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Motivating MSMEs Entrepreneurs through Gamified Digital Platforms: A Design Thinking Approach

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Abstract

Micro, Small, and Medium Enterprises (MSMEs) play a crucial role in driving local economic development; however, their growth is often constrained by limited access to technology and digital literacy. This study aims to design a user-centered digital marketplace, *Sarana Desa (SaDes)*, to support rural entrepreneurs in marketing their products more effectively. The research adopts the *Design Thinking* methodology, consisting of five stages—*empathize, define, ideate, prototype,* and *test*—to ensure that the system design aligns with users' real needs. Insights from interviews and empathy mapping reveal that rural sellers face difficulties in reaching broader markets, navigating digital platforms, and maintaining motivation in online business environments. Therefore, a gamification-based design approach is proposed to enhance user engagement and sustain seller motivation through mechanisms that encourage active participation, competition, and recognition. The study concludes that incorporating gamification elements within a simple and intuitive interface can improve user experience, build confidence among rural entrepreneurs, and foster sustainable participation in the digital economy.

Keywords: gamification; design thinking; MSMEs; digitalization

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1- Introduction

Information media, which have emerged due to technological developments have changed people's lifestyles towards digital, including in the dissemination of information. This change requires a system that supports information distribution and village recognition [1]. In addition to serving as a distribution system for information, technological advances can be utilized for the introduction of villages in the wider community, including the introduction of local wealth through Micro, Small, and Medium Enterprises (MSMEs). Economic growth is a key indicator of a country's development, reflecting income growth over time and its direct or indirect impact, and in Indonesia, MSMEs play a crucial role in economic progress, demonstrating resilience by consistently growing even after economic crises [2]. MSMEs constitute nearly the entire business population, employing around 70% of the workforce and contributing 50% to 60% of economic revenue. Given this significant role, developing a competitive advantage is essential for sustainable performance [3]. The lack of access to technology and understanding of e-marketplaces are the main bottleneck for Micro, Small, and Medium Enterprises (MSMEs) in villages in approaching a wider market through online trading [4]. Since MSMEs serve as the backbone of the economy in both developed and developing nations, further research is essential to support sustainable development in an increasingly globalized and digitalized world [5]. For business actors, including MSMEs, digitalization is a must in this 5.0 society era. This is because digitalization will make it easier to distribute products and reach a wider market. Thus, business actors, especially MSMEs, must follow the progress of the global industry by producing the latest technology or breakthroughs to gain market share [6] and fulfill market demand [7].

The digitalization of MSMEs requires technological advancements to transform business processes and market dynamics while reducing transaction costs. Leveraging technologies like e-commerce enables MSMEs to expand customer and supplier networks. The government's initiative for digital transformation among MSMEs in Indonesia focuses on enhancing broadband access to support e-commerce activities [8]. MSMEs constitute nearly the entire business population, employing around 70% of the workforce and contributing 50% to 60% of economic revenue. Given this significant role, developing a competitive advantage is essential for sustainable performance. To improve the performance of MSMEs, a digital commerce ecosystem is essential to ensure that sellers and buyers are able to

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transact. This ecosystem can be formed through a marketplace platform [4]. There are many techniques used by marketplaces to increase their presence, one of which is gamification to increase customer engagement [9]. Gamification influences user attitudes, such as providing a sense of happiness and having a positive impact on shopping habits. The role of gamification is to facilitate an enjoyable and unique customer experience, which serves as a tool for building deeper engagement between consumers and brands or companies [10]. For this reason, marketplaces today are inevitable with the role of gamification.

This research aims to develop a prototype for a village marketplace in Surabaya, Indonesia, with a focus on gamification design using the design thinking method. This prototype design is not only centered on intuitive user interface (UI) and user experience (UX), but also on how gamification elements can be applied to encourage user engagement and loyalty. The prototype will feature elements such as a points system, achievement badges, and daily challenges specifically designed to motivate small and medium-sized enterprises (SMEs) to regularly upload products and interact with buyers. To ensure its effectiveness, this gamification design will be tested using Figma, enabling user testing to assess how easy and enjoyable the user experience is in completing missions or achieving specific goals. The implementation of this gamification-enhanced marketplace system is expected to expand market reach, improve product quality through positive competition, and simplify digital transaction processes, ultimately driving sustainable local economic growth.

2. Research Methodology

This study applies design thinking as a method for prototype development, ensuring a structured and sequential process that demands meticulous attention at each stage. Design thinking is a comprehensive approach to problem-solving that starts with empathizing with specific human-centered needs and aims to create long-term innovations driven by user demands [6] through products and services [11]. This method has five interrelated stages, including empathize, define, ideate, prototype, and test [12]. The research methodology can be seen in Figure 1.

Figure 1. Research Methodology

1. Empathize, is the first step of design thinking. This stage requires an understanding of the problems perceived by users, and of course, a solution will be found [6]. This stage can also be interpreted as the stage of how data can be collected. Observation techniques can be performed at this stage [13].

2. Define, the results of empathize will be described in the define stage. Where user problems will be defined and analyzed so as to produce several core problems [6]. An in-depth analysis of the findings from interviews and observations from the empathy stage was conducted to prioritize the issues to be resolved [14].

3. Ideate, this stage formulates a solution design from the results of the problems obtained at the empathize and define stages. This solution design will later be outlined in the interface development stage by writing down interesting ideas and proposals to be implemented in the prototype stage [6]. This stage is intended to create various alternative design solutions to address user experience issues identified in the previous stage. A priority matrix is used to generate these solution ideas [15].

4. Prototype, After passing through the three stages, the next step is to develop a design that is needed according to the data from the previous stages [6]. The purpose of the prototype stage is to implement ideas into a visual form that can be tested. At this stage, feedback on each visual can be accepted to assess the quality of human interaction with the system in terms of UI/UX. This process involves the creation of low-fidelity and high-fidelity prototypes [14].

5. Test, at the test stage, is used to improve the design results. The purpose of testing is to assess whether the results of the prototype that has been built are acceptable to the user or require improvement [6]. At this stage, usability testing and heuristic evaluation can be performed, which may involve several tests from users and experts [15].

3- Research Results

3-1-Empathize

In the empathize phase, data were collected to capture what users think, say, and feel. This process was carried out through interviews and the distribution of questionnaires. For the seller role, interviews were conducted directly with

micro, small, and medium enterprise (MSME) actors in Rejosari Village. For the buyer role, both interviews and questionnaires were used to gather insights from potential consumers. These activities aimed to obtain a deeper understanding of the challenges experienced by MSME actors as well as the expectations of buyers when interacting with a marketplace platform.

Data collection related to the seller role focused on identifying perspectives and specific needs in utilizing a marketplace as a tool for business development. In contrast, data regarding the buyer role aimed to explore preferences and expectations in fulfilling purchasing needs through digital platforms. To synthesize these findings and develop a comprehensive understanding of user needs, an *empathy map* was constructed based on the collected data. This visualization offers a holistic representation of user experiences and viewpoints from both roles and is presented in Figure 2.

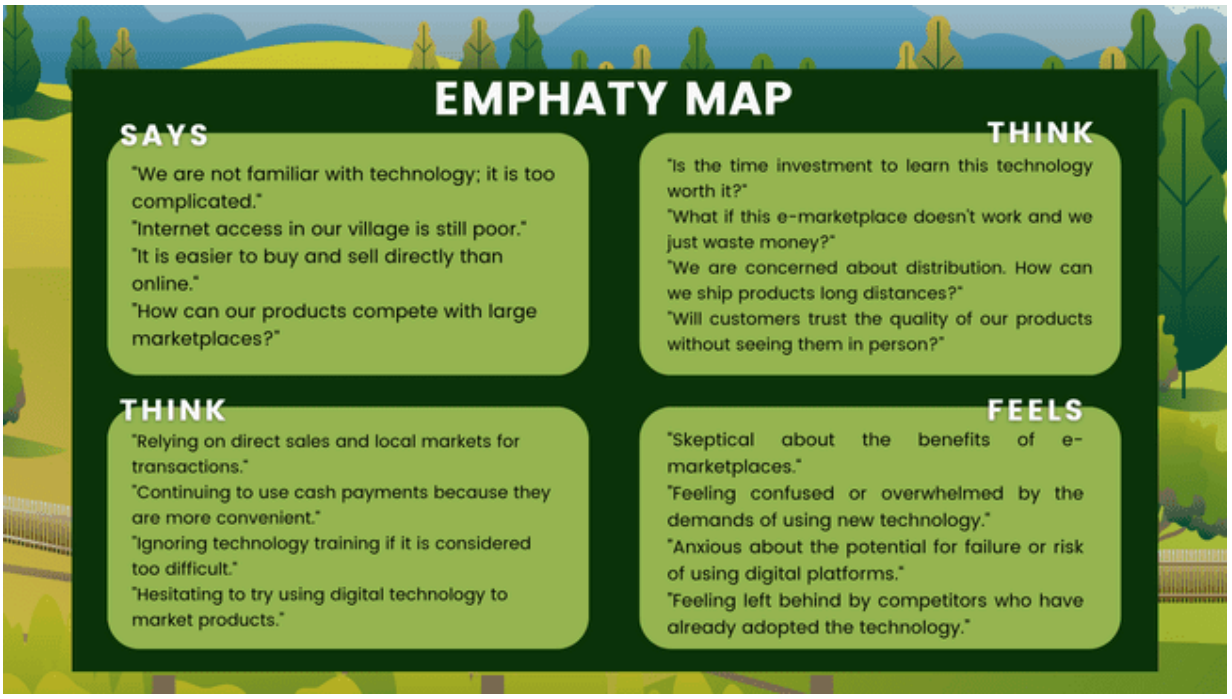

Figure 2. Empathy Map

The *Empathy Map* provides an in-depth understanding of rural MSME actors' experiences, thoughts, and emotions regarding digital technology adoption, specifically in the use of e-marketplaces. In the *SAYS* quadrant, many participants stated that they were unfamiliar with digital tools and found them complicated to operate. Limited infrastructure—especially poor internet connectivity—was identified as a significant barrier. Sellers also expressed a greater level of comfort with direct, face-to-face transactions and conveyed doubt about their ability to compete with more prominent sellers in digital marketplaces.

In the *THINK* quadrant, MSME actors tend to rely heavily on local markets and cash-based transactions as their primary method of doing business. Digital training programs are often perceived as irrelevant or too complex, which contributes to their reluctance to explore online platforms. Meanwhile, the *FEELS* quadrant highlights emotional challenges such as anxiety, skepticism, confusion, and fear of failure when engaging with new technologies. There is also a sense of being left behind by competitors who have adopted digital tools more rapidly. These insights illustrate a notable resistance to digital transformation, which stems from both practical limitations and psychological barriers, such as lack of self-confidence and insufficient access to supportive technology infrastructure.

Based on this analysis, it is evident that rural MSME actors require technological solutions that are not only accessible and user-friendly, but also capable of fostering user confidence and sustaining long-term engagement. The insights reveal a strong need for approaches that reduce hesitation in using digital tools, build trust in digital interactions, and create a sense of motivation among users to participate actively. Emotional drivers such as fear of failure, skepticism toward digital platforms, and feelings of being left behind suggest the importance of designing experiences that are both empowering and encouraging. These findings lay the groundwork for exploring potential design directions that align with user behaviors, needs, and motivations in subsequent stages of the development process.

3-2-Define

The *define* stage resulted in the identification of two primary user personas (sellers and buyers) along with their

respective needs and challenges. This information serves as a foundational guide for the development of features within the *Sarana Desa* application, ensuring that the platform delivers an optimal user experience for both parties. A comprehensive understanding of each persona allows for more targeted application development, aligning closely with actual user expectations and behaviors.

By mapping specific goals, frustrations, and technological capabilities of each user group, the design process can better address usability issues and contextual constraints faced in rural settings. Ultimately, this persona-driven approach contributes to enhancing the effectiveness of local product marketing and supports the creation of an inclusive digital ecosystem for rural micro-enterprises.

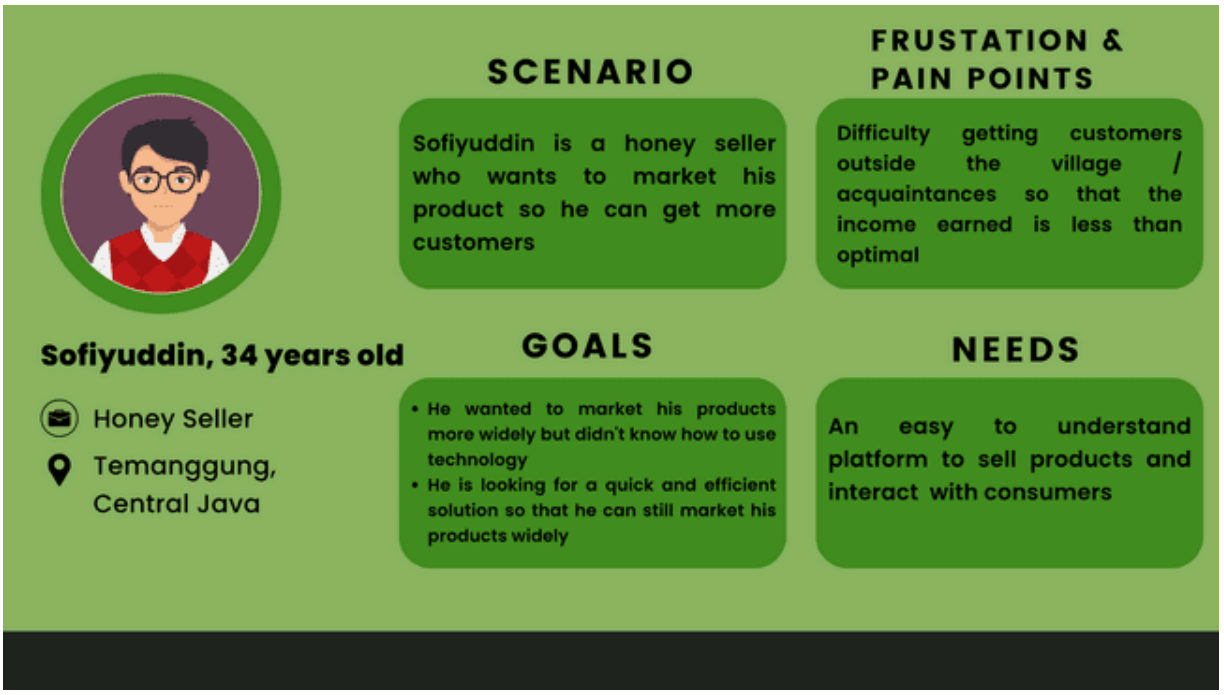

Figure 3. Seller's User Persona

The user persona describes a 34-year-old honey seller from Temanggung, Central Java, who encounters significant obstacles in expanding the customer base beyond the immediate village community. Although there is a strong intention to reach broader markets, limited digital literacy and unfamiliarity with technology-based marketing platforms inhibit progress. These constraints result in suboptimal income generation and continued reliance on conventional sales approaches.

To address this, a solution that is both efficient and easy to navigate is required, enabling product promotion to a wider audience without necessitating advanced technical skills. The individual represented in this persona demonstrates entrepreneurial motivation but lacks adequate support and resources to fully engage with digital commerce. Therefore, any proposed technological intervention should emphasize a user-friendly design with intuitive navigation, allowing users with limited digital experience to engage with the platform confidently. Simplifying the interface and aligning it with users' daily habits will be essential to encourage adoption and ensure sustainable usage within rural business environments. Moreover, to maintain long-term engagement, the system should incorporate motivational elements that encourage consistent participation in selling activities. One promising approach is the integration of gamification strategies, which can foster a sense of achievement and competition, thereby motivating sellers to remain active and continuously improve their performance. Gamification is the use of game elements in non-game contexts to enhance motivation, engagement, and user participation. It helps encourage interaction, regulate behavior, and create enjoyable experiences that support continued involvement [16]. Gamification refers to the meaningful involvement of individuals through interactive and engaging experiences in a gamified environment, which in turn can positively influence personal behavior and improve organizational outcomes [17]. Studies show that implementing gamification element, such as levels, badges, points, and leaderboards within MSMEs can effectively measure and influence several key business factors. These game elements help explain levels of engagement, motivation, and healthy competition, while also driving changes in behavior and psychology that are relevant to employee performance and social loyalty within the business model [18].

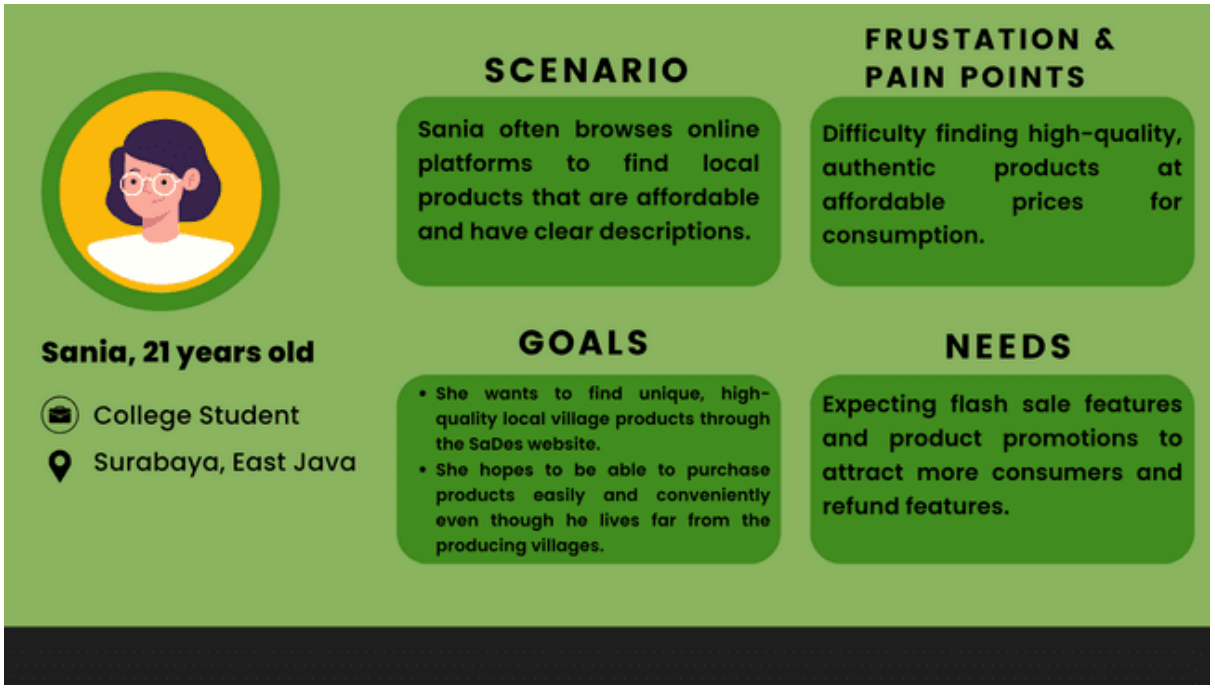

Figure 4. Buyer User Persona

A 21-year-old student frequently explores online platforms to find local products that are unique, high-quality, affordable, and have clear descriptions. However, there are challenges in locating authentic products with reasonable prices suitable for consumption. The goal is to easily and conveniently purchase distinctive local village products through a dedicated platform, regardless of distance from the producers. Desired features include flash sales, promotional tools to attract more consumers, and a refund policy for added convenience and trust.

Figure 5. Seller Journey Map

The image illustrates a seller journey map for the SaDes platform, detailing the stages sellers go through: understanding the application, login and registration, uploading products, managing stock and pricing, setting up shipping, completing transactions, and receiving feedback. Each stage outlines specific tasks, emotions, pain points, and suggested improvements. For example, initial skepticism about the platform's effectiveness is addressed through better information and guidance, while difficulties with product descriptions and stock management are mitigated with templates and automated notifications. Shipping concerns and unfamiliarity with payment systems are resolved through clearer instructions and options. Finally, feedback mechanisms provide both positive reinforcement and constructive insights to enhance seller performance.

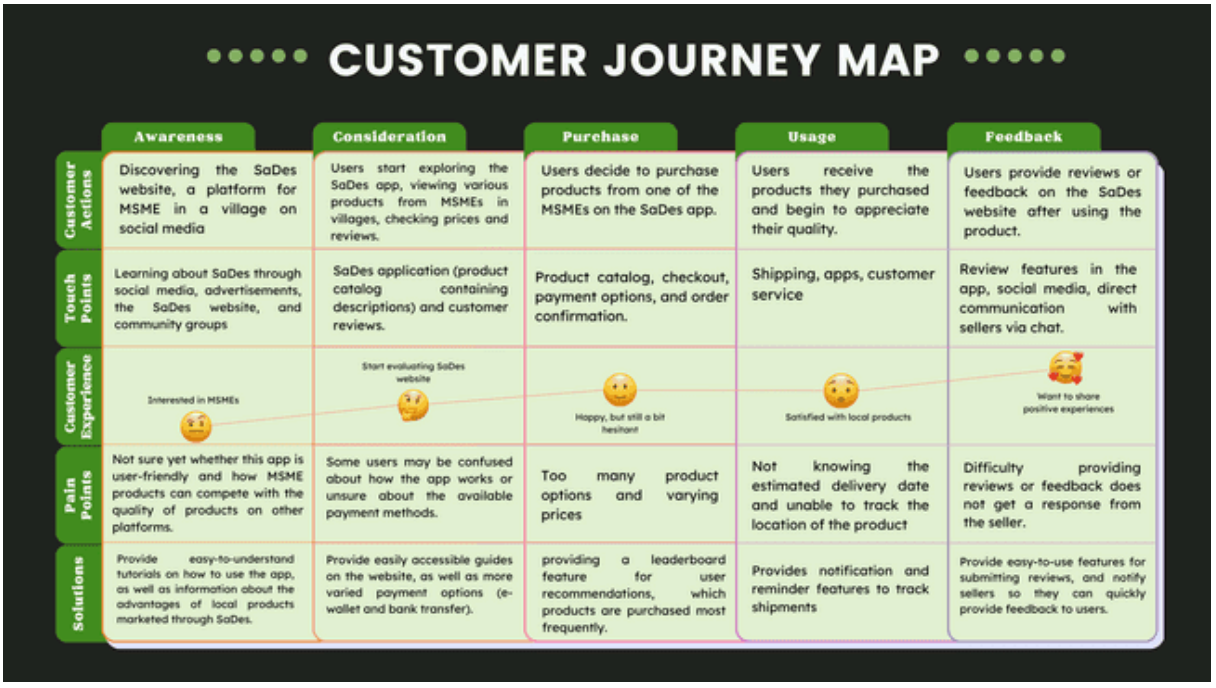

Figure 6. Customer Journey Map

The image outlines a customer journey map for the SaDes platform, detailing five key stages: awareness, consideration, purchase, usage, and feedback. It captures customer actions, touchpoints, experiences, pain points, and solutions at each stage. In the awareness stage, customers discover the platform through social media and community groups but may feel unsure about its reliability. During consideration, they explore products and reviews, facing challenges with user-friendliness and payment methods. In the purchase stage, customers decide to buy products but may encounter issues with price transparency and payment options. Usage involves receiving and enjoying products, but uncertainty about delivery timelines arises. Finally, the feedback stage includes providing reviews or communicating with sellers, where users might struggle with giving feedback easily. Proposed solutions include tutorials, enhanced payment options, notifications for delivery tracking, and simplified feedback features to improve the overall experience.

3-3-Ideate

The How Might We approach provides a framework for designing creative solutions that can be applied in the development of Sarana Desa application features. By answering these questions, we can create features that not only meet the needs of sellers and buyers, but also improve the overall effectiveness of local product marketing.

The image presents a "How Might We" framework that identifies insights, proposes solutions, and aligns them with actionable strategies to address specific challenges faced by rural MSMEs and buyers on the SaDes platform. Key insights include difficulties in marketing products beyond the local area, challenges in utilizing technology, fears of negative reviews affecting reputation, a lack of trust in village products, and difficulty in finding needed products. For each insight, "How Might We" (HMW) questions are posed, such as helping MSMEs understand and use technology, alleviating concerns about negative feedback, and improving buyer trust. Solutions include developing features to simplify marketing, providing educational tools and tutorials, offering guidance for handling reviews professionally, labeling "best products" to enhance trust, and using personalized recommendations to help buyers find desired items effectively. This structured approach connects problems with user-centered solutions to drive platform success.

3-4-Prototype

In the SaDes (Sarana Desa) system, wireframes are used to design the initial layout of the e-commerce platform that facilitates the marketing of local MSME products in villages. These wireframes display the basic structure of the pages, such as the main page for displaying product lists, review pages, payment pages, and user profile pages. With wireframes, the development team can design the positioning of important elements such as the “Buy” button, navigation menu, product search bar, and review form before creating a more detailed visual design. This ensures that each page on the SaDes system provides intuitive navigation and functionality that meets user needs

Figure 7. How Might We.

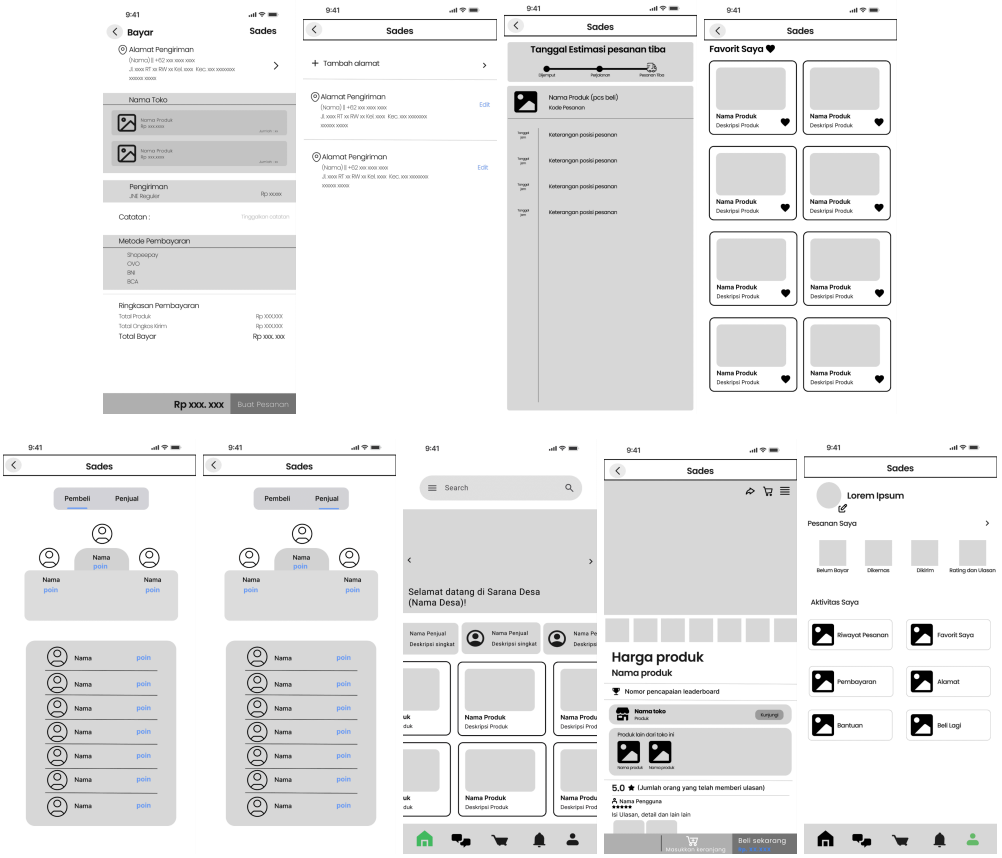

Figure 8. Wireframe payment, change address, shipping, leaderboard, home, detail product and profile

This wireframe displays the user interface design for the main features of the SaDes app, including payment, address management, delivery, favorites, leaderboard, home, product details, and profile. The payment screen includes details such as store name, product list, shipping address, shipping method, additional notes, and payment summary, with options for various payment methods. The address management screen allows users to add or edit shipping addresses for convenience. The shipping screen displays the estimated shipping date along with order details. The favorites section displays saved products along with their names and descriptions, allowing users to quickly access and review their favorite items.

The leaderboard feature allows users to view the highest points from both the seller and buyer sides. Sellers earn points when they successfully sell a product, while buyers earn points when they complete a purchase. For sellers, the more products sold, the more points they earn. For buyers, the more completed product purchase transactions, the more points they accumulate. The more points earned, the higher the ranking. The homepage displays sellers registered in Sades and the products available for purchase within the app. Following that, the product detail page provides more detailed information about a product and can direct buyers to the payment section if they are interested in purchasing the product. Lastly, the profile page contains user-related data, such as personal information, transactions, or favorite products. This wireframe emphasizes functionality and ease of use to enhance the shopping experience.

The SaDes system prototype is an early, more interactive version of the e-commerce platform that allows users to try out simulations of key features, such as viewing details and selecting products, providing reviews and ratings, making payments, viewing leaderboard simulations, and viewing profiles. This prototype helps demonstrate how the transaction process works from start to finish, such as adding products to the shopping cart, selecting a payment method, and receiving confirmation notifications. With this prototype, the development team can thoroughly test the user flow, identify potential issues in navigation or functionality, and gather feedback from users and SME buyers before the final product is launched.

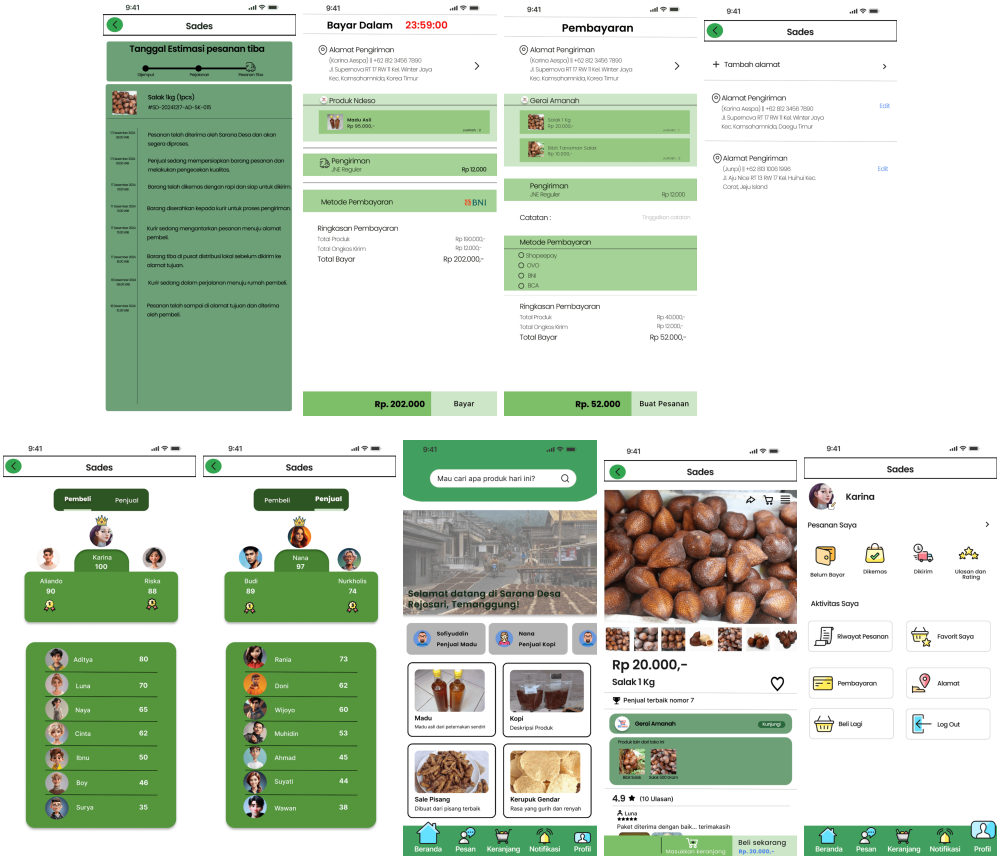

Figure 9. Prototype Payment, Change Address, Sshipping, leaderboard, home, detail product and profile

The image shows the prototype interface for the SaDes app, highlighting features for payment, address management, delivery, leaderboard, home page, product details, and profile. The shipping screen displays the estimated shipping date along with detailed product and order information. The payment section shows a summary of the shipping address, purchased products, shipping method, payment options, and total cost summary, accompanied by a visible countdown timer for payment completion. The address management screen allows users to add and edit multiple shipping addresses. This design emphasizes clarity and ease of use, ensuring users can efficiently manage orders, payments, and shipping preferences.

The leaderboard consists of two sections: one for buyers and one for sellers. In the leaderboard, the number of points and rankings earned by both sellers and buyers are displayed. Next, on the homepage, there is the name of the village, several registered sellers, and the products being sold. On the product detail page, it displays a more complete image of the product, the price, the store selling the product, and reviews from buyers who have purchased the product. Finally, on the profile page, it displays the buyer's activities, such as order history, favorite products, or the logout menu.

3-5-Test

During the SaDes system testing phase, usability testing was conducted to evaluate how effectively users could interact with the platform and complete essential tasks. A total of five respondents participated in this process, all of whom were university students aged between 18 and 23 years old. This group was chosen because it represents the primary target user persona of SaDes—young individuals who frequently explore online platforms to find unique, high-quality, and affordable local products with clear descriptions. These users often face challenges in locating authentic products at reasonable prices and expect a platform that allows them to make purchases easily, regardless of their distance from the producers.

The testing scenarios were designed to reflect the customer journey of these users, which typically involves five stages: awareness, consideration, purchase, usage, and feedback. At the awareness stage, users usually discover the platform through social media and online communities but may question its reliability. In the consideration stage, they explore products and reviews, often encountering usability issues related to payment methods. The purchase stage focuses on decision-making and transaction ease, while the usage stage involves product reception and delivery clarity. Finally, in the feedback stage, users may struggle with leaving reviews or communicating efficiently with sellers.

To mirror this journey, five testing scenarios were implemented: Forgot Password and Login, Purchasing–Viewing Store–Reviews–Payment, Leaderboard and Chat, Notifications and Profile Editing, and Profile and Logout. For each scenario, three usability metrics were measured, namely outcome (to assess task completion), duration (to track task completion time), and misclicks (to count navigation errors).

The results showed that all respondents successfully completed the Forgot Password and Login scenario with an average time of 22.7 seconds, although several misclicks were recorded. For the Purchasing, Viewing Store, Reviews, and Payment scenario, only 60% of respondents were able to complete the task, with a significantly longer duration and a high number of misclicks, indicating that transaction flow remains a critical pain point. In the Leaderboard and Chat scenario, 80% of respondents completed the task with minimal issues, while the remaining respondent encountered difficulties due to multiple misclicks.

For Notifications and Profile Editing, all respondents successfully completed the task with an average time of 52.8 seconds, although a few experienced minor navigation challenges. Similarly, the Profile and Logout scenario achieved a 100% success rate with an average duration of 35 seconds, showing that basic profile interactions are intuitive and easily accessible.

To complement the usability testing, a quantitative method was conducted by a structured questionnaire. The questionnaire was distributed to 24 participants representing potential buyers. The questionnaire consists of questions about interest in using the application and gamification. The questionnaire questions are presented in Table 1.

Table 1. Percentage of Buyer Questionnaire Responses

Question	Percentage of Responses
Are you interested in purchasing local village products through the SaDes website?	95.8% of participants are interested in purchasing products through Sarana Desa.
Are you interested in buying the product even if it is located far from your residence?	83.3% of participants are interested in buying products even if they are far from their domicile.
How important is product information (such as price and description) in the SaDes application to you?	91.7% of participants consider product information important to be displayed in the application.
How important is the availability of a refund or product return feature if there is a problem with the purchased product?	95.8% of participants consider the refund feature important.
How important is the leaderboard points feature to you, where users with the highest point ranking can receive additional benefits?	91.7% of participants consider the leaderboard feature important in the SaDes application.

The results of the questionnaire indicate that 95.8% of respondents were interested in buying local village products through the SaDes platform, and 83.3% stated they would still buy even if the product was located far from their domicile. Furthermore, 91.7% considered clear product information such as price and description to be crucial. Similarly, 95.8% emphasized the importance of having a refund feature, and 91.7% agreed that a leaderboard reward system would make the platform more engaging. This proves that users are satisfied with the gamification implemented in several gamification elements accompanying the Sades application. This will motivate users to continue using the Sades application.

Overall, these results indicate that the platform's core features, such as login, profile management, and notifications, are well understood and easy to use by the target users. However, transaction-related features, particularly purchasing and payment, require improvement to reduce misclicks and enhance navigation clarity. This aligns with the persona's pain points in the customer journey, emphasizing the importance of streamlining the purchase flow to create a smoother, more efficient user experience.

4- Conclusion

This study successfully designed a prototype of the SaDes (Sarana Desa) application using the Design Thinking method, which consists of five stages: Empathize, Define, Ideate, Prototype, and Test. The results of the study show that this application can be a strategic solution to support the marketing of local MSME products in the village of Rejosari, Temanggung. Through interviews and questionnaires, the needs of users, both from the seller and buyer sides, were successfully identified and translated into key features such as product catalogs, reviews and ratings, digital payments, and gamification-based leaderboards.

Testing of the prototype shows that the SaDes application is intuitive, easy to use, and can meet user needs. With a simple interface and a user experience specifically designed to improve accessibility, this application is expected to help MSMEs increase their competitiveness and expand their markets. The SaDes application also has the potential to encourage technology adoption among rural communities, while promoting sustainable local economic growth. With these research results, it is hoped that the SaDes platform can be implemented in practice to have a positive impact on the rural economy and support the empowerment of MSMEs in Indonesia. In testing, users agreed that the application of gamification can increase engagement and motivation. Therefore, it is hoped that this application can create an ecosystem that attracts users to continue using it. This will motivate MSMEs to continue increasing their contribution to this application.

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