# DESIGNING INTERFACE ON HARA CHICKEN KALIURANG STREET KM 12.5 USING QUALITY FUNCTION DEPLOYMENT METHOD THROUGH VOICE OF CUSTOMER

**UNDERGRADUATE THESIS**

**Submitted to the International Undergraduate Program in Industrial Engineering in Partial Fulfilment of Requirement for the Degree of Sarjana Teknik at the Faculty of Industrial Technology Universitas Islam Indonesia**


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**UNIVERSITAS ISLAM INDONESIA**

**YOGYAKARTA**

**2025**

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For the sake of Allah SWT, I admit this work is the result of my own work, except for the excerpts and summaries from which I have explained the source. If in the future, it turns out that my confession is proven to be untrue and violates the legal regulations in the paper and intellectual property rights. In that case, I am willing to get a diploma that I have received to be withdrawn by Universitas Islam Indonesia.

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Demikian surat keterangan ini kami buat, agar dapat dipergunakan sebagaimana mestinya.

*Wassalamu'alaikum warahmatullahi wabarakatuh*

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# Designing Interface on Hara Chicken Kaliurang Street Km 12.5 Using Quality Function Deployment Method Through Voice of Customer

**UNDERGRADUATE THESIS**

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## DEDICATION PAGE

To express my thanks to all in many ways to the success, to our Allah almighty who is always there where I am, thank you for guiding me and giving me strength in my everyday life.

With deep gratitude and pride, I dedicate this undergraduate thesis to my beloved parents all the time, Papa and Mama. Accomplishing this would hopefully make my parents proud of me as much as I am proud of having them as my parents. Even though there are so many things I need to do after. They always provided endless love, support, and prayers. To all my siblings, who have constantly given encouragement and supported me throughout my academic journey. And to all my friends who have always been there to support me in my ups and downs, close companions who have always been there to accompany me through. The joys and sorrows during the preparation of this undergraduate thesis. Additionally, with

With the utmost respect, I would like to express my gratitude to my supervisor, Ms. Dr. Harwati, S.T., M.T., for all of her help, advice, and patience during the composition of this undergraduate thesis. The guidance and assistance provided have been crucial in finishing this work

.

## MOTTO

*"Allah does not require of any soul more than what it can afford. All good will be for its own benefit, and all evil will be to its own loss."*

**(Al-Baqarah/2: 286)**

*"Verily, with the hardship, there is relief (i.e., there is one hardship with two reliefs, so one hardship cannot overcome two reliefs). Surely with difficulty comes ease. truly where there is hardship, there is also ease."*

**(As-Sharh/94:6-7)**

*"Abu Huraira reported: The Messenger of Allah, peace and blessings be upon him, said: If anyone pursues a path in search of knowledge, Allah will make easy for him a path to paradise."*

**(Sahiḥ Muslim 2699)**

# PREFACE

***Assalamu'alaikum Warahmatullaahi Wabaraakatuh***

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8. All IP IE batch 2021 colleagues, along with juniors and seniors in the International Industrial Engineering Program department, have provided support and motivation to the author while facing various challenges in this study.

9. The Head of the Laboratory, Laboratory Staff, and Friends from the Desain Sistem Kerja & Ergonomic Laboratory Assistant batches of 2019, 2020, 2021, and 2022 provided support and prayers to the author.
10. All parties involved and assisting the author during the study, especially in conducting undergraduate thesis research, cannot be mentioned individually.

The author is aware that there is still much room for improvement in this undergraduate thesis report. For this research report to be perfect and improved, the author welcomes critiques and recommendations. The education sector can gain from this report, which can also be used in the field and expanded upon.

***Wassalamu'alaikum Warahmatullahi Wabarakatuh***

Yogyakarta, April 21st, 2025

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# ABSTRACT

In marketing management, there are considerations and influences that drive consumers to make purchasing decisions. Queuing is one of the factors that can make consumers cancel orders. This study involved MSMEs in Yogyakarta and requires improvement of retail conditions and the implementation of self-order design that can attract the attention of potential buyers and maintain consumer satisfaction. The method used in this study is Voice of Customers and house of quality, then carried out usability testing by using three task scenarios and system usability scale questionnaires. The attributes in the self-order interface design focus on four key attributes that align with consumer needs: convenience and comfort, customer appeal, information, and features. These attributes aim to optimize user satisfaction and enhance the overall efficiency of the self-order service. Based on the results of the Independent T-test conducted on 30 respondents with 7 before-and-after comparison questions, the degrees of freedom (df) value is 58. Since all $H_1$ hypotheses are accepted, this indicates that for all tested attributes. This confirms that there is a significant difference between the before and after design. And then, based on the System Usability Scale (SUS) score of 83.41, the application falls into the Acceptability Ranges: Acceptable, Grade Scale: A, and Adjective Ratings: Excellent categories. This shows that the application has a very good level of usability and is well-received by users

Keywords: Interface Design, House of Quality, SUS Questionnaires, Usability Testing.

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# CHAPTER I
# INTRODUCTION

## 1.1 Background

The role of MSMEs is very large for Indonesian Economic Growth, with number 99% of all business units. In 2023, n 2023, MSME business actors will reach around 66 million. The contribution of MSMEs reaches 61% of Indonesia's Gross Domestic Product (GDP) equivalent to IDR 9,580 trillion. MSMEs absorb around 117 million workers (97%) of the total workforce.

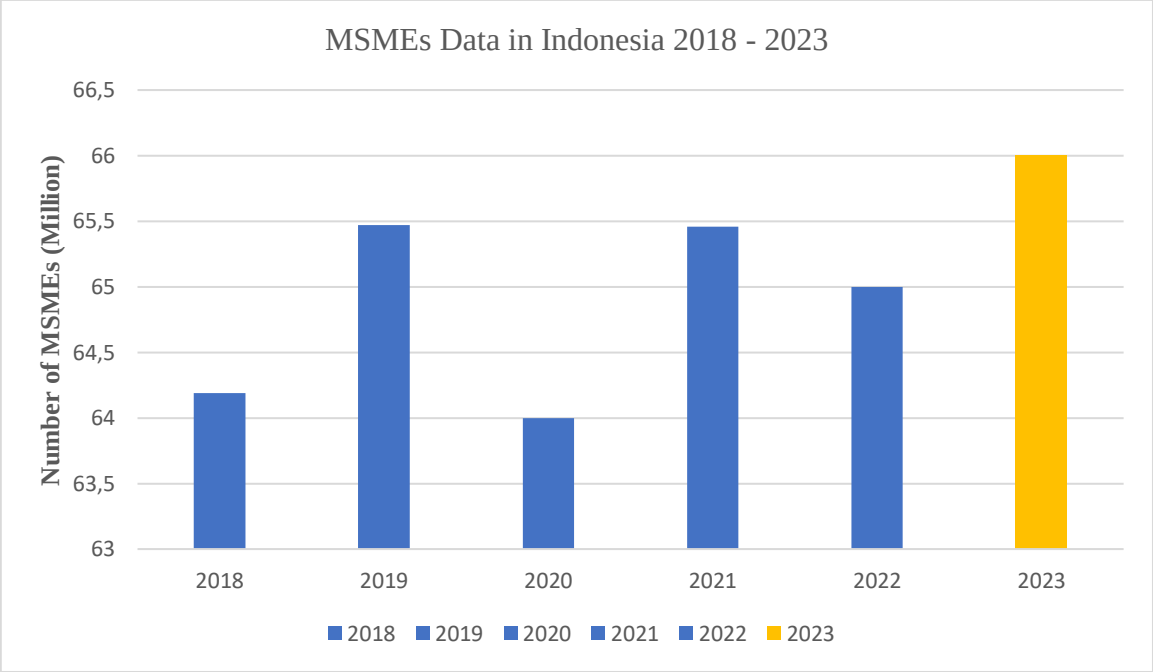



Figure 1. 1 MSMEs Data in Indonesia 2018 – 2023
Source: *Indonesian Chamber of Commerce and Industry* (2023)

According to BPPOM (2022), MSMEs have several fields, including culinary arts, fashion arts, and crafts. One type of MSME that is very reliable in supporting the regional economy is the culinary business, which is the most popular field for entrepreneurs. Since the culinary field can be run with minimal capital. Data shows that 70% of MSMEs in Indonesia are in the food and beverage industry, 99.5% of which are Micro, Small, and Medium Enterprises (Ahmad & Rahmi, 2023). The food and beverage (F&B) industry is a high-potential sector as it makes a significant contribution to the Indonesian economy. The food and beverage (F&B) industry in Indonesia has great growth potential and plays a key role in contributing to the country's economy. According to data from Statistics Indonesia (BPS), the F&B business experienced a 20.76% annual growth in 2022 compared to the previous year. Most food and beverage providers on Java are in mall/shopping

areas, 50.44% (Badan Pusat Statistik BPS, 2023). This expansion is intricately connected to the heightened production of food and beverages.

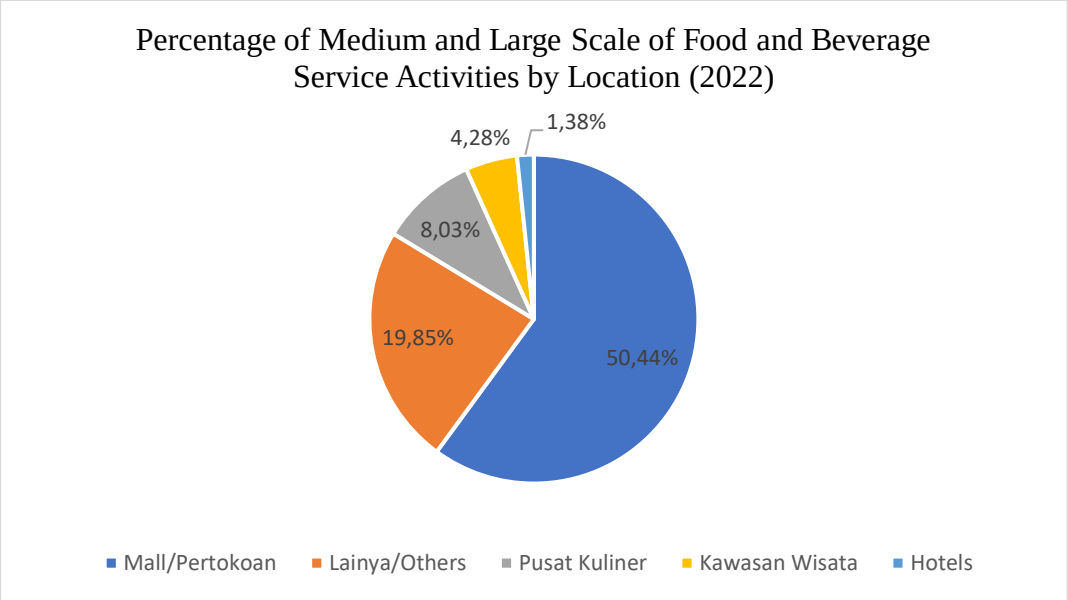



Figure 1. 2 Percentage of Medium and Large Scale of Food and Beverage Service Activities by Location (2022)

Source: Badan Pusat Statistik, 2022

Food and Beverages are one of the main essentials for consumers to fulfill, likewise in the Yogyakarta region. Micro, Small, and Medium Enterprises (MSMEs) in various regions of Yogyakarta have been regulated by Laws, Policies, and Regulations in planning, managing, implementing, and reporting each performance, both in non-financial and financial aspects (Fajri, 2022). According to the Coordinating Ministry for Economic Affairs of the Republic of Indonesia, numbered HM.4.6/103/SET.M.EKON.3/05/2021, MSMEs are the most important pillars in the Indonesian economy because their contribution to the Gross Domestic Product is 61.07% or 8,573.89 trillion rupiah. The contribution of MSMEs to the Indonesian economy includes the ability to absorb 97% of the total workforce and collect up to 60.4% of the total investment.

The culinary industry has recently grown significantly, because this industry is considered to have a big chance in offering basic human needs. The growth of the food and beverages industry is influenced by various factors such as economic level and people's lifestyles. Consumer demographic factors also affect the willingness to buy a product. Likewise, Yogyakarta has a significant growth day of the year that makes the city of Jogja one of ten cities in Indonesia that are culinary tourism destinations (Kalputri, 2019). One of the culinary trends that is currently growing in fast food. According to ESDA Economic Research Service (2023) and the Public Health Agency

of Canada (2015) defines fast food is defined as cuisine from establishments that offer counter service, drive-through, or carry-out options without table service (Ufholz & Werner, 2023).

In Yogyakarta, there are variations of fast-food restaurants serving chicken. Such as the very famous Mbok Berek fried chicken, as well as the emergence of fast food such as Hara Fried Chicken, which ranges from local to international, such as KFC and McDonald's. Local brands, especially those in the Special Region of Yogyakarta, namely Hara Fried Chicken, have their own characteristics. Hara Fried Chicken is here to meet the needs of fulfilling the food consumption of the people of Yogyakarta. The existence of this fast food is very famous among students in Yogyakarta, which is known as a city of students. Considerably cheap prices and good taste are the main reasons why this fast food is very popular with the community and students in Yogyakarta.

In marketing management, there are considerations and influences that drive consumers to make purchasing decisions. The presence of international brands in our country is a new challenge for MSME business actors in the regions, one of which is the city of Yogyakarta, which is a tourist destination and has many MSME products, such as Hara Fried Chicken. Hara Fried Chicken outlet placed in Kaliurang Street Km 12.5 has a huge consumers. During break times, many students and even workers will come to get their fried chicken, especially lunch. Hara fried chicken has a single channel and single phase, according to Heizer and Render (2011), single phase meaning is that there is only one individual service (Bataona et al., 2020). Using those methods for transactions in purchasing food and drinks in restaurants can certainly cause queues when ordering food and beverages, which causes inefficiency in providing services to consumers.

Queuing is one of the factors that can make consumers cancel orders. Gross (2011) states that while these approaches do lead to enhanced customer experience, they can potentially have a negative influence on individual consumption. It is possible that individuals, after waiting for a long time, may spend less due to feelings of dissatisfaction and frustration (Maister 1984, Larson 1987). As a result, they may be unwilling to make a significant purchase from the company. Queuing is a ubiquitous behavior that we encounter daily. Queues are ubiquitous. Queues at restaurants arise when customers engage in the process of selecting, ordering, and paying for their food, before it is served, and they leave the queue line. Queuing arises when customers experience delays in being served due to the waiter's high workload. Furthermore, it was contended that the perception of waiting has a negative impact on customer satisfaction, especially when the perception of waiting is high (Katz et al., 1991). Ailudin & Devi (2019) stated that consumer satisfaction makes consumers want to buy the product/service in the long term. Quality of service can instill a mindset in consumers that when they feel hungry and need fast food, they will return to buy at the same

place next time (Felina & Besra, 2019). This is one of the things that Hara Fried Chicken needs to pay attention to maintain their customers and develop their service quality.

Multi-criteria decision-making (MCDM) is one of the methods in data mining to make informed decisions in the presence of a queue in MSMEs. These techniques will generate the best solution in the real world for decision problems via the identification, evaluation, and ranking of attributes, criteria, and alternatives that might be, in some cases, conflicting (Ayvaz-Çavdaroğlu et al., 2024). One of the solutions expected to be implemented from the queuing line for Hara Chicken Kaliurang Street Km 12.5 is self-service technology to maintain customer satisfaction. Self-service technology is a technological interface that produces services for customers without the assistance of human personnel (M. L. Meuter et al., 2000). In addition, one method is created to establish self-service technology by using customer feedback to determine how far customer satisfaction. One method for early customer involvement in product development is the voice of the customer (Melander, 2020). Using Quality Function Deployment and System Usability Scale Questionnaire analysis, it can later be identified whether the Hara Fried Chicken consumers' demands are met by collecting their responses as the voice of the customer and analyzing how much customer satisfaction is achieved after developing a design for the solution.

Based on the description of the problem above, this study focuses on the consumer queue when making an order at the fast-food restaurant "Hara Chicken". This study requires improvement of retail conditions and the implementation of self-order design that can attract the attention of potential buyers and maintain consumer satisfaction. The method used in this study is Voice of Customers and House of Quality, which both methods synergize to meet customer satisfaction after developing the design.

### 1.2 Problem Formulation

Based on this research background description, the problem formulation is as follows:

1. What are the consumer needs attributes required in designing the Hara Chicken self-order interface design?
2. How are the results of the System Usability Scale Category, effectiveness, and efficiency in designing the Hara chicken self-order interface design?
3. How are the results of the comparative test between before and after the design using the Independent T-test via SPSS software?

### 1.3 Research Objectives

The following are the research objectives that will be achieved based on the results of the problem formulation:

1. Identifying the attributes of consumer needs in designing the Hara Chicken Jalan Kaliurang Km 12 self-order interface design.
2. Evaluating the usability of the Hara Chicken self-order interface design using the System Usability Scale (SUS), effectiveness, and efficiency.
3. Analyzing the impact of the redesigned self-order interface by conducting a comparative test between the pre-design and post-design versions using the Independent T-test in SPSS software.

### 1.4 Research Limitations

In this research, there are limitations to prevent any deviations and broadening of the main problem as follows:

1. This research was conducted at Hara Chicken Kaliurang Street Km.13, Besi, Sardonoharjo, Ngaglik, Sleman Regency, Daerah Istimewa Yogyakarta 55581, Indonesia.
2. The subject of this research is Hara chicken customers of Kaliurang Street km 12.5, especially Universitas Islam Indonesia Students.
3. The respondents were only students who used to purchase at Hara Chicken and ordered directly from the store without any assistance or application.
4. This study uses the usability method to test the interface design and Quality Function Deployment (QFD) as a design proposal.
5. This research only goes as far as creating a self-order interface design for Hara Chicken Kaliurang Street Km 12.5.
6. The design is only an interface using the help of Canva and Figma software.
7. The target that needs to be completed is to focus on the customer order placement process using the interface, and then the final results are tested using the comparative test before and after the design.
8. The Comparative Test used is an Independent T-test by using SPSS software.

### 1.5 Benefits of research

The research results, which were identified through a detailed analysis, are expected to be beneficial to all parties involved, particularly retail establishments. The outcomes of this investigation may yield the following advantages:

1. For students, it is important to know the application of methods used in Industrial Engineering, especially in Micro, Small, and Medium Enterprises, as well as the recommendations that are given.
2. Providing the process of using Voice of Customer, Quality Function Deployment, House of Quality, and Usability Testing.
3. Providing a proposed recommendation interface for self-ordering placement in the store.
4. Serves as a guideline for Micro, Small, and Medium Enterprises, especially the food and beverages sector, to design payment and marketing strategies to increase consumer satisfaction.

### 1.6 Systematic research

The research is structured into several chapters, and each chapter will be described as follows:

**CHAPTER 1 INTRODUCTION**

This chapter discusses the background of the research conducted, problem formulation based on the background, problem limitations, research objectives, research benefits, and systematic writing of the research conducted.

**CHAPTER II LITERATURE REVIEW**

This chapter covers the theoretical foundation of research development derived from deductive analysis and elucidates inductive studies by contrasting summaries of prior research.

**CHAPTER III RESEARCH METHODOLOGY**

This chapter discusses the subjects and objects of research, types of data used, research instruments, data collection methods, data processing methods, data analysis methods, and flowcharts of the research conducted.

**CHAPTER IV DATA PROCESSING AND RESEARCH RESULTS**

This chapter discusses the data collection process, data obtained during the research, and data processing that has been obtained using the methods used in the research.

**CHAPTER V DISCUSSION**

This chapter discusses the analysis and discussion of the results of the data processing that has been carried out previously by adjusting it to the research objectives so that conclusions and suggestions are obtained.

**CHAPTER VI CONCLUSIONS AND RECOMMENDATIONS**

This chapter discusses the conclusions of all the results obtained that answer the research objectives and suggestions for the research that has been carried out for further research.

# CHAPTER II
# LITERATURE REVIEW

## 2.1 Literature Review

First research was conducted by Çavdaroglu et al (2024), which focused on how Technology is transforming the Hospitality and Tourism (H&T) sector from a "high-touch, face-to-face" to a "high-tech, low-touch" service sector. Entitled "Smart service quality in hospitality – A quantitative assessment using MCDM and clustering methods", the purpose of the research is to extend the SERVQUAL framework that includes smart service quality as a key dimension in its scope of implementation. The consumers' point of view is taken into consideration when determining the relative importance of the extended SERVQUAL dimensions through the use of the best-worst method (BWM). In addition, the methods of latent class clustering are utilized to determine the differences that exist between the various consumer groups. The findings indicate that preference ratios are relatively balanced across quality dimensions and age groups; however, reliability is the service dimension that is preferred the most, while smart service quality is the least preferred. The findings of the analysis suggest several significant insights into the weighted importance ranking of quality dimensions and the nuanced preferences of data-driven customer segments. These insights are valuable from both a theoretical and managerial point of view.

Next, research conducted by Nemeschansky (2020), Entitled "Listen to your customer - how to manage your restaurant more effectively", The scope of research is concern that hinder a restaurant's path to improved profitability: the absence of a holistic model of customer-experience value attributes; and the organization centric nature of current management accounting practices. This article outlines the development and success of a newly developed model, Customer-driven Restaurant Analysis (CDRA). The study was undertaken at a 60-seat family restaurant offering a range of à la carte meals for brunch, lunch, and dinner. All food was prepared and cooked on the premises by four full-time kitchen staff. In total, the restaurant employed 11 staff (full and part-time), covering an average of 270 hours per week. The restaurant's location was Devonport, NZ. The research was conducted at a 60-seat family restaurant providing a variety of à la carte options for brunch, lunch, and dinner. All food was prepared and cooked on-site by four full-time kitchen personnel. The restaurant employed a total of 11 staff members (both full-time and part-time), averaging 270 hours of work per week. The restaurant was situated in Devonport. The results of this study indicate that the key emphasis for a restaurant should be on the strategic management of

financial resources. The focus should be customer-centric, i.e., it should aim to match restaurant resources to the attributes that are valued and expected by the customers (the DEVAs).

In the next research, which focuses on customer-centric innovation, was conducted by Kwok & Tang (2023) the research with the title “A fuzzy MCDM approach to support customer-centric innovation in virtual reality (VR) metaverse headset design”. The research proposed an advanced optimization technique that integrates the Hybrid Fuzzy-based Analytical Hierarchy Process with the Integral-based Taguchi Method, referred to as the Fuzzy multi-criteria decision-making (MCDM) approach, to identify critical factors and design parameters, thereby elucidating customer preferences and engineers' technical requirements for product enclosure design. We illustrate our methodology utilizing the virtual reality (VR) headset, which facilitates the visualization of the metaverse within a virtual environment. The AHP is conducted to identify the critical technical attributes of a product prior to emphasizing the subjective aspects of form design. The Taguchi experiment is conducted to determine the influential factors on enclosure design. The technical factors are integrated with the subjective aspects of product form design to improve the robustness and feasibility of the design. The proposed approach evaluates the product in a more objective and pragmatic manner. The product enclosure design incorporates materials and various technical design elements, including airtightness, ventilation design, and control mechanisms for a VR head-mounted device. The proposed methodology can consolidate various affective response factors into a singular index, indicating that the design is optimized for all technical and emotional response variables.

The next research was conducted by Hafeez et al (2020), entitled “Analyzing the voice of customers by a hybrid fuzzy decision-making approach in a developing country’s automotive market.” The purpose of the research is to analyze the voice of customers through a hybrid fuzzy decision-making methodology in the automotive market of a developing nation. Data encompassing 3,342 voices of customers (VoCs) were collected nationwide. Seven determinant complaint criteria were identified through brainstorming sessions with three groups of six experts each, utilizing the fuzzy Delphi method. The weights of these criteria were determined using the fuzzy best–worst method (FBWM) to assess the severity of the complaints. The complaints were subsequently categorized into five groups based on customer locations (province), vehicle type, and manufacturer using the K-means method, and were further prioritized and ranked utilizing the fuzzy complex proportional assessment of alternatives (FCOPRAS) method. The result was that the majority of complaints (1,027) received from different parts of the country were related to a single model of automobile manufactured by a particular manufacturer. According to the findings of the analyses, only a small number of complaints were associated with the quality of the product. The majority of

the complaints, on the other hand, were associated with service and financial procedures. These included delays in the delivery of automobiles, delays in the calculation of monthly instalments, price variation, failure to provide a registration (license), and failure to supply the requested product. In addition to providing a set of results that are dependable and robust, the method that has been proposed is an effective method for solving large-scale multidimensional problems.

The next research in the operations and supply chain management journal was conducted by Iqbal & Grigg (2020) regarding "Enhancing voice of customer prioritization in QFD by integrating the competitor matrix". The aim of this article is to enhance the voice of customers' importance ratings by utilizing the application of the analytic hierarchy process (AHP) combined with the geometric mean (GM). The existing methodology for calculating Importance Ratings (IRs) may redirect Quality Function Deployment (QFD) practitioners' focus from a potentially significant Voice of the Customer (VOC) to less critical VOCs. Initially, a matrix of comparative evaluations is constructed for all competitors utilizing the current ratings of existing competitors. In the second step, the GM for each VOC is combined with the current VOC importance ratings to establish new ratings. AHP and QFD were carried out, and performance ratings were directly distributed to both the company and its competitors. In the following step, the researcher will generate the RMMC by making use of these performance ratings. This RMMC is comprised of performance ratings that are provided directly to each competitor, which will assist in preventing inconsistencies throughout the process. This result illustrates how the existing results of the case study may lead to decisions that are not in the best interest of the organization. Further evidence suggests that re-ranking existing volatile organic compounds (VOCs) in this manner is a more effective means of achieving the objective of customer satisfaction in relation to VOC ratings and the rankings of competitors.

Next research entitled "Combining quality function deployment with simple additive weighting for interval-valued fuzzy multi-criteria decision-making with dependent evaluation criteria" was conducted by Wang (2019). Certain methodologies have suggested FMCDM utilizing independent evaluation criteria within an interval-valued fuzzy context. The application of FMCDM for interval-valued fuzzy numbers with interdependent evaluation criteria has been minimally explored due to computational complexity. Additionally, QFD has been generalized within certain fuzzy contexts involving triangular or trapezoidal fuzzy numbers, but not within an interval-valued fuzzy environment. Interval-valued fuzzy numbers are considered a type of fuzzy number that encapsulates more information than other fuzzy numbers; however, they are more complex in terms of computation. By a rational technique of combining QFD with SAW under a fuzzy environment, the computation tie of interval-valued fuzzy numbers corresponding to dependent evaluation criteria is resolved, and more messages are grasped than using other fuzzy

numbers in FMCDM. The method utilizing extended fuzzy preference relations integrates Quality Function Deployment (QFD) with the Simple Additive Weighting (SAW) technique to efficiently and effectively address interval-valued Fuzzy Multi-Criteria Decision-Making (FMCDM) issues with interdependent evaluation criteria.

In other research, entitled "Vendor management system improvement using PDCA and optimizing transporter vendor selection using fuzzy analytical hierarchy process," was conducted by Ariyanti et al (2020). This research aims to establish a transporter vendor selection system utilizing weighted criteria: price, reliability, flexibility, and company qualifications, employing the Fuzzy Analytical Hierarchy Process (FAHP) method. During research, the researcher determines the main problem by using the 5W + 2H approach and the Ishikawa Diagram and then studying the information related to the process. The theories used are Analytical Hierarchy Process (AHP), Fuzzy Logic-Based Model for Decision Making, Vendor Management System (VMS), User-Centered Design (UCD), Human Computer Interaction (HCI), HOQ, and PDCA. Then, Data obtained by brainstorming was used to determine customer needs, AHP weighting questionnaires, interviews, and system usability scale (SUS) questionnaires. The results of the observation indicate that the weighted criteria are as follows: price 0.283, reliability 0.243, flexibility 0.246, and company qualification 0. 228. There is a near equilibrium between price criteria and other criteria. The second proposed enhancement of the vendor management system is to convert the Procurement process into a digital format, referred to as process digitization. The mock-up application design is conducted as an initial phase, encompassing 22 functional requirements for the transporter and 15 functional requirements for the transporter application.

The research from the Journal of King Saud University in Computer and Information Sciences entitled "Aspect-based approach to measure performance of financial services using voice of customer." The objective of this research is to identify the trade-off in determining what actions to undertake and what to forgo, necessitating a grading of significance. An evaluation model is proposed that integrates sentiments articulated by online reviewers with the Analytical Hierarchical Process (AHP) to create an ensemble Multi-Criteria Decision-Making (MCDM) model for ranking banks. Ranking serves as a straightforward method for establishing priorities. Prioritization facilitates the achievement of multiple objectives with minimal resource expenditure. To evaluate methodology, a sentiment dataset was developed comprising reviews on four Indian nationalized banks, whose quality is evaluated using 9 aspects/attributes. Based on these primary criteria, different banks are evaluated to select the most favorable option through ensemble multi-criteria decision-making utilizing a majority voting method. The sensitivity analysis of the final bank rankings was conducted. The validity of the proposed methodology is further examined through

human evaluation. The model's accuracy is determined to be 70.4%. In reality, opinions evolve over time. The alteration in preference may occur as banks enhance their services progressively or users deem the products or services satisfactory.

In the next research entitled "Prioritizing the determinants of Industry-4.0 for implementation in MSME in the post-pandemic period – a quality function deployment analysis," was conducted by Agarwal & Ojha (2023). Micro, Small, and Medium Enterprises (MSMEs) are experiencing rapid transformation due to the emergence of Industry 4.0 (I4.0) in the post-pandemic era. It provides promising customer responsiveness, competitiveness, business growth, and sustainability, thereby necessitating its integration into MSMEs. The objective of the research is to investigate the challenges of Industry 4.0 and their specific implementation requirements, while also offering valuable insights to stakeholders. This research paper identifies, explains, and analyzes various determinants of I4.0 implementation within the context of MSMEs. The focus group approach has been utilized to gather expert input for the development of the House of Quality (HOQ) tool within the Quality Function Deployment (QFD) methodology, derived from the Total Quality Management (TQM) toolbox. The result of the observation is that the model highlights three key challenges being faced by the Indian MSMEs: Top management support, Incompatible resources, and Transition cost. The model also reveals a few vital designers' descriptors – Cultural reorientation, IT-enabled digitization, Process automation, and knowledge and skill in I4.0 implementation (Knowhow) for a structured implementation of I4.0.

The next research was conducted by Syaifuddin et al (2024), entitled "Enhancing Consumer Loyalty and Market Competitiveness: Approaching IPA-QFD in Product Development". This journal discusses the success of a business that is evaluated by the quantity of products manufactured and their market competitiveness. Product development is essential for enhancing competitiveness and attracting prospective consumers. The caliber of the product and marketing initiatives profoundly influence customer satisfaction. This research aims to enhance AA.co.Store's product development through an IPA-QFD-based marketing mix that is crucial for the store's Sustainable Development Goals (SDGs) to effectively compete with other local brands in Sidoarjo. This study employs quantitative research methods, utilizing numerical data and statistical analysis. Data is obtained directly from the primary source, specifically from respondents via a questionnaire. The questionnaire was administered to 50 randomly selected respondents who had acquired products.

According to research conducted by Azrifirwan et al (2024) entitled "Manajemen Strategis Bisnis Menggunakan Modified QFD Terintegrasi dengan SWOT dan TOPSIS: Studi Kasus UMKM Agroindustri XYZ". Strategic management is a business program to enables the ability to manage

available resources so as to achieve business goals. Strategic management is carried out by analyzing the stages of business evaluation, strategy formulation, and strategy selection. The challenges of a business, especially the increasingly complex food processing industry, require new methods that can formulate and determine strategies by considering all aspects that have an influence. This research is to analyze strategic management from the stages of business evaluation, strategy formulation, and strategy selection by considering all aspects that have an influence. The method used is Quality Function Deployment Modified, which is integrated with Strengths-Weaknesses-Opportunities-Threats (SWOT). According to researchers, this integration defines a business as a customer who needs to be able to grow. Through the House of Quality (HOQ), aspects in SWOT are visualized as needs in HOQ, and factors in SWOT become ECs in HOQ. The results obtained in the form of the Weight of Each EC become the values that influence the selection of strategies. Based on the SWOT analysis, strategies are formulated in 4 quadrants, which are alternatives to determine their priorities. Alternative strategies are assessed so that priorities can be determined in their implementation using the TOPSIS method. The final results obtained are in the form of a sequence of strategic priorities that can provide the greatest influence in developing a business. In its implementation in a business, decision-makers can have a new perspective on solving business problems. In the case study of UMKM XYZ, which is engaged in the food processing agro-industry, it was found that the resulting strategic priorities have the greatest opportunity for developing the business.

Next research was undertaken by Utaminingtias (2023) in her research at Griya Saba Insani 2 entitled “Perancangan Aplikasi Berbasis Website Di Griya Saba Insani 2 Menggunakan Metode Waterfall Dan Usability Testing”. This study aims to provide solutions to visitors in ordering badminton courts. A website-based application designed to display schedules that are still available. So, the visitors can choose their own schedule in order to schedule that have already been booked and cannot be booked by others. Then, Griya Saba Insani 2 managers do not need to input customer data manually, because it has been automatically inputted by the system. The methodology of research is an Interview with the manager of Griya Saba Insani 2, observations, and SUS questionnaires on Griya Saba Insani customers. The results of the study are in the form of creating a website-based application that displays the schedule that is still available, starting from the day, field number, and hours that are still available. Website visitors can choose their own schedule and those that are still available. Schedules that have been booked cannot be booked again by others. This application is evaluated for usability utilizing the System Usability Scale (SUS), which yields an average score of SUS 73, corresponding to the grade scale in category C and the adjective rating in the Good category.

## 2.2 Theoretical basis

### 2.2.1 *Micro, Small, & Medium Enterprises (MSMEs)*

The Micro, Small, and Medium Enterprises refers to a market segment specifically targeting Micro, Small, and Medium Enterprises (MSMEs). MSMEs are a subset of companies that operate on a smaller scale than major corporations. Products and services offered by MSMEs to consumers, companies, or other organizations are included in the MSME market (Yani et al., 2023). Micro, Small, and Medium Enterprises (MSMEs) are essential in increasing national economic growth. The emergence of the digital economy has become a benchmark in implementing digitalization for MSMEs in Indonesia (Meilariza et al., 2024).

Micro, Small, and Medium Enterprises (MSMEs) are an important pillar in supporting economic growth in Indonesia, with a composition of 64.13 million (99.92%) of the total business sector of 64.19 million businesses (Armiani et al., 2022). Micro, small, and medium enterprises (MSMEs) have generated substantial employment opportunities for the Indonesian population. The standards for micro, small, and medium enterprises (MSMEs). The criteria for micro, small, and medium enterprises (MSMEs) as stated in Article 35 of the Republic of Indonesia Government Regulation Number 7 of 2021 are as follows:

1. Micro Business

   Micro businesses possess business capital of up to one billion rupiah, excluding the value of the land and buildings utilized for the enterprise. Micro business sales reach a maximum of two billion rupiah a year.
2. Small Business Small enterprises possess business capital ranging from one billion to five billion rupiah, excluding the value of the land and buildings utilized for the business operations. Annual sales of small businesses amount to fifteen billion rupiah.
3. Medium Business

Medium enterprises possess business capital ranging from five billion to ten billion rupiah, excluding the value of land and buildings utilized for the business operations. Micro business sales attain an annual range of fifteen billion to fifty billion rupiah.

### 2.2.2 *Fast-Food Restaurant Service Quality*

Fast-food restaurants (FFRs) represent a significant environmental factor, characterized as food establishments primarily focused on delivering food services (excluding snack and non-alcoholic beverage bars) where customers typically place orders or select items and pay prior

to consumption (Peng Jia, 2019. A fast-food restaurant, often referred to as a quick-service restaurant (QSR), is an establishment that focuses on fast food and provides minimal table service (Song et al., 2022). Fast food establishments usually have a counter for placing orders and collecting payments, little table service, and an emphasis on speed (Upadhyay, 2015). Characteristics of fast-food restaurants encompass rapid service, uniform food preparation, an emphasis on convenience, competitive prices, and a diverse array of menu selections (Hasan et al., 2021).

On the other hand, Service quality is crucial in attracting repeat consumers in the fast-food restaurant industry and various other retail enterprises. Service quality is a measure that indicates to what extent an organization delivers or provides service to its customers against the customers' expectations (Udayalakshmi & Sridevi, 2023). The quality of service in fast-food restaurants was crucial for customer satisfaction. Studies have shown that attributes such as food quality, employee service quality, and the physical environment significantly influence customer perceptions and satisfaction levels. Service quality is a relatively modern idea. Service quality evaluates the superiority of brands in the travel, retail, hospitality, airline, and restaurant sectors (Rajput & Gahfoor, 2020). Service quality incentivizes customers to buy products or services as desired. If the company has good service quality, then many customers will be satisfied. In addition, the kind of service provided and the setting in which it is offered influence how clients perceive service quality (Awaji-Ima & Carr, 2022).

### 2.2.3 *Self-Service Technology*

Self-service technology (SST) is a means of assisting service employees to help staff members cut expenses and enhance services (Taillon & Huhmann, 2019). Self-services and SSTs are intended to benefit businesses and consumers in a variety of ways (Payne, 2005). The term "self-service technology" refers to any kind of automated system that enables clients to carry out service tasks without the need for assistance from an outside source (Chan & Petrikat, 2022). In other words, Self-Service Technology (SST) refers to technology interfaces that allow customers to utilize services without direct help from company personnel. Self-service technology has supplanted direct interaction between buyers and service providers, allowing the former to utilize a service without in-person engagement with the service firm's personnel (Iqbal et al., 2018; Jeon et al., 2020). Thus, self-service has replaced the traditional division between the client and the service provider. Below will examine the benefits of self-service technology to organizations (Chan & Petrikat, 2022).

1. Gaining Competitive Advantage, Advanced self-service technology systems brought forth by technological improvements provide superior customer service compared to traditional physical service offerings, giving businesses a competitive edge.
2. Management Efficiency and Effectiveness, most tasks would be completed faster with these self-service technologies than with human labor, which could take several hours or days, and labor costs would be reduced.
3. Enhanced Financial Performance: Self-service technology works well for enhancing the company's financial situation. By reducing labor costs and raising return on investment, it aids the business in maintaining a sound financial position.

Self-service technologies or additional service offerings as a part of an existing SST system are both service innovations that enable marketers to enhance benefits and improve SST evaluation and customer engagement, while potentially increasing profitability depending on the difference between their cost and any incremental increase in unit sales or profit margins (Taillon & Huhmann, 2019).

### 2.2.4 Independent T-test

The independent t-test, sometimes referred to as the student's t-test, independent-samples t-test, or two-sample t-test, is an inferential statistical test that determines whether there is a statistically significant difference between the means of two unrelated groups (Lund, 2018). According to the Academic Success Centre (ASC) (2023), the independent sample t-test is used to compare the means of two unrelated groups (Akpan et al., 2023).

A common example of using an independent samples t-test is in medical research. For instance, researchers might take a look at how well two different medications work to lower blood pressure and compare their effectiveness. One group is given Drug A, and another group is given Drug B. The t-test is used to determine whether or not there is a significant difference between the two groups in terms of the average reduction in blood pressure (T. Kim, 2015).

The samples are independent. In the process of testing hypotheses, the t-test is an indispensable instrument for comparing two groups. However, the necessity of meeting the necessary assumptions is a prerequisite for its validity. An alternative method, such as the Mann-Whitney U test, which is a non-parametric equivalent, ought to be taken into consideration in the event that these assumptions are not met (Fagerland, 2012).

### 2.2.5 Product Design

Design is all around us, and the wish to design is inherent in human beings (Cross, 2021). The general application of digital design packages (such as CAD, FEA, CAE, CAM, and so on) is a clear indication that the design process is in the process of becoming more digitalized than it has ever been before. The Internet of Things (IoT) enables the direct collection of data from smart devices, which is then sent in real-time to the "cloud" and evaluated using big data analytics (Tao et al., 2019). Product design entails the creation and enhancement of new or existing goods to fulfill particular aims and user requirements. Product design encompasses multiple facets, including aesthetics, functionality, usability, ergonomics, materials, manufacturing processes, cost-effectiveness, and sustainability. Design engineers work to turn ideas and concepts into physical goods by taking into account business goals, technical viability, user feedback, and market research (Ivanov et al., 2023). The process of designing a product requires the integration of knowledge from a variety of fields, including engineering, design, and marketing (Brambila-Macias et al., 2018).

The importance of product design cannot be overstated in the middle evolving landscape of technology and consumer preferences. The process of designing a product requires the integration of expert knowledge from a variety of fields, including engineering, design, and marketing (Ivanov et al., 2023; Still & Crane, 2017). The process of designing a product is intricately connected to market research and the understanding of consumers. Designers engage in extensive research to gain an understanding of market tendencies, consumer behaviors, and developing requirements (Cooper, 2019). One of the fundamental principles of product design is user-centeredness. By putting the end user at the center of the design process, designers and engineers can learn a great deal about their wants, needs, and problems. By ensuring that the finished product meets or beyond user expectations, this user-centric strategy raises consumer happiness and brand loyalty (Ivanov et al., 2023). Product design fosters innovation and creativity by prompting engineers to consider unconventional solutions. It cultivates an environment of experimentation and iteration, enabling engineers to investigate novel materials, technologies, and design concepts (Passow & Passow, 2017). Design for Manufacturing, often known as DFM, is an essential component of product design that takes into account the optimization of a product's design to guarantee manufacturing processes that are both efficient and cost-effective (Mears & Summers, 2020). The goals of DFM are to

accelerate production, lower manufacturing costs, enhance product quality, and reduce the amount of time it takes to bring a product to market.

### 2.2.6 Quality Function Deployment

Mechanical engineering in Japan has implemented the Quality Function Deployment (QFD) methodology since 1972. The method had been extensively implemented worldwide by 1987. From its inception to the present, the methodology has been employed in mechanical engineering and other production and service sectors (Cardoso et al., 2015). A method that would guarantee product quality throughout the entire new product development process was required as a result of this growth. To address this need, research conducted in Japan produced a technique known as Quality Function Deployment (Akao, 1990).

Quality Function Deployment (QFD) is a methodology employed to convert customer requirements into technical specifications, prioritizing needs to improve customer satisfaction. The House of Quality matrix is an essential instrument in Quality Function Deployment (QFD), enabling efficient communication between customer requirements and organizational competencies (Das M et al., 2021). Quality Function Deployment (QFD) is extensively utilized during the product planning phase to convert customer feedback into product specifications (functional and quality requirements). Quality Function Deployment (QFD) can be integrated with various design methodologies, including Analytic Hierarchy Process (AHP), TRIZ, Taguchi methods, Failure Mode and Effects Analysis (FMEA), and the Kano Model (Tao et al., 2019). QFD is frequently chosen for its capacity to assist engineers in delineating the primary tangible and intangible attributes and resources of PSS, while also clearly conveying the relative significance of design requirements concerning key customer needs. QFD can systematically and effectively illustrate the connections between customer requirements and product/service attributes (Sousa-Zomer & Miguel, 2017). Product planning, part development, process planning, production planning, and services planning are the areas that QFD focuses on. Numerous organizations have adopted QFD over the years and benefited from it.

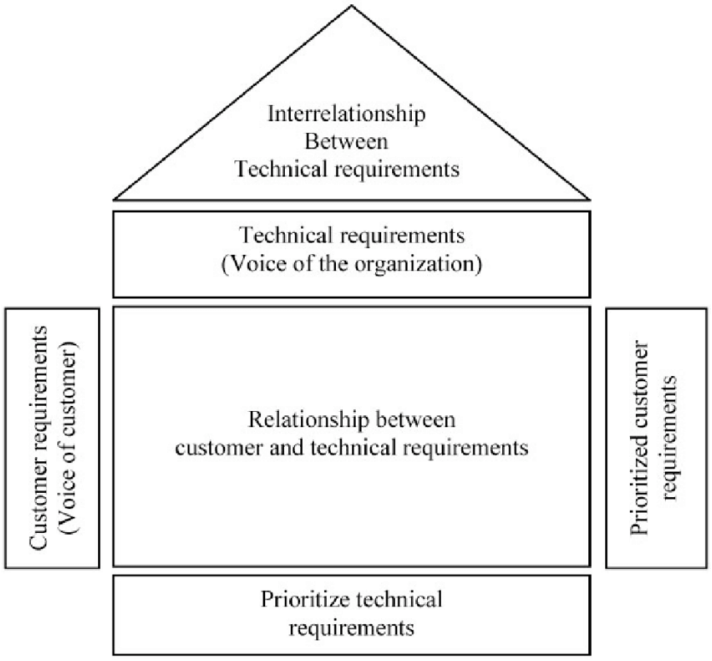



Figure 2. 1 The House of Quality (HOQ)

The House of Quality (HOQ) is a distinctive and predominantly organized component of Quality Function Deployment (QFD), named for its resemblance to a house with a roof. A traditional House of Quality (HOQ) comprises several components organized in matrix format, including customer demands (CDs), customer evaluations (Ces) of those demands, technical descriptors (TDs), a relationship matrix linking CDs and TDs, and a correlation matrix among TDs (Haktanir & Kahraman, 2022).

### 2.2.7 Usability Method

Usability is the study of the intersection between systems and users, tasks, and expectations in the context of use (Weichbroth, 2020). Since many software products have been found to be inadequate to satisfy user needs, a number of thorough studies have been carried out under the term "usability" thus far. These studies aim to better understand and measure relevant factors while covering all legitimate phenomena in a single framework or model. The term "usability" has many meanings. In user-centered product development, it typically refers to the quality of use in a given context, or, as defined by the ISO 9241-11 standard (1998), "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use." In user-centered design, usability must be assessed at every stage of development rather than just at the end with extensive testing

(Norman & Kirakowski, 2018). According to Nielsen, usability has five attributes (Harrison et al., 2013), as follows:

1. Efficiency, the number of resources that are used in relation to the precision and comprehensiveness with which users accomplish their objectives.
2. Satisfaction, Absence of discomfort, and a favourable attitude toward the utilization of the product are all desirable outcomes.
3. Learnability, it is important that the system be simple to understand so that the user can begin using it to complete their work as quickly as possible.
4. Memorability, for the casual user to be able to return to the system after a period of time during which they have not used it, the system should be simple to remember, so that they do not have to become familiar with everything all over again.
5. In order for users to make a minimal number of mistakes while utilizing the system, the system ought to have a low error rate. In the event that users do make mistakes, they should be able to easily recover from those mistakes. Moreover, there must be no catastrophic errors that take place.

Usability evaluation techniques that involve direct user participation are known as user-based evaluations. To find design flaws that lead to user errors or difficulties, users are asked to freely explore a product or complete common tasks with it. Their actions are then monitored and documented. During these observations, the duration to complete a task, task completion rates, and the quantity and types of errors are documented. Upon identifying design flaws, recommendations are made to enhance the product's ergonomic quality (Bastien, 2010). Evaluation methods that can provide an adequate picture of research results are based on considerations made regarding the number of sampling and research methods used were relatively small because it only provides questionnaires and via the internet, it is called the system usability scale method (Ependi et al., 2019).

### 2.2.8 System Usability Scale

The System Usability Scale, also known as the SUS, is a standardised questionnaire that is widely used for the purpose of evaluating the perceived usability of a system (Lewis, 2018). SUS method uses a questionnaire with ten questions and five scales for answer options from strongly agree to strongly disagree with assessing usability of the system quickly and simply (Hidayat & Suryayusra, 2022). The statements in this method consist of five positive and

negative statements. System Usability Scale (SUS) is a usability evaluation technique that directly involves the assessment of users (end-users) in the Usability evaluation process (Herdianto, 2023). There are several advantages of SUS, such as easy use of testing scales understood by respondents, the ability to carried out with a small sample size but provides reliable results, and effectiveness in differentiating between software that can be used by those who do not (Ependi et al., 2019). To determine the score for each positive statement, subtract one score from each score that the respondent has provided. This determines the total score for each positive statement. While the score for each negative statement is determined by subtracting a score from 5 that was provided by a respondent, the score for each positive statement is set at 5. Because of this, every single statement has a minimum score of zero and a maximum score of two and a half, which means that the total score for each respondent can range anywhere from zero to one hundred thousand. When expressed in the form of a mathematical formula, the calculation of the SUS score for each respondent can be calculated using the formula that is presented below (Setemen et al., 2019).

$$SUS\ Score = \{(S1 - 1) + (5 - S2) + (S3 - 1) + (5 - S4) + (S5 - 1) + (5 - S6) + (S7 - 1) + (5 - S8) + (S9 - 1) + (5 - S10)\} * 2.5 \quad (2.1)$$

Table 2. 1 SUS Questionnaires

| No. | Questionnaire | Likert Scale | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| 1. | I think that I would like to use this system frequently. | | | | | |
| 2. | I found the system unnecessarily complex. | | | | | |
| 3. | I thought the system was easy to use. | | | | | |
| 4. | I think that I would need the support of a technical person to be able to use this system. | | | | | |
| 5. | I found the various functions in this system were well integrated. | | | | | |
| 6. | I thought there was too much inconsistency in this system. | | | | | |
| 7. | I would imagine that most people would learn to use this system very quickly | | | | | |
| 8. | I found the system very awkward to use, | | | | | |
| 9. | I felt very confident using this system. | | | | | |
| 10. | I needed to learn a lot of things before I could get going with this system | | | | | |

Based on table above, respondents will be asked to respond according to their experience respondents in application use using the Likert scale. The Likert scale is a

measurement tool used to assess views, opinions, or individual or group perception regarding an event or social phenomenon (Shen et al., 2001).

Table 2. 2 Likert Scale

| Score | Likert Scale |
|---|---|
| 1 | Strongly Disagree |
| 2 | Disagree |
| 3 | Neutral |
| 4 | Agree |
| 5 | Strongly Agree |

In the final stage of the System Usability method, this scale will be interpreted against the results of calculating the value of the questionnaire given to respondents. There are five types. The resulting interpretations are percentile rank, grade, adjectives, acceptable (acceptance level), and recommendation level (Intyanto et al., 2021).

### 2.2.9 Voice of Customer

Voice of the customer, also known as VOC, is a critical analysis procedure that provides precise information regarding the input requirements of customers for a product or service output. The ability to conduct a voice of the customer analysis, which could be obtained through direct and indirect questioning, will make it possible for engineers and other decision makers to successfully understand the requirements, desires, perceptions, and preferences of customers (Aguwa et al., 2012). To be able to provide essential information for the product development process and to have an understanding of how the product development process operates, it is essential to be able to capture and analyze the voice of the customer.

This will allow for the most effective method of capturing and analyzing the voice of the customer to be achieved (Yang, 2007; in Aguwa et al journal). The main goals of customer satisfaction research are to assess the strengths and weaknesses of a business organization with an emphasis on the customer, and it has emerged as a significant area of study in recent years. One effective and well-liked strategy for promoting customer orientation is to make customer satisfaction the primary performance metric. Furthermore, a VOC analysis assists design engineers in preventing expensive modifications to product output that may subsequently fail to meet customer expectations. Qualitative Voice of the Customer (VOC) typically reflects

customer desires and preferences, while quantitative VOC generally indicates the prioritization of those needs and wants by customers (Shen et al., 2001).

### 2.2.10 Preparing for Usability Testing

According to Lewis (1982), who described the usability test as the "thinking-aloud." Essentially, a usability test involves a user testing a product while an assessor watches the user and hears what they have to say (Hertzum, M, 2020). In addition, usability test comprises four main components (Clemmensen et al., 2009):

- Instruction and tasks: A series of tasks and instructions prepared before the test are used to guide the user's interaction with the product. The tasks outline what users should attempt to accomplish with the product, and the instructions include an explanation of how to think aloud.
- Verbalization: The users think aloud and express their ideas verbally. Verbalizations show how users perceive and comprehend the product. Users are encouraged to resume verbalization if they become silent for extended periods. Users may also be asked to describe their expectations, reasons for hesitation, and methods for evaluating their experience.
- Reading the user: The evaluator or group of evaluators observes the user's interaction with the product and listens to their thoughts. On this basis, the evaluator determines how well the product assists users in completing tasks. This analysis leads to the identification, description, and reporting of a set of usability issues.
- Relationship between user and evaluator: It is the evaluator's responsibility to create an environment in which the user can test the product and express both positive and negative feedback. Whether the user is comfortable with issues such as instructions, language, and indirect communication cues.

The four components are interconnected, and assume that the evaluator is familiar with the product and its intended application. These presuppositions mean that a usability test reaches into the preceding analysis and design activities as well as into the subsequent reanalysis and redesign activities. And then, in planning to begin preparations for usability testing, there will be some activities, the activities include (Barnum, 2011):

1. Recruiting participants
2. Assigning team roles and responsibilities

3. Preparing or using other forms
4. Creating questionnaires
5. Using standard post-test questionnaires
6. Using qualitative feedback methods
7. Testing the test.

### 2.2.11 Customer Satisfaction

Maintaining the satisfaction of customer is need lower costs rather than looking for new customers. Customer satisfaction significantly gives a benefit in business (Kadir & Shamsudin, 2019). The thing that makes consumers continuously use a product and makes consumers loyal, and makes consumers tell a product to others is customer satisfaction. Customer satisfaction is a response and consumer assessment of the level of satisfaction (Ginting et al., 2023).

# CHAPTER III
# RESEARCH METHOD

## 3.1 Research Subject

The research subject of this observation is one of the branches of fast-food restaurants, namely Hara Chicken, which is one of the fast-food restaurants that produces Kentucky Fried Chicken. This store is situated in Kaliurang Street, km 12.5, Sleman District, Special Region of Yogyakarta, and the customers of Hara Chicken, especially Universitas Islam Indonesia students, who are used to consuming Hara Chicken.

## 3.2 Research Object

The object of this study is the food ordering system at Hara Chicken, which causes long queues of customers when ordering food. In addition, a usability test will be carried out on the design of a self-service technology-based ordering application, which aims to evaluate the UI/UX. Therefore, the evaluation is carried out on the interface of the self-service technology mock-up based on the results of the customer and also the quality function deployment, which is used as a method in designing products based on customer needs.

## 3.3 Data Collection Method

In this study, several methods were used to collect data. The following is a more detailed explanation of several methods used in this study:

1. Questionnaire

   Questionnaires are frequently used in quantitative marketing research and social research. A questionnaire is a set of inquiries made to people in order to gather statistically significant data on a particular subject. Questionnaires are an essential tool for making statements about particular groups, individuals, or entire populations when they are designed and used appropriately (Roopa & Rani, 2012). The questionnaire is conducted by giving the Voice of Customers Questionnaire and Quality Function Deployment (QFD) to get information on what customers need for to interface of self-order.

   .

2. Interview

An interview is a conversation aimed at obtaining information, where an interviewer asks questions and an interviewee provides responses. It can occur through various modes, including face-to-face, telephonic, and electronic/multimedia approaches, serving multiple domains like healthcare and social sciences (Chahal, 2021).

In this study, interviews were conducted as an initial stage to find out the respondents' personal data and to identify existing problems. In this study, interviews were conducted with Hara Chicken employees and Hara Chicken consumers, especially students of the Universitas Islam Indonesia.

3. System Usability Scale Questionnaire

   The System Usability Scale (SUS) is a simple, ten-item scale giving a global view of subjective assessments of usability. The System Usability Scale (SUS) employs a Likert scale format. A Likert scale is frequently characterized as a forced-choice format, wherein a statement is presented, and the respondent indicates their level of agreement or disagreement on a 5- or 7-point scale (Brooke, 1995).

## 3.4 Research Instrument

Research Instrument is a tool that is employed to help researcher to collect the data, process data, and observation data analytics. The following are research instruments research, as follows:

1. Laptop
2. Smartphone
3. Google Form
4. Questionnaire
5. Microsoft Word
6. Canva
7. Figma

## 3.5 Research Flow

The following is diagram of research flow:

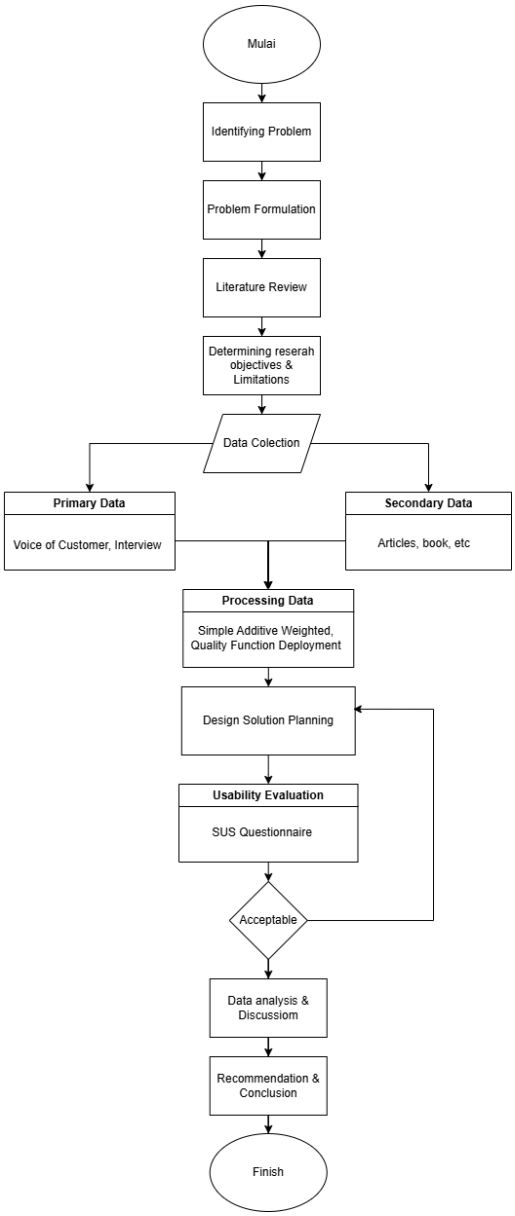



Figure 3. 1 Research Flow Diagram

The following is an explanation of the research flow diagram:

1. Start
2. Identifying Problem

   The first step in this research is to determine the specific discussion topic of the research. Subsequently, the research topic has been identified as applying association rules and layout improvement encompassing the retail store visuals. The association rules method is utilized to discern shopping patterns among customers and is integrated into the

3. Problem Formulation

   The problem formulation stage is carried out after identifying the problems that exist in the MSMEs. This stage determines the problems to be examined to determine the direction of research. The problem is identified as a question that the research's findings will address.

4. Literature Review

   The study literature is determined after the problem formulation has been carried out. Literature review is undertaken to look for relevant information on the problem that will be addressed in this research. Literature studies also aim to examine several basic theories that are relevant to the problem to be studied.

5. Determining Research objectives & Limitations

   This stage is conducted to determine the main objectives of the research and identify any limitations that need to be considered for the research to proceed smoothly. This research aims to understand the purchasing transaction patterns of customers, which can be observed through the combinations of products purchased together. Additionally, it aims to redesign the store layout visually and implement planograms for arranging the store shelves.

6. Data Collection

   This stage is carried out to obtain the necessary data before processing. Data from Voice of the Customer and interviews will be used as initial data in this research. The result of the voice of the customer comes from the Google form, which is shared with customers. Then, the data will be obtained and processed, combined with the data of multi-criteria and decision-making. Direct observation is conducted at the retail store to obtain data on the number of employees and their roles. Additionally, supporting data is collected from books, journal articles, and previous research.

7. Processing Data

   The data processing process is carried out to determine the results of multi-criteria decision making by using the simple additive weighting method. The criteria will be recognized through an interview according to the problems happened in the MSMEs based on the owner and employees' perspectives. This is done by distributing questionnaires to retail store customers regarding their demographic and buying experience, visually concerning customer satisfaction. On the other hand, after the

criteria have already been determined and the result of the method has been calculated, the highest score from that calculation will be determined for the most important things to be solved. The voice of the customer will be used to help determine what kind of features need to be added based on the customer's desire, into the design will be developed after. Customers' desires will be put and process and need to translate to be engineering measurements. Then, the method used is quality function deployment, but before QFD, there is a tool called a house of quality that helps measure customers' needs. And in this part, there will be another second form shared with customers to simplify and narrow the criteria of features going narrow. Then, the second result of customer voice will be processed and calculated in the quality function deployment method. In this study, the interface design will be designed for the Hara chicken self-service application using Figma software. The design of the interface design aims to produce a prototype that can overcome the problems that occur and increase user satisfaction and produce a website interface that is following the needs and desires of the user to increase user satisfaction in using the chicken one interface.

8. Usability Evaluation

   After the design solution has been planned and made, in this stage, there will be validation to evaluate the design that has been developed in the previous stage. Usability testing will be conducted to determine how far the improvement has been made. If the result of the usability evaluation is not satisfactory for customers, the stage will go back to the previous stage to fix the design. And then, Usability testing will be carried out again to find out how much the developments that have been made have changed the user usability value.

9. Analysis & Discussion

   This stage involves a detailed analysis and discussion of the results regarding the formed association rules and potential clusters about their visual experience during shopping. With the aim of determining the rearrangement of the retail store layout, especially for product shelves through the application of planograms in the concept of visual merchandising.

10. Recommendation & Conclusion

    The conclusion and suggestion stage is the final stage in this research. At this stage, the researcher draws conclusions based on the results of the data analysis and discussion

that have been carried out in the previous stage. The conclusions produced come from data and analysis related to the level of user satisfaction with the website, as well as the level of satisfaction and usability of the design development that is designed as a solution for improvement. At this stage, the researcher also provides suggestions for further research, which are the shortcomings of this research, with the hope that they will not occur in further research or as a reference for further research to be more optimal.

11. Finish

# CHAPTER IV
# DATA COLLECTION AND PROCESSING

## 5.1 Data Collection

4.1.1 MSMEs Profile

Hara chicken is a restaurant chain that offers a variety of dishes, including Ayam Geprek, Ayam Utuh Krisbar, and milkshakes. They have been created since 2017, which was created by Sunan Hasan as the owner. The name of Hara stands for the words “Harapan Rakyat”. Hara chicken is located in several places in Yogyakarta, they have many branches at Jl. Palagan 98 Jogja, Jl. Damai Jogja, Jl. Balongan Jogja, and Jl. Kaliurang km 12.5, the place where the research is conducted. On the other hand, Hara chicken strives to provide excellent customer service to compete with other brands by offering the best services and facilities in various aspects. They have implemented and designed a cashless payment method in their store to give ease for those customers who didn’t bring their money on hand.

4.1.2 Respondent Characteristics

Based on the results of interviews and filling out questionnaires regarding the identification of user desires and needs, with the characteristics of respondents listed in Table 4.1, as follows:

Table 4. 1 Respondent Characteristics

| No | Characteristics | Information | Number |
|---|---|---|---|
| 1 | Age | 18 – 30 Years old | 66 |
| 2 | Gender | Male<br>Female | 38 Male<br>28 Female |
| 3 | Occupation | Students | 66 |

4.1.3 Customers’ Requirements (VOC)

Customer requirements are met by product design approximation, based on customers’ desires in the self-order interface. This data was collected by spreading the voice of customers questionnaire to respondents. The result of the customer voice is attached as follows:

Table 4. 2 Customers' Needs

| NO | Customer Needs | Attribute |
|---|---|---|
| 1 | Interface yang gampang dipahami oleh semua kalangan sehingga semua kalangan bisa menggunakan metode self-service tanpa merasa kebingungan | Convenience and Comfort |
| 2 | penampilan deskirpsi makanan pada menu (seperti apa makanan tersebut dan dan terdiri dari apa saja) | Informative |
| 3 | - Desain minimalis dengan warna yang menarik tetapi tidak terlalu mencolok.<br>- Ikon yang jelas untuk setiap kategori (misalnya: Menu Utama, Paket, Minuman, Promo, dll.)<br>- Teks yang besar & mudah dibaca, terutama untuk pelanggan yang kurang familiar dengan teknologi. | Feature |
| 4 | Interface self-service yg mudah dan simpel untuk digunakan, menggunakan desain yg menarik dan bisa menambah selera makan | Customers Appeal |
| 5 | Mudah, praktis, dan cepat | Convenience and comfort |
| 6 | gambar menu dan harga terlihat jelas dan ada keterangan jika diperlukan. dibuat simpel aja tampilannya | Feature |
| 7 | interface yang mudah untuk dipahami karena tujuan utama dari self service adalah memudahkan dan minimasi dari antrian | Convenience and comfort |
| 8 | interface yang digunakan tidak terlalu rumit dan memiliki petunjuk pemesanan yg jelas | Informative |
| 9 | adanya scan QR pada masing masing meja untuk memesan dan juga melakukan pembayaran. pembayaran bisa dengan menggunakan bank, shopee pay, dana, dan lain lain | Feature |
| 10 | lebih ke penjelasan menu agar si pembeli tidak kebingungan, untuk desain nya bebas se kreatif mungkin, berusaha menarik pelanggan aja dengan desain unik dan menarik | Informative |

Table 4. 3 Attribute of Design

| No | Attribute |
|---|---|
| 1 | Convenience and comfort |
| 2 | Informative |
| 3 | Customers Appeal |
| 4 | Features |

## 5.2 Data Processing

### 5.2.1 Scenario Model

Next, scenario modeling is carried out at the Specify Requirements stage. The type of scenario used in this study is Goal- or Task-Based Scenarios. This scenario states what the user wants to do and does not provide any information about the user's procedures for completing the scenario. This scenario aims to help determine the architecture of the current website. This

scenario will show how respondents will carry out activities to complete tasks on the related website. Table 4.4 is the scenario used in this research and testing:

Table 4. 4 Usability Task Scenario

| No | Task Category | Task Given | Steps |
|---|---|---|---|
| 1 | Easy | Change Languages | 1. Choose icon “English”<br>2. Change into “Bahasa”<br>3. Close icon “Bahasa” |
| 2 | Medium | Make an Ala Carte menu selection then returns to the homepage | 1. Click “Start Order”.<br>2. Change into “English”.<br>3. Choose “Dine-in”.<br>4. Choose “Ala Carte” menu.<br>5. Choose Button “Start from the beginning”. |
| 3 | Hard | Check out Chicken Breast with iced tea. | 1. Choose “Start Order”.<br>2. Change into “Bahasa” then choose “Bawa Pulang”.<br>3. Choose menu “Paket Nyuuz” then choose “Ayam dada + Nasi”.<br>4. Choose Button “+” then choose “Tambah Pesanan”.<br>5. Choose “Minuman” then choose “Es Teh”.<br>6. Choose Button “+” then choose “Tambah Pesanan”. |

| No | Task Category | Task Given | Steps |
|---|---|---|---|
| | | | 7. Click “Pesanan Saya” then choose “Selesaikan Pesanan”<br>8. Choose “Bayar Disini” then choose “Konfirmasi Pembayaran” |

5.2.2 Importance Rating

After determining consumer needs obtained through questionnaire results from respondents, the next step is to determine the level of importance (Importance Rating) of consumer needs. Consumer needs assessment uses a Likert scale with values 1 (Very Unimportant), 2 (Unimportant), 3 (Quite Important), 4 (Important), and 5 (Very Important). The calculation of the importance rating uses equation (3.2). Then, a recapitulation of the importance rating data is carried out along with the calculation of the average of each consumer’s need to obtain the value of the importance rating results. The following is a recapitulation of the data and the results of the calculation of each important rating:

Table 4. 5 Importance Rating Result

| No | Attributes | Scale | | | | | Importance Rating | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | SUM | AVG |
| 1 | Convenience and comfort | 0 | 0 | 0 | 11 | 19 | 139 | 4.6 |
| 2 | Customers Appeal | 0 | 0 | 1 | 9 | 20 | 139 | 4.6 |
| 3 | Informative | 0 | 1 | 1 | 11 | 17 | 134 | 4.4 |
| 4 | Features | 1 | 0 | 2 | 12 | 15 | 130 | 4.3 |

5.2.3 Validation *Test*

Validation is a necessary step for model acceptance. No single combination of validation tests will be applicable across the diverse range of models and their uses. Validation testing is used for testing the speed of measuring instruments. This test is calculated towards Voice of Customers. Validation test will be determined as valid if Rmeasure > Rtable. The data used in

this observation is 30 data. This particular observation makes use of thirty different datasets. For this reason, the degree of freedom (df) that is utilized is 28, the level of significance (α) is set at 0.05, and the scores measured in the R table are 0.361. If the scores that are considered significant (sig.) are less than 0.05, then the data will be considered valid. Utilizing the software IBM SPSS Statistics 25, the following is the outcome of the calculations performed on the data:

1. SUS Questionnaires

**Correlations**

| | | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q1 | Pearson Correlation | 1 | .155 | .529** | .144 | .736** | .273 | .603** | .373* | .402* | .204 | .651** |
| | Sig. (2-tailed) | | .413 | .003 | .448 | .000 | .144 | .000 | .042 | .028 | .281 | .000 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q2 | Pearson Correlation | .155 | 1 | .094 | .579** | -.017 | .249 | .104 | .394* | .541** | .201 | .614** |
| | Sig. (2-tailed) | .413 | | .621 | .001 | .928 | .185 | .584 | .031 | .002 | .287 | .000 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q3 | Pearson Correlation | .529** | .094 | 1 | .139 | .433* | .399* | .485** | .271 | .332 | .314 | .593** |
| | Sig. (2-tailed) | .003 | .621 | | .465 | .017 | .029 | .007 | .148 | .073 | .091 | .001 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q4 | Pearson Correlation | .144 | .579** | .139 | 1 | -.110 | .133 | .256 | .562** | .577** | .527** | .721** |
| | Sig. (2-tailed) | .448 | .001 | .465 | | .563 | .485 | .173 | .001 | .001 | .003 | .000 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q5 | Pearson Correlation | .736** | -.017 | .433* | -.110 | 1 | .354 | .425* | .175 | .200 | -.110 | .400* |
| | Sig. (2-tailed) | .000 | .928 | .017 | .563 | | .055 | .019 | .355 | .289 | .564 | .028 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q6 | Pearson Correlation | .273 | .249 | .399* | .133 | .354 | 1 | -.016 | .435* | -.002 | .380* | .501** |
| | Sig. (2-tailed) | .144 | .185 | .029 | .485 | .055 | | .932 | .016 | .991 | .038 | .005 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q7 | Pearson Correlation | .603** | .104 | .485** | .256 | .425* | -.016 | 1 | .140 | .489** | .242 | .572** |
| | Sig. (2-tailed) | .000 | .584 | .007 | .173 | .019 | .932 | | .462 | .006 | .198 | .001 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q8 | Pearson Correlation | .373* | .394* | .271 | .562** | .175 | .435* | .140 | 1 | .347 | .335 | .663** |
| | Sig. (2-tailed) | .042 | .031 | .148 | .001 | .355 | .016 | .462 | | .061 | .070 | .000 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q9 | Pearson Correlation | .402* | .541** | .332 | .577** | .200 | -.002 | .489** | .347 | 1 | .124 | .683** |
| | Sig. (2-tailed) | .028 | .002 | .073 | .001 | .289 | .991 | .006 | .061 | | .514 | .000 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Q10 | Pearson Correlation | .204 | .201 | .314 | .527** | -.110 | .380* | .242 | .335 | .124 | 1 | .596** |
| | Sig. (2-tailed) | .281 | .287 | .091 | .003 | .564 | .038 | .198 | .070 | .514 | | .001 |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Total | Pearson Correlation | .651** | .614** | .593** | .721** | .400* | .501** | .572** | .663** | .683** | .596** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .001 | .000 | .028 | .005 | .001 | .000 | .000 | .001 | |
| | N | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Figure 4. 1 SUS Validity Test Result

The validity test is carried out to measure the questionnaires of the system usability scale, whether the attributes are valid or not. Based on Figure 4.1, the instruments of the questionnaires have already been tested. The following is the result of data calculated by using the software IBM SPSS Statistics 25:

Table 4. 6 SUS Validity Test

| Attributes | Pearson Correlation | Rtable | Sig | Result |
|---|---|---|---|---|
| Question 1 | 0.651 | 0.361 | 0.000 | Valid |
| Question 2 | 0.614 | 0.361 | 0.000 | Valid |

| Attributes | Pearson Correlation | Rtable | Sig | Result |
|---|---|---|---|---|
| Question 3 | 0.593 | 0.361 | 0.001 | Valid |
| Question 4 | 0.721 | 0.361 | 0.000 | Valid |
| Question 5 | 0.400 | 0.361 | 0.028 | Valid |
| Question 6 | 0.501 | 0.361 | 0.005 | Valid |
| Question 7 | 0.572 | 0.361 | 0.001 | Valid |
| Question 8 | 0.663 | 0.361 | 0.000 | Valid |
| Question 9 | 0.683 | 0.361 | 0.000 | Valid |
| Question 10 | 0.596 | 0.361 | 0.001 | Valid |

Based on the recapitulation table 4.6, which shows validity test results, it can be seen that all consumer needs attributes have a calculated R value > R table and have a significance value (sig.) < 0.05, so that all questions of the System Usability Scale Questionnaires are said to be valid.

2. Comparison Test

**Correlations**

| | | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q1 | Pearson Correlation | 1 | .414* | .424* | .534** | .588** | .332 | .665** | .451* | .447* | .508** | .482** | .366* | .572** | .566** | .603** | .332 | .739** |
| | Sig. (2-tailed) | | .021 | .017 | .002 | .001 | .068 | .000 | .011 | .012 | .004 | .006 | .043 | .001 | .001 | .000 | .068 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q2 | Pearson Correlation | .414* | 1 | .298 | .707** | .117 | .593** | .292 | .746** | .285 | .702** | .354 | .561** | .295 | .629** | .378* | .652** | .659** |
| | Sig. (2-tailed) | .021 | | .104 | .000 | .530 | .000 | .111 | .000 | .120 | .000 | .051 | .001 | .107 | .000 | .036 | .000 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q3 | Pearson Correlation | .424* | .298 | 1 | .412* | .719** | .221 | .522** | .262 | .408* | .358* | .455* | .188 | .589** | .327 | .562** | .341 | .645** |
| | Sig. (2-tailed) | .017 | .104 | | .021 | .000 | .232 | .003 | .155 | .023 | .048 | .010 | .312 | .000 | .073 | .001 | .061 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q4 | Pearson Correlation | .534** | .707** | .412* | 1 | .407* | .714** | .414* | .739** | .427* | .736** | .429* | .636** | .310 | .742** | .348 | .729** | .778** |
| | Sig. (2-tailed) | .002 | .000 | .021 | | .023 | .000 | .021 | .000 | .017 | .000 | .016 | .000 | .089 | .000 | .055 | .000 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q5 | Pearson Correlation | .588** | .117 | .719** | .407* | 1 | .374* | .777** | .385* | .598** | .471** | .472** | .271 | .576** | .380* | .522** | .436* | .738** |
| | Sig. (2-tailed) | .001 | .530 | .000 | .023 | | .038 | .000 | .033 | .000 | .007 | .007 | .140 | .001 | .035 | .003 | .014 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q6 | Pearson Correlation | .332 | .593** | .221 | .714** | .374* | 1 | .366* | .697** | .491** | .713** | .331 | .651** | .235 | .587** | .218 | .677** | .678** |
| | Sig. (2-tailed) | .068 | .000 | .232 | .000 | .038 | | .043 | .000 | .005 | .000 | .069 | .000 | .204 | .001 | .239 | .000 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q7 | Pearson Correlation | .665** | .292 | .522** | .414* | .777** | .366* | 1 | .461** | .659** | .542** | .615** | .245 | .777** | .408* | .621** | .377* | .800** |
| | Sig. (2-tailed) | .000 | .111 | .003 | .021 | .000 | .043 | | .009 | .000 | .002 | .000 | .184 | .000 | .023 | .000 | .036 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q8 | Pearson Correlation | .451* | .746** | .262 | .739** | .385* | .697** | .461** | 1 | .215 | .724** | .272 | .662** | .244 | .672** | .270 | .681** | .700** |
| | Sig. (2-tailed) | .011 | .000 | .155 | .000 | .033 | .000 | .009 | | .246 | .000 | .139 | .000 | .187 | .000 | .142 | .000 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q9 | Pearson Correlation | .447* | .285 | .408* | .427* | .598** | .491** | .659** | .215 | 1 | .553** | .555** | .313 | .475** | .357* | .471** | .490** | .691** |
| | Sig. (2-tailed) | .012 | .120 | .023 | .017 | .000 | .005 | .000 | .246 | | .001 | .001 | .086 | .007 | .049 | .007 | .005 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q10 | Pearson Correlation | .508** | .702** | .358* | .736** | .471** | .713** | .542** | .724** | .553** | 1 | .388* | .676** | .365* | .659** | .434* | .677** | .804** |
| | Sig. (2-tailed) | .004 | .000 | .048 | .000 | .007 | .000 | .002 | .000 | .001 | | .031 | .000 | .043 | .000 | .015 | .000 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q11 | Pearson Correlation | .482** | .354 | .455* | .429* | .472** | .331 | .615** | .272 | .555** | .388* | 1 | .398* | .743** | .275 | .644** | .235 | .702** |
| | Sig. (2-tailed) | .006 | .051 | .010 | .016 | .007 | .069 | .000 | .139 | .001 | .031 | | .027 | .000 | .134 | .000 | .202 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q12 | Pearson Correlation | .366* | .561** | .188 | .636** | .271 | .651** | .245 | .662** | .313 | .676** | .398* | 1 | .309 | .628** | .342 | .636** | .654** |
| | Sig. (2-tailed) | .043 | .001 | .312 | .000 | .140 | .000 | .184 | .000 | .086 | .000 | .027 | | .091 | .000 | .059 | .000 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q13 | Pearson Correlation | .572** | .295 | .589** | .310 | .576** | .235 | .777** | .244 | .475** | .365* | .743** | .309 | 1 | .218 | .833** | .224 | .730** |
| | Sig. (2-tailed) | .001 | .107 | .000 | .089 | .001 | .204 | .000 | .187 | .007 | .043 | .000 | .091 | | .240 | .000 | .226 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q14 | Pearson Correlation | .566** | .629** | .327 | .742** | .380* | .587** | .408* | .672** | .357* | .659** | .275 | .628** | .218 | 1 | .207 | .602** | .683** |
| | Sig. (2-tailed) | .001 | .000 | .073 | .000 | .035 | .001 | .023 | .000 | .049 | .000 | .134 | .000 | .240 | | .263 | .000 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q15 | Pearson Correlation | .603** | .378* | .562** | .348 | .522** | .218 | .621** | .270 | .471** | .434* | .644** | .342 | .833** | .207 | 1 | .239 | .715** |
| | Sig. (2-tailed) | .000 | .036 | .001 | .055 | .003 | .239 | .000 | .142 | .007 | .015 | .000 | .059 | .000 | .263 | | .195 | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Q16 | Pearson Correlation | .332 | .652** | .341 | .729** | .436* | .677** | .377* | .681** | .490** | .677** | .235 | .636** | .224 | .602** | .239 | 1 | .687** |
| | Sig. (2-tailed) | .068 | .000 | .061 | .000 | .014 | .000 | .036 | .000 | .005 | .000 | .202 | .000 | .226 | .000 | .195 | | .000 |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |
| Total | Pearson Correlation | .739** | .659** | .645** | .778** | .738** | .678** | .800** | .700** | .691** | .804** | .702** | .654** | .730** | .683** | .715** | .687** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | .000 | |
| | N | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 | 31 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4. 2 Comparison Validity Test Result

Another validity test is carried out to measure the comparison of instruments between the previous and after design, as shown in Figure 4.2, whether the attributes are valid or not. Based on Figure 4.2, the instruments of the questionnaires have been tested. The following is the result of data calculated by using the software IBM SPSS Statistics 25:

Table 4. 7 Comparison Validity Test

| **Attributes** | **Rcal** | **Rtable** | **Sig** | **Result** | **Attributes** | **Rcal** | **Rtable** | **Sig** | **Result** |
|---|---|---|---|---|---|---|---|---|---|
| Statement 1 | 0.739 | 0.361 | 0.000 | Valid | Statement 9 | 0.691 | 0.361 | 0.000 | Valid |
| Statement 2 | 0.659 | 0.361 | 0.000 | Valid | Statement 10 | 0.804 | 0.361 | 0.000 | Valid |

| Attributes | Rcal | Rtable | Sig | Result | Attributes | Rcal | Rtable | Sig | Result |
|---|---|---|---|---|---|---|---|---|---|
| Statement 3 | 0.645 | 0.361 | 0.000 | Valid | Statement 11 | 0.702 | 0.361 | 0.000 | Valid |
| Statement 4 | 0.778 | 0.361 | 0.000 | Valid | Statement 12 | 0.654 | 0.361 | 0.000 | Valid |
| Statement 5 | 0.738 | 0.361 | 0.000 | Valid | Statement 13 | 0.730 | 0.361 | 0.000 | Valid |
| Statement 6 | 0.678 | 0.361 | 0.000 | Valid | Statement 14 | 0.683 | 0.361 | 0.000 | Valid |
| Statement 7 | 0.800 | 0.361 | 0.000 | Valid | Statement 15 | 0.715 | 0.361 | 0.000 | Valid |
| Statement 8 | 0.700 | 0.361 | 0.000 | Valid | Statement 16 | 0.687 | 0.361 | 0.000 | Valid |

Based on the recapitulation Table 4. 7, which shows validity test results, it can be seen that all consumer needs attributes have a calculated R value > R table and have a significance value (sig.) < 0.05 so that all questionnaires of comparison between previous and after interface has been designed are said to be valid.

3. Importance Rating

**Correlations**

| | | Q1 | Q2 | Q3 | Q4 | Total |
|---|---|---|---|---|---|---|
| Q1 | Pearson Correlation | 1 | .267 | .375* | .072 | .482** |
| | Sig. (2-tailed) | | .153 | .041 | .704 | .007 |
| | N | 30 | 30 | 30 | 30 | 30 |
| Q2 | Pearson Correlation | .267 | 1 | .491** | .707** | .891** |
| | Sig. (2-tailed) | .153 | | .006 | .000 | .000 |
| | N | 30 | 30 | 30 | 30 | 30 |
| Q3 | Pearson Correlation | .375* | .491** | 1 | .269 | .674** |
| | Sig. (2-tailed) | .041 | .006 | | .151 | .000 |
| | N | 30 | 30 | 30 | 30 | 30 |
| Q4 | Pearson Correlation | .072 | .707** | .269 | 1 | .807** |
| | Sig. (2-tailed) | .704 | .000 | .151 | | .000 |
| | N | 30 | 30 | 30 | 30 | 30 |
| Total | Pearson Correlation | .482** | .891** | .674** | .807** | 1 |
| | Sig. (2-tailed) | .007 | .000 | .000 | .000 | |
| | N | 30 | 30 | 30 | 30 | 30 |

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 4. 3 Importance Rating Validity Test Result

The third validity test is carried out to measure the importance ratings instruments to find attributes of design as shown in Figure 4.3, whether the attributes are valid or not. Based on Figure 4.2, the instruments of the questionnaires have been tested. The following is the result of data calculated by using the software IBM SPSS Statistics 25:

Table 4. 8 Importance Rating Validity Test

| **Attributes** | **Rcal** | **Rtable** | **Sig** | **Result** |
|---|---|---|---|---|
| Statement 1 | 0.482 | 0.361 | 0.000 | Valid |
| Statement 2 | 0.891 | 0.361 | 0.000 | Valid |
| Statement 3 | 0.674 | 0.361 | 0.000 | Valid |
| Statement 4 | 0.807 | 0.361 | 0.000 | Valid |

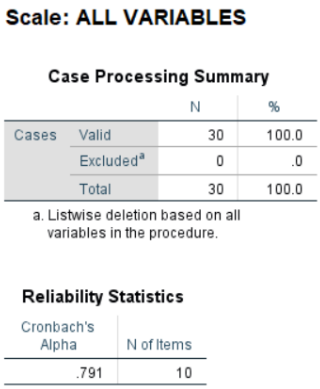
On the other hand, third instruments on table 4. 8 which shows validity test results, it can be seen that all consumer needs attributes have a calculated R value > R table and have a

significance value (sig.) < 0.05, so that all questionnaires looking for importance rating are said to be valid.

5.2.4 Reliability Test

Reliability testing is conducted to test the extent to which the measuring instrument used is reliable and relatively consistent when used repeatedly. This reliability test is conducted on the results of the Voice of Customer (VOC) that have been tested for validity. The reliability test is conducted using the Cronbach's Alpha formula, where if the Cronbach's Alpha value is > 0.6, then the data is considered reliable. The following are the results of the reliability test conducted using IBM SPSS Statistics 25 software:

1. SUS Questionnaire



**Scale: ALL VARIABLES**

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 30 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

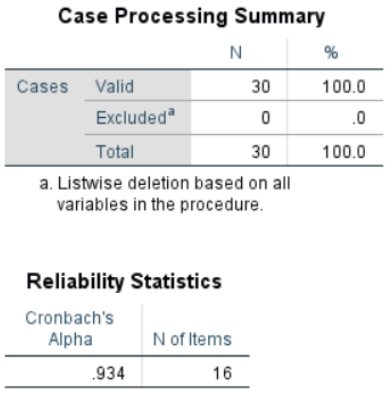
**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .791 | 10 |

Figure 4. 4 SUS Reliability Test

Based on the image above, it can be seen in the reliability statistics section that Cronbach's Alpha value is 0.791, which is greater than 0.60, so it can be said that the data that has been collected is reliable, consistent, and falls into the classification of high reliability.

2. Comparison Test



**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 30 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .934 | 16 |

Figure 4. 5 Comparison Reliability Test

In the second reliability test, it can be seen on the figure above where the reliability statistics section that Cronbach's Alpha value is 0.934, which is greater than 0.60, so it can be said that the data that has been collected is reliable, consistent, and falls into the classification of having very high reliability.

3. Importance Rating

**Scale: ALL VARIABLES**

**Case Processing Summary**

| | | N | % |
|---|---|---|---|
| Cases | Valid | 30 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 30 | 100.0 |

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

| Cronbach's Alpha | N of Items |
|---|---|
| .722 | 4 |

Figure 4. 6 Importance Rating Reliability

Similar to the previous reliability test, Figure 4.6 above shows where reliability statistics section shows that Cronbach's Alpha value is 0.722, which is still greater than 0.60, so it can be said that the data that has been collected is reliable, consistent, and falls into the classification of high reliability.

5.2.5 Usability *Testing*

1. Effective Measurement

   The calculation of effectiveness can be measured by using the level of success of respondents in completing the tasks given. The following is an example of a calculation for effectiveness 1, which can be calculated using the formula:

$$Effectiveness = \frac{Number\ of\ task\ run\ succesfully}{Total\ Number\ of\ task} \times 100\% \quad (5.1)$$

   The following is the calculation of effectiveness, running by respondents:

Table 4. 9 Effectivity Table

| Respondents | Task 1 | Task 2 | Task 3 | Effectiveness |
|---|---|---|---|---|
| Respondent 1 | Failed | Succes | Succes | 67% |
| Respondent 2 | Succes | Succes | Succes | 100% |
| Respondent 3 | Succes | Succes | Succes | 100% |
| Respondent 4 | Succes | Succes | Failed | 67% |
| Respondent 5 | Succes | Succes | Succes | 100% |
| Respondent 6 | Succes | Succes | Succes | 100% |
| Respondent 7 | Succes | Succes | Succes | 100% |
| Respondent 8 | Failed | Succes | Succes | 67% |
| Respondent 9 | Succes | Succes | Succes | 100% |
| Respondent 10 | Succes | Succes | Succes | 100% |
| Respondent 11 | Succes | Succes | Succes | 100% |
| Respondent 12 | Succes | Succes | Succes | 100% |
| Respondent 13 | Succes | Succes | Succes | 100% |
| Respondent 14 | Succes | Succes | Succes | 100% |
| Respondent 15 | Failed | Succes | Failed | 33% |
| Respondent 16 | Succes | Succes | Succes | 100% |
| Respondent 17 | Succes | Success | Success | 100% |
| Respondent 18 | Failed | Failed | Succes | 33% |
| Respondent 19 | Succes | Succes | Failed | 67% |
| Respondent 20 | Failed | Failed | Success | 33% |
| Respondent 21 | Succes | Succes | Succes | 100% |
| Respondent 22 | Succes | Failed | Failed | 33% |
| Respondent 23 | Succes | Succes | Succes | 100% |
| Respondent 24 | Failed | Failed | Succes | 33% |
| Respondent 25 | Succes | Succes | Succes | 100% |
| Respondent 26 | Succes | Succes | Succes | 100% |
| Respondent 27 | Succes | Succes | Succes | 100% |
| Respondent 28 | Succes | Succes | Succes | 100% |
| Respondent 29 | Succes | Succes | Succes | 100% |

| Respondents | Task 1 | Task 2 | Task 3 | Effectiveness |
|---|---|---|---|---|
| Respondent 30 | Failed | Succes | Succes | 67% |

2. Efficiency

Time taken is related to the accuracy and completeness with which users achieve their goals. The calculation of efficiency can be measured based on the duration of the respondent in completing the given task. The following is an example of the calculation of efficiency in this study, which can be calculated using time-based formula, as follows:

$$Time\ based = \frac{Task\ Result}{Time}$$

The following are the results of the calculation of the efficiency level obtained in this initial stage of testing:

Table 4. 10 Efficiency Table

| Respondents | Task 1 (s) | Task 2 (s) | Task 3 (s) |
|---|---|---|---|
| Respondent 1 | 0 | 20 | 40 |
| Respondent 2 | 9 | 17 | 44 |
| Respondent 3 | 13 | 32 | 78 |
| Respondent 4 | 9 | 28 | 0 |
| Respondent 5 | 14 | 21 | 54 |
| Respondent 6 | 8 | 11 | 60 |
| Respondent 7 | 22 | 31 | 100 |
| Respondent 8 | 0 | 27 | 65 |
| Respondent 9 | 11 | 46 | 76 |
| Respondent 10 | 13 | 29 | 71 |
| Respondent 11 | 8 | 21 | 78 |
| Respondent 12 | 6 | 20 | 77 |
| Respondent 13 | 5 | 25 | 72 |
| Respondent 14 | 11 | 26 | 71 |
| Respondent 15 | 0 | 11 | 0 |
| Respondent 16 | 14 | 28 | 65 |

| **Respondents** | **Task 1 (s)** | **Task 2 (s)** | **Task 3 (s)** |
|---|---|---|---|
| Respondent 17 | 9 | 30 | 75 |
| Respondent 18 | 0 | 0 | 37 |
| Respondent 19 | 6 | 15 | 0 |
| Respondent 20 | 0 | 0 | 33 |
| Respondent 21 | 8 | 11 | 23 |
| Respondent 22 | 12 | 0 | 0 |
| Respondent 23 | 11 | 28 | 61 |
| Respondent 24 | 0 | 0 | 70 |
| Respondent 25 | 9 | 14 | 38 |
| Respondent 26 | 11 | 17 | 72 |
| Respondent 27 | 9 | 22 | 69 |
| Respondent 28 | 6 | 9 | 27 |
| Respondent 29 | 21 | 24 | 72 |
| Respondent 30 | 0 | 23 | 65 |

The results of the task are obtained based on the respondent's success in completing the task. If the task is successful, the task result is worth 1, and if the task fails, the task result is worth 0. From this formula, the values are obtained in the following table:

Table 4. 11 Efficiency Metric

| Respondents | TB1 | TB2 | TB3 | Respondents | TB1 | TB2 | TB3 |
|---|---|---|---|---|---|---|---|
| R1 | 0 | 0,05 | 0,025 | R16 | 0,07 | 0,036 | 0,015 |
| R2 | 0,11 | 0,059 | 0,023 | R17 | 0,11 | 0,033 | 0,013 |
| R3 | 0,08 | 0,031 | 0,013 | R18 | 0 | 0 | 0,027 |
| R4 | 0,11 | 0,036 | 0 | R19 | 0,17 | 0,067 | 0 |
| R5 | 0,07 | 0,048 | 0,019 | R20 | 0 | 0 | 0,030 |
| R6 | 0,13 | 0,091 | 0,017 | R21 | 0,13 | 0,091 | 0,043 |
| R7 | 0,05 | 0,032 | 0,010 | R22 | 0,08 | 0 | 0 |
| R8 | 0 | 0,037 | 0,015 | R23 | 0,09 | 0,036 | 0,016 |
| R9 | 0,09 | 0,022 | 0,013 | R24 | 0 | 0 | 0,014 |
| R10 | 0,08 | 0,034 | 0,014 | R25 | 0,11 | 0,071 | 0,026 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| R11 | 0,13 | 0,048 | 0,013 | R26 | 0,09 | 0,059 | 0,014 |
| R12 | 0,17 | 0,050 | 0,013 | R27 | 0,11 | 0,045 | 0,014 |
| R13 | 0,20 | 0,040 | 0,014 | R28 | 0,17 | 0,111 | 0,037 |
| R14 | 0,09 | 0,038 | 0,014 | R29 | 0,05 | 0,042 | 0,014 |
| R15 | 0 | 0,091 | 0 | R30 | 0 | 0,043 | 0,015 |

After obtaining the time-based value of each respondent, the overall time-based efficiency calculation will be carried out using the following formula:

$$Time\ based\ effeciency = \frac{\sum TB1 + \sum TB1 + \sum TB3}{\sum T * \sum R}$$

Notes:

Tb = Time Based

T = Task

R = Respondents

$$Time\ based\ effeciency = \frac{(2{,}47 + 1{,}34 + 0{,}48)}{(3 * 30)}$$

Based on the calculation results, the time-based or average time required by respondents to complete each task given was obtained, **2,68 sec/goals**

3. SUS Questionnaire

   The System Usability Scale (SUS) Questionnaire is a tool that is widely utilized for the purpose of evaluating the extent usability of scale which a product, service, or system possesses. It is a method that is both quick and reliable for determining the level of user satisfaction and the ease of use.

Table 4. 12 SUS Calculation

| Respondents | Question | | | | | | | | | | SUS Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | |
| Respondent 1 | 5 | 4 | 5 | 2 | 5 | 1 | 5 | 1 | 5 | 2 | 87,5 |
| Respondent 2 | 4 | 2 | 4 | 2 | 4 | 3 | 5 | 2 | 5 | 3 | 75 |
| Respondent 3 | 5 | 1 | 4 | 1 | 5 | 2 | 5 | 1 | 5 | 2 | 92,5 |
| Respondent 4 | 4 | 1 | 4 | 2 | 4 | 1 | 4 | 2 | 4 | 2 | 80 |

| Respondents | Question | | | | | | | | | | SUS Score |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | |
| Respondent 5 | 4 | 1 | 4 | 1 | 4 | 1 | 4 | 1 | 4 | 1 | 87,5 |
| Respondent 6 | 4 | 2 | 4 | 2 | 4 | 2 | 4 | 2 | 4 | 3 | 72,5 |
| Respondent 7 | 5 | 1 | 5 | 1 | 5 | 2 | 5 | 1 | 5 | 2 | 95 |
| Respondent 8 | 4 | 2 | 4 | 2 | 4 | 1 | 4 | 1 | 4 | 2 | 80 |
| Respondent 9 | 4 | 2 | 4 | 2 | 4 | 1 | 4 | 1 | 4 | 2 | 80 |
| Respondent 10 | 5 | 2 | 4 | 4 | 5 | 1 | 3 | 1 | 3 | 2 | 75 |
| Respondent 11 | 4 | 2 | 5 | 2 | 4 | 2 | 4 | 1 | 5 | 3 | 80 |
| Respondent 12 | 5 | 1 | 5 | 1 | 5 | 1 | 4 | 1 | 5 | 1 | 97,5 |
| Respondent 13 | 5 | 2 | 5 | 1 | 5 | 1 | 4 | 1 | 5 | 2 | 92,5 |
| Respondent 14 | 5 | 1 | 5 | 3 | 5 | 1 | 5 | 1 | 5 | 3 | 90 |
| Respondent 15 | 5 | 5 | 5 | 5 | 5 | 2 | 5 | 2 | 2 | 2 | 65 |
| Respondent 16 | 3 | 2 | 4 | 1 | 3 | 2 | 4 | 1 | 4 | 1 | 77,5 |
| Respondent 17 | 4 | 2 | 4 | 2 | 4 | 1 | 4 | 2 | 3 | 1 | 77,5 |
| Respondent 18 | 5 | 2 | 4 | 1 | 5 | 2 | 5 | 1 | 4 | 2 | 87,5 |
| Respondent 19 | 4 | 2 | 5 | 3 | 5 | 1 | 5 | 2 | 4 | 2 | 82,5 |
| Respondent 20 | 5 | 2 | 5 | 1 | 4 | 2 | 5 | 2 | 5 | 1 | 90 |
| Respondent 21 | 5 | 1 | 4 | 1 | 5 | 2 | 5 | 1 | 5 | 2 | 92,5 |
| Respondent 22 | 3 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 1 | 52,5 |
| Respondent 23 | 5 | 1 | 5 | 1 | 4 | 1 | 5 | 1 | 5 | 2 | 95 |
| Respondent 24 | 5 | 2 | 5 | 1 | 5 | 1 | 5 | 1 | 4 | 2 | 92,5 |
| Respondent 25 | 4 | 2 | 4 | 1 | 3 | 3 | 4 | 1 | 4 | 3 | 72,5 |
| Respondent 26 | 4 | 2 | 5 | 1 | 4 | 1 | 4 | 1 | 3 | 1 | 85 |
| Respondent 27 | 4 | 1 | 5 | 3 | 4 | 2 | 4 | 2 | 4 | 3 | 75 |
| Respondent 28 | 5 | 1 | 5 | 1 | 5 | 1 | 5 | 1 | 5 | 1 | 100 |
| Respondent 29 | 4 | 2 | 5 | 1 | 5 | 1 | 4 | 1 | 4 | 3 | 85 |
| Respondent 30 | 5 | 2 | 5 | 2 | 5 | 2 | 5 | 2 | 5 | 2 | 87,5 |
| Average | | | | | | | | | | | 83.41 |

After obtaining all of the respondents' SUS scores as a whole, the next step is to determine the average SUS score for each individual from the 30 respondents. This is based on the results of the data processing that are displayed in the table that is located above, as well as the results of the usability testing score that was obtained by utilizing the questionnaire usability scale system with the formula per individual. A total score of 83.41 was obtained by calculating the overall average of the SUS scores of the individuals who participated in the survey.

## 5.3 Quality Function Deployment (QFD)

### 5.3.1 Technical Requirements

Technical requirements are determined from the customer requirements attributes obtained from the Voice of Customer (VOC) that have been given to respondents. The following are the technical requirements from the customer requirements attributes that have been obtained:

Table 4. 13 Technical Requirements

| No | Customer Requirements | Technical Requirements |
|---|---|---|
| 1 | Convenience and comfort | - Use large touch-friendly buttons<br>- Response time per action |
| 2 | Customers Appeal | - Promo menu display<br>- Use of bright primary color |
| 3 | Informative | - Multilingual support<br>- Food descriptions on the menu |
| 4 | Features | - Payment method variety. |

### 5.3.2 Relationship *between Customer Needs and Technical Needs*

The relationship between consumer needs attributes and technical requirements can be determined based on three categories. The matrix symbols and interpretation of the relationship values of the three categories are as follows:

Table 4. 14 Relationship Between Customer Needs

| Symbol | Means | Score |
|---|---|---|
| | Not Linked | 0 |
| ▽ | Possibly Linked | 1 |
| ○ | Moderately Linked | 3 |
| ● | Strongly Linked | 9 |

If the consumer needs attribute has no relationship with technical needs, then the filling in the HOQ is left blank. However, if the consumer needs attribute that has a relationship with technical needs, then the filling in the HOQ is in accordance:

| Column # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Direction of Improvement | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Customer Requirements (Explicit and Implicit) \ Functional Requirements | Use large touch-friendly buttons | Image Resolution | Use of bright primary color (Red) | Font descriptions on the menu | Response time per action | Simple, clear menu category display | Multi-Language Support | Payment method variety |
| Convenience and Comfort | ● | ○ | ● | ● | | ○ | ● | ○ |
| Customers Appeal | | ● | ○ | ○ | ● | | ○ | |
| Infrormative | | | | ○ | | | | |
| Features | | | | | ▽ | ○ | | ○ |

Figure 4. 7 Relationship Between Customer Needs

5.3.3 Relative *Weight*

After identifying the relationship between consumer needs attributes and technical needs, the column weight calculation is carried out using the following formula:

$$\text{Column Weight} = \sum \text{Importance Rating} \times \text{Technical needs Corelation}$$

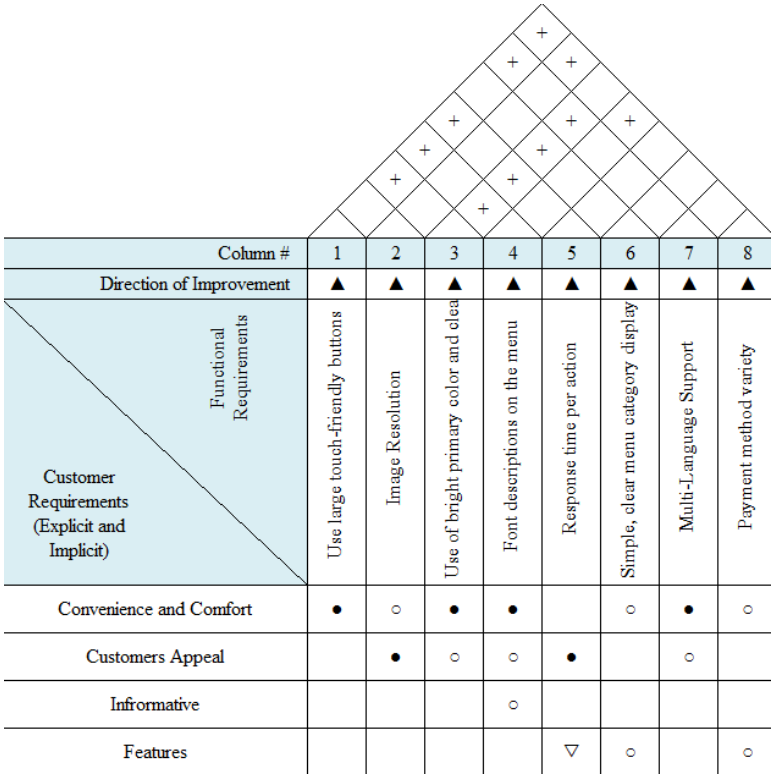
The results of the column weight calculation can be seen in the technical importance rating section in the figure below.

| Column # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Direction of Improvement | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Customer Requirements (Explicit and Implicit) \ Functional Requirements | Use large touch-friendly buttons | Image Resolution | Use of bright primary color (Red) | Font descriptions on the menu | Response time per action | Simple, clear menu category display | Multi-Language Support | Payment method variety |
| Convenience and Comfort | ● | ○ | ● | ● | | ○ | ● | ○ |
| Customers Appeal | | ● | ○ | ○ | ● | | ○ | |
| Infromative | | | | ○ | | | | |
| Features | | | | | ▽ | ○ | | ○ |
| Target | Use large touch-friendly buttons (min. 60x60 pixels) | min size 600x600 px for menu images | Red used in ≥ 60% of primary interface element | Font size ≥ 14 px (for body text/description) - Font type must be sans- | 1.5 seconds | minimum image size 150 px on display | Supports at least 2 languages | 3 types: QRIS, GoPay/OVO, and cash |
| Max Relationship | 9 | 9 | 9 | 9 | 9 | 3 | 9 | 3 |
| Technical Importance Rating | 54,3 | 68,1 | 58,9 | 68,1 | 72,5 | 54,3 | 55,2 | 66,3 |
| Column # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

Figure 4. 8 Column Weight of Customers' Needs

5.3.4 Relation *Between Technical Requirements*

Identify the relationship between technical needs using two symbols, namely, if there is a positive relationship between technical needs, then use the symbol (+), but if there is a negative relationship between technical needs, then use the symbol (-). The following is the relationship between technical needs:



| Column # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Direction of Improvement | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| Customer Requirements (Explicit and Implicit) \ Functional Requirements | Use large touch-friendly buttons | Image Resolution | Use of bright primary color and clea | Font descriptions on the menu | Response time per action | Simple, clear menu category display | Multi-Language Support | Payment method variety |
| Convenience and Comfort | ● | ○ | ● | ● | | ○ | ● | ○ |
| Customers Appeal | | ● | ○ | ○ | ● | | ○ | |
| Informative | | | | ○ | | | | |
| Features | | | | | ▽ | ○ | | ○ |

Figure 4. 9 Relational Technical Requirements

5.3.5 *Target* Specifications

The target specifications for packaging have been designed to meet customers' needs in terms of using Self-order capacity. The result specification in detail is coming from technical requirements and how that suits consumer needs. The following is the target specification for the interface self-order for Hara Chicken:

Table 4. 15 Target Specifications

| No | Specification | Target |
|---|---|---|
| 1 | Use large touch-friendly buttons | Using size buttons min. 60x60 pixels. |
| 2 | Image resolution | min size 600x600 px for menu images |
| 3 | Use of bright primary color and clearly visible icons | Apply brand colors, fonts, and logo consistently with HR design |
| 4 | Font descriptions on the menu | - Font size ≥ 14 px (for body text/description)<br>- Max 3 lines of key descriptions |

| No | Specification | Target |
|---|---|---|
| 5 | Response time per action | 1.5 Seconds |
| 6 | Payment method variety. | 3 types: QRIS, GoPay/OVO, and cash |
| 7 | Multi-Language Support | 2 languages support. |

5.3.6 *Result of House of Quality*

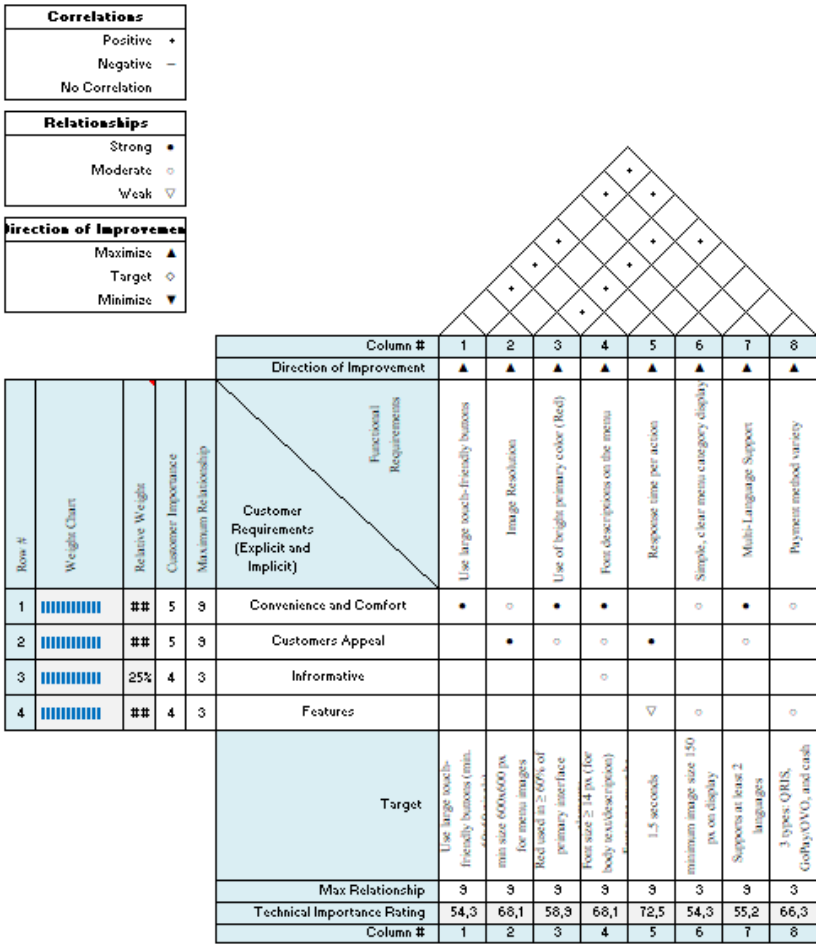



Figure 4. 10 Result of HOQ

## 5.4 Interface Design of Hara Chicken Self-Order

The results of the self-order design plan that is used to order food using a direct interface without any contact with the Hara Chicken cashier service, which suits the needs and desires of consumers, are as follows:

5.4.1 Initial Design of Hara Chicken Self-Order

The design of the Hara Chicken was made using the software called Canva initially. The following is the initial design interface of Hara Chicken self-order:

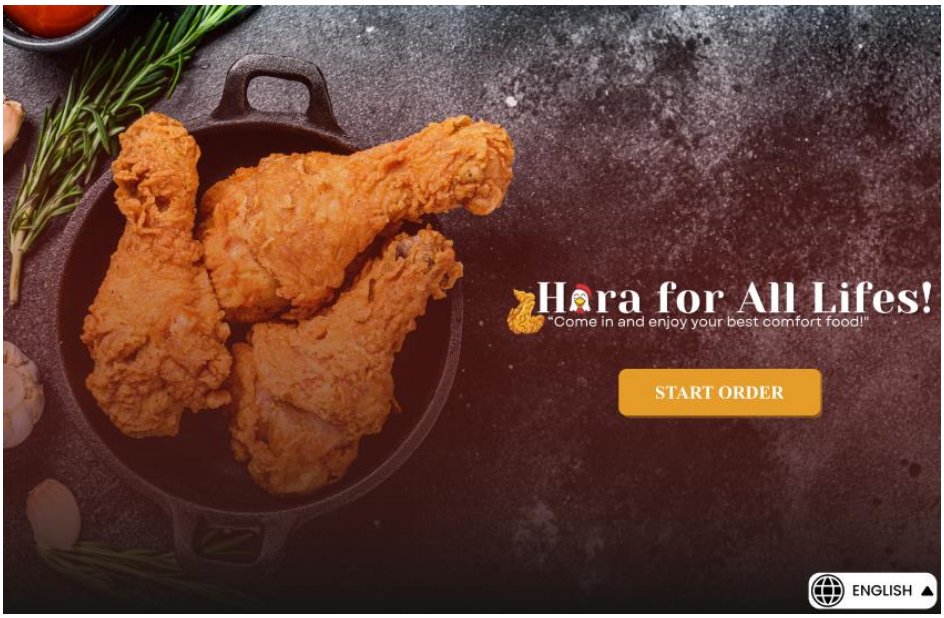



Figure 4. 11 Homepage Self-Order

Based on the figure above, the size of the initial interface of the homepage that was used is 1200 x 800 pixels. The tagline was deliberately created with the original logo from Hara Chicken itself, with a chicken background adapted from UMKM itself, so that the appearance can attract customers' attention. The high-quality visuals significantly impact consumer purchasing behavior, as they enhance engagement and provide a more immersive experience in digital platforms (Bleier et al., 2019). According to the Westfix Team (2017), a tagline is a short phrase that captures a brand's essence, personality, and positioning. Taglines also help popularize the company or product being offered. The appearance or interface must be appropriate, attractive, and not distracting to users while using the system, which can be in the form of shapes, colors, and writing designed to be as attractive as possible for users (Mulyadi et al., 2023). One of the key elements is the "Start Order" button, which has dimensions of 275 pixels in width and 70 pixels in height. Additionally, the interface includes a language selection feature, which was specifically. Integrated to accommodate the diverse customer base at Hara Chicken’s location on Jalan Kaliurang km 12.

This area is within a university environment, so the restaurant frequently serves Indonesian and international students. The existence of alternative language options makes it easier for

users to use the application because the language displayed on the interface can be selected so that it is easy to understand (Kurniawan & Henderi, 2021). By providing language options in Indonesian and English, the interface ensures that customers, regardless of their background, can easily navigate the menu and place their orders without confusion. This feature enhances accessibility and improves the overall ordering experience for all visitors and customers.

Figure 4. 12 2nd Slide of Interface

On the other hand, customers still can change languages before ordering on the next slide, exactly after the homepage, before they decide to dine in or take the food away, as shown above. The interface effectively utilizes clear iconography to distinguish between the "Makan di Tempat" (Dine-in) and "Bawa Pulang" (Takeaway) options, ensuring that customers can easily identify their preferred ordering method. Additionally, the inclusion of a bilingual language selection feature further improves accessibility, catering to both local and international customers in the campus environment. The use of a consistent red and yellow color scheme aligns with the brand identity and evokes appetite-stimulating emotions, making the interface visually engaging. Despite these strengths, some areas could be refined to improve overall usability. The readability of the font, particularly for the "Makan di Tempat" and "Bawa Pulang" labels, could be enhanced to ensure clarity for users, including those with visual impairments. Additionally, the "Mulai Dari Awal" (Start Over) button may benefit from increased contrast to improve its visibility. The use of a consistent red and yellow color scheme aligns with the brand identity and makes the interface visually engaging.

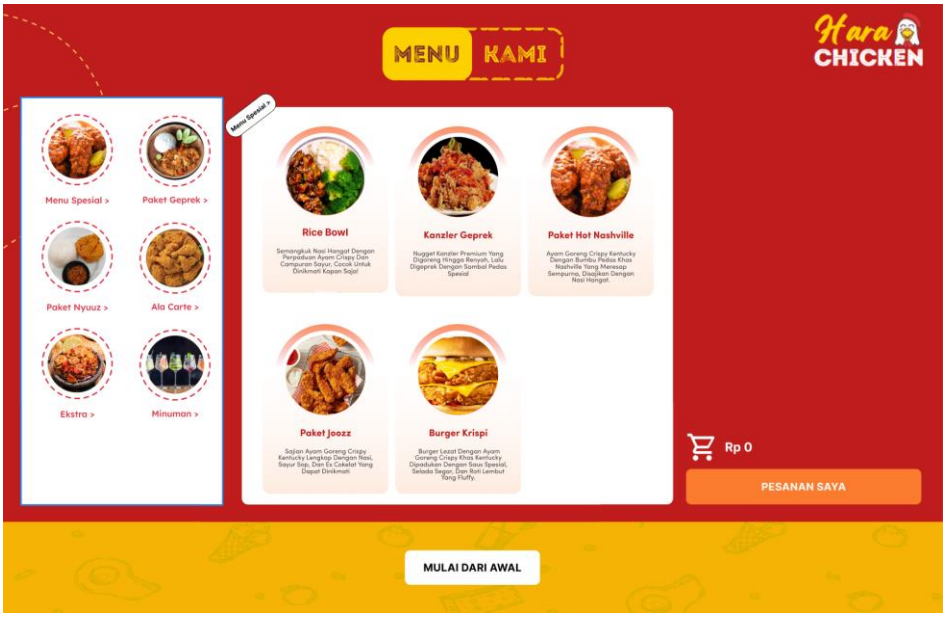



Figure 4. 13 Special Menu of Interface

The special menu is designed to meet unique customer requirements outlined in technical specifications, ensuring that the meals cater to diverse preferences and dietary needs. Research indicates that well-structured promotional menus can increase engagement and boost sales, encourage impulse purchases, and create a sense of urgency among customers (Zhang & Krishnamurthi, 2004). Furthermore, updating this menu based on ongoing activities or seasonal promotions enhances flexibility in menu management, allowing businesses to introduce variety while maintaining customer interest. Studies suggest that menu variability, when strategically implemented, can significantly impact consumer perceptions of value and increase brand loyalty.

By aligning the special menu with current promotions or events, restaurants can optimize customer engagement and purchasing behavior. Offering time-limited deals and rotating menu options ensures excitement in product offerings and contends better inventory management and reduced food waste, a critical factor in sustainable restaurant operations (Filimonau & Gherbin, 2017). Therefore, incorporating a dynamic and responsive special menu section within the self-order interface is a crucial strategy for enhancing customer satisfaction, improving sales performance, and maintaining operational efficiency in the food service industry.

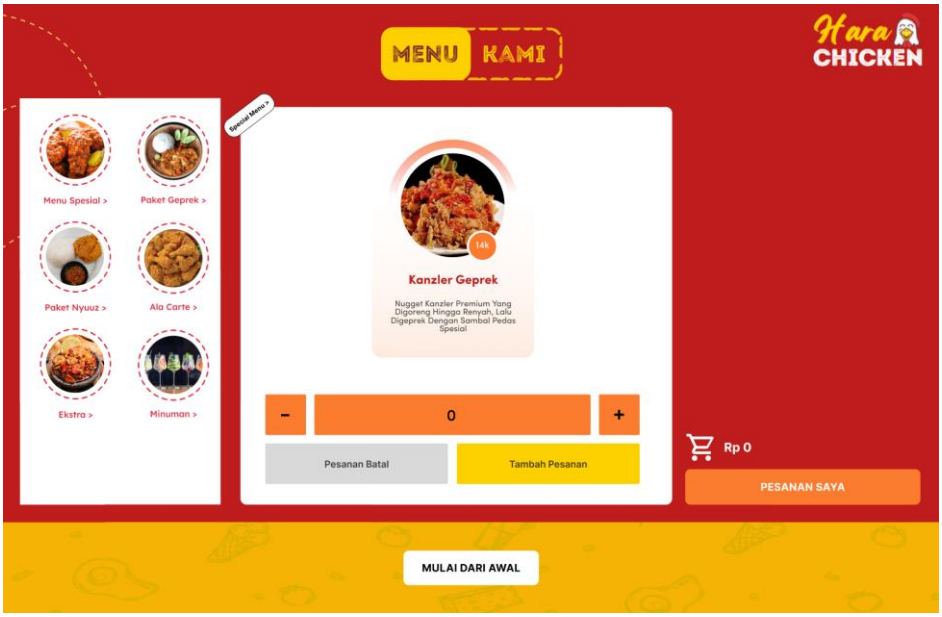



Figure 4. 14 Kanzler Geprek Section

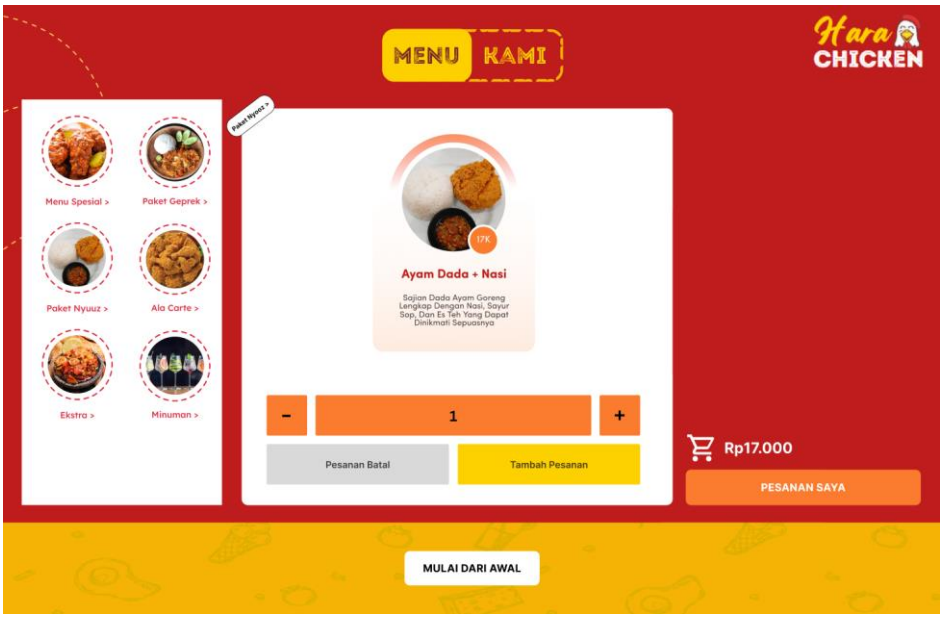



Figure 4. 15 3rd Interface Design

The image above showcases the main menu display from the selection of menu options available on the Hara Chicken self-order service interface. Within this interface, customers can find six distinct categories of menu variants, each carefully curated to reflect the range of offerings available at Hara Chicken. These menu categories have been designed to align seamlessly with the restaurant's actual menu, ensuring that customers can easily browse through familiar options when placing their orders. One example of this is the "Special Menu" category, which highlights some of the restaurant's most unique and signature dishes. Each

menu category contains detailed information about the food items included, providing customers with a comprehensive understanding of their choices before making a selection. To enhance the user experience, each food item displayed on the interface is accompanied by high-resolution images that have been carefully selected to ensure clarity and visual appeal. These images have been optimized to prevent blurriness, allowing customers to view each dish in sharp detail, making it easier to recognize and select their preferred meals.

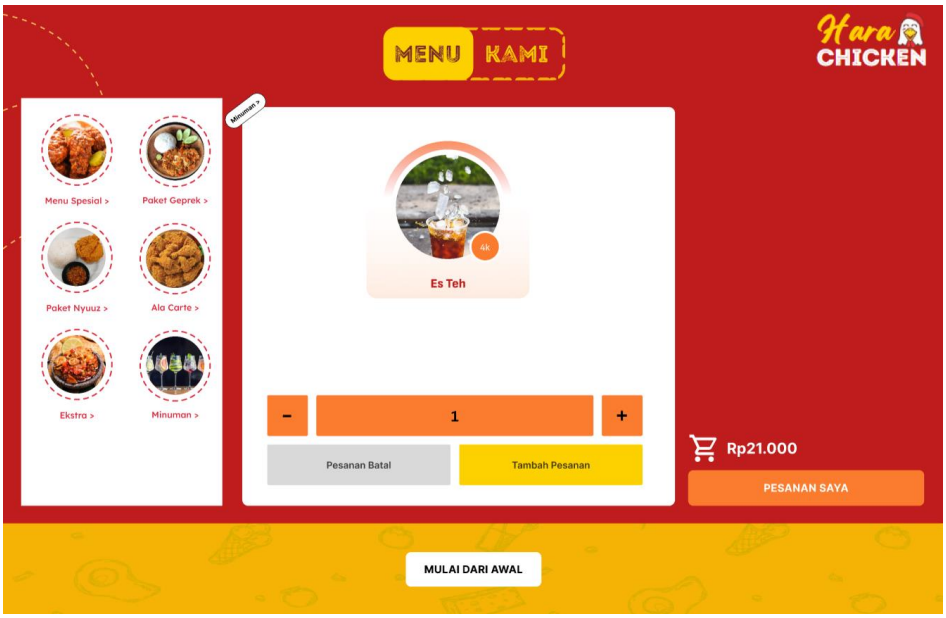



Figure 4. 16 Interface of Beverages

By incorporating high-quality visuals and informative descriptions, the self-order interface aims to improve the ordering experience by making it more intuitive, engaging, and efficient for customers, whether they are first-time visitors or regular patrons of Hara Chicken. However, minor improvements could enhance usability further. The yellow background of the "Tambah Pesanan" button may cause readability issues due to insufficient contrast with the white text. It has been found through research that utilizing a colour scheme with a higher contrast improves readability and reduces the number of user errors. According to Gefen et al. (2003), the area where the total price is calculated could be made more prominent. This would reinforce the significance of transparency in pricing, which is essential for ensuring the trust and satisfaction of users (Gefen et al., 2003).

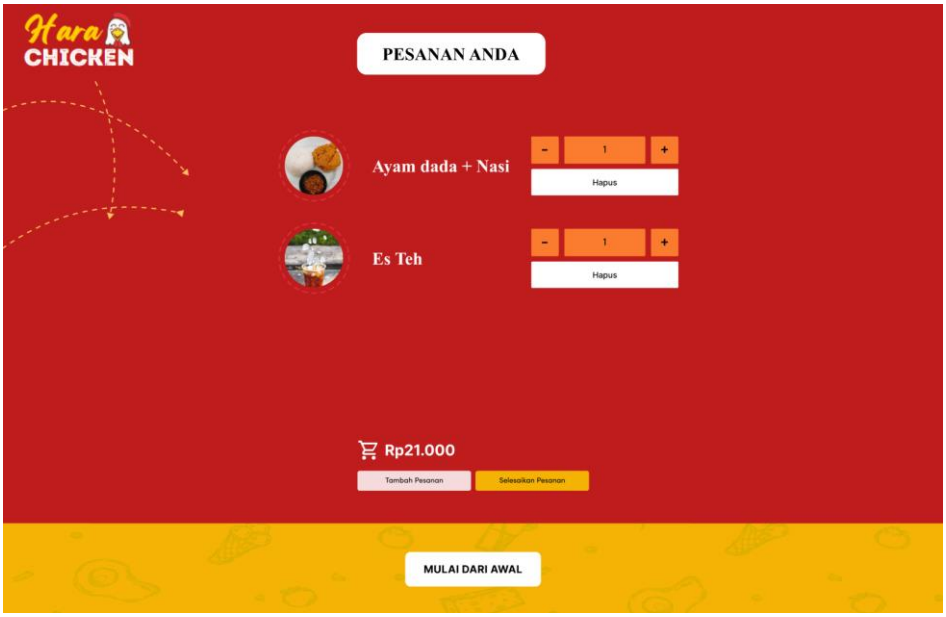



Figure 4. 17 Summary Order from Interface

This page provides a summary of customers' orders before they are going to check out their food and beverages. The order summary is prominently displayed, featuring product images alongside clear item names, quantities, and pricing. The interface also incorporates interactive quantity adjustment buttons ("-" and "+") that allow users to modify their selections seamlessly. These buttons are large and well-spaced, improving usability, particularly for touchscreen interactions. Research indicates that button size and spacing significantly influence the effectiveness of digital interfaces, particularly in self-service kiosks, where ease of navigation is a critical factor in user experience (Nielsen, 2012). Additionally, the "Hapus" (Delete) option is clearly visible, giving users control over their selections and minimizing frustration in case of changes.

Figure 4. 18 Payment Choice

The payment interface presented above effectively provides users with two payment options: "Bayar Disini" (Pay Here) and "Bayar Di Kasir" (Pay at the Cashier). This design aligns with the best practices in self-service technology (SST) by offering flexibility and convenience, which have enhanced customer satisfaction and streamlined the transaction process (M. Meuter et al., 2000). Using intuitive icons and clear labeling supports usability principles, as recommended in research on digital payment system design (Laukkanen & Pasanen, 2008). However, while the design is clear and functional, there are potential areas for improvement. For instance, incorporating a brief description or tooltip under each payment option could further guide first-time users, particularly those unfamiliar with digital transactions. By integrating these improvements, the interface could further optimize the user experience and encourage seamless adoption of digital payment solutions, ultimately aligning with contemporary research on self-service technology in retail and food service industries, especially for Hara Chicken.

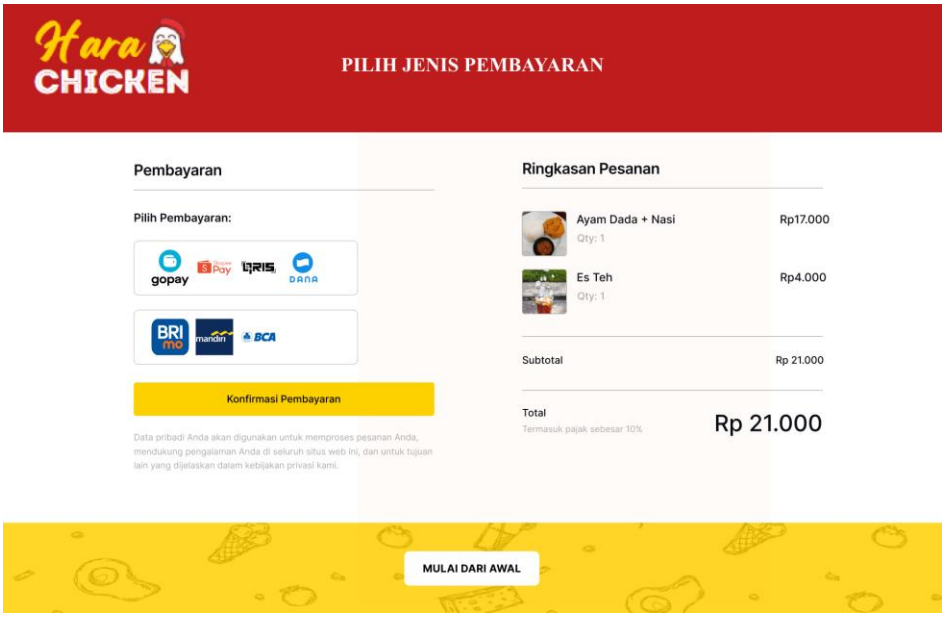



Figure 4. 19 2nd Payment Choice

Next, the payment interface displayed above effectively follows usability principles, ensuring clarity, accessibility, and efficiency in the digital payment process. The layout is divided into two main sections: (1) the payment method selection on the left and (2) the order summary on the right. This structure reduces cognitive load by organizing information into clear sections and improves decision-making speed (Tuch et al., 2012). Including multiple payment methods, such as e-wallets (GoPay, ShopeePay, DANA, QRIS) and bank transfers (BRI, Mandiri, BCA), aligns with customers' needs mentioned in technical requirements. Furthermore, the yellow "Konfirmasi Pembayaran" button is a strong call to action, as high-contrast colors increase visibility and user engagement. On the right, the order summary provides a breakdown of the selected items, subtotal, and total cost, ensuring transparency in pricing. Including tax details helps build customer trust, as users appreciate clear cost breakdowns in e-commerce transactions (Gefen et al., 2003). While the interface is visually appealing and functionally efficient, the readability of the privacy policy statement at the bottom could be improved. A more prominent display or a hyperlink to a detailed privacy policy would enhance user trust regarding data security (Wang, 2020). Overall, this interface is well-designed for a self-ordering system.

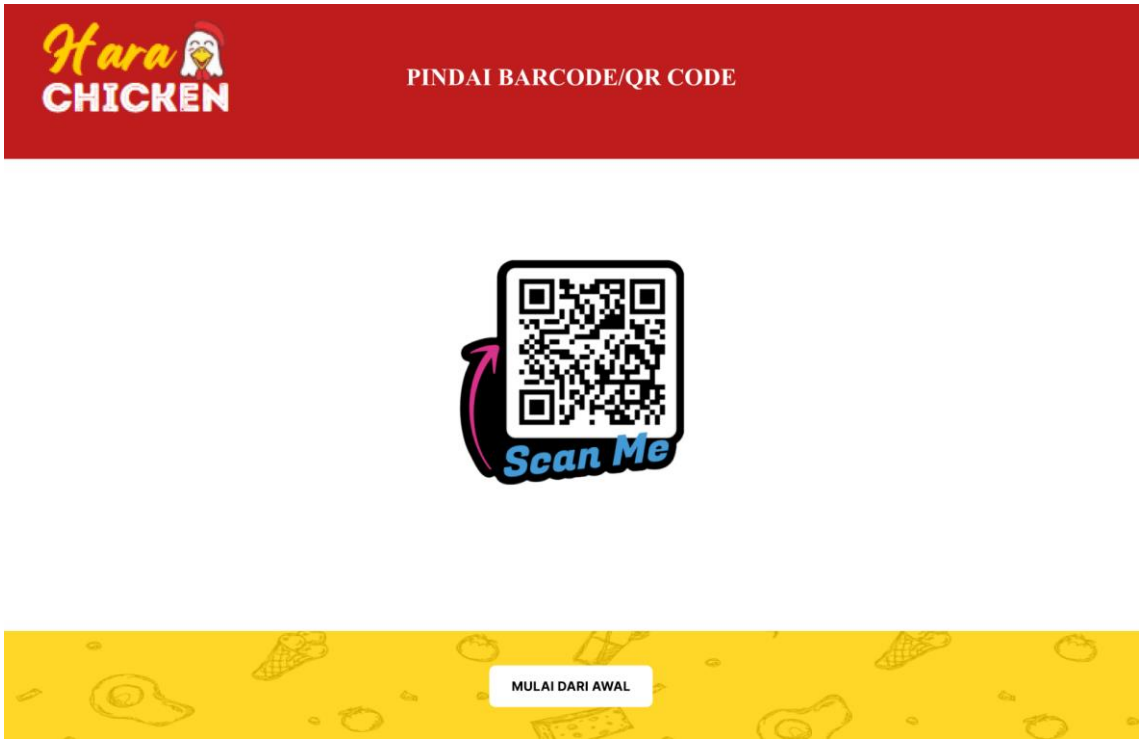



Figure 4. 20 Barcode Scanning

According to Pickford (2015) the era of "cashless transactions" is rapidly approaching. Mobile payments have gradually replaced cash payments worldwide, becoming the primary payment method in daily life, as a result of the widespread use of mobile phones and third-party payment applications (Liu et al., 2021). The interface presented effectively utilizes a QR code payment system, which is widely recognized for its convenience, efficiency, and reduced physical contact, particularly important in post-pandemic consumer behavior. The design follows a minimalistic approach, centering the QR code prominently, ensuring that users immediately recognize the next step in their payment process. The large, bold “Scan Me” text with an arrow enhances usability by guiding user attention toward the QR code (Lidwell et al., 2023). Overall, the interface is effective in supporting a seamless self-service payment experience, aligning with usability best practices and cognitive design principles. Minor refinements, such as adding feedback mechanisms and optimizing navigation placement, could enhance the system’s overall intuitiveness and user satisfaction.

Figure 4. 21 Barcode to Order

In addition to making it easier for customers to order food or beverages, there is a barcode link that can be accessed directly by customers using a mobile phone without having to use the existing interface.

# CHAPTER V
# DISCUSSION

## 5.1 Voice of Customer Analysis

### 5.1.1 Voice of Customer Analysis

Before proceeding with designing the self-order interface for Hara Chicken, an initial interface self-order design and questionnaire were distributed to respondents, particularly customers who frequently visit and make purchases at Hara Chicken, specifically at the Kaliurang Km 12 branch. This questionnaire and interface were aimed at gathering insights regarding customer satisfaction with the existing ordering system, identifying key pain points, and potential areas for improvement. The questionnaire was completed by a total of 66 respondents, all of whom were Hara Chicken customers. The survey included an open-ended answer column and a Likert scale for the initial design of the interface, where customers could freely express their opinions, suggestions, and concerns to ensure a more comprehensive understanding of customer needs and expectations. The data collected showed that a significant number of customers, notably more than 25 respondents, expressed dissatisfaction with the current ordering system. Their main concern was the limited number of cashier counters available at the restaurant. As only one cashier counter was handling all orders, long queues frequently formed, especially during peak dining hours, causing delays and inconvenience for customers who wanted to place their orders. This issue significantly impacted the overall customer experience, as many patrons waited longer than expected before they could place their orders and receive their meals. Research has demonstrated that self-service technologies (SSTs) significantly enhance customer satisfaction and loyalty in the fast-food industry. For instance, a study published in the *Journal of Foodservice Business Research* found that emotional and functional values associated with SSTs positively influence customer satisfaction and their intention to continue using such technologies (Zaitouni, M., & Murphy, K. S., 2023). There were four attributes from questionnaires that were distributed: Convenience and comfort, Customer appeal, Informative, and features.

Furthermore, all respondents unanimously agreed that implementing a self-order system would be highly beneficial in enhancing service quality and streamlining the ordering process. By integrating a self-order system, the restaurant could potentially minimize long queues, reduce customer waiting times, and create a more efficient and seamless ordering experience, especially for those who prefer a quick and hassle-free transaction when purchasing food and

beverages on-site. The implementation of self-order systems in restaurants has been shown to reduce wait times, minimize queues, and streamline the ordering process, leading to improved service quality and customer experience (Jufri & Muhammad, 2024). Based on the insights gathered from the questionnaire, several key customer needs were identified, which are crucial for designing an effective and user-friendly self-order interface tailored specifically for Hara Chicken at Jalan Kaliurang Km 12. Consumer needs needed to design a self-order interface at Hara Chicken Jalan Kaliurang km 12, namely user-friendly navigation, promo display, visually engaging design, Menu images and prices are visible and there are descriptions, Appearance of food descriptions on the menu, Simple, clear menu category display, easy payment with e-wallet and Chris, Multi-Language Support, Order Customization. Analyzing a self-service food menu application using heuristic evaluation highlighted the importance of user control, freedom, and comprehensive help documentation. Addressing these elements can significantly improve usability and customer satisfaction (Widiawati et al., 2021). By integrating these features into the self-order interface, Hara Chicken can effectively address customer concerns regarding long queues and limited cashier counters, ultimately enhancing overall customer satisfaction.

## 5.2 Quality Function Deployment Analysis

### 5.2.1 Customer Analysis Requirements

This study obtained customer requirements through a questionnaire distributed to customers who had previously made direct purchases at the Hara Chicken branch on Jalan Kaliurang, Km 12. The analysis results identified four key attributes, as mentioned before, for developing the self-ordering system: convenience and comfort, customer appeal, informativeness, and features. These attributes align closely with the Voice of Customers (VoC), highlighting critical aspects such as user-friendly navigation, promo display, visually engaging design, clear menu images and descriptions, simple category display, easy payment options, multi-language support, and order customization. Each of these attributes plays a crucial role in enhancing the customer experience and optimizing the ordering process at the restaurant.

Convenience and Comfort: This attribute’s goal is to provide a smooth and efficient experience that minimizes waiting times and maximizes ease of use for customers. User-friendly navigation from technical requirements ensures customers can quickly browse and select menu items without confusion, reducing frustration during peak hours. Additionally, simple and clear

menu displays help to guide customers when the selection process, allowing customers to find their desired meals effortlessly. Self-service systems can reduce ordering errors and enhance overall customer experience by making the process more intuitive and time-efficient (Ramli et al., 2024).

The following attribute is customer appeal; a visually engaging design is essential for capturing customer attention and maintaining engagement with the self-ordering system. The integration of promo displays allows customers to easily access current offers and discounts, encouraging them to explore more menu options. Interfaces and promotional visibility in self-ordering kiosks can increase customer engagement and positively influence purchasing decisions (Shan Lee et al., 2025). Next is the informative aspect; it is essential to provide customers with information that is both clear and comprehensive to assist them in making informed choices. To ensure that customers are able to see what they are ordering, it is important to display images of the menu, as well as prices and descriptions of the food. This helps customers feel more confident in the selection process. In addition, the inclusion of food descriptions on the menu assists customers in better comprehending the dimensions of the portions, the components, and the flavor profiles of the food, thereby reducing customer uncertainty and increasing customer satisfaction. When it comes to self-ordering systems, studies have shown that providing customers with detailed and transparent menu presentations results in increased customer trust and a more satisfying dining experience (Yi Sann Lee, 2023).

Features, Functionalities such as easy e-wallet and QRIS payment options, multi-language support, and order customization contribute significantly to user satisfaction. Cashless payment options provide a faster and more secure transaction process, aligning with modern consumer preferences for digital payments. Meanwhile, multi-language support ensures accessibility for a diverse customer base, particularly in areas with international visitors. Additionally, order customization allows customers to personalize their meals, catering to dietary restrictions and individual preferences. self-order kiosks with extensive feature options, such as flexible payment methods and customization choices, increase customer retention and loyalty (Gladiewin & Aquino, 2023).

### 5.2.2 House of Quality (HOQ) Analysis

1. Importance Rating

After distributing the questionnaire, seven attributes of consumer needs were obtained: convenience and comfort, customer appeal, information, and features. Furthermore, an assessment of the level of importance of all of these attributes was carried out. The importance scale is divided into five scales: very unimportant with a value of 1, unimportant with a value of 2, quite important with a value of 3, important with a value of 4, and significant with a value of 5. The total scale score is divided by the total number of respondents who are used to determine the importance of the rating.

Of the 30 respondents, 11 answered that it was important, and 19 answered that it was very important for convenience and comfort, so the level of importance for convenience and comfort is 4.63. For the Customer's appeal attribute, one person answered quite neutral, nine answered important, and 20 answered very important, so the level of importance for the Customer's appeal attribute is 4.63. For the informative attribute, one person answered less important, one answered neutral, 11 answered important, and 17 answered very important, so the level of importance for the informative attribute is 4.46. For the features attribute, two people answered neutral, 12 answered important, and 15 answered very important, so the level of importance for the Features attribute is 4.33. The results of the importance rating of each consumer that needs the attribute showed that the majority answered very important. This means that in designing the Hara Chicken self-order interface, you must focus and pay attention to the quality of convenience and comfort, customer appeal, information, and feature attributes because they can achieve product success and gain consumer satisfaction when using the interface. Conversely, if these attributes are not addressed properly, the interface may fail to meet customer expectations, leading to dissatisfaction, decreased usage rates, and potentially harming the restaurant's overall customer experience and revenue generation

2. Technical Requirements

The technical requirements are derived from the attributes of consumer requirements that were previously identified. These consumer requirement attributes include convenience and comfort, customer appeal, informative content, and features. Each attribute is associated with specific technical requirements to enhance the overall user experience. For convenience and comfort, the primary technical requirement is ensuring that the self-order system is easy to operate for all customers. This means

implementing a user-friendly navigation system that allows users to browse the menu, place orders, and complete transactions effortlessly, regardless of their familiarity with technology. The interface should be intuitive, with clear buttons, minimal steps, and a responsive design to enhance accessibility.

The customer appeal attribute focuses on creating a visually engaging and attractive ordering experience. The system should incorporate high-quality images, appealing color schemes, and a well-structured layout to achieve this. Additionally, promo displays should be integrated to highlight special offers, discounts, and recommended items. The informative attribute emphasizes the importance of providing precise and detailed menu descriptions. The system should display high-resolution images of food items, prices, and comprehensive descriptions, ensuring customers can make informed decisions before placing an order. Including ingredient lists, portion sizes, and allergen information can further enhance transparency and assist customers in selecting meals that best suit their preferences and dietary restrictions.

Lastly, the features attribute, the technical requirements encompass essential functionalities that contribute to user satisfaction. The system should support seamless payment options, including e-wallet integration and QRIS compatibility, to facilitate quick and convenient transactions. Additionally, multi-language support should be available to cater to diverse customer demographics, ensuring that language barriers do not hinder the ordering process. Another critical feature is order customization, allowing customers to modify their meals according to their preferences.

3. Relationship Between Customer Needs and Technical Needs

A critical component of developing products and systems is the interaction between technical requirements and customer needs, which guarantees that design choices meet user expectations and improve overall satisfaction. Technical requirements convert these needs into particular design and functional components that enhance usability, efficiency, and performance, while customer needs represent the expectations, preferences, and demands of end users. According to Akao (1990), the Quality Function Deployment (QFD) method is widely used to systematically connect customer requirements with technical specifications, enabling businesses to develop solutions that effectively meet consumer expectations.

The convenience and comfort attributes have a strong relationship with the technical requirements of user-friendly navigation, a system that is easy to operate for customers of all backgrounds, and a responsive interface to ensure a smooth ordering experience. Next, customer appeal attribute has a strong relationship with the technical requirements of visually engaging UI/UX design, and menu images and prices are clearly visible, and there are description. Moderate relationship with Simple, clear menu category display, easy payment with e-wallet, and Qris.

The informative attribute has a strong relationship with the technical requirements of relationship with the technical requirements of multi-language support. It has a moderate relationship with the technical requirement of visually appealing design to ensure that information is easy to read and understand.

The features attribute has a strong relationship with the technical requirements of support for e-wallet and QRIS payments, order customization options, and compliance with digital transaction regulations to ensure customer security and convenience in transactions. It has a moderate relationship with the technical requirements of multi-language support, Menu images, and prices are clearly visible and there are descriptions, appearance of food descriptions on the menu, and promo display.

4. Weight Column

   The relationship value of each attribute's technical requirements multiplied by the importance rating yields the column weight value (Cohen, 1995). Column weight value of largest to smallest, namely User-Friendly Navigation (80.1), Appearance of food descriptions on the menu (72.5), Menu images and prices are clearly visible and there are descriptions and promo displays (68.1), Order Customization (66.3), Visually Engaging Design (58.9), Multi-Language Support (55.2), Simple, clear menu category display, easy payment with e-wallet and Qris (54.3), Hence, User-Friendly Navigation is a priority of self-order interface design.

5. Relationship Between Technical Requirements

   The relationship between technical requirements is divided into three categories: positively related, negatively related, and unrelated (Cohen, 1995). The user-friendly navigation technical requirement has a positive relationship with visually engaging design, menu images, and prices being clearly visible, the appearance of food descriptions on the menu, multi-language support, and order customization. The

addition of pictures to menus that contain common descriptive food names has a positive impact on the attitudes, willingness to pay, and intentions of consumers to make purchases. The conclusion that can be drawn is that a visually appealing design, when combined with information that is both clear and descriptive, improves the user experience and makes navigation easier (Hou et al., 2017). Next, there is a positive correlation between order customization and the promo display requirement. According to research by Soh and Sharma (2021), menu presentation has a big impact on customers' propensity to buy, which suggests that showcasing promotions well can entice customers to browse and personalize their orders (Soh & Sharma, 2021).

Furthermore, visually engaging design positively relates to clear visibility of menu images and prices, appearance of food descriptions, simple and clear menu category display, easy payment options like e-wallet and QRIS, and multi-language support. Lastly, the requirement for clear visibility of menu images and prices has a positive relationship with order customization.

## 5.3 Usability Testing

### 5.3.1 Effectivity

The effectiveness of an application can be measured by the percentage of respondents' success in completing each task. Respondents are given three tasks to measure the effectiveness of the Self-order interface. This test will be carried out on 30 respondents. The tasks used in this performance measurement process are arranged based on activities often carried out by customers, especially students, when ordering food or drinks using the self-order service. The data processing results using the Performance Measurement method obtained the average success rate of respondents in completing each task given, which was 83%. This value is supported by the presence of several respondents who were not successful in completing the tasks that were given. Of the 30 respondents in task 1, 7 respondents failed to complete the task. In tasks 2 and 3, 4 respondents failed to complete the task. Based on these results, it can be concluded that the failures made by the respondents were not too many and can be said to be quite effective. However, with the failures still occurring, it can be concluded that the self-order interface at Hara Chicken still needs improvement.

### 5.3.2 Efficiency

In the analysis of the test results based on efficiency, it was found that the level of respondent efficiency was measured based on the value of time-based metrics, namely the time required by respondents to complete each task given. The test results showed that the average time required by users to complete tasks on the Hara Chicken self-order interface was 2.68 seconds per goal (sec/goals). This value indicates that users can complete their tasks relatively quickly, indicating that the interface design used has a fairly good efficiency level. Task completion time is one of the primary metrics in usability testing used to assess how quickly users can complete tasks after understanding the system. The shorter the task completion time, the more efficient the interface is being tested (Lewis, 2009). Thus, based on the test results conducted and support from existing literature, it can be concluded that the Hara Chicken self-order interface design has achieved a good level of efficiency. This efficiency can contribute to a more positive user experience, reduce waiting times, and increase customer and business managers' productivity.

### 5.3.3 Usability Testing Categories

Based on the calculation results for the SUS score, the final SUS score was 83.41. The following are the categories of usability test results.

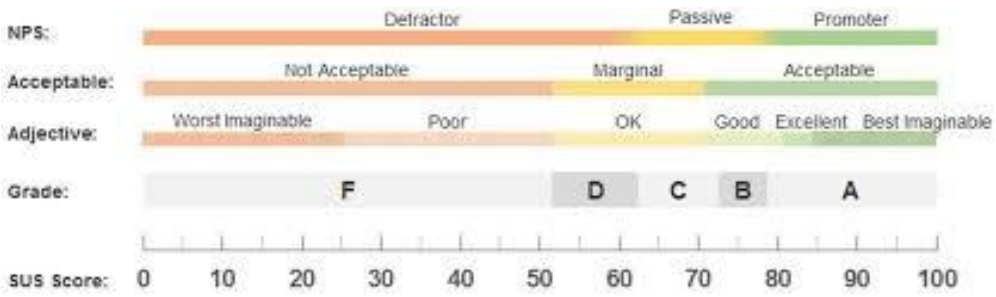



Figure 5. 1 Usability Categories
Source: (Kesuma,2021)

Table 5. 1 Usability Categories

| Usability Aspect | Result |
|---|---|
| **SUS Score** | 83,41 |
| **Acceptability Ranges** | Acceptable |

| | |
|---|---|
| **Grade Scale** | A |
| **Adjective Ratings** | Excellent |

Referring to Table 5.1 Usability Categories, the score of 83.41 is included in the Acceptability Ranges: Acceptable. Acceptable Ranges determine the application's rating. Meanwhile, the Grade Scale gets an A. The Grade Scale determines the application's level of quality. Then, Adjective Ratings are included in the Excellent category. Adjective Ratings are an aspect of determining the level of acceptance of the application. Based on the results of all these aspects, an improvement in usability is still needed to get a better score.

### 5.4 Comparative Test Before and After Design Using Independent T-test

The independent t-test is a statistical method used to compare the means of two unrelated groups, intending to determine whether there is a statistically significant difference between the two groups (H.-Y. Kim, 2019). There will be 7 before and after questions tested using an Independent T-test, for 30 respondents using SPSS Software, with df scores of 58. The writing of the hypothesis in the t-test is as follows:

$H_0 =$ There is no difference in average value of comparisson test

$H_1 =$ There is difference in average value of comparisson test

Conclusion

If $|\text{Tmeasure}| \leq \text{Rtable}$, So $H_0$ Accepted

If $|\text{Tmeasure}| > \text{Rtable}$, So $H_0$ Rejected

The data collected from 30 respondents who filled questionnaires by using Likert-scale; 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree). The following is the average result from each before and after question.

Table 5. 2 Before and After Statement

| Statement | Before Design | | | | | After Design | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Metode Pemesanan yang mudah dilakukan oleh konsumen | 2 | 11 | 14 | 2 | 1 | 0 | 1 | 0 | 13 | 16 |
| Tampilan menu makanan | 4 | 9 | 10 | 6 | 1 | 0 | 1 | 1 | 12 | 16 |
| Kemudahan memahami daftar menu | 4 | 9 | 10 | 6 | 1 | 0 | 1 | 1 | 12 | 16 |
| Pemesanan makanan atau minuman yang efektif | 6 | 9 | 12 | 2 | 1 | 0 | 1 | 0 | 13 | 16 |
| Lama waktu antri saat memesan makanan./minuman | 12 | 12 | 5 | 1 | 0 | 1 | 0 | 0 | 8 | 21 |
| Kenyamanan dalam proses pembayaran | 6 | 10 | 10 | 3 | 1 | 0 | 1 | 1 | 11 | 17 |
| Kemungkinan pelanggan untuk kembali memesan | 4 | 7 | 12 | 4 | 3 | 0 | 1 | 1 | 15 | 13 |
| Secara keseluruhan bagaimana tingkat kepuasan anda terhadap system pemesanan di Hara | 3 | 9 | 12 | 4 | 2 | 0 | 1 | 0 | 10 | 19 |

1. Easy ordering method for consumers before and after the Self-order Interface

Table 5. 3 Question 1 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 2.63 | 0.850 | 0.155 |
| | After | 30 | 4.47 | 0.681 | 0.124 |

Table 5. 4 Question 1 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | 1.038 | 0.312 | -9.215 | 58 | .000 | .199 | -2.232 | -1.435 |
| | Equal Variance not assumed | | | -9.215 | 55.373 | .000 | .199 | -2.232 | -1.435 |

Based on Table 5.3 above, $t_{measure} = |-9.215| = 9.215$

While $t_{table} with\ df\ \mathbf{58} = 1.671$

Since, $|\text{Tmeasure}| > \text{Rtable}$, So $H_0$ Rejected, means that there is a difference in average value between before and after design, and Hypothesis H1 is accepted.

2. Food Menu Display

Table 5. 5 Question 2 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 2.43 | 0.817 | 0.149 |
| | After | 30 | 4.43 | 0.858 | 0.157 |

Table 5. 6 Question 2 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | .213 | 0.646 | -9.243 | 58 | .000 | .216 | -2.433 | -1.567 |
| | Equal Variance not assumed | | | -9.243 | 57.861 | .000 | .216 | -2.433 | -1.567 |

Based on Figure 5.3 above, $t_{measure} = |-9.243| = 9.243$

While $t_{table} with\ df\ \mathbf{58} = 1.671$

Since, $|\text{Tmeasure}| > \text{Rtable}$, So $H_0$ Rejected, means that there is difference in average value between before and after design, and Hypothesis H1 is accepted.

3. Ease of Understanding the List of Menu

Table 5. 7 Question 3 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 2.70 | 1.055 | 0.193 |
| | After | 30 | 4.43 | 0.728 | 0.133 |

Table 5. 8 Question 3 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | 4.550 | 0.037 | -7.405 | 58 | .000 | .216 | -2.433 | -1.567 |
| | Equal Variance not assumed | | | -7.405 | 57.861 | .000 | .216 | -2.433 | -1.567 |

Based on Figure 5.3 above, $t_{measure} = |-7.405| = 7.405$

While $t_{table} with\ df\ \mathbf{58} = 1.671$, as 7.405 > 1.671.

Since, |Tmeasure| > Rtable, So $H_0$ Rejected, means that there is difference in average value between before and after design, and Hypothesis H1 is accepted.

4. Effective for Ordering Food or Beverages

Table 5. 9 Question 4 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 2.43 | 1.006 | 0.184 |
| | After | 30 | 4.47 | 0.681 | 0.124 |

Table 5. 10 Question 4 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | 4.950 | 0.030 | -9.164 | 58 | .000 | .222 | -2.477 | -1.589 |

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| | Equal Variance not assumed | | | -9.164 | 50.976 | .000 | .222 | -2.479 | -1.588 |

Based on Figure 5.3 above, $t_{measure} = |-9.164| = 9.164$

While $t_{table} with\ df\ \mathbf{58} = 1.671$, as 9.164 > 1.671.

Since, $|\text{Tmeasure}| > \text{Rtable}$, So $H_0$ Rejected, means that there is difference in average value between before and after design, and Hypothesis H1 is accepted.

5. Waiting Time When Ordering Food/Drinks

Table 5. 11 Question 5 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 1.83 | .834 | 0.152 |
| | After | 30 | 4.60 | .814 | 0.149 |

Table 5. 12 Question 5 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | .595 | 0.443 | -13.006 | 58 | .000 | .213 | -3.192 | -2.341 |
| | Equal Variance not assumed | | | -13.006 | 57.965 | .000 | .213 | -3.192 | -2.341 |

Based on Figure 5.3 above, $t_{measure} = |-13.006| = 13.006$

While $t_{table} with\ df\ \mathbf{58} = 1.671$, as 13.006 > 1.671.

Since, $|\text{Tmeasure}| > \text{Rtable}$, So $H_0$ Rejected, means that there is difference in average value between before and after design, and Hypothesis H1 is accepted.

6. Convenience in Payment Process

Table 5. 13 Question 6 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 2.43 | 1.040 | 0.190 |
| | After | 30 | 4.47 | .730 | 0.133 |

Table 5. 14 Question 6 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | 4.260 | 0.043 | -8.764 | 58 | .000 | .232 | -2.499 | -1.569 |
| | Equal Variance not assumed | | | -8.764 | 52.006 | .000 | .232 | -2.499 | -1.568 |

Based on Figure 5.3 above, $t_{measure} = |-8.764| = 8.764$

While $t_{table} with\ df\ \mathbf{58} = 1.671$, as 8.764 > 1.671.

Since, $|\text{Tmeasure}| > \text{Rtable}$, So $H_0$ Rejected, means that there is difference in average value between before and after design, and Hypothesis H1 is accepted.

7. The Likelihood of Customer Re-ordering

Table 5. 15 Question 7 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 2.83 | 1.147 | 0.209 |
| | After | 30 | 4.33 | .711 | 0.130 |

Table 5. 16 Question 7 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | 3.974 | 0.051 | -8.764 | 58 | .000 | .246 | -1.993 | -1.007 |
| | Equal Variance not assumed | | | -48.420 | 52.006 | .000 | .246 | -1.995 | -1.005 |

Based on Figure 5.3 above, $t_{measure} = |-6.087| = 6.087$

While $t_{table} with\ df\ \mathbf{58} = 1.671$, as 6.087 > 1.671.

Since, |Tmeasure| > Rtable, So $H_0$ Rejected, means that there is difference in average value between before and after design, and Hypothesis H1 is accepted.

8. Level of Satisfaction With the Ordering System at Hara Chicken

Table 5. 17 Question 8 Group Statistics

| | Question | N | Mean | Std. Dev | Std. Error Mean |
|---|---|---|---|---|---|
| Score | Before | 30 | 2.77 | 1.040 | 0.190 |
| | After | 30 | 4.57 | .679 | 0.124 |

Table 5. 18 Question 8 Independent T-test

| | | F | Sig | T | Df | Sig (2-tailed) | Std. Error difference | Lower | Upper |
|---|---|---|---|---|---|---|---|---|---|
| Score | Equal Variance assumed | 3.974 | 0.051 | -8.764 | 58 | .000 | .246 | -1.993 | -1.007 |
| | Equal Variance not assumed | | | -48.420 | 52.006 | .000 | .246 | -1.995 | -1.005 |

Based on Figure 5.3 above, $t_{measure} = |-7.938| = 7.938$

While $t_{table} with\ df\ \mathbf{58} = 1.671$, as we know 7.938 > 1.671.

Since, |Tmeasure| > Rtable, So $H_0$ Rejected, means that there is difference in average value between before and after design, and Hypothesis H1 is accepted.

# CHAPTER VI
# CLOSING

## 1.1 Conclusion

The conclusions that can be drawn from the research that has been conducted are as follows:

1. The attributes in the self-order interface design for Hara Chicken Kaliurang Street Km 12 focus on four key attributes that align with consumer needs: convenience and comfort, customer appeal, information, and features. These attributes aim to optimize user satisfaction and enhance the overall efficiency of the self-order service.
2. The self-order application demonstrates a high level of usability, reflected by a System Usability Scale (SUS) score of 83.41, which falls into the "Acceptable" range, receives a grade of A, and is rated as "Excellent" by the respondent. This indicates that the interface is intuitive, comfortable, and well-received. In terms of effectiveness, users achieved an average success rate of 83% in completing tasks, although a few respondents encountered difficulties, particularly in tasks 1, 2, and 3. For efficiency, the average time taken to complete each task was 2.68 seconds per goal, indicating that the interface supports quick task execution.
3. There is a significant difference between the before and after design by using an independent T-test, demonstrating that the redesign of the Hara Chicken self-order interface has had a measurable and positive impact on user experience.

## 1.2 Suggestion

Based on the conducted research, the suggestions that might help for future research are as follows:

1. As for the suggestions given for further research, it can consider other aspects that have not been discussed in this study, and can use other development focuses for product design.
2. Further researchers can use other development methods in product design and evaluation, add other variables such as studying differences with existing self-order designs in Yogyakarta City or other areas.

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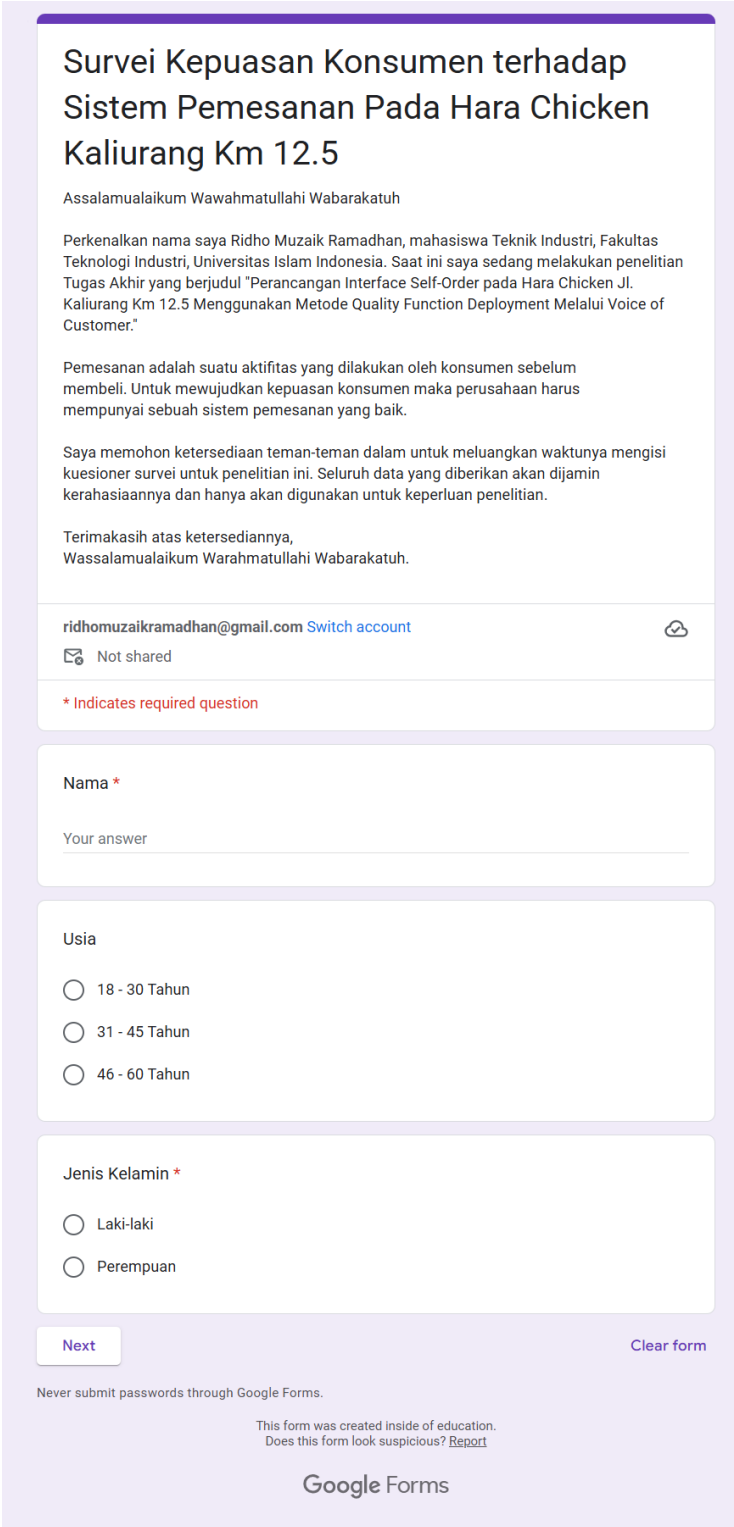
# ATTACHMENT

## A-Kuesioner Survei



Survei Kepuasan Konsumen terhadap Sistem Pemesanan Pada Hara Chicken Kaliurang Km 12.5

Assalamualaikum Wawahmatullahi Wabarakatuh

Perkenalkan nama saya Ridho Muzaik Ramadhan, mahasiswa Teknik Industri, Fakultas Teknologi Industri, Universitas Islam Indonesia. Saat ini saya sedang melakukan penelitian Tugas Akhir yang berjudul "Perancangan Interface Self-Order pada Hara Chicken Jl. Kaliurang Km 12.5 Menggunakan Metode Quality Function Deployment Melalui Voice of Customer."

Pemesanan adalah suatu aktifitas yang dilakukan oleh konsumen sebelum membeli. Untuk mewujudkan kepuasan konsumen maka perusahaan harus mempunyai sebuah sistem pemesanan yang baik.

Saya memohon ketersediaan teman-teman dalam untuk meluangkan waktunya mengisi kuesioner survei untuk penelitian ini. Seluruh data yang diberikan akan dijamin kerahasiaannya dan hanya akan digunakan untuk keperluan penelitian.

Terimakasih atas ketersediannya,
Wassalamualaikum Warahmatullahi Wabarakatuh.

ridhomuzaikramadhan@gmail.com Switch account

Not shared

* Indicates required question

Nama *

Your answer

Usia

- 18 - 30 Tahun
- 31 - 45 Tahun
- 46 - 60 Tahun

Jenis Kelamin *

- Laki-laki
- Perempuan

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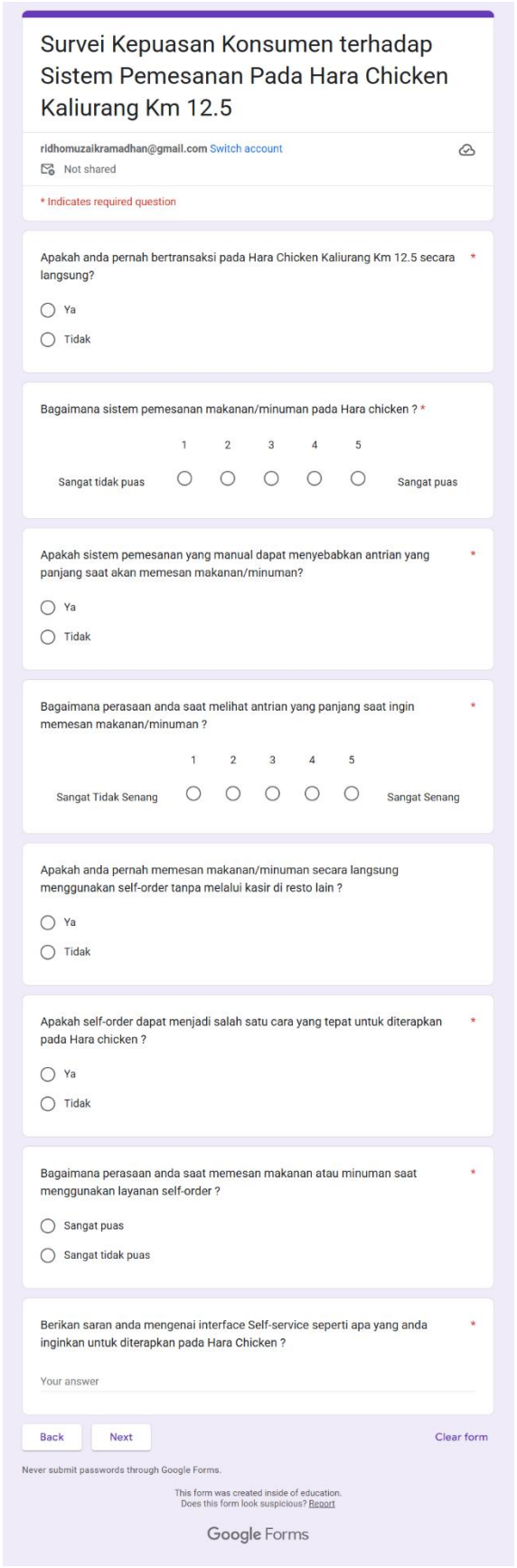

# Survei Kepuasan Konsumen terhadap Sistem Pemesanan Pada Hara Chicken Kaliurang Km 12.5

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* Indicates required question

Apakah anda pernah bertransaksi pada Hara Chicken Kaliurang Km 12.5 secara langsung? *

- Ya
- Tidak

Bagaimana sistem pemesanan makanan/minuman pada Hara chicken ? *

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Sangat tidak puas | ○ | ○ | ○ | ○ | ○ | Sangat puas |

Apakah sistem pemesanan yang manual dapat menyebabkan antrian yang panjang saat akan memesan makanan/minuman? *

- Ya
- Tidak

Bagaimana perasaan anda saat melihat antrian yang panjang saat ingin memesan makanan/minuman ? *

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| Sangat Tidak Senang | ○ | ○ | ○ | ○ | ○ | Sangat Senang |

Apakah anda pernah memesan makanan/minuman secara langsung menggunakan self-order tanpa melalui kasir di resto lain ?

- Ya
- Tidak

Apakah self-order dapat menjadi salah satu cara yang tepat untuk diterapkan pada Hara chicken ? *

- Ya
- Tidak

Bagaimana perasaan anda saat memesan makanan atau minuman saat menggunakan layanan self-order ? *

- Sangat puas
- Sangat tidak puas

Berikan saran anda mengenai interface Self-service seperti apa yang anda inginkan untuk diterapkan pada Hara Chicken ? *

Your answer

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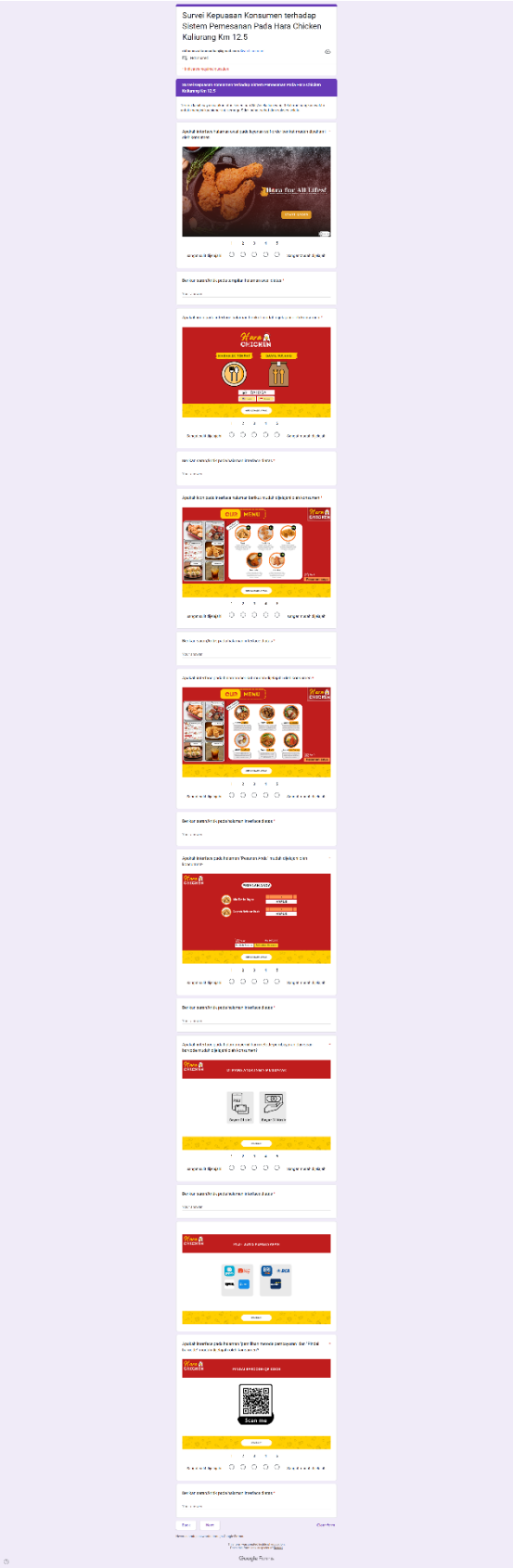
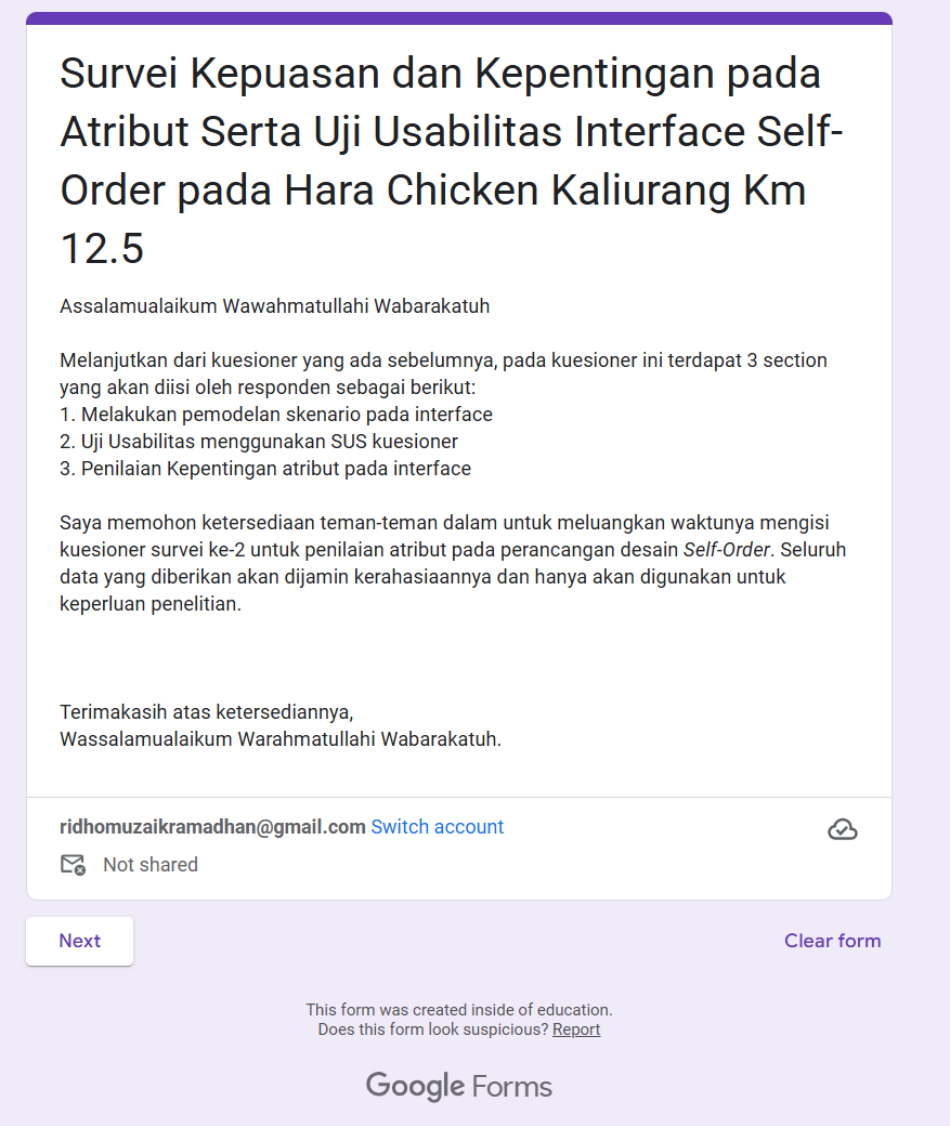

Survei Kepuasan Konsumen terhadap Sistem Pemesanan Pada Hara Chicken Kalkulang Km 12.5
Hara for All Life's!
Scan me

**B-Kuesioner Kepentingan Atribut**



Survei Kepuasan dan Kepentingan pada Atribut Serta Uji Usabilitas Interface Self-Order pada Hara Chicken Kaliurang Km 12.5

Assalamualaikum Wawahmatullahi Wabarakatuh

Melanjutkan dari kuesioner yang ada sebelumnya, pada kuesioner ini terdapat 3 section yang akan diisi oleh responden sebagai berikut:
1. Melakukan pemodelan skenario pada interface
2. Uji Usabilitas menggunakan SUS kuesioner
3. Penilaian Kepentingan atribut pada interface

Saya memohon ketersediaan teman-teman dalam untuk meluangkan waktunya mengisi kuesioner survei ke-2 untuk penilaian atribut pada perancangan desain *Self-Order*. Seluruh data yang diberikan akan dijamin kerahasiaannya dan hanya akan digunakan untuk keperluan penelitian.

Terimakasih atas ketersediannya,
Wassalamualaikum Warahmatullahi Wabarakatuh.

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# Survei Kepuasan dan Kepentingan pada Atribut Serta Uji Usabilitas Interface Self-Order pada Hara Chicken Kaliurang Km 12.5

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## Pemodelan skenario pada interface

Kategori pemodelan skenarion dibagi menjadi 3 tahap (*Easy, Medium, Hard*)

- *Easy Scenario*

1. Pilih Icon "English"
2. Ubah menjadi "Bahasa"
3. Tutup icon bahasa

- *Medium Scenario*

1. Pilih Mulai pesan
2. Ubah menjadi bahasa inggris
3. Pilih "Dine-in"
4. Pilih menu "Ala Carte"
5. Pilih menu "Start from the beginning"

- *Hard Scenario*

1. Pilih "Start Order"
2. Ubah menjadi "bahasa indonesia" lalu pilih "Bawa Pulang"
3. Pilih menu "Paket Nyuuz" lalu pilih menu "Ayam dada + Nasi"
4. Pilih tanda

   "+"

   lalu pilih "tambah pesanan"
5. Pilih menu "Minuman" lalu pilih menu "Es Teh"
6. Pilih tanda "+" lalu pilih "tambah pesanan"
7. Klik "Pesanan Saya" lalu pilih "Selesaikan Pesanan"
8. Pilih "Bayar Disini" lalu berikutnya pilih "Konfirmasi Pembayaran"

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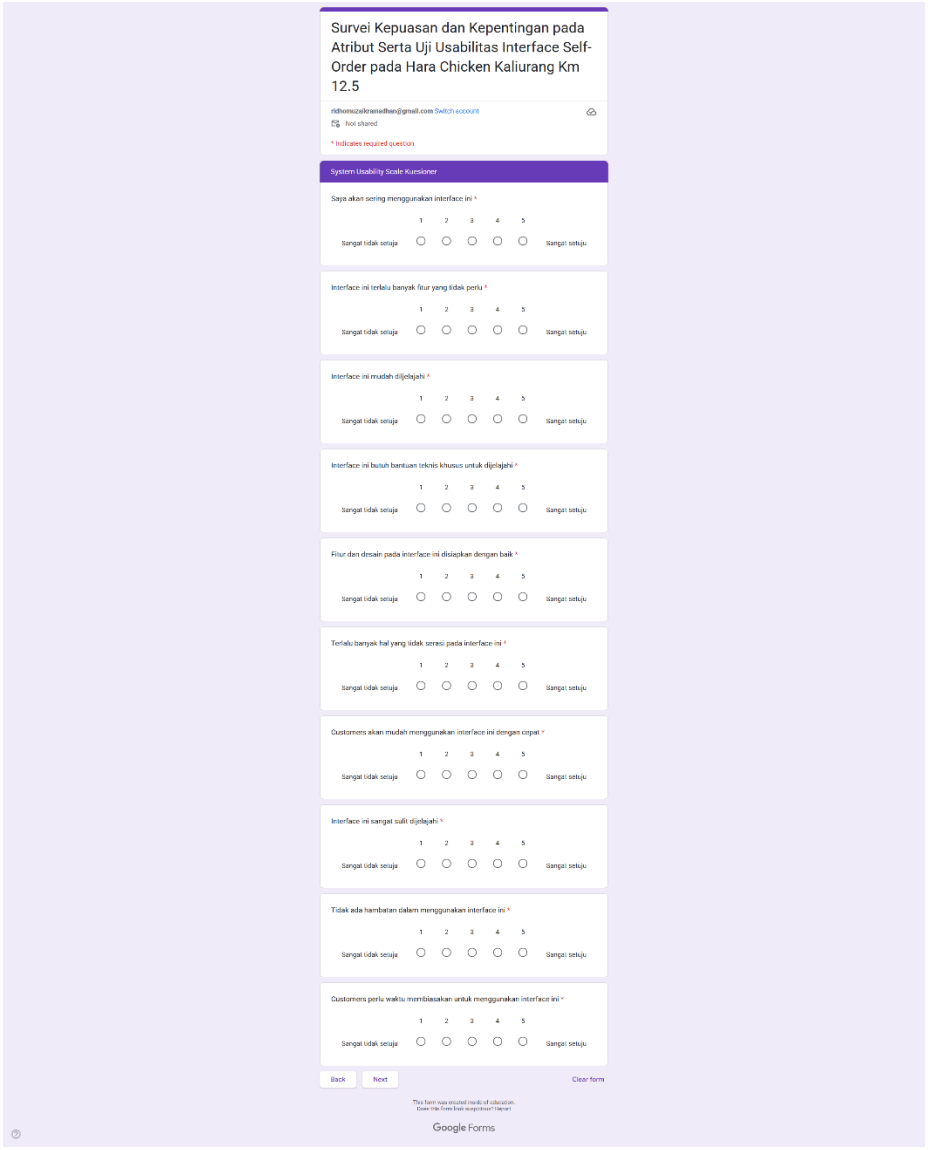

Survei Kepuasan dan Kepentingan pada Atribut Serta Uji Usabilitas Interface Self-Order pada Hara Chicken Kaliurang Km 12.5

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* Indicates required question

System Usability Scale Kuesioner

Saya akan sering menggunakan interface ini *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Interface ini terlalu banyak fitur yang tidak perlu *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Interface ini mudah dijelajahi *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Interface ini butuh bantuan teknis khusus untuk dijelajahi *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Fitur dan desain pada interface ini disiapkan dengan baik *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Terlalu banyak hal yang tidak serasi pada interface ini *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Customers akan mudah menggunakan interface ini dengan cepat *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Interface ini sangat sulit dijelajahi *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Tidak ada hambatan dalam menggunakan interface ini *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

Customers perlu waktu membiasakan untuk menggunakan interface ini *

1 2 3 4 5

Sangat tidak setuju ○ ○ ○ ○ ○ Sangat setuju

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Survei Kepuasan dan Kepentingan pada Atribut Serta Uji Usabilitas Interface Self-Order pada Hara Chicken Kaliurang Km 12.5

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* Indicates required question

Perbandingan kepuasan konsumen **sebelum** dan **sesudah** adanya Interface Self-Order

Metode Pemesanan yang mudah dilakukan oleh konsumen **sebelum** adanya Interface Self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Metode Pemesanan yang mudah dilakukan oleh konsumen **setelah** adanya Interface Self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Tampilan menu makanan **sebelum** adanya interface self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Tampilan menu makanan **setelah** adanya interface self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Kemudahan memahami daftar menu **sebelum** adanya Interface Self-order *

1 2 3 4 5

○ ○ ○ ○ ○

Kemudahan memahami daftar menu **setelah** adanya Interface Self-order *

1 2 3 4 5

○ ○ ○ ○ ○

Pemesanan makanan atau minuman yang efektif **sebelum** adanya interface self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Pemesanan makanan atau minuman yang efektif **setelah** adanya interface self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Lama waktu antri saat memesan **sebelum** adanya interface self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Lama waktu antri saat memesan **setelah** adanya interface self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Kenyamanan dalam proses pembayaran **sebelum** adanya Interface Self-order

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Kenyamanan dalam proses pembayaran **setelah** adanya Interface Self-order

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Kemungkinan pelanggan untuk kembali memesan **sebelum** adanya Interface Self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Kemungkinan pelanggan untuk kembali memesan **setelah** adanya Interface Self-order *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Secara keseluruhan bagaimana tingkat kepuasan anda terhadap system pemesanan di Hara **sebelum** adanya aplikasi *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

Secara keseluruhan bagaimana tingkat kepuasan anda terhadap system pemesanan di Hara **setelah** adanya aplikasi *

1 2 3 4 5

Sangat Tidak Puas ○ ○ ○ ○ ○ Sangat Puas

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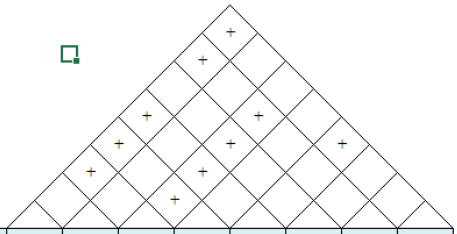
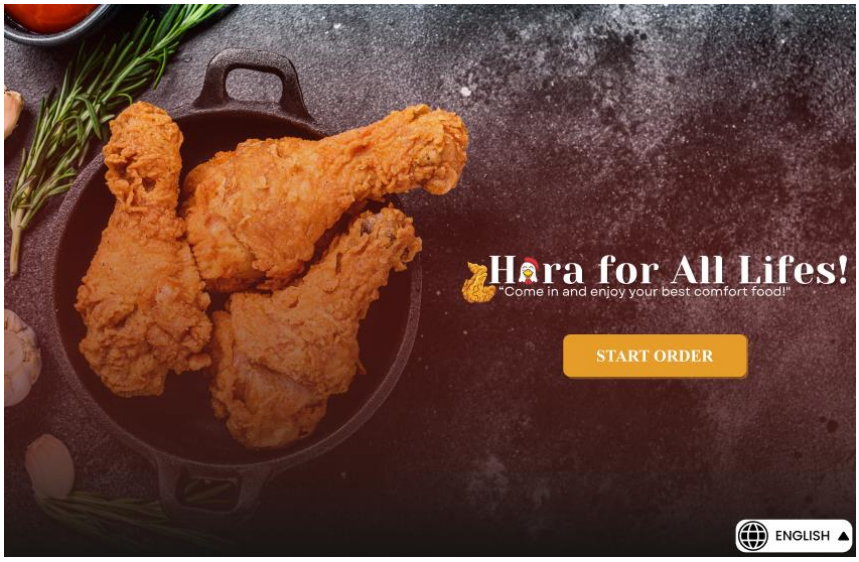
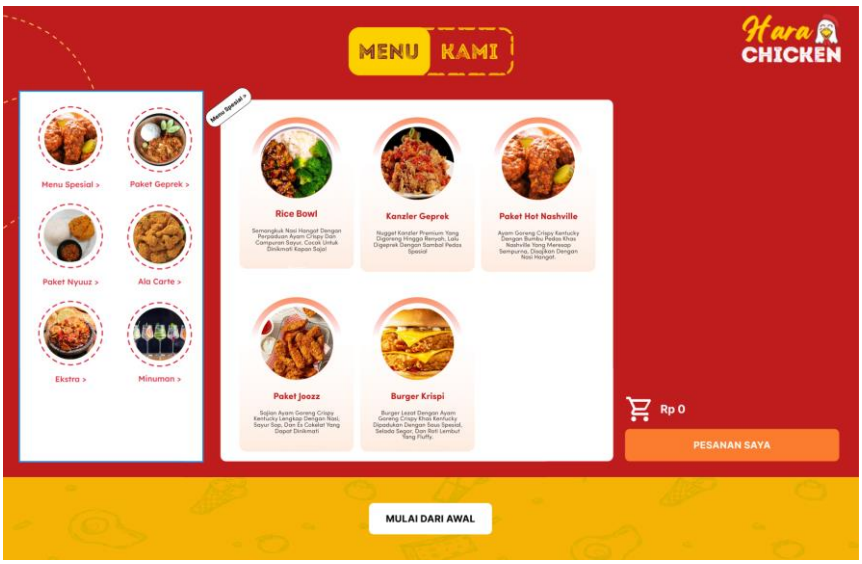
# C-House of Quality

| Correlations | |
|---|---|
| Positive | + |
| Negative | − |
| No Correlation | |

| Relationships | |
|---|---|
| Strong | ● |
| Moderate | ○ |
| Weak | ▽ |

| Direction of Improvement | |
|---|---|
| Maximize | ▲ |
| Target | ◇ |
| Minimize | ▼ |




| Row # | Weight Chart | Relative Weight | Customer Importance | Maximum Relationship | Customer Requirements (Explicit and Implicit) \ Functional Requirements | User-Friendly Navigation | Promo display | Visually Engaging Design | Menu images and prices are clearly | Appearance of food descriptions on | Simple, clear menu category display | Multi-Language Support | Order Customization |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Column # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | | | | | Direction of Improvement | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ | ▲ |
| 1 | | 26% | 4,6 | 9 | Convenience and Comfort | ● | ○ | ● | ○ | | ● | ● | ○ |
| 2 | | 26% | 4,6 | 9 | Informative | | | | ● | ● | ▽ | ○ | |
| 3 | | 25% | 4,4 | 9 | Customers Appeal | | ● | ○ | | ▽ | | ● | ● |
| 4 | | 24% | 4,3 | 9 | Features | | ○ | ▽ | ○ | ○ | ● | | ○ |
| | | | | | Target | Use large touch-friendly buttons (min. 60x60 pixels) | Apply brand colors, font and logo consistently. | High-resolution images | High contrast for readability | Max 2 lines of key descriptions | minimum image size 15( px on display | Easy language switch in max 2 touches. | Supports at least 2 languages |
| | | | | | Max Relationship | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| | | | | | Technical Importance Rating | 41,4 | 66,3 | 58,9 | 68,1 | 72,5 | 84,7 | 94,8 | 66,3 |
| | | | | | Column # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

## D-Interface Design