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Improving the Mie GACOAN Online Food Ordering Application Using the System UsabilityScale (SUS)

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***Abstract*—Improvement of the online food ordering application through the System Usability Scale (SUS) method to enhance user satisfaction and streamline the ordering process. Driven bythe rapid expansion of online food ordering in Indonesia, this study aims to address long queues and improve customer convenience through optimized digital solutions. Current challenges include delayed ordering processes and limitations in existing application features, such as navigation issues, unclear language, and limited ordering options for dine-in, takeaway, and delivery. The research employs a mixed-methods approach,combining survey and interview data with competitive analysis, to identify critical areas for enhancement. Design improvements focus on user interface (UI) and user experience (UX) to simplify navigation, optimize payment processes, and make language more user-friendly. Initial usability tests resulted in a SUS scoreof 48, categorizing the application as "poor." After iterative improvements based on Agile Development, the score rose to 70, indicating an "acceptable" level of usability. This research highlights the importance of continuous UI/UX refinement to meet consumer expectations, with recommendations for ongoing updates and professional design involvement to maintain and enhance app performance. The findings indicate that improvements in the usability and functionality aspects of the application have a significant impact on customer satisfaction levels. This directly reinforces the position of online food ordering services as a competitive alternative in the digital food service industry.**

***Index Terms*—agile development; user interface design; usability scale; digital food service**

I. INTRODUCTION

In the era of Industry 4.0, technological advancements are experiencing significant acceleration, impacting various aspects of daily life. According to a survey conducted by the Indonesian Internet Service Providers Association (APJII) in 2019, it was recorded that 73.7% of the population—equivalent to 196.71 million individuals—were connected to the internet. This figure increased to 78.19% in 2023, reflecting a 4.49% growth in internet usage over a four-year period [1]. This increase in digital connectivity has a real impact on various sectors, including the food and beverage industry, where online food ordering services have shown significant growth. In Indonesia, the online food ordering market is estimated to grow at an annual rate of 11.5% from 2020 to 2024, indicating the increasingly important role of these services in modern consumption patterns [2].

Online food ordering services offer various advantages, including the creation of job opportunities and increased customer convenience through an easier and faster ordering process. In Indonesia, many restaurants have integrated this service into their operations, one of which is Mie Gacoan managed by PT Pesta Pora Abadi. Mie Gacoan is widely known for its distinctive noodle dishes at affordable prices, making it a favorite choice among students and young consumers. Despite achieving high popularity, Mie Gacoan still faces operational challenges, particularly in terms of long queues which are often the main complaint from customers [3].

The model proposed in this study focuses on optimizing the usability and functionality aspects of the online food ordering application Mie Gacoan. This research applies the System Usability Scale (SUS) method combined with an Agile Development approach to address various limitations in the user interface (UI) and user experience (UX). The SUS method is used as a reliable evaluation instrument to measure the system's usability level based on direct feedback from users. Meanwhile, the Agile approach allows for an iterative and adaptive development process, so that each system update can be responsively adjusted to the evolving needs of users.

The System Usability Scale (SUS) method was chosen in this research because it has proven effective in identifying usability issues with relatively low resource requirements. Its wide use across various fields has demonstrated a high level of reliability in evaluating user satisfaction and system effectiveness. Meanwhile, the Agile Development approach was

selected because of its adaptive and iterative characteristics, allowing for the direct integration of feedback to support continuous improvements in user interface (UI) and user experience (UX). The combination of these two methods results in a user-centered approach, making the developed solutions more aligned with customer needs and expectations.

This research makes a significant contribution to this field by demonstrating that systematic improvements in user interface and user experience (UI/UX) can directly enhance customer satisfaction levels in the food delivery service sector. By identifying and addressing specific usability challenges—such as navigation difficulties, unclear language usage, and inefficient payment processes—this study produces practical insights that can be applied not only by Mie Gacoan but also by similar businesses. The findings of this research, indicated by the increase in the System Usability Scale (SUS) score from 48 (poor category) to 70 (acceptable category), affirm the potential for ongoing development in UI/UX design to enhance customer experience and support overall operational efficiency.

User Experience (UX) refers to the perceptions, feelings, and level of satisfaction experienced by users when interacting with a product or service. A positive UX is created when software effectively meets the needs and goals of users, such as helping to complete tasks easily, thereby enhancing overall comfort and user satisfaction [4]. By considering user preferences, perceptions, emotions, and cognitive and physical reactions before, during, and after use, UX plays a crucial role in ensuring that products can provide optimal and sustainable services for their users [5].

The User Interface (UI) plays a strategic role in supporting the interaction between users and systems by providing visually appealing designs, easily accessible features, and well-organized navigation structures. An effective UI design contributes to enhanced usability by aligning visual elements—such as colors, animations, and responsive feedback—with the needs and expectations of users, thereby strengthening the overall user experience and satisfaction. Additionally, the UI serves as a communication bridge between users and the system, enabling efficient and intuitive information exchange across various platforms, including web applications, mobile, and software. To achieve optimal results, UI design must integrate aesthetic and performance aspects in a balanced manner to ensure that the appearance does not hinder the core functionality of the application [6].

Usability is a product evaluation method conducted by directly testing with users to assess the ease of use of a website's interface. This evaluation includes several key aspects, such as learnability, which measures how quickly users can complete basic tasks when first using the design; efficiency, which refers to the speed of task completion after users become familiar with the design; memorability, which evaluates how easily users can navigate back to the site after a period of not using it; error management, which encompasses the frequency, severity of errors, and ease of recovery from errors; and satisfaction, which describes the level of comfort and enjoyment users experience while interacting with the design [7].

The System Usability Scale (SUS) is a usability evaluation method developed by John Brooke in 1986 to measure user satisfaction with a system or application. This method uses a questionnaire consisting of 10 statements with a 5-point Likert scale, ranging from strongly agree to strongly disagree. SUS is designed to provide a quick and efficient assessment of ease of use and effectiveness of the user interface. The strength of this method lies in its ability to be applied in various contexts with a relatively small number of respondents, making it very suitable for use in the early stages of product development to effectively and reliably identify usability issues [8].

Usability testing measures how user-friendly an application is, involving testers to identify defects before launch. It applies to both web and mobile apps, focusing on ease of use, flexibility, and control. Reports indicate that 50% of developers' efforts go toward resolving usability issues, highlighting the importance of early- stage usability testing to meet user expectations. Additionally, experts found that 97% of mobile app users prioritize ease of use as their top requirement [9].

A prototype is an early version or model of a product created to test concepts, designs, or processes before mass production. Prototypes serve as tools to explore ideas, identify issues, and refine designs before the final product is developed. They allow designers and developers to see how a product will function in real life and make necessary adjustments to enhance functionality, aesthetics, and usability. While crucial for creating innovative solutions, prototype development can incur high costs and involve significant uncertainty, potentially leading to resource waste if not managed effectively [10].

Hybrid mobile applications combine native app features with web technologies, relying on HTML, CSS, and JavaScript for cross-platform development. The Ionic Framework facilitates this by using HTML, CSS, and JavaScript to create hybrid mobile apps, integrating Angular and Cordova for communication with mobile devices. In the context of m-commerce applications, particularly food delivery services from restaurants, the presence of an intuitive and user-friendly interface becomes very crucial. Additionally, the system must provide a secure payment processing mechanism, real-time order tracking features, as well as an easy-to-operate menu management system. This allows restaurants to update items and adjust prices effectively and efficiently. [11].

The Agile Development Method is an approach to software development that is widely known for its ability to quickly adapt to changes in user needs during the development cycle. This approach emphasizes short iterations that allow for continuous

evaluation and adjustment, as well as strengthening direct collaboration between development teams and users to ensure that the resulting software can meet dynamic business needs. Previous studies have indicated that Agile methods are very effective in the development of web and mobile applications, especially in fast-changing environments such as mobile commerce (m-commerce). The application of Agile in hybrid m-commerce applications enables efficient development processes and easier integration with external systems, thus enhancing application performance while improving the user experience [12].

Research on the development of hybrid applications for restaurant delivery services is motivated by issues related to a less intuitive user experience, which affects customers' difficulties in completing the purchasing process.The Agile Development method was used to develop a hybrid application that combines the benefits of both native and web-based applications. The resulting solution allows users to access m-commerce features, such as product browsing, ordering, and payments, through a single integrated platform [13].

Another study focused on the development of a web-based self- service system for food ordering in restaurants. This topic was chosen as a solution to minimize physical contact in restaurants during the COVID-19 pandemic. In this study, the System Usability Scale (SUS) method was used to test the usability of the application. The proposed solution involves designing a self-service application that allows customers to independently order food using QR code access, complemented by an admin management feature to support restaurant operations [14].

Study on the GrabFood mobile food ordering app revealed a lengthy loading screen, an invisible map feature when selecting addresses, missing food photos for some restaurants, an excessive number of restaurants in the “Delivering to You” section, and the absence of search filters by price or distance. The researchers then applied the Design Thinking method to evaluate and enhance the user experience for GrabFood. Additionally, they used Heuristic Evaluation to analyze usability issues and prioritize improvements based on severity ratings. The implemented changes significantly improved application efficiency, providing a better user experience, with users reporting increased satisfaction after these modifications [15].

The study on hybrid-based emergency call application that was developed to assist the Tangerang Regency community in handling emergency situations, such as accidents or fires has revealed the main issues that are the public’s limited awareness of emergency numbers and the difficulty in providing accurate location information [11]. The solution is an application that utilizes Location-Based Services (LBS) and the Ionic framework to provide quick access to emergency numbers and display critical locations, such as police stations, hospitals, and fire departments, through Google Maps. With these features, the app is expected to help people receive faster assistance and enhance safety during emergencies.

Therefore, a thorough investigation of the Gacoan application is needed to assess the level of user satisfaction and identify any challenges they may face. Thus, the scope of this paper will be limited to:

- The research focus is directed towards Gacoan noodle customers who are experiencing issues with long queues and delays when ordering food.
- This research is limited to the discussion of user interface and user experience development in the Gacoan noodle ordering application.
- User experience analysis is used to assess how satisfied Gacoan noodle customers are with the features of the developed Gacoan noodle application.

II. METHODOLOGY

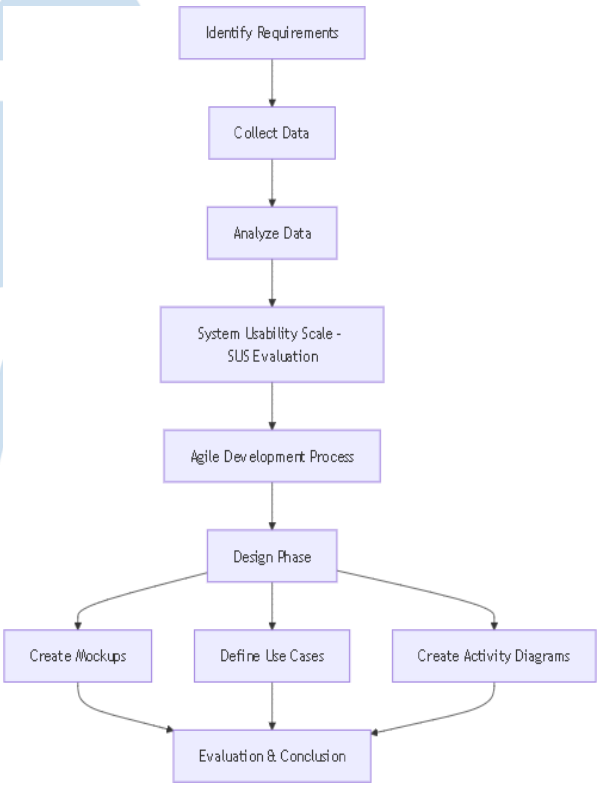


Fig. 1. Research Methodology.

The evaluation of the Mie Gacoan application was conducted to identify deficiencies in the user interface (UI/UX) and provide relevant development solutions. In this study, surveys and interviews targeted application users and loyal customers of Mie Gacoan restaurants [16]. These subjects were selected because they were considered capable of providing objective feedback regarding their experience using the application.

This survey involved a total of 73 respondents collected in one day at one of the Mie Gacoan branches. The selection of this sample size was based on the consideration of data representativeness while maintaining practicality in the analysis process according to the time constraints of the research. The respondents participated in usability testing of the application and were asked to fill out a System Usability Scale (SUS) questionnaire to evaluate their experience using the application.

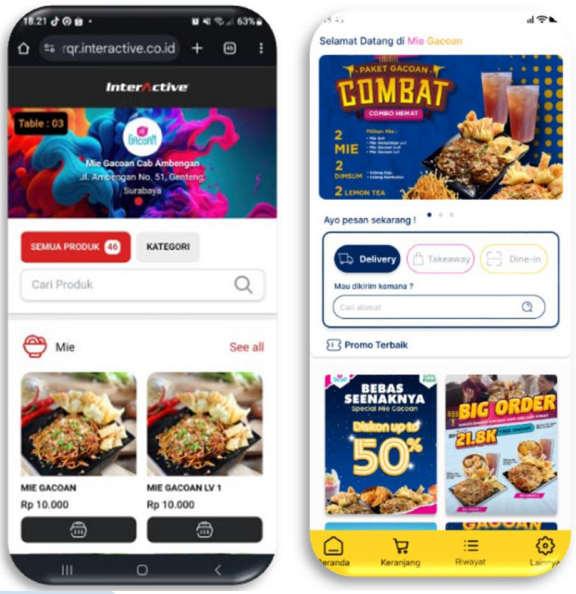
This research begins with a system development approach that starts with a needs identification process, aimed at understanding user expectations and formulating the overall system objectives. The next stage involves data collection through surveys and/or interviews, which are then analyzed to gain insights that support the design of an appropriate system solution. To assess the level of system usability, the System Usability Scale (SUS) instrument is used. In the development process, the Agile method is implemented to allow for flexibility and rapid adaptation through short and continuous iterations. [17].

Subsequently, the team moves to design, incorporating several key elements such as mockups as early visual representations, use cases to depict interaction scenarios between users and the system, and activity diagrams to illustrate process flows. Once all stages are completed, the results and evaluation of the development process lead to conclusions and recommendations for future improvements [18].

III. Results and Discussions

Testing of the Gacoan application was carried out by utilizing the smartphone used by the respondents, recording and observing. The following are the results of solving the user interface design problems along with their explanations:

1. The first problem in this research is related to the *usability* of food ordering applications, where the ordering process often takes a long time and reduces user convenience. Customers frequently face challenges in selecting the appropriate ordering service, whether for Delivery, Take Away, or Dine- In. Therefore, this research aims to design an application that can simplify the process for customers to manage queues and choose services according to their needs. With this application, it is expected that the ordering process will be faster and more efficient, ultimately enhancing the overall userexperience [20].



Before After

Fig. 2 Dashboard page.

2. The second problem in this research is to simplify navigation in the Gacoan app by adding features that were previously unavailable. These include optionsto increase the quantity of food and drinks ordered, as well as a timer for the payment process. If payment is not completed within the specified time, the order will automatically be canceled and returned to the main menu. This feature is particularly useful for Dine-In services, where customers may occasionally overlook payment, causing tables to remain marked as "occupied" and unavailable for other customers. It is hoped that this feature will improve the efficiency of table use.

Before After

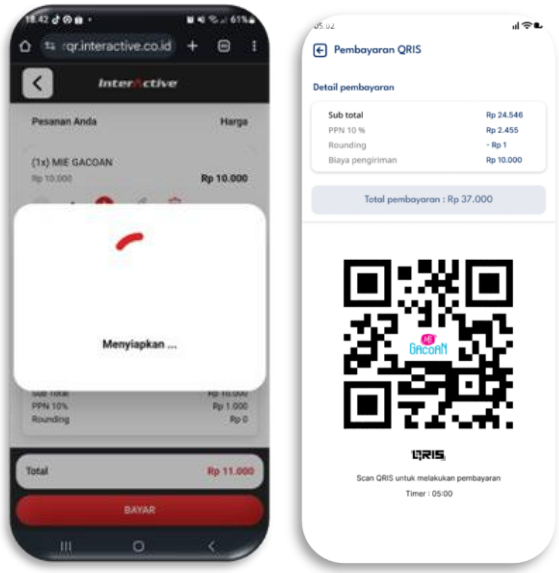


Fig. 3. Payment page.

3. The third problem in this research concerns the language used in the Gacoan app, which still poses difficulties for customers during the food ordering process. Many customers experience confusion due to unclear and unintuitive wording or terminology, which slows down the ordering process and reducesthe user experience. Therefore, improvements in the language used in the app are needed to make it more easily understood by a diverse range of users. With simpler and more familiar language, customers are expected to place orders more quickly and comfortably, without encountering confusion whileusing the app [21].

Before After

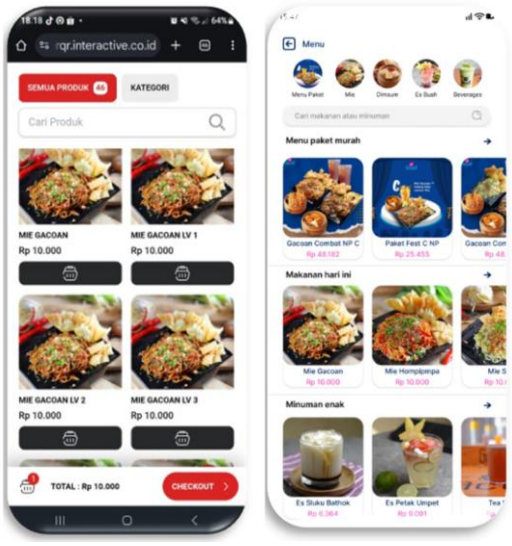


Fig. 4. Receipt page.

In this study, we distributed a questionnaireto Mie Gacoan customers to evaluate the application. The questionnaire aimed to gather user feedback both before and after testing. The data collected helped assess customer satisfaction, user experience, and areas for improvement. These insights were used to analyze the app's strengths and weaknesses and to identify necessary development steps. This approach ensures the app better meets user needs, enhances customer satisfaction, and provides an optimal user experience. The results of the questionnaire serve as a foundation for further application development. Below are the findings from the distributed questionnaire. The following are the final calculated scores for "after"assessments:

TABLE I. Questionnaire 1 score.

Question: I feel that the feature in the Mie Gacoan application are functioning well.

Response	Frequency	Percent	Valid Percent	Cumulative Percent
Very Disagree	25	34.2%	34.2%	34.2%
Disagree	18	24.7%	24.7%	58.9%
Neutral	17	23.3%	23.3%	82.2%
Agree	5	6.8%	6.8%	89.0%
Very Agree	8	11.0%	11.0%	100.0%
Total	**73**	**100.0%**	**100.0%**	

TABLE II. Questionnaire 2 score.

Question: I feel that the design of Mie Gacoan application is quite appealing.

Response	Frequency	Percent	Valid Percent	Cumulative Percent
Very Disagree	1	1.4%	1.4%	1.4%
Disagree	3	4.1%	4.1%	5.5%
Neutral	7	9.6%	9.6%	15.1%
Agree	24	32.9%	32.9%	47.9%
Very Agree	38	52.1%	52.1%	100.0%
Total	**73**	**100.0%**	**100.0%**	

TABLE III. Questionnaire 3 score.

Question: I feel the need for the addition of takeaway and delivery feature.

Response	Frequency	Percent	Valid Percent	Cumulative Percent
Sangat Tidak Setuju	1	1.4%	1.4%	1.4%
Netral	6	8.2%	8.2%	9.6%
Setuju	18	24.7%	24.7%	34.2%
Sangat Setuju	48	65.8%	65.8%	100.0%
Total	**73**	**100.0%**	**100.0%**	

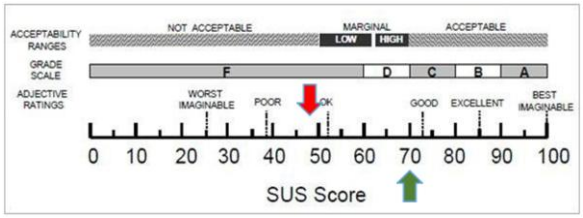


Fig. 5. Likert score after testing.

4. The fourth problem Gacoan application is that its usability level is still low. Based on the calculations that have been performed, it is known that the SUS score obtained before the development of the Gacoan noodle ordering application was 48. This aligns with the established SUS score criteria, wherea score of 48 falls into the adjective ratings category of "poor," marginal acceptability ranges of "low," and a grade scale of "F." After development, another usability test was conducted. Based on the results ofthe test, the SUS score obtained was 70, which indicates that this score falls within the adjective ratings of "Ok," marginal acceptability ranges of "high," and a grade scale of "D" [19].

IV. CONCLUSION

The research findings indicate that customer satisfaction with the Mie Gacoan ordering application has increased after development. The post-development System Usability Scale (SUS) score reached 70, which falls into the high category, while the pre-development score was only 48, classified as low. Based on the results of interviews and questionnaires, the appearance and features of the application have undergone significant improvements and now meet the needs and comfort of customers. Customers have stated that the changes in appearance and the addition of features provide a better user experience. The development of the application's features and appearance has proven to enhance the user experience. The newly added delivery and takeaway features greatly simplify the process for customers to order food online, eliminating the need for long queues.

PT. Pesta Pora Abadi should conduct regular maintenance of the Mie Gacoan application by updating existing features and enhancing the application's appearance to ensure it meets customer expectations. PT. Pesta Pora Abadi is encouraged to hire a professional UI/UX designer to improve the design and user experience of the Mie Gacoan ordering application, ensuring it is user-friendly and visually appealing.

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