635 method was used to prioritize ideas for prototype development. The prototype, presented as a fleet management application mockup, was tested with respondents to ensure feature alignment with user needs. The study findings reveal that the developed fleet management system application enhances efficiency, security, and user satisfaction. Application evaluation using the System Usability Scale (SUS) yielded a score of 78.4, surpassing the threshold of 71.1. Additionally, 100% of respondents agreed that the application meets their expectations. This research concludes that implementing a fleet management application based on the design thinking approach is effective in supporting Telkom Property's operational efficiency.

Keywords: Business Strategy; Design Thinking; Digitalization*;* Fleet Management System Application; Property Company

INTRODUCTION

Concurring to Prastyaningtyas and Arifin (2019), the advancement of information technology in later times has critically affected different areas or segments, especially the financial segment. This development has given rise to unused commerce models and financial performing artists characterized by high dynamics and capabilities, which may lead to the relocation of conventional trade actors or practices. Businesses that can adjust to mechanical headways will pick up a significant competitive advantage and offer greater included esteem compared to those incapable of adjusting. The utilization of digital technology in trade is not restricted to companies that have risen amid the technological change period, commonly alluded to as digital-native companies (Pelser & Gaffley, 2020). Instep, this technological adoption has moreover been grasped by other divisions such as fabricating, state-owned undertakings (SOEs), managing an account, healthcare, and numerous more.

Concurring to Perdana and Syamil (2023), numerous challenges emerge within the fleet management industry, one of which is the dependence on manual and conventional forms. These forms are regularly cited as critical impediments, possibly influencing the quality of administrations given. The essential center of transportation, administration, and coordination administrations is to guarantee that items or administrations are conveyed to clients on time. Companies must moreover oversee and screen commerce forms to be viable, effective, prudent, and keep up benefit quality in line with set-up guidelines. Concurring to Saeidi et al. (2020), fleet management operations follow the 7R (Seven R) principles: ensuring the movement of goods or services is the right size, situation, time, cost, location, and customer. To back these standards, technology plays a vital part in providing reliable solutions. Illustrations incorporate the utilization of the Web of Things (IoT), manufactured insights (AI), information analytics, machine learning, and other advances (Sallam et al., 2023). These innovations disentangle the operations of transportation and coordination businesses by advertising modern arrangements and tending to different challenges.

The implementation of digitalization in the transportation industry offers significant benefits for both service providers and users of fleet management systems (Prananta et al., 2024). One of the primary advantages is the automation of operational processes, leading to improved time efficiency by eliminating manual tasks. Additionally, digitalization enhances security by providing better control for users and business operators, thereby minimizing potential risks. These benefits help increase the value proposition of services and strengthen customer trust.

However, digitalization also presents challenges. According to Sedarmayanti and Rahadian (2018), the main challenge lies in the ability to adapt to new technologies, particularly for industries that previously operated traditionally. A shift in mindset is crucial, as many business operators and users are reluctant to transition to digital technologies. Moreover, the lack of optimal knowledge transfer results in uneven technological capability distribution, creating disparities.

From another perspective, digital transformation is often perceived as a costly investment, leading many to hesitate in making the switch (Agustian et al., 2023). To address these challenges, steps such as intensive socialization, regular training, and mindset changes are essential to help business operators and users become more accustomed to and willing to adapt (Errida & Lotfi, 2021). Support from the government and other stakeholders, such as outreach programs or financial incentives, is also necessary to overcome cost limitations. With the right approach, digital transformation can ensure business sustainability and strengthen the overall transportation ecosystem.

Digital transformation in the transportation industry, particularly in fleet management, requires a lengthy process of technological evaluation and adaptation, making it impossible to achieve instantaneously. Regular and continuous evaluations are essential to ensure that the implemented technology remains relevant to ever-changing conditions. This transformation process is complex, as it involves various considerations not only in transportation but also in other related areas. This is relevant to the case of Telkom Property, a company established as part of the Telkom Group to generate additional streamlined revenue and enhance business value in the property sector, both for assets owned by the Telkom Group and its subsidiaries or affiliated companies. Telkom Property envisions becoming a property company that leverages digital technology, excels in collaboration with other companies and stakeholders, and provides innovative, high-quality solutions.

In line with this vision, Telkom Property offers technology-based services through a website that functions as a management information system, specifically providing services for transportation management within Telkom Indonesia. However, based on field observations and interviews with several sources, issues have been identified in the transportation management business unit, particularly in the areas of operations vehicle rental and monitoring security. The current system is not yet optimized, leading to operational and security obstacles that ultimately affect Telkom Property's overall performance.

This study will focus on addressing the issues within the service system of Telkom Property. The identified problems are aimed to be resolved using technology-based solutions, leveraging the advantages of technology to minimize human error in the system. To ensure that the fleet management system at Telkom Property performs optimally in delivering services, a technology-driven solution is essential. Research on fleet management systems with Telkom Property as a case study has not been conducted before. Moreover, this study will employ design thinking as a problem-solving tool, emphasizing a human-centered approach to provide effective solutions to the challenges faced.

This study aims to identify the main issues faced by Telkom Property related to transportation management services and determine the most appropriate solutions to address these challenges. Consequently, this research can be utilized to support the development of knowledge, serving as a reference for case studies, teaching materials, or other research efforts that require similar insights, particularly regarding the implementation of applications in the fleet management system at Telkom Property. Furthermore, this study can serve as part of a guide or action plan for the development of applications implemented by Telkom Property in their transportation management system.

Regarding research on the utilization of technology-based applications to improve system services, several approaches have been previously employed, including interviews, surveys, and design thinking. This research is considered both intriguing and unique, especially since the theme of digitalization in transportation or fleet management has not been extensively explored. The authors have chosen the design thinking approach as the method for analyzing problems and proposing innovative solutions.

LITERATURE REVIEW

Business Strategy
According to Catio et al. (2021), a business strategy is a capability possessed by companies or business actors, implemented either internally or externally through the

formulation of business strategies. These strategies are then executed based on pre-established plans, with the goal of achieving the company's previously set targets. In addition, the process also involves evaluation, which is carried out by obtaining feedback during the business strategy formulation process for future implementation. There are measurement tools used for the variables above, which include three dimensions: differentiation, cost reduction, and focus within the strategy used.

As stated by McDermott (2002), strategy is formulated as a goal to be achieved, the steps needed to communicate the designs or plans, who will carry them out, how the implementation process will take place, and to whom these will be communicated. Furthermore, strategy is a tool widely used to guide how a business can attain its desired objectives. In general, strategies are often employed by business actors and companies to gain an advantage in market competition. According to Assauri (2013), business strategies are implemented by companies or business actors due to changes in the business environment, which compel them to adapt and adjust to the current conditions in order to prevent their business from falling behind or losing out to competitors running similar businesses. Furthermore, Assauri (2013) states that a business strategy is one that is created and executed to achieve business objectives. In conducting business activities, business actors or companies typically implement business strategies to achieve the desired outcomes.

Fleet Management
This study focuses on the issues faced by Telkom Property regarding fleet management. A fleet management system is a process of operating and planning services within a centralized transportation industry. This system is designed to ensure the sustainability of resources, particularly those related to energy, the environment, and the quality of life, while maintaining the necessary mobility (Nugroho & Malkhamah, 2018). From an economic perspective, the fleet management system plays a role that is not always measured in monetary terms. It encompasses other economic aspects, such as reducing traffic congestion, which can improve the efficiency of goods distribution processes, lower operational costs, and protect the surrounding environment. Moreover, fleet management systems can help eliminate the potential for setting excessively high tariffs, which could disadvantage all stakeholders (Darmawan & Sutanto, 2023). Another explanation of fleet management systems is provided by Andriansyah (2015), who defines it as a series of functions designed to organize and manage modes of transportation, whether operated individually or by companies. According to Andriansyah (2015), transportation services are a vital component of the input factors for activities in production, agriculture, trade, and other economic sectors. Transportation is essential for ensuring the distribution and mobilization of goods or services to meet human needs.

Fleet management at Telkom Property requires advancement to improve the quality of administrations given. Agreeing with Triana and Subakti (2017), benefit quality may be a benchmark utilized to evaluate the degree to which the level of benefit meets the desires or benchmarks set by customers. Berry et al. in Subawa and Sulistyawati (2020), contend that benefit quality speaks to the contrast between client desires and recognitions. On the off chance that the services gotten by customers meet or surpass their desires, the benefit can be considered of great quality; something else, it is considered destitute. Lovelock in Subawa and Sulistyawati (2020) characterizes service quality as a level of excellence that is anticipated and controlled to guarantee that each client's requirement is met. Besides, benefit quality can also be characterized as the degree of inconsistency between what is anticipated and what is seen and gotten by clients. Based on these clarifications, benefit quality can be deciphered as all efforts focused on satisfying customer needs and wants, combined with exactness in conveying services, ensuring that the result adjusts with the desires of the clients. Kotler in clarifies that customer

fulfillment may be a degree of a person's sentiments after employing a service, determined by the method of comparing their expectations with what comes about they get.

Digital Transformation

In this study, the proposed solution involves leveraging digital transformation by modifying the fleet management system. According to McGrath and Maiye (2010), digital transformation is a transition process aimed at integrating digital technology into all aspects of life and operations within an organization. As digital transformation progresses, organizations are experiencing substantial changes in their manufacturing processes. In today's intensely competitive market, companies must embrace digital transformation to secure a competitive edge (Yiming & Manansala, 2024). The ultimate goal is to drive infrastructure changes related to how companies conduct their operational processes, thereby increasing added value for customers. Irsyadi et al. (2023) depict digital transformation as a principal approach to presenting changes in trade operations, the items delivered, and the forms executed. Technological advancements have revolutionized commerce models within the neighborliness and tourism divisions, especially in tourism showcasing. These changes adjust with innovative advances, including information and communication technology (ICT), which has essentially encouraged different community exercises, particularly in getting to data (Fannisa et al., 2021). Westerman et al. in Oktaviani et al. (2023), argue that digital transformation involves utilizing available technology to improve a company's performance and reach. This enhances the quality of customer relationships, internal service processes, and design thinking initiatives. They suggest that digital transformation is a process aimed at increasing a company's value and fostering change in alignment with its unique characteristics. Furthermore, digital transformation is often defined as an evolutionary process that leverages sophisticated and accessible digital technology to create value with distinct advantages.

Design Thinking

This study employs the design thinking method to delve deeper into the issues surrounding fleet management at Telkom Property. According to Andina in Darmawan and Sutanto (2023), every product planning process involves certain steps known as design thinking. It is described as a non-linear, iterative process used to gain a deeper understanding of users, challenge assumptions, redefine problems, and seek innovative solutions for prototyping and testing. Another perspective explains that design thinking is a method employed to address problem-solving needs.

One of the concepts capable of addressing this issue is a human-centered approach called design thinking (Hatammimi & Andini, 2022). This method, originating from and focused on human needs, aims to provide solutions to problems (Kelley & Brown in Darmawan and Sutanto (2023). The design thinking process consists of five key stages that work together to address user-centered problems effectively. The first stage, Empathize, emphasizes understanding and building empathy for user needs, particularly focusing on human-centered requirements. Next, the Define stage involves identifying and clearly framing the problem based on insights gained during the empathize stage. In the Ideate stage, creativity takes center stage as teams brainstorm and generate ideas to develop plans or product designs aimed at solving the defined problems. Following this, the Prototype stage focuses on creating tangible models or systems that represent potential solutions. Finally, the Test stage evaluates these prototypes by gathering user feedback, enabling refinements to ensure the final solution effectively addresses the initial problem. Together, these stages provide a structured yet flexible framework for innovative problem-solving.

Holling and Schwabe (2013) describe design thinking as a human-focused approach that combines design tools with human needs, technological possibilities, and situational factors necessary for business success. According to Hassi and Laakso in Ginanjar and Sukoco (2022), the utilization of design thinking considers the desires and needs of the target market, integrating them with technological advancements relevant to those needs, thereby creating effective products or services to address existing problems. Roterberg (2018) defines design thinking as a comprehensive approach to problem-solving and innovation.

The design thinking approach consists of four distinct phases that guide problem-solving and innovation. The first phase, Understanding, focuses on gaining a comprehensive grasp of the problems or challenges at hand. Next, the Observation phase delves deeper into analyzing and observing the issues, uncovering critical insights. In the Point of View phase, participants adopt the user's perspective, broadening their understanding of the situation and crafting solutions that align with real-world conditions. Finally, the Ideation phase facilitates collaborative brainstorming with stakeholders to generate ideas tailored to the identified problems. This phase encompasses four sub-stages: framing the problem through "how might we" questions, conducting brainstorming sessions, identifying viable solutions, and confirming their alignment with the issues. Together, these phases create a robust framework for developing innovative and user-centered solutions.

RESEARCH METHOD

This study adopts a qualitative research approach, which focuses on data in the form of text or images and involves specific stages in data analysis, as well as diverse illustrations in planning (Creswell, 2018). In qualitative research, researchers examine subjects within their natural environments with the goal of understanding and interpreting phenomena that represent real-life situations (Iradianty & Sitorus, 2024). The objective of this research is descriptive, as it emphasizes field data collection to provide a detailed depiction of the research topic, namely Telkom Property. The data collected aims to explain the phenomena observed in the field, which are elaborated in the research background. This aligns with the views of Sekaran and Bougie (2017), who state that descriptive research is typically designed to collect data that characterizes an object, such as individuals, organizations, products, brands, events, or specific situations.

Qualitative data collection was conducted through interviews with pre-selected respondents. Data collection involved documentation, observation, and visual materials used to establish appropriate protocols for recording information (Creswell, 2018). The data collection process took place during the first semester of 2024 within the Telkom Property environment. The respondents were grouped based on criteria, specifically internal employees of Telkom Property who are involved in and relevant to the fleet management service business unit, as well as users or customers of the fleet management services at Telkom Property.

In this study, interviews were conducted with eight respondents divided into two groups. The first group consisted of three internal respondents from Telkom Property who met the pre-established criteria. The second group comprised five external respondents who are users of Telkom Property's fleet management transportation services. This study uses the 5-stage design thinking theory: empathize, define, ideate, prototype, and test.

In this research, the operational variable associated with design thinking is based on the work of Kelley and Brown (2018). The interview questions concerning user experience are derived from Ghina and Afifah's (2021) study, tailored specifically for data collection

during the empathize stage of the design thinking process. A semi-structured interview method is employed for data collection. The measurement tools have been validated through a pilot test, ensuring they are improvements upon those used in prior studies. The research questions are outlined in Table 1.

Table 1. Research Question

No.	Operational Definition	Interview Question	Respondent	Supporting Evidence	Output
Design Thinking "A human-centered approach to innovation that aims to integrate the needs of people as users, the possibilities of technology, and the requirements for business success." (Kelley & Brown, 2018)					
1	Empathize	User Understanding of Telkom Property Transportation Management Services (Customer): As a user or potential user of Telkom Property's transportation management services, share your awareness and experiences regarding these services. Begin by discussing your knowledge of the transportation management offerings provided by Telkom Property and how you first learned about them. Elaborate on how frequently you use these services and the factors influencing your usage. Finally, describe your understanding of the process involved in accessing and utilizing Telkom Property's transportation management services, highlighting any challenges or conveniences you have encountered. User Understanding of Telkom Property Transportation Management Services (Internal Employees): As a provider of Telkom Property's transportation management services, share your approach to introducing these services to potential customers. Begin by describing the methods or strategies you use to promote and explain the benefits of the transportation management offerings. Detail how you deliver these services to customers, focusing on the key steps and processes involved. Additionally, elaborate on your understanding of how to utilize Telkom Property's transportation management system effectively, including any tools or resources you rely on to ensure smooth service delivery.	External informant (Customer)	Documentation in the form of verbatim interview recordings and interview photos.	The respondent has a good understanding of the transportation management services offered by Telkom Property, including their frequency of use, and is able to explain the necessary steps to utilize the fleet management services effectively.

No.	Operational Definition	Interview Question	Respondent	Supporting Evidence	Output
2	Define	Questions for Internal Employees: As someone involved in the use or management of Telkom Property's transportation services, describe the necessary preparations and actions for borrowing these services. Start by explaining what needs to be prepared before initiating the borrowing process, including any documents, approvals, or requirements. Detail the steps you follow to complete the borrowing process effectively. After the borrowing period ends, outline what preparations are required to conclude the service use, such as inspections or documentation. Finally, describe the handover process for the transportation service, emphasizing the key procedures involved in ensuring a smooth and accountable transition after the borrowing period is complete. Questions for Customer: As a user of Telkom Property's transportation management services, describe the preparations and actions needed to borrow and utilize the services effectively. Start by explaining what needs to be prepared before borrowing, such as required documents or approvals. Then, describe the steps involved in borrowing the transportation services, focusing on the process you follow to complete the request. After successfully utilizing the services, elaborate on what needs to be done once the services are completed, including any follow-up actions or responsibilities to ensure a smooth experience and satisfaction.	Internal Informant: Internal Employee External Informant: Customer	Interview Results & Interview Documentation	The respondent has a deep understanding of the process of borrowing transportation management services at Telkom Property, including the preparations needed before and after the borrowing, as well as the stages that must be followed throughout the process. The respondent is also able to provide a detailed explanation of the steps to be taken after the service usage is complete, including the handover process of the transportation management services once the borrowing is finished by the customer
3	Ideate	How can we design a fleet management service that ensures the rapid delivery of real-time data to guarantee that the booking process is quickly responded to in real-time?	Internal Informant: Interna Employee External Informant: Customer	Documentation in the form of notes and photos of the process of formulating ideas as solutions	Generate creative ideas and then prioritize the ideas that will be used as solutions to the problems

No.	Operational Definition	Interview Question	Respondent	Supporting Evidence	Output
					identified in the Define stage. Tools : Brain-storming 2x2 matrix
4	Prototype	How can we define and design the ideal prototype for the development of the fleet management product?	Internal Informant: Interna Employee External Informant: Customer	Documentation in the form of notes and prototype mockups.	Design the ideal prototype based on the needs of users. Tools : User Flow Prototype Mockup
5	Test	What is the user response to the development of the fleet management application?	Internal Informant: Interna Employee External Informant: Customer	Documentation in the form of interview recordings and questionnaire results.	The informant shares their experience using the latest version of the fleet management application

RESULTS

In this study, the researcher gathers data through interviews with eight respondents. The selection of sources is based on their involvement in the use and advancement of the fleet management service. These selected sources are expected to provide detailed information and contribute to an exhaustive understanding of the fleet management framework.

This investigation receives a plan considering the approach, which comprises five stages: empathize, define, ideate, prototype, and test. The introductory stage in this study includes data collection, which is obtained through methods such as interviews, observations, or documentation. Particularly, the researcher aims to extract detailed information from the respondents using in-depth interviews. This can be taken after by making an outline for information decrease to assist the analyst draw exact conclusions and gain a comprehensive understanding of the accumulated data.

Empathize Stage
In this stage, the researcher engages directly with user sources through interviews, beginning with introductory questions. This approach allows the researcher to observe and comprehend the issues from the users' point of view. The data collection process is supported by a recorder, and the interview responses are transcribed verbatim. The interview results are then reduced by summarizing the responses from each user source across different sections. A user journey map is employed to visualize the user experience. In this study, both active and inactive users are interviewed to identify the elements of the user journey map that impact the customer experience. The results of the user journey map are subsequently analyzed by the researcher. The collected informants are coded as follows: Dimas.

Dimas is a 40-year-old operational manager and a client of Telkom Property's fleet management services. His primary goal is to ensure that all operational activities within his company run smoothly. Furthermore, his priority goals include ensuring that every booking process proceeds efficiently, minimizing waiting time, and obtaining clear information regarding the required waiting period for fleet reservations. Dimas has several key needs to support his productivity. He requires real-time access to information on both utilized and available fleets, enabling faster decision-making. Additionally, Dimas hopes that the booking communication platform can be seamlessly integrated into a single application that fulfills all his needs without the necessity of using external tools like WhatsApp for interactions. As a manager, Dimas exhibits an analytical mindset and pays close attention to detail. He is not patient with processes that are overly complicated and involve multiple steps, as he believes that the time spent managing fleets has a direct impact on operations and customer satisfaction. Consistency and reliability in service delivery are of utmost importance to him, and he desires a stable system with minimal technical disruptions. Moreover, the current booking system, which relies on various communication channels, presents significant challenges, leading to fragmented and inefficient processes. The monitoring of fleets is also difficult because it is still performed manually and is not well-integrated with existing systems. Complex coordination, manual processes, and other obstacles create challenges that must be addressed to optimize the current services. In summary, Dimas represents an individual who desires a simple fleet management system that streamlines booking and monitoring processes. He expects real-time features and seamless integration to ensure that coordination can be handled through a single platform, thereby minimizing the time required to manage fleet operations effectively.

Define Stage
The data processing stage in qualitative research involves deconstruction, presentation, and conclusion drawing (Sekaran & Bougie, 2017). The collected data will be selected, reduced, and categorized based on key terms and then visualized using empathy maps, user personas, and user journey mapping to facilitate interpretation. These visualizations depict the background of the users, including their personalities, goals, needs, and challenges. Based on this analysis, we can also create problem priorities with the confirmation carried out by the researcher to all users, as in Table 2. Based on this analysis, the researcher formulates questions using the "How might we" method to determine the most suitable solutions for the users' needs. Through the process of identifying the core issues faced by users, significant opportunities can be created to deliver value through the development of the proposed application. Once the main problem is identified, the development team can design solutions that are concrete, relevant, and effective. In alignment with this process, Table 3 outlines the details of the Point of View (POV).

Problem Prioritization
Based on the established problem priorities, the issue with the highest priority scale is selected, which is problem number 1. This aligns with the confirmation process conducted by the researcher with all users, as shown in Table 2.

Table 2. Impact vs. Risk Ideation Priority Matrix

Impact/Risk	Low (1)	Medium (2)	High (3)
Low (1)	-	-	-
Medium (2)	-	Providing Ease of User Experience (2)	-
High (3)	-	Fleet Analytic (4)	Fleet Monitoring & Real-Time Notifications (2)

Impact/Risk	Low (1)	Medium (2)	High (3)
High (3)	-	Automation and Integration of the Booking System (1)	-

Based on the priority ideation analysis, the main focus of development is on real-time notifications and fleet monitoring (Idea 2), which have a significant impact on operational efficiency and user satisfaction despite the high risks in implementation. Next, the development of the booking and automation system (Idea 1) and fleet analytics (Idea 4) are also crucial, as both can enhance service efficiency and fleet management. Although the risks are moderate, these two ideas support error reduction and better fleet maintenance, making them secondary priorities after the main idea.

Jobs to Be Done (JBTD)
After identifying the priority of the problem, the researcher proceeds to create Jobs to Be Done (JBTD). JBTD is an approach that focuses on the tasks or jobs that users aim to accomplish, rather than just the product itself. Beyond enhancing the user experience, JBTD helps prioritize the development of relevant features and enables the creation of more targeted marketing strategies through segmentation based on users' occupations.

Point of View and How Might We
Table 3. Point of View

Aspects	Description
Insights	Dimas and other users experience frustration when booking fleets due to the lack of required system integration, necessitating manual coordination. This issue ultimately results in operational delays and temporary halts in productivity.
Needs	Dimas and other users experience frustration when booking fleets due to the lack of required system integration, necessitating manual coordination. This issue ultimately results in operational delays and temporary halts in productivity.
Point of View (POV)	Operational managers, such as Dimas, require access to a fleet booking process that is fast, integrated, and responsive.
HMW Question	How can the fleet booking and monitoring process for users be made more effective and efficient?

The fleet booking process faces significant challenges, as highlighted by the experiences of users like Dimas (see Table 3). The lack of system integration forces manual coordination, leading to frustration, operational delays, and temporary productivity halts. These insights underscore the pressing need for a solution that addresses these inefficiencies. From the perspective of operational managers like Dimas, there is a clear requirement for a booking system that is fast, seamlessly integrated, and highly responsive. This raises the critical question: How can the fleet booking and monitoring process for users be made more effective and efficient? By addressing this question, the aim is to create a streamlined process that minimizes delays and enhances overall productivity.

Idea Stage
During the ideation stage, brainstorming sessions are held with relevant stakeholders to generate ideas that align with the development of Telkom Property's fleet management application. The ideas generated are then categorized based on needs, including features expected by all parties. The method used is the 6-3-5 technique, a collaborative brainstorming approach to ensure effective contributions from each participant. This session is conducted in two forums: an internal session involving dispatchers and managers, and an external session with other respondents. The focus is on user needs

and operational efficiency, with the aim of addressing urgent issues and improving services.

The development of the fleet management application focuses on integration and automation to enhance efficiency and service quality. The booking system covers the entire process from reservation to reporting, with real-time notifications and one-click booking features, simplifying coordination and planning. Automatic confirmation and fleet availability notifications are designed to expedite the booking process without manual coordination.

Fleet monitoring is supported by location-based estimated arrival times and traffic conditions, complete with an interactive map and schedule notifications. The application is designed to be user-friendly, accessible from various devices, and facilitates seamless booking for users.

The integrated feedback system allows for direct service evaluation, while the analytics feature helps monitor fleet performance and supports operational decision-making. All features are designed to ensure more efficient service delivery and responsiveness to user needs.
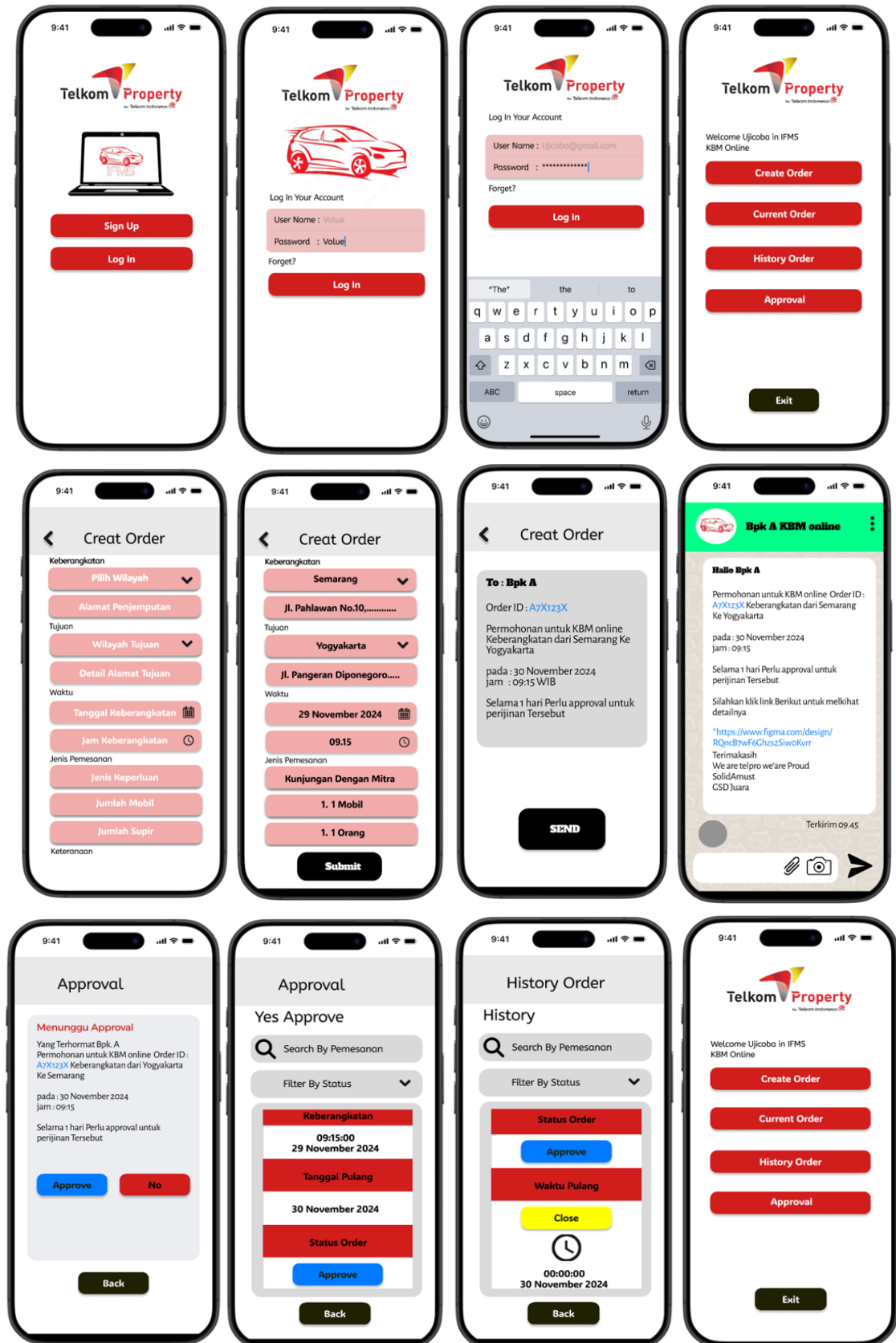
Prototype Stage
Within the prototype stage, the designs from the ideation stage are changed into high-fidelity prototypes utilizing the necessary tools for application development and handling within the fleet management service. The objective is to guarantee that the prototype meets the agreed-upon criteria, such as the required highlights and UI/UX design. This stage is vital because it brings the starting thoughts to life and sets the establishment for encouraging advancement and refinement.

The prototype being developed will integrate a large data system featuring several key elements to provide users with optimal notifications and services. Among the key areas of focus, real-time monitoring stands out as a critical feature, allowing users to track the fleet`s status in real-time. Automated notifications will keep users updated with booking confirmations, fleet status, and any changes to schedules or routes. To enhance user experience, the design will feature a user-friendly interface optimized for mobile devices, developed based on feedback to ensure ease of use. Additionally, the application will integrate seamlessly with other systems, allowing for data synchronization to improve accuracy and efficiency.

The development process starts with making an introductory model plan utilizing wireframes and mock-ups to characterize the layout, user flow, and key highlights. Once the design is set up, the other step is to execute the necessary technology, such as cloud services, which is able to back the application's adaptability and stability. After the technology is in place, internal testing will be conducted by dispatchers and operational managers to test the application's usefulness and simulate its real-world utilization.

The objective is to create a Least Practical Item (MVP) that incorporates a mobile-based application with real-time checking capabilities and an instinctive dashboard. An automated notification module will also be made alongside organized announcing highlights. After developing the MVP, model testing will be performed to distinguish any ranges that require enhancements, guaranteeing that the ultimate item is well-prepared for full-scale execution. The following is the result of the prototype, as shown in Figure 1.

Figure 1. Telkom Property Fleet Management Application Prototype

Source: Author's Documentation (2024)

Testing Stage
At this stage, the prototype is tested to ensure that the features and layout meet the agreed-upon expectations. In addition, feedback is gathered from the research respondents to determine whether the offered features fulfill their needs. At this stage, Telkom Property conducted a thorough trial of the mobile fleet management application to ensure that the developed features met the required needs. The testing included realistic scenarios such as usage in remote locations to verify real-time access, performance evaluation across different devices, and data integration testing to ensure quick and accurate synchronization. The notification feature was also monitored to prevent delays. Scalability testing was conducted to gradually add data and fleets. The results of the trials were used to make adjustments and improvements before full implementation.

After the trials, further testing was conducted to evaluate the fleet management application using the System Usability Scale (SUS) measurement. SUS is a tool used to assess the usability of the tested fleet management application. The minimum SUS score is 71.1 (Good/Acceptable). For the fleet management application, the obtained score was 78.4. This result is higher than the acceptance threshold of 71.1. This score reflects that the majority of users who participated in the trial considered the application to be more efficient, particularly regarding features like real-time monitoring and automatic notifications. With this score, the application is able to meet user needs while providing an intuitive and valuable experience.

The results of the SUS measurement yielded a score of 78.4, which is above the established threshold of 71.1. Based on this score, the application is considered effective in addressing the challenges experienced by users and received positive feedback on the features offered.

DISCUSSION

Technology has become a crucial element in business development, including at Telkom Property. The company entered the digital realm driven by changes in the business environment influenced by digital technology (Sudrajad et al., 2023). One application of technology at Telkom Property is in the fleet management system. However, as explained by Perdana and Syamil (2023), there are still many challenges in this industry, such as manual and traditional processes, which hinder the delivery of optimal services. To address these challenges, the design thinking method is applied, in line with Daymond and Knight's (2023) view on the importance of design thinking in product development, shaping how organizations tackle problems and develop strategies.

The first stage in design thinking is the empathize stage, which is carried out using user journey mapping to collect data and understand the user experience with the existing system. This process involves interviews with informants to identify the challenges they face and the features that need improvement. Liu et al. (2024) emphasize the importance of creativity in this stage to quickly uncover problems. Observations revealed that many processes are still manual and inefficient, causing customer dissatisfaction with the service. This aligns with Järvi et al.'s (2018) research, which shows that customer satisfaction has a significant impact on loyalty and business sustainability.

In the define stage, the problems identified through interviews include difficulties in fleet booking and the lack of integration that requires manual coordination. Alkaf et al. (2021) reveal that these constraints can affect the efficiency of the company, potentially disrupting service performance. The next stage, the ideate stage, involves brainstorming to determine the right solutions. This process generates ideas to improve integration,

real-time monitoring, and automation, which will focus on developing supporting fleet systems. Shidqi & Febrianta (2023) and Tarigan et al. (2019) emphasize the importance of service quality in enhancing customer satisfaction and company performance.

In the prototype stage, the fleet management application is developed with features such as real-time monitoring, an intuitive user interface, and fast and secure data integration. Prototype testing shows positive results in improving efficiency and user comfort, although there are still challenges to overcome. In line with Wydyanto's (2022) research, software is an essential component supporting business activities and corporate communication. The prototype development includes features that address the identified problems, such as automatic notifications and synchronized booking to expedite services.

The final stage, the testing stage, involves testing the application to ensure that the features function as expected by the users. Evaluation of the application's responsiveness, integration stability, and system scalability is conducted to prepare for future fleet growth. Testing results show that the application has a positive impact, with survey and interview feedback showing strong support. However, periodic evaluations are still necessary to ensure the sustainability and effectiveness of the application. Perry (2006) states that end-user testing is crucial to evaluate whether the application's functions meet their needs.

CONCLUSION

The conclusion of this study indicates that each stage of the development of the fleet management system at Telkom Property successfully identified the users` needs and constraints through the user journey mapping method. This research systematically reveals that the inefficiency of the existing system, caused by manual processes and the lack of synchronization between systems, is a major barrier to providing optimal service to customers. This condition also directly affects customer satisfaction, which aligns with the findings of Prabowo et al. (2024), who stated that customer satisfaction significantly influences loyalty and the sustainability of a company. Customer loyalty, as defined by (Najwan et al., 2024), refers to a dedication to consistently purchase and support particular products or services, even though customers may switch due to changes in marketing conditions or strategies. Therefore, to improve operational efficiency and maintain service quality, a transformation of the existing system is essential.

The arrangement proposed in this consideration, which includes the improvement of a coordinated booking framework prepared with programmed notice highlights, real-time observing, and process automation, appears to have extraordinary potential in tending to the existing challenges. In spite of the fact that the model application created has appeared positive results, there are still viewpoints that have to be moved forward, both actually and in terms of user experience. The testing conducted utilizing the SUS strategy came about a score of 78.4, reflecting a positive reaction from clients to the model and demonstrating that the application is well-received by clients.

Besides, the results of this emphasize the significance of ceaseless development and innovative improvement in the assembly of customer desires. In an increasingly digital business world, companies must ceaselessly adjust and overhaul their innovations to preserve tall benefit quality. The victory of implementing a proficient fleet management framework does not, as it were, impact the operational execution of Telkom Property but, moreover, essentially contributes to upgrading customer devotion. Customer loyalty, which is cultivated through way better and more productive user encounters, will back long-term commerce development and supportability.

Moreover, mechanical advancement ought to continuously consider customer input and prioritize user consolation and ease of getting to. By making continuous improvements and innovations, the company can guarantee that the framework remains important and successful in tending to advancing challenges. In this manner, it is vital for companies like Telkom Property to reliably overhaul and enhance their technology to supply way better services, meet customer expectations, and eventually move forward with client loyalty, contributing positively to the company's progression and maintainability within the future.

LIMITATION
The limitation of this is that it is kept to Telkom Property, with the essential center on issues related to fleet management. This research does not cover other companies that will have distinctive fleet management frameworks or confront diverse challenges in their operations. Hence, the discoveries and arrangements inferred from this consideration are as they were relevant to Telkom Property and cannot be generalized to other companies inside the same division without encouraging research. Also, this thinking centers on the advancement and enhancement of the existing fleet management system, and so, other aspects that will contribute to the, by and large, execution of the company, such as human resource management or marketing techniques, are not examined in detail. Thus, the results of this research give particular bits of knowledge for Telkom Property in tending to challenges related to fleet management, but it cannot be anticipated to cover all operational issues confronted by the company.

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DECLARATION OF CONFLICTING INTERESTS
The author(s) declare that there are no potential clashes of intrigue with regard to the research, authorship, or distribution of this article. There are no budgetary, individual, or proficient connections that may be seen as affecting the results or conclusions of this consideration. All discoveries and elucidations displayed in this research are based on the information collected and the examination conducted, and no outside impacts have compromised the judgment of the inquiry about the handle.

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