

# Implementing Online Ordering Systems for Small Culinary Businesses: A Case Study of Nasi Cia

Charisma Christ Anugrah<sup>1</sup>, Wirawan Istiono<sup>2,\*</sup>

<sup>1</sup> Faculty Engineering and Informatics, Department of Informatics, Universitas Multimedia Nusantara, Tangerang, Indonesia

Email: <sup>1</sup> charisma.anugrah@student.umn.ac.id, <sup>2,\*</sup> wirawan.istiono@umn.ac.id

**Abstrak**—Dalam era pertumbuhan industri kuliner dan transformasi digital, tantangan bagi startup seperti Nasi Cia dalam mengelola pesanan nasi semakin kompleks. Dalam lingkungan SMA Xaverius 1, lonjakan pengunjung sering kali mengakibatkan masalah dalam pengelolaan pesanan secara efisien. Sistem manual yang digunakan saat ini terbukti tidak cukup untuk menangani beban pesanan yang meningkat. Masalah antrian panjang juga memengaruhi pengalaman pelanggan dan dapat menyebabkan kehilangan pelanggan potensial. Pengelolaan data penjualan yang kurang juga menjadi masalah yang harus diselesaikan. Untuk mengatasi permasalahan tersebut, maka dibangun dan dirancanglah sistem pemesanan online dengan metode extreme programming. Dengan aplikasi ini, Nasi Cia beralih ke sistem pemesanan yang lebih efektif dengan tujuan meningkatkan fleksibilitas, responsivitas, dan kualitas layanan, serta mengurangi ketergantungan pada aplikasi pengantar makanan yang mahal seperti Gojek dan Grab. Hasil dan kesimpulan dari penelitian ini menunjukkan bahwa aplikasi ini sudah berhasil dibangun dengan metode pengembangan extreme programming. Aplikasi pemesanan online ini dapat diterima dengan baik yang dibuktikan sebesar 91,4% pengguna sangat setuju

**Kata Kunci:** Extreme Programming, Nasi Cia Startup, Sistem Pemesanan Online, Website Sistem

**Abstract**—In the era of culinary industry growth and digital transformation, the challenges for startups like Nasi Cia in managing rice orders are increasingly complex. In the environment of SMA Xaverius 1, the surge in visitors often results in problems in managing orders efficiently. The manual system used today proved insufficient to handle the increasing order load. The problem of long queues also affects the customer experience and can lead to losing potential customers. Lack of sales data management is also a problem that must be solved. To overcome these problems, an online ordering system was built and designed using the extreme programming method. With this application, Nasi Cia switches to a more effective ordering system with the aim of improving flexibility, responsiveness, and service quality, as well as reducing dependence on expensive food delivery applications such as Gojek and Grab. The results and conclusions of this research show that this application has been successfully built with the extreme programming development method. This online ordering application can be well received as evidenced by 91.4% of users strongly agree

**Keywords:** Extreme Programming, Nasi Cia Startup, Online Ordering System, Website System

## 1. INTRODUCTION

In the growth of the culinary industry and digital transformation, Nasi Cia as a startup that focuses on offering a variety of rice, is faced with several problems that exist in the environment of SMA Xaverius 1. Crowded visitors or orderers often pose challenges in managing orders efficiently. The manual system used today is considered overwhelmed or less able to accommodate the surge in orders. In addition, long queues are also a critical issue that can affect customer experience. Many customers are discouraged from purchasing due to these issues.

Operational effectiveness at Nasi Cia still has room for improvement. With the development of this online ordering system, it is expected to increase flexibility, responsiveness, and overall quality of development, in line with the needs that may change in the midst of dynamic market competition. Based on the results of interviews with the owner of Nasi Cia, problems also arise externally, such as food delivery applications like Gojek and Grab, which are often considered too expensive in terms of transaction fees [1], [2], becoming obstacles for Nasi Cia's growth. By adopting a web-based online ordering system, Nasi Cia hopes to reduce dependence on expensive delivery applications, providing a more economical alternative for customers while maintaining service quality [3], [4]. By adopting a website-based online ordering system, Nasi Cia hopes to reduce reliance on expensive delivery apps, providing a more economical alternative for customers, while still maintaining the quality of service [5]. Then coupled with the difficulty in processing sales data is also a focus of improvement. By implementing a website-based online ordering system, it is expected to optimize sales data management through integrated reporting and analysis features [6], [7]. Thus, business owners can make more informational and strategic decisions to develop Nasi Cia business sustainably.

The choice in making applications on the website is based on several reasons. Making applications in the form of a website is considered to provide ease of access because it is very flexible to any device [8], [9]. Web applications are also considered to provide a significant reduction in costs compared to the creation of mobile applications [10]. Then, for future maintenance, web-based applications are considered easier to maintain.

Maintenance of web-based applications does not have to wait for third-party approval and can also be done in real time, unlike the case with mobile applications which require users to reinstall the application [7], [11].

Similar research was also conducted by Che Ishak [12] where in the study an ordering application was created using KIOSK technology in fast food restaurants, from the results of the study it was found that the service rating of fast food restaurants that implemented the technology increased. The difference in this study lies in the creation of a website-based application that is specifically designed for one place to eat and also ordering can be done independently via the user's cellphone. In making an online ordering website application has several objectives including designing and building a website application that can overcome these problems and also to determine the satisfaction of users who use the application. About the uniqueness, in this website being designed with the main focus on the needs of business owners and customers of the Nasi Cia culinary restaurant. The user-friendly interface makes it easy for business owners to manage menus, orders and promotions efficiently, as well as providing customers with a comfortable and interactive purchasing experience. Features such as online ordering, food ratings, and menu recommendations, make this site an effective tool in increasing customer satisfaction and supporting restaurant business growth [13].

## 2. RESEARCH METHODS

### 2.1. Interview

Interviews were conducted with business owners, employees, and potential users system to gain a deep understanding of business dynamics and the challenges faced. The questions are carefully worded covers critical aspects, such as specific business needs, preferences users, and expectations of the new system. The interview process is not only focuses on technical aspects, but also includes qualitative elements can influence system design and development. Through this interview, It is hoped that a comprehensive picture of needs can be formed users and business interests, which are the main basis for design responsive and effective system. In this case, the interview was conducted with meet face to face with the resource person.

### 2.2. Literature Study

Literature studies are carried out to understand in depth the conceptkeys related to the development of online ordering systems, Agile methods, and the latest technology in website development. By accessing resources reliable and relevant literature sources, this project can obtain understanding of best practices, industry trends, and expert insight related domains. This literature analysis helps the project to identify common patterns, potential obstacles, and solutions that have been proven to work on similar project. By summarizing knowledge from the literature, this project can build a solid foundation of knowledge to make informed decisions informational and ensure that the implementation of this online ordering system in line with industry standards and Nasi Cia startup business needs.

#### 1) Extreme Programming

The Extreme Programming (XP) method is a software development approach that emphasizes adaptive and collaborative practices [14]. With a focus on iterative and incremental development, XP enables teams to quickly and efficiently respond to changing customer requirements. Principles such as pair programming, automated testing, and continuous integration ensure high code quality and stable functionality in each development iteration [15], [16]. The collaborative approach emphasized in XP also results in solutions that are more relevant and aligned with business needs, as stakeholders are actively involved in every stage of development [17]. Through a focus on quality, adaptability, and collaboration, XP provides a robust framework for tackling the complexities of software development [15], [18]. By engaging in adaptive planning and prioritizing features that deliver the greatest value to customers, XP allows teams to produce products quickly without compromising quality. Additionally, practices such as pair programming and continuous integration facilitate knowledge transfer and minimize development risks. Thus, XP not only enhances the efficiency of software development but also produces more responsive and relevant solutions to changing needs [19], [20]. There are four stages in creating a website application using the Extreme Programming (XP) method [14], [19]:

##### a. Planning

This stage is the initial step in system development where several planning activities are carried out, including problem identification, needs analysis, and scheduling for system development implementation. In this stage, researchers obtain a broad overview of the application desired by the client, from the desired features to the goals for creating this ordering application.

##### b. Design

The next stage is design, where modeling activities are carried out, starting from system modeling, architecture modeling, to database modeling. In this stage, the researchers successfully designed the pages of the application.

##### c. Coding

This stage involves implementing the models created into a user interface using programming languages. At this stage, the code for several pages in the online ordering application was successfully created.

d. Testing

After the coding stage is complete, system testing is conducted to identify any errors that arise while the application is running and to determine if the built system meets user needs. In this testing stage, researchers ask clients to try the online ordering application.

2) Likert Scale

The Likert Scale is a measurement tool frequently used in research and surveys to gauge the level of agreement or disagreement with specific statements [21]. Named after its creator, Rensis Likert, the Likert Scale typically consists of a series of statements or items followed by five sequential response options, ranging from "Strongly Agree" to "Strongly Disagree." Respondents are asked to select the option that best reflects their opinion or attitude towards the statement. Additionally, the Likert Scale can be customized with different numbers of response options or by using both positive and negative statements to measure respondents' attitudes towards a particular topic [22], [23].

The use of the Likert Scale enables data collectors to quantitatively measure the degree of agreement or disagreement, facilitating more detailed and in-depth data analysis. The main advantage of the Likert Scale is its flexibility in measuring attitudes or opinions on various topics or domains. Moreover, the Likert Scale is easy for respondents to understand and apply, as it only requires selecting one option that matches their opinion. However, it is important to note that interpreting results from the Likert Scale requires a careful understanding of the context and statements presented, as well as consideration of potential biases or errors in data collection.

### 2.3. Requirements Analysis

Requirements analysis begins with collecting data from interviews and findings from literature studies. This information is then carefully analyzed to identify the functional and non-functional requirements of the system, as well as to describe the involved business processes. User stories and use cases are formulated as the main guiding tools for development, mapping user desires and business interests into concrete scenarios. This process involves stakeholder engagement to ensure that system development aligns with the desired business objectives. This requirements analysis provides a strong foundation for system design and implementation, ensuring that the resulting solution will deliver added value according to the identified expectations and needs. For this web-based ordering application, several requirements are needed as the main objectives for creating the web-based application. There are two types of users who will use this website application: admin (business owner) and user (customer).

a. Admin

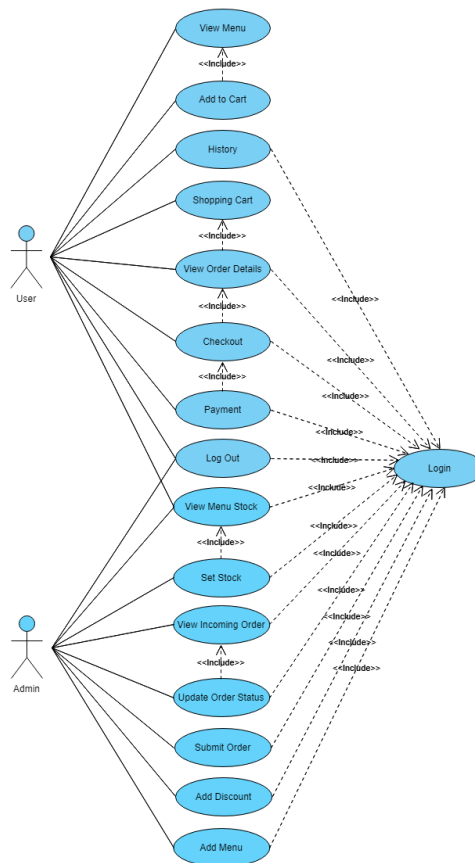
1. Admin can log in using admin username and password.
2. Admin can view paid orders.
3. Admin can set the status to "ready" when an order is completed.
4. Admin can set the status to "done" when an order is delivered to the customer.
5. Admin can update the stock quantity of the menu.
6. Admin can log out from the website application.

b. User

1. User can log in using their username and password.
2. User can create a new account using email.
3. User can view and add items to the shopping cart.
4. User can view the history of paid orders.
5. User can view the status of their paid orders.

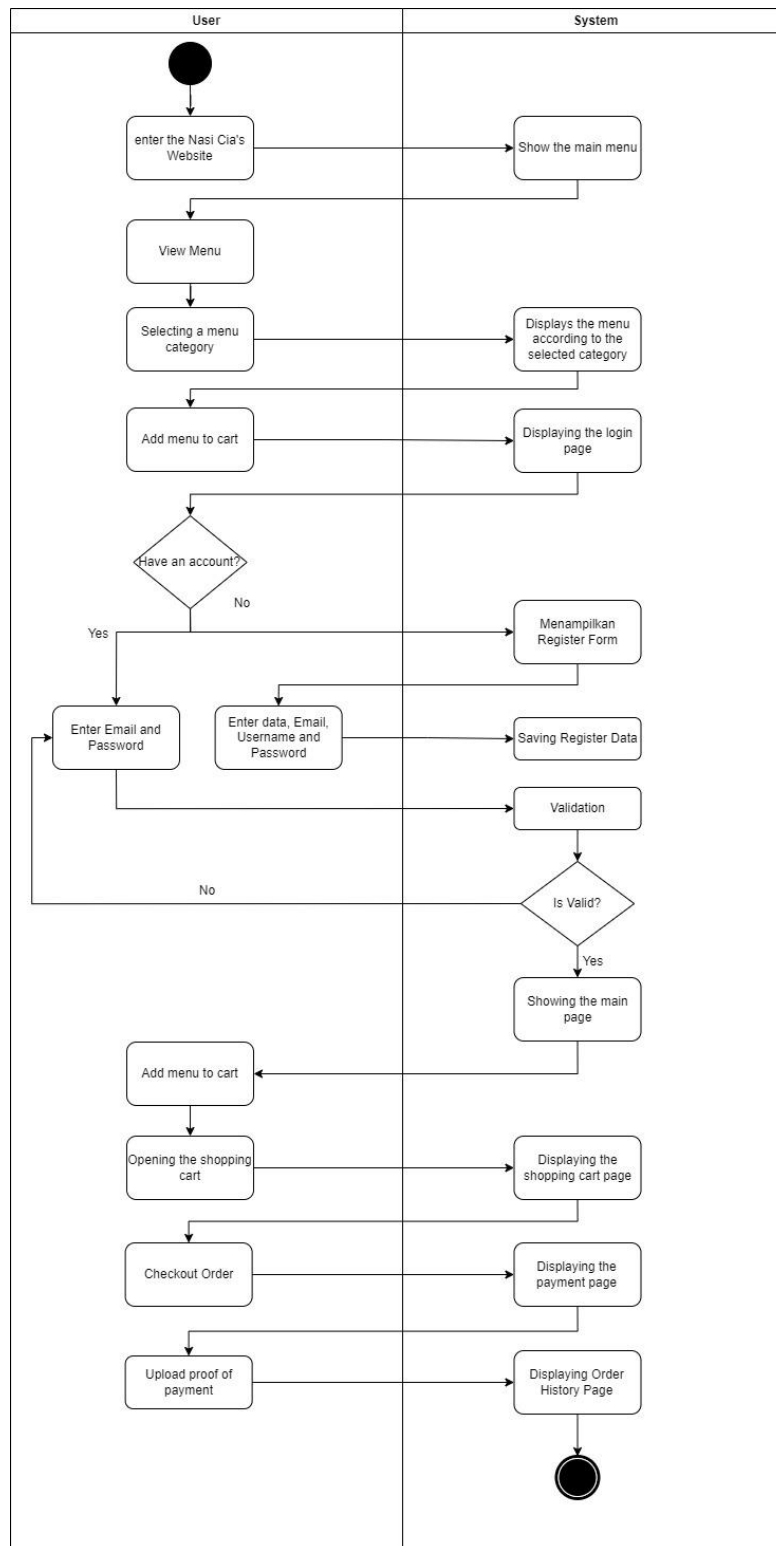
### 2.4. Website Design

This stage begins with detailing user requirements identified previously through interviews and requirements analysis. Next, wireframes and prototypes are developed as initial visual representations of the website's structure and functionality. The website design process involves developers and stakeholders to ensure that the design reflects the Nasi Cia brand identity and provides an optimal user experience. In designing the layout, a focus on easy-to-understand features/designs and clear information presentation is paramount. Additionally, the use of responsive design elements is considered to ensure good accessibility from various devices. The website design aims to create an attractive and efficient interface, thus enhancing user appeal and ensuring the successful implementation of this online ordering system in supporting the operations of the Nasi Cia startup business. The following is a series of designs for the website application, starting from the application's workflow to the website database design.



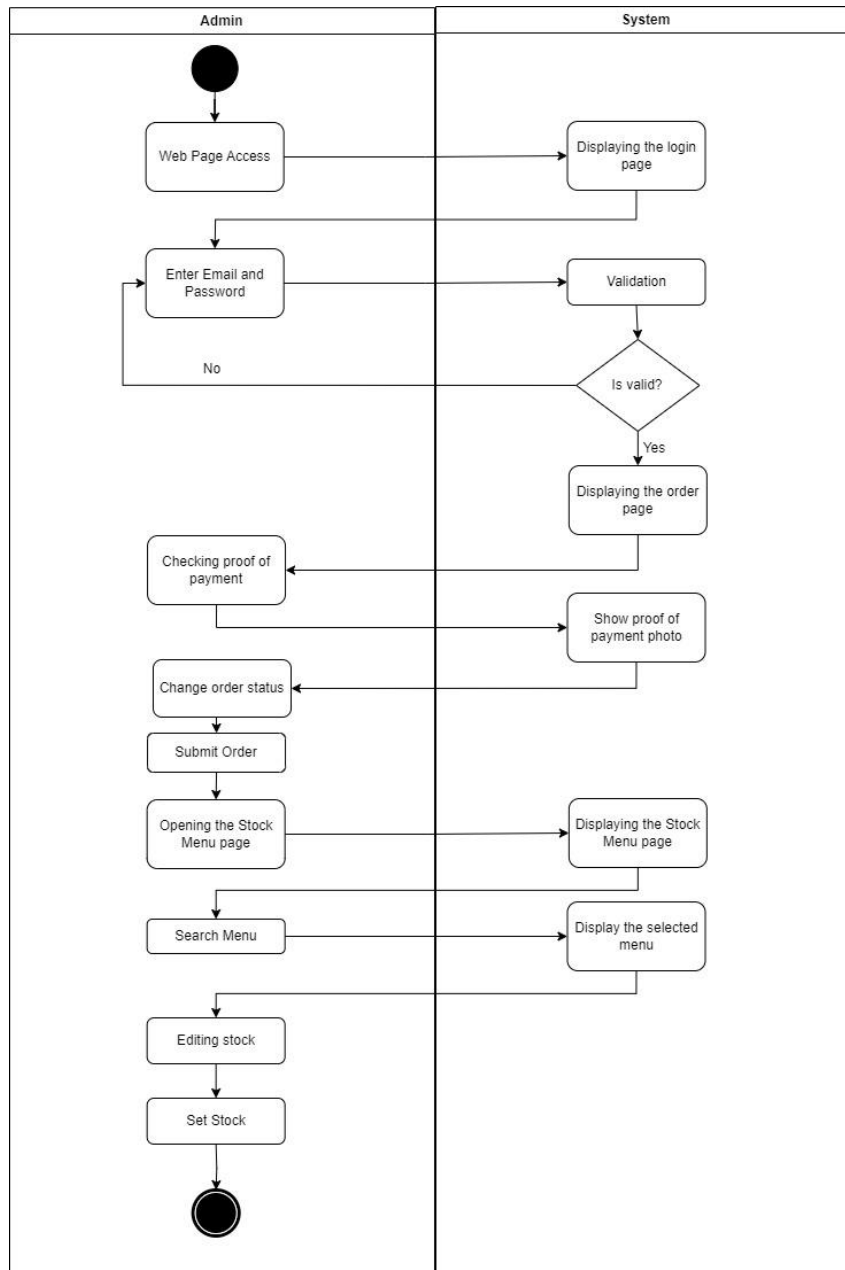
**Figure 1.** Use Case Diagram

In this system, the user has several actions available. First, users can see the existing food menu. Then, they can add food items into the shopping cart and view the list items they have added. Users can also view order history or previous transactions. Next, they can carry out the checkout process to complete their purchase, where the system will show order details. Payment processing is available to users, but for access it, they must first log in. Lastly, users can log out of their account in the system. With this use case diagram, interactions between user and system is clearly depicted, while implementation details such as form validation and payment verification are not explained in detail in this report. Then for the admin system, the admin is required to log in first to be able to access existing features. From the login, the admin can see stock menu and also edit the stock menu. Admin can also see bookings made by users directly. After seeing the order The admin can also change the manufacturing status which consists of preparing, ready, done. The admin here also has the authority to complete things orders that have been made using the "done" feature. admin can too log out of your account on this system. Admin can also add menus new and provide discounts on every desired menu. The following is a activity design for the website applications.



**Figure 2.** User’s Activity Diagram

Figure 2 explains the activity diagram for the user. Users who access the Nasi Cia website can view and select available menu categories. If users wish to add items to their shopping cart, they must first log in. If they already have an account, they can log in directly. However, if they do not have an account, they will be directed to the registration page to create a new account. Once the user's login is validated, the main page will be displayed. On this page, users can add items to the shopping cart, open the cart, and proceed with the checkout process. Subsequently, users will be asked to upload proof of payment as part of the transaction completion procedure. The following is a activity diagram of admin based on website application.



**Figure 3.** Admin’s Activity Diagram

Figure 3 explains the activity diagram for the admin. The admin accesses the web page and is prompted to log in by entering their email and password. After the admin enters these credentials, the system will validate them. If the email and password entered are valid, the order page will be displayed. On this page, the admin can check proof of payment, change the order status, and submit the order. Additionally, the admin has access to the stock menu page, where they can edit the available menu stock. Next, the admin opens the edit menu page, selects the menu to be discounted, sets the discount amount, and submits it. The system will then display the new price updated with the discount. The following is a schema diagram based on database website application.

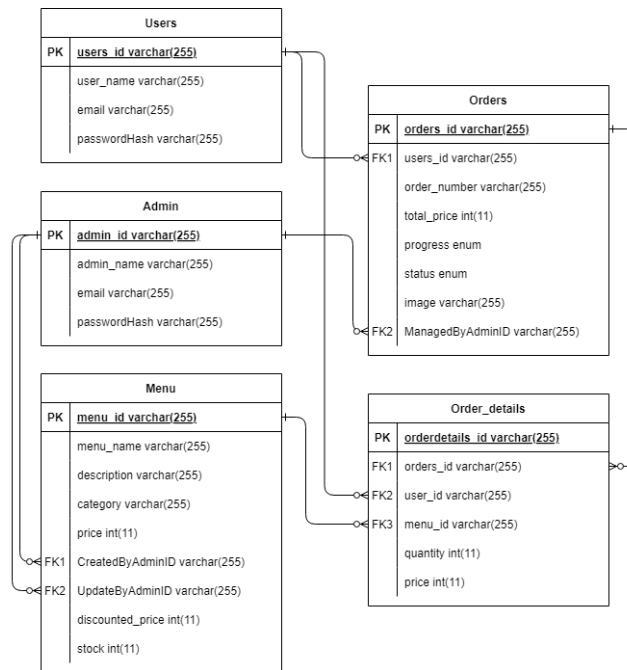


Figure 4. Schema Diagram

In this system, there are six interconnected tables that store various data. The Users table stores information about users who place orders and handle authentication, with columns for user ID, name, email, and hashed password. The admin table keeps data on admins who manage the system, including admin ID, name, email, and hashed password. The Menu table records menu items available for order, with details such as menu ID, name, description, category, price, discounted price, stock, and the admins responsible for creating and updating these items. The orders table tracks order information, including order ID, user ID, order number, total price, order progress, status, proof of payment image, and the admin managing the order. The order details table provides specifics on each order's items, including order details ID, order ID, user ID, menu ID, quantity, and price. These tables are designed to facilitate the management and operation of the web-based ordering system, ensuring data integrity and a seamless user experience.

### 2.5. Creating a Program

Program creation using the React JS programming language as front-end and for database systems using MySQL. In development In this program, ReactJS Form is not used, but a regular form. Program This also does not utilize API or HTTP requests, but relies on Laravel framework to build the functionality. PHP artisan commands server is usually used to run this program locally on localhost. Program creation is done from the front-end stage first. Design The menu in this ordering application is also inspired by the website application which is owned by the Fore agency, which is included in the website application all the menus are clearly displayed so according to the researchers they are good to use also in creating this online ordering website. After creating the front- end is completed, then from there the researcher creates the back-end part can be called the database of this online ordering system. For method development, researchers used extreme programming methods. With Applying this methodology, it is hoped that program development can be carried out by being more adaptive to changing needs, and providing better results more responsive to user expectations and Nasi Cia startup business goals.

### 2.6. User Satisfaction Testing

User satisfaction testing is carried out through a series of evaluations involving stakeholders and users. This test is carried out randomly face to face with users. Then after testing, the researcher asked for feedback obtained through a survey in the form of a Google Form questionnaire to assess performance system, user comfort, and overall satisfaction. The data collected from user satisfaction testing is used to identify areas that require repair and improvement. This process makes it possible developers to respond quickly to user input, so the system can be customized to their actual preferences and needs. The application of user satisfaction testing methodology is not just a final stage of the project but is carried out continuously throughout the development cycle. This approach aims to ensure that the final online ordering system delivers high user satisfaction levels, supports system adoption, and enhances the overall performance of the Nasi Cia startup. The testing methodology employed is the

User Acceptance Test (UAT), and for its calculation, the Likert scale method is utilized to determine the percentage results from the questionnaires.

### 2.7. Report Writing

The project report encompasses detailed information on each phase, starting from requirements analysis to user satisfaction testing. This documentation is designed to provide a comprehensive overview of the project objectives, achieved outcomes, and evaluation of project success. The report includes the preparation of an executive summary, a description of the applied methodologies, and findings and solutions discovered during the development process. Additionally, the report evaluates system performance, offers recommendations for future development, and provides a general overview of the system's impact on the operational business of the Nasi Cia startup.

The writing of the report involves collaboration among developers, stakeholders, and other relevant parties to ensure the accuracy and completeness of the information presented. By implementing a systematic report writing methodology, it is expected that this project report will serve as a valuable reference document for internal and external stakeholders. It will provide a foundation for decision-making related to improvements and further development of the Nasi Cia startup's online ordering system.

## 3. RESULTS AND DISCUSSIONS

### 3.1. Implementation Interface

The Online Ordering System for Nasi Cia is made based on a website and this system is made with the Laravel framework, React JS, TailwindCSS Styling-framework. Figure 5 to Figure 14 show the results of the Nasi Cia website system that has been built, below are some views from the Nasi Cia website.

#### a. Login Page

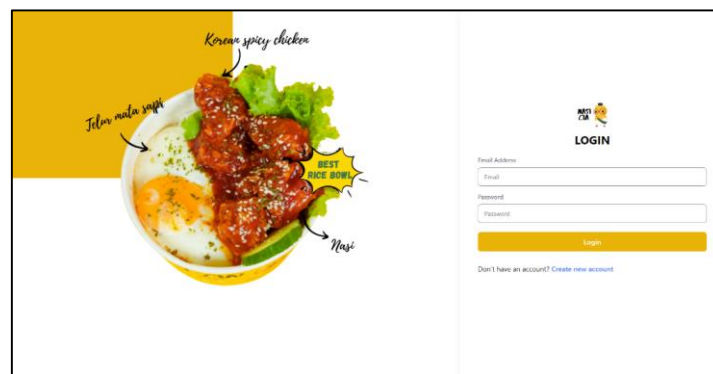


Figure 5. Login Page

Figure 5 illustrates the login page for users. Users can enter their registered email and password. For users who do not have an account yet, they can use the 'Create new account' feature.

#### b. Sign Up Page

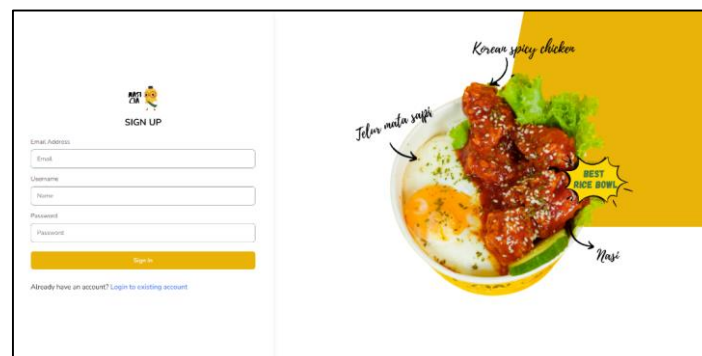


Figure 6. Sign Up Page

Figure 6 depicts the sign-up page in this online ordering application. Users can register using their existing email and set a password for their account. Additionally, users can create their own name/username which will be displayed for an order.



c. Home Page

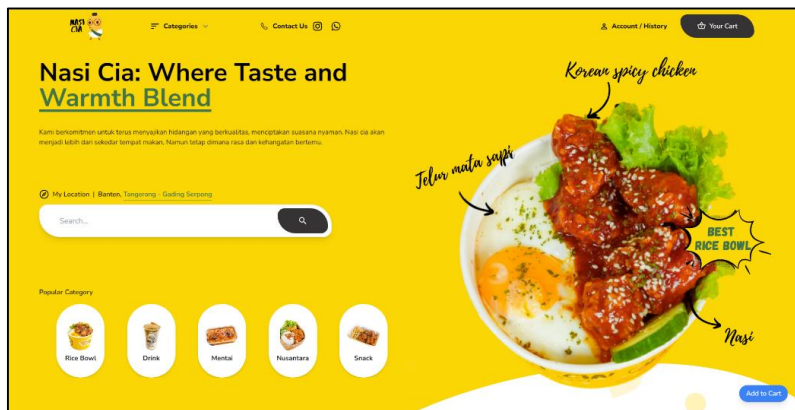


Figure 7. Home Page

Figure 7 illustrates the homepage for users once they have logged into this application. The page presents a tagline from Nasi Cia. It also displays the menu of Nasi Cia and several categories available in the Nasi Cia restaurant.

d. Menu Page

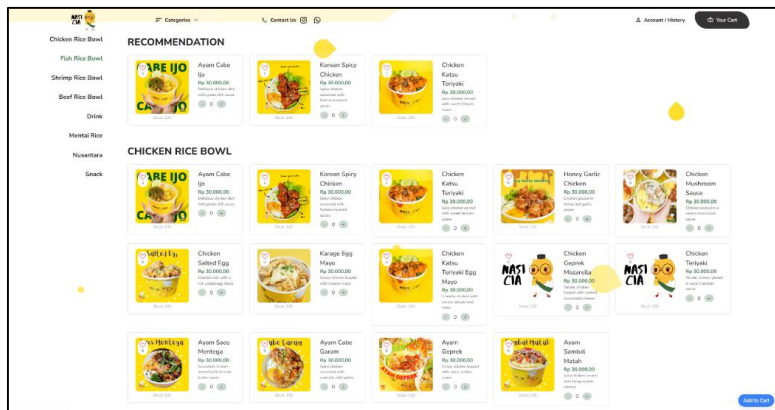


Figure 8. Menu Page

Figure 8 is also part of the user's homepage. The top section of the menu displays recommended dishes from Nasi Cia restaurant. As the user scrolls down the page, they will see the available menus. These menus are also available for ordering at the Nasi Cia restaurant. The recommended menu items are based on the number of people who like those dishes.

e. Shopping Cart

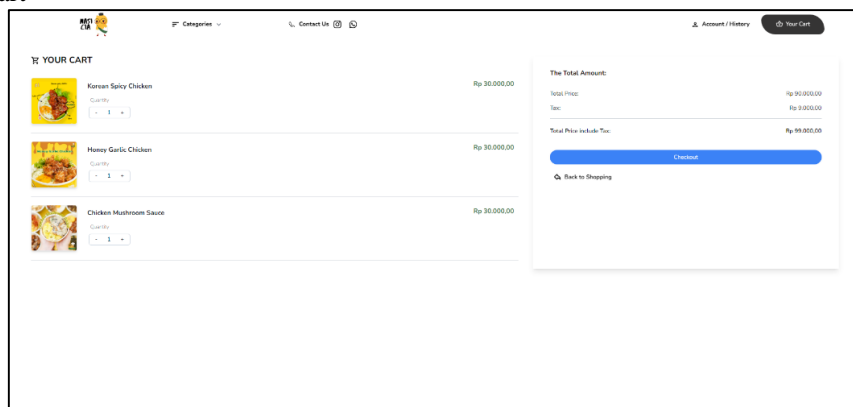


Figure 9. Shopping Cart

Figure 9 depicts the page that displays all orders added by the user. All orders added by the user are recorded on this page. This page is the final step before the user can proceed to pay for their orders.

f. History Page

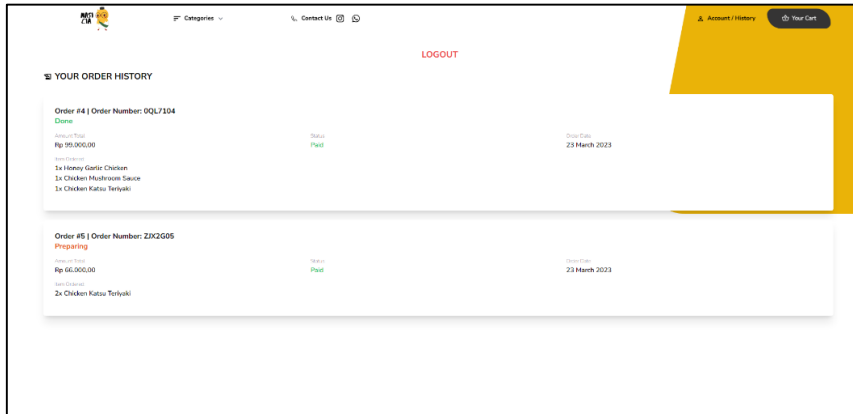


Figure 10. History Page

Figure 10 is the history page of this application. This page is useful for users who have ordered and paid, as it shows the order status. Users can review and see the history of what they have ordered and complete the payment for their orders.

g. Dashboard Admin

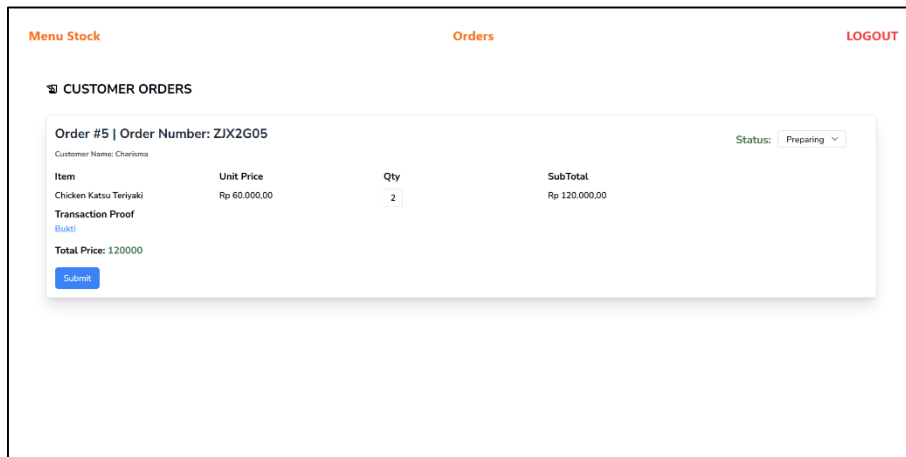


Figure 11. Dashboard Admin

Figure 11 is a page accessible only to the admin. On this page, the admin can view orders from users that have been paid for. The admin can also view photos of payment proof provided by users. From there, the admin can change the status from 'preparing' to 'ready'. The 'ready' status indicates that the order requested by the user has been prepared. Subsequently, the admin can change the status to 'done' once the user has picked up the order. This panel allows the restaurant admin to keep track of incoming orders and promptly prepare them.

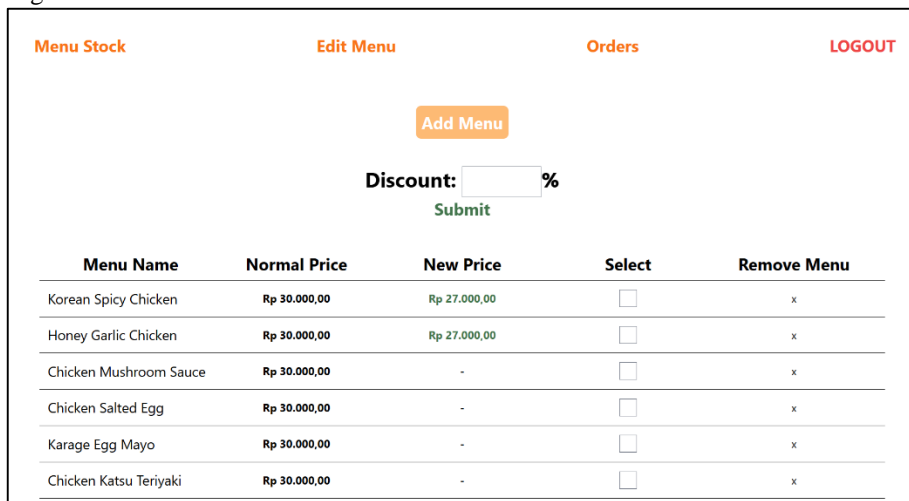
h. Set Stock Admin Page



**Figure 12.** Set Stock Admin Page

Figure 12 is a page accessible only to the admin. On this page, the admin can modify the stock quantity of items on the menu. The stock can be adjusted if the inventory of a particular menu item has been depleted.

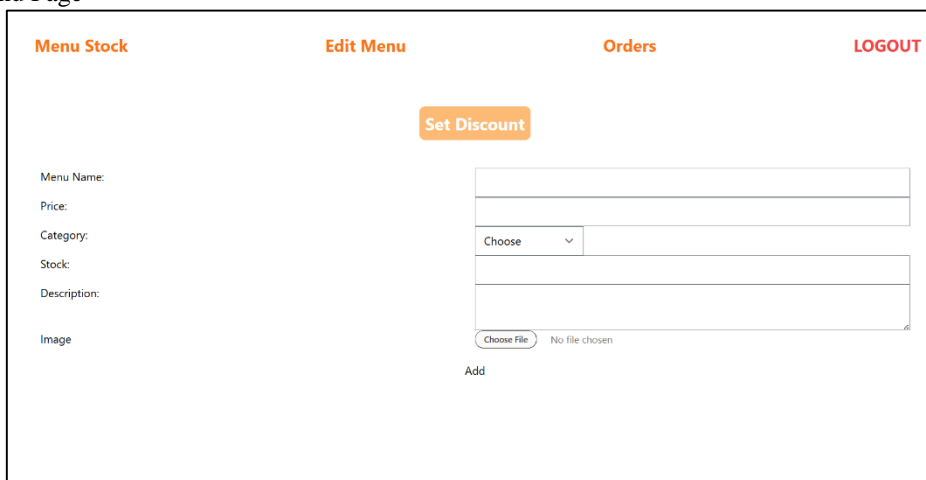
i. Discount Page



**Figure 13.** Discount Page

Figure 13 is a page accessible only to the admin. On this page, the admin can apply discounts to products and also delete existing menu items.

j. Add Menu Page



**Figure 14.** Add Menu Page

Figure 14 is a page accessible only to the admin. On this page, the admin can add new menu items to the system.

### 3.2. System Satisfaction Test Results

After completing the design of the website-based application, it is continued with the testing stage. At this stage, testing is carried out on users using the User Acceptance Test. A questionnaire has been distributed and successfully responded to by 30 users who are customers of the Nasi Cia restaurant itself. Respondents answered with options ranging from Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), to Strongly Disagree (SD). The testing is conducted manually and directly on-site. Table 1 shows a list of questions asked to 30 respondents along with the survey results.

**Table 1.** Table Questionnaire Result

No	Question	SA	A	N	D	SD
1	The online ordering program for nasi cia is easy to understand and use	15	15	0	0	0
2	The features that have been implemented are made according to your needs and expectations	17	13	0	0	0
3	The interface or appearance of the website is intuitive and easy to understand	18	11	1	0	0
4	The online ordering system has no technical errors or bugs when used	17	12	1	0	0
5	You find it easy to learn to operate the online ordering system	18	12	0	0	0
6	This system is compatible with the devices and platforms you use	18	11	1	0	0
7	This system is easy to access and use by users with different skill levels	17	12	1	0	0
8	You are satisfied with the experience of using this ordering program as a whole	18	12	1	0	0
9	You feel that this program meets your expectations as a user in terms of functionality	18	11	1	0	0
10	You feel that this program increases the efficiency of your ordering process	20	9	1	0	0

After getting the answers from the respondents as seen in Table 1, a calculation was carried out using a Likert scale on each question, where the SA category will be multiplied by five, A will be multiplied by four, N will be multiplied by four, D will be multiplied by two and SD will be multiplied by one. After the results of the Likert scale on each question, an average was carried out for all questions, to obtain the percentage results of user acceptance of the system built. From the average calculation results for each question, the user satisfaction level was found to be 91.4%, which shows that users strongly agree that the system created is very useful and helpful for placing orders at Nasi Cia.

## 4. CONCLUSION

Based on the research conducted, it can be concluded that this web-based online ordering application has been successfully designed and developed using Extreme Programming methodology. The User Acceptance Test (UAT) survey results also indicate a satisfactory outcome. After calculating the survey results using the Likert scale method, a satisfaction rate of 91.4% was achieved. These results indicate that users of this website are highly satisfied with the web-based application.

## ACKNOWLEDGEMENT

Thank you to the Universitas Multimedia Nusantara, Indonesia which has become a place for researchers to develop this journal research. Hopefully, this research can make a major contribution to the advancement of technology in Indonesia

## REFERENCES

- [1] B. M. Wibawa, G. Anggadwita, R. R. Mardhotillah, S. N. Husin, A. Z. Komara Putri, and S. L. Putri, "Gojek VS Grab: Which One Is Better in Creating Customer Satisfaction and Loyalty?," *Bus. Financ. J.*, vol. 7, no. 1, pp. 11–

- 24, 2022, doi: 10.33086/bfj.v7i1.2607.
- [2] M. Marwiyah, P. Puji Arti, and T. Hidayat, "An Analysis of Online Transportation Applications Between Gojek and Grab for Students," *Int. J. Sci. Educ. Cult. Stud.*, vol. 1, no. 1, pp. 52–64, 2022, doi: 10.58291/ijsecs.v1i1.28.
- [3] A. Yanto and N. Asiah, "Customer Relationship Management (CRM) Based On Web To Improve The Performance Of The Company," *IAIC Trans. Sustain. Digit. Innov.*, vol. 1, no. 1, pp. 32–41, 2021, doi: 10.34306/itsdi.v1i1.7.
- [4] A. Alamäki and P. Korpela, "Digital transformation and value-based selling activities: seller and buyer perspectives," *Balt. J. Manag.*, vol. 16, no. 2, pp. 298–317, 2021, doi: 10.1108/BJM-08-2020-0304.
- [5] M. Uribe and B. Feinberg, "The Effect Of Online Advertising On Consumer Buying Interest In Online Selling Applications With Customer Satisfaction As An Intervening Variable," *Med. Res. Nursing, Heal. Midwife Particip.*, vol. 01, no. 04, pp. 96–102, 2023.
- [6] M. Mandviwalla and R. Flanagan, "Small business digital transformation in the context of the pandemic," *Eur. J. Inf. Syst.*, vol. 30, no. 4, pp. 359–375, 2021, doi: 10.1080/0960085X.2021.1891004.
- [7] D. S. Wuisan and T. Handra, "Maximizing Online Marketing Strategy with Digital Advertising," *Startuppreneur Bus. Digit. (SABDA Journal)*, vol. 2, no. 1, pp. 22–30, 2023, doi: 10.33050/sabda.v2i1.275.
- [8] F. H. Gazzawe, "Comparison of websites and mobile applications for. International Conference on Technology in Education No Title," in *2017 IACB, 2017 ICE & 2017 ICTE Proceedings*, 2017.
- [9] I. Almarashdeh *et al.*, "The difference between shopping online using mobile apps and website shopping: A case study of service convenience," *Int. J. Comput. Inf. Syst. Ind. Manag. Appl.*, vol. 11, pp. 151–160, 2019.
- [10] I. Almarashdeh *et al.*, "Search Convenience and Access Convenience: The Difference Between Website Shopping and Mobile Shopping," *Adv. Intell. Syst. Comput.*, vol. 942, pp. 33–42, 2020, doi: 10.1007/978-3-030-17065-3\_4.
- [11] A. Wong, ... S. W.-J. of E. and D. using, and undefined 2016, "A cross-cohort exploratory study of a student perceptions on mobile phone-based student response system using a polling website," *Learntechlib.Org*, vol. 12, no. 3, pp. 58–78, 2016, [Online]. Available: <https://www.learntechlib.org/p/174310/>
- [12] F. A. Che Ishak, N. A. Che Lah, H. Samengon, S. F. Mohamad, and A. Z. Abu Bakar, "The Implementation of Self-Ordering Kiosks (SOKs): Investigating the Challenges in Fast Food Restaurants," *Int. J. Acad. Res. Bus. Soc. Sci.*, vol. 11, no. 10, 2021, doi: 10.6007/ijarbss/v11-i10/11491.
- [13] S. Chou and H. Min, "Evaluating Web Site Performance In Internet-Based Selling From A Business Value Perspective," *Underst. client 's Commit. Bus. Process outsourcing relationships*, pp. 227–228, 2012.
- [14] A. Akhtar, B. Bakhtawar, and S. Akhtar, "Extreme Programming Vs Scrum: a Comparison of Agile Models," *Int. J. Technol. Innov. Manag.*, vol. 2, no. 2, pp. 80–96, 2022, doi: 10.54489/ijtim.v2i2.77.
- [15] A. Shrivastava, I. Jaggi, N. Katoch, D. Gupta, and S. Gupta, "A Systematic Review on Extreme Programming," *J. Phys. Conf. Ser.*, vol. 1969, no. 1, 2021, doi: 10.1088/1742-6596/1969/1/012046.
- [16] D. J. C. Sihombing, "Analysis and development of the ProTrack application: construction timeline management using Extreme Programming Methodology," *J. Mantik*, vol. 7, no. 2, pp. 2685–4236, 2023.
- [17] W. Istiono, "Efficient Thesis Management : A Study of Universitas Multimedia Nusantara ' s Application Development Using Extreme Programming Principles," vol. 6, no. 2, pp. 639–651, 2024, doi: 10.51519/journalisi.v6i2.701.
- [18] C. Fagarasan, O. Popa, A. Pisla, and C. Cristea, "Agile, waterfall and iterative approach in information technology projects," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 1169, no. 1, p. 012025, 2021, doi: 10.1088/1757-899x/1169/1/012025.
- [19] M. Ibrahim *et al.*, "Presenting and Evaluating Scaled Extreme Programming Process Model," *Int. J. Adv. Comput. Sci. Appl.*, vol. 11, no. 11, pp. 163–171, 2020, doi: 10.14569/IJACSA.2020.0111121.
- [20] W. Istiono and J. Sampurna, "Notification information system android-based for spreading school information," *Telkonnika (Telecommunication Comput. Electron. Control)*, vol. 19, no. 3, pp. 747–753, 2021, doi: 10.12928/TELKOMNIKA.v19i3.18326.
- [21] I. Kusmaryono, D. Wijayanti, and H. R. Maharani, "Number of Response Options, Reliability, Validity, and Potential Bias in the Use of the Likert Scale Education and Social Science Research: A Literature Review," *Int. J. Educ. Methodol.*, vol. 8, no. 4, pp. 625–637, 2022, doi: 10.12973/ijem.8.4.625.
- [22] L. South, D. Saffo, O. Vitek, C. Dunne, and M. A. Borkin, "Effective Use of Likert Scales in Visualization Evaluations: A Systematic Review," *Comput. Graph. Forum*, vol. 41, no. 3, pp. 43–55, 2022, doi: 10.1111/cgf.14521.

- [23] J. Mumu, B. Tanujaya, R. Charitas, and I. Prahmana, "Likert Scale in Social Sciences Research: Problems and Difficulties," *FWU J. Soc. Sci.*, vol. 16, no. 4, pp. 89–101, 2022, doi: 10.51709/19951272/Winter2022/7.