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Development of Digitalization Strategies for Small and Medium-Sized Enterprises (SMEs) in Layer Poultry Farming in Baolan District, Tolitoli Regency

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ABSTRACT

This research was conducted to ensure that entrepreneurs engaged in egg-laying chicken farming in Tolitoli Regency, particularly in Baolan District, can effectively implement digital marketing strategies based on websites, which constitute the primary outcome of this study. An examination of the Tolitoli Regency area reveals its status as the outermost region in Indonesia, presenting a strategic opportunity for the local government to enhance the marketing efforts of SMEs. This endeavour is crucial for improving the community's economy and supporting the government's initiatives aimed at optimising the digital economy through focused research. Moreover, it represents a significant step towards addressing the development of Industrial Revolution 5.0 in Indonesia's outermost communities. This research aims to design a digital marketing strategy for the IKM website, explicitly targeting egg-laying chicken farms in Baolan District, Tolitoli Regency. The investigation was conducted directly at one of the Zoeya Berkah laying hen farms in Baolan District. The research employs the waterfall method, which entails analysis, design, development, and testing. The outcome of this research is the creation of an online sales platform for Zoeya Berkah laying hens, presented as a website that streamlines sales and marketing processes. Named Zoeya Online, this platform serves as a medium connecting small and medium-sized enterprises (SMEs) with consumers. This Business-to-Customer website offers customisation features that enable users to tailor products to their preferences, along with a purchase history that simplifies transaction tracking. Additionally, the website provides information regarding the benefits of our products and the various types of eggs available. With this platform, consumers find it easier to purchase products and are increasingly inclined to buy eggs from the Zoeya Berkah laying hen business, particularly those residing outside Baolan District.

Keywords: Digitalization, SMEs, strategy planning, animal husbandry, websites.

INTRODUCTION

As the world's fourth most populous country, Indonesia is a developing nation facing numerous economic challenges. Small and Medium Enterprises (SMEs) play a crucial role in fostering economic growth, creating jobs, and enhancing community welfare. (Rosandiena and Indrojarwo, 2018). The importance of digitalisation acts as a driver for SMEs in Indonesia. Leveraging the digital economy can increase SME income, make them more innovative and competitive, and encourage communities to adapt to the Industrial Revolution 5.0 in Indonesia. (BPIPI and Kemenperin, 2023)(Fridolin, 2023). One of the small and medium-sized enterprises (SMEs) with potential for development in Indonesia is layer poultry farming in the livestock sub-sector (Tri Agustin et al., 2023). Enhancing the local economy and supporting government efforts to optimise the digital economy, especially in Indonesia's outermost regions, are steps that require This attention.(Miftahuljannah and Suharso, 2023). The production of laying hens in Baolan District, Tolitoli Regency, reaches 48.18 tons, with an average monthly output of 4 tons. The most significant production comes from the Zoeya Berkah laying hen farm, averaging 1.5 tons per month. While this farm has strong production capacity, its marketing strategy remains conventional, relying on sales to stores and kiosks within Baolan District. Therefore, it is essential to develop a plan to expand the market reach of laying hen farms beyond Baolan District, Tolitoli Regency, through digital marketing. (BPS Tolitoli, 2023) (Satria, Marhayani, 2023). To develop a digital marketing strategy centered on websites, it is essential to design a platform that serves as both a marketing and promotional medium, as well as a management information system, to reach consumers outside Baolan District, Tolitoli Regency. (Mahardika, 2015)(Serli et al., 2023)(Nurhasanah et al., 2022).

Tolitoli Regency spans an area of 3,700.54 km², comprising 10 districts. Baolan District, as the regency capital, has an average distance of 149 km between districts.

This condition poses a significant challenge for layer poultry farmers in Baolan District, Tolitoli Regency, particularly in terms of marketing and promoting their products (BPS Tolitoli, 2023). Promotion is a key factor that poultry farmers must optimise to increase demand. Therefore, a digital marketing strategy, known as e-marketing, needs to be designed to boost the income of layer poultry farmers in Baolan District, Tolitoli Regency. Previous studies indicate that layer poultry farmers in Baolan District, Tolitoli Regency, do not currently utilise a website-based digital marketing platform as part of their marketing strategy (Satria and Marhayani, 2023; Serli et al., 2023). Based on the background described, the authors intend to conduct research titled "Designing Digitalisation Strategies for Small and Medium Enterprises (SMEs) in Layer Poultry Farming in Baolan District, Tolitoli Regency." This study employs the waterfall method, which includes analysis, design, development, and testing phases. The waterfall method is a linear approach that minimises errors with structured processes and clear final outputs, making it suitable for software development. It is hoped that this research can provide a digitalisation design for layer poultry farmers in Baolan District, Tolitoli Regency. vide a digitalization design for layer poultry farmers in Baolan District, Tolitoli Regency.

MATERIALS AND METHODS

This research employs a linear or sequential approach using the Waterfall Method. The research process is conducted meticulously and carefully through a structured workflow. The first stage involves understanding the data sources to be used in the research through observations and interviews. The second stage is a literature review. After completing the literature review, the Waterfall system is developed.

The initial stage of the Waterfall development process commences with analysis, during which the researcher identifies the business needs and digital marketing objectives of the layer chicken farming business. In this regard, direct observation was conducted at one of the layer chicken farms, Zoeya Berkah, which was previously analysed in prior research, to evaluate how thoroughly the requirements document addresses all essential aspects of the business, users, and stakeholder objectives. (Satria, Marhayani, 2023) (Pressman, 2014). The research stages can be seen in the diagram below:

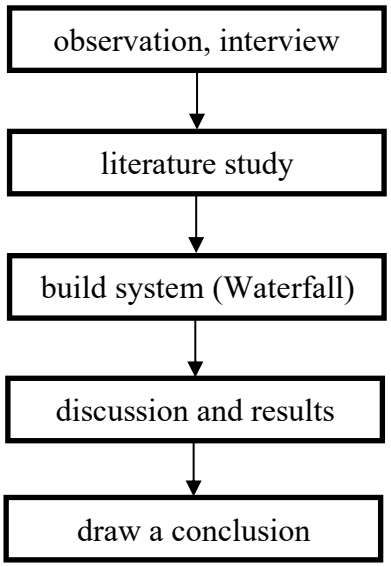

Figure 1. Flow of Research Stages

The next stage, Design and Development, involves creating the system architecture for the website and defining the technical specifications. This includes selecting technologies, structuring the database, integrating the system, and outlining the steps for development, code testing, and system integration, to ensure that the final product meets the website's requirements.

Once the Analysis, Design, and Development stages are complete, the next phase is Testing. This stage evaluates the performance and user experience of the resulting website to minimise errors and ensure the outcomes align with the expected goals.

The research flowchart is illustrated in the image below, showing that the outcomes meet the expected goals.(Yudianto et al., 2021). The research flowchart can be seen in the image below:

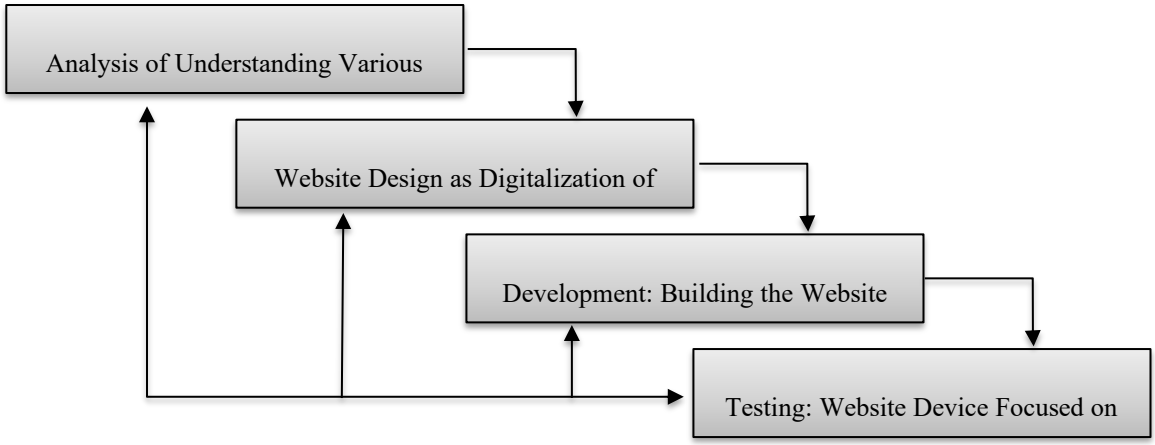

Figure 2. Waterfall Method Flow Chart

The diagram above provides an overview of the digitalisation strategy design for the marketing system of the layer chicken farming business in Baolan District, Tolitoli Regency. This research aims to encourage layer chicken farming entrepreneurs to adopt a digital marketing system, utilising a website, to increase revenue.

RESULTS AND DISCUSSION

Designing the System Activity Diagram

Determining the Digitalization Strategy Design for Small and Medium Enterprises (SMEs) in Layer Chicken Farming, Baolan District, Tolitoli Regency, utilising the Waterfall method through analysis, design, development, and testing. The Waterfall method in developing a digital marketing platform for layer chicken farming includes needs analysis, system design, software development, and testing. (Edison. et al., 2021). In the website marketing system, marketing is conducted directly with one of the entrepreneurs, Zoeya Berkah Layer Chicken Farm in Baolan District. SMEs are an economic activity that fosters conducive business environments and job creation, thereby improving community welfare. (Rosandiena and Indrojarwo, 2018). To achieve this design, the researcher involves a third party (Partner) from CV. MAHADEV INDONESIA is the service provider for building the website-based system.

After analysing and understanding the data sources to be used in the research through observation, interviews, and literature studies with Zoeya Berkah Layer Chicken Farm in Baolan District, the researcher needs to understand what will constitute the Use Case Diagram as the initial database. This will serve as the foundation for developing the system, enabling the third party (Partner) to create an Activity Diagram and Design Sketch to conceptualize the website for easy use by the Zoeya Berkah Layer Chicken Farm entrepreneur. The buying and selling concept is also accountable, as consumers are directly redirected to the business owner's WhatsApp number. The database that needs to be designed for the marketing system is as follows:

1. Information about Zoeya Berkah Layer Chicken Farm, including its vision and mission, the farm's background, and the products it markets.
2. Admin access data to provide information to the public and consumers, especially those in the district who may not have easy access to information.

Once these requirements are met, the database performance and user experience should be tested to minimise errors and ensure that the outcomes meet expectations.

After acquiring the necessary database, a meeting will be held with the third party (Partner) and Zoeya Berkah Layer Chicken Farm, the user, to discuss the conceptual design of the website being constructed. The initial steps in building a use case diagram involve identifying system actors, defining use cases, establishing relationships between actors and use cases, specifying system boundaries, and documenting the diagram. The use case diagram is part of the design employed in functional requirements, representing the interaction between users and the system at Zoeya Berkah Layer Chicken Farm. The use case diagram is presented in the image below: The use case diagram is presented in the image below:

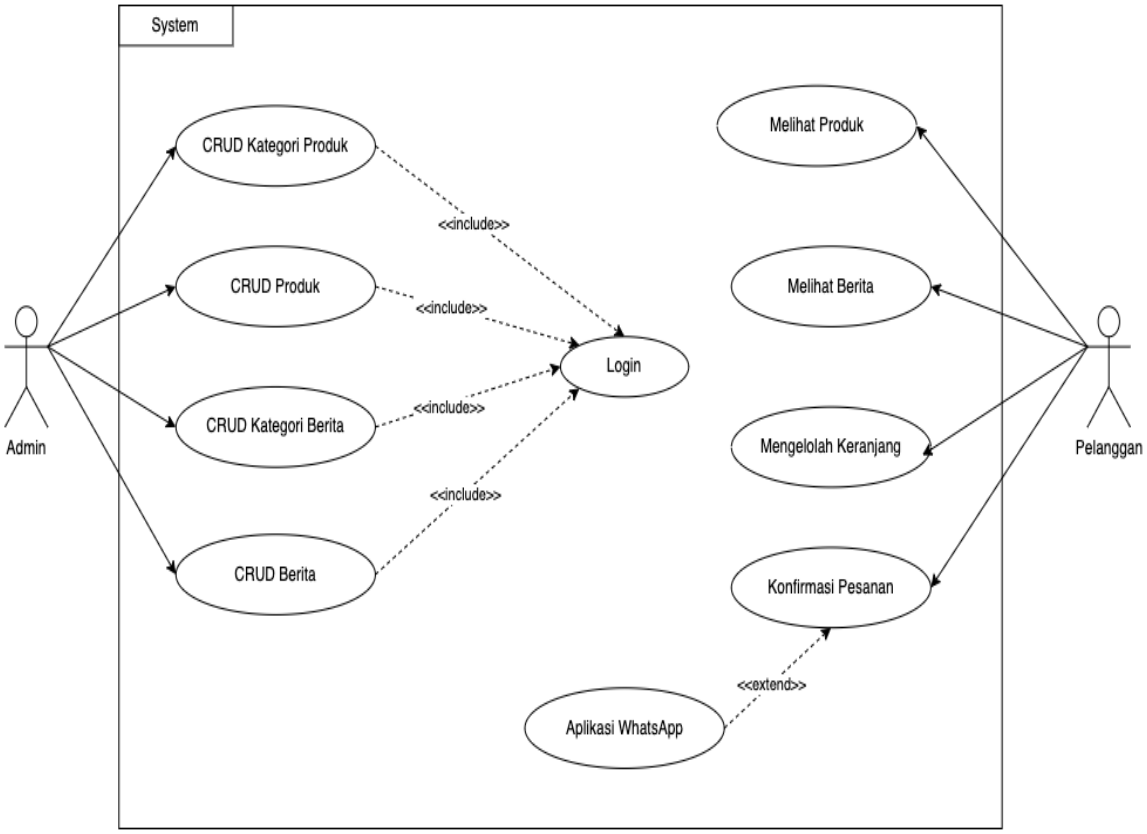

Figure 3. Use Case Diagram for Chicken Farming Zoeya Berkah

Activity Diagram

An Activity Diagram is a visual representation of the flow of activities or tasks within a system, detailing how operations are performed and how various components of the system interact in a sequence. It is commonly used to model workflows or processes in a system, such as those in a layer chicken farming business. The diagram consists of several key elements, including start and end points, which mark the initiation and conclusion of a process. Activities, represented by rounded rectangles, denote tasks or actions, such as feeding or egg collection in poultry farming. Transitions, indicated by arrows, show the movement from one activity to the next. Decision nodes, depicted as diamonds, signify points where choices are made, leading to different paths based on specific conditions. Forks and joins divide the flow into parallel tasks and then combine them. Swimlanes can be included to organize tasks by different actors, such as farm workers, administrators, or customers. Overall, the Activity Diagram provides a clear and structured way to understand the flow of processes, improving clarity and communication within the poultry farming system.

From the Activity Diagram above, the process begins with managing sales, where the admin enters an email and password to gain access. The admin can then add, input, and edit categories as needed to provide sales information to consumers of Zoeya Berkah laying hens, including news categories and product categories. The Activity Diagram is presented in the image below:

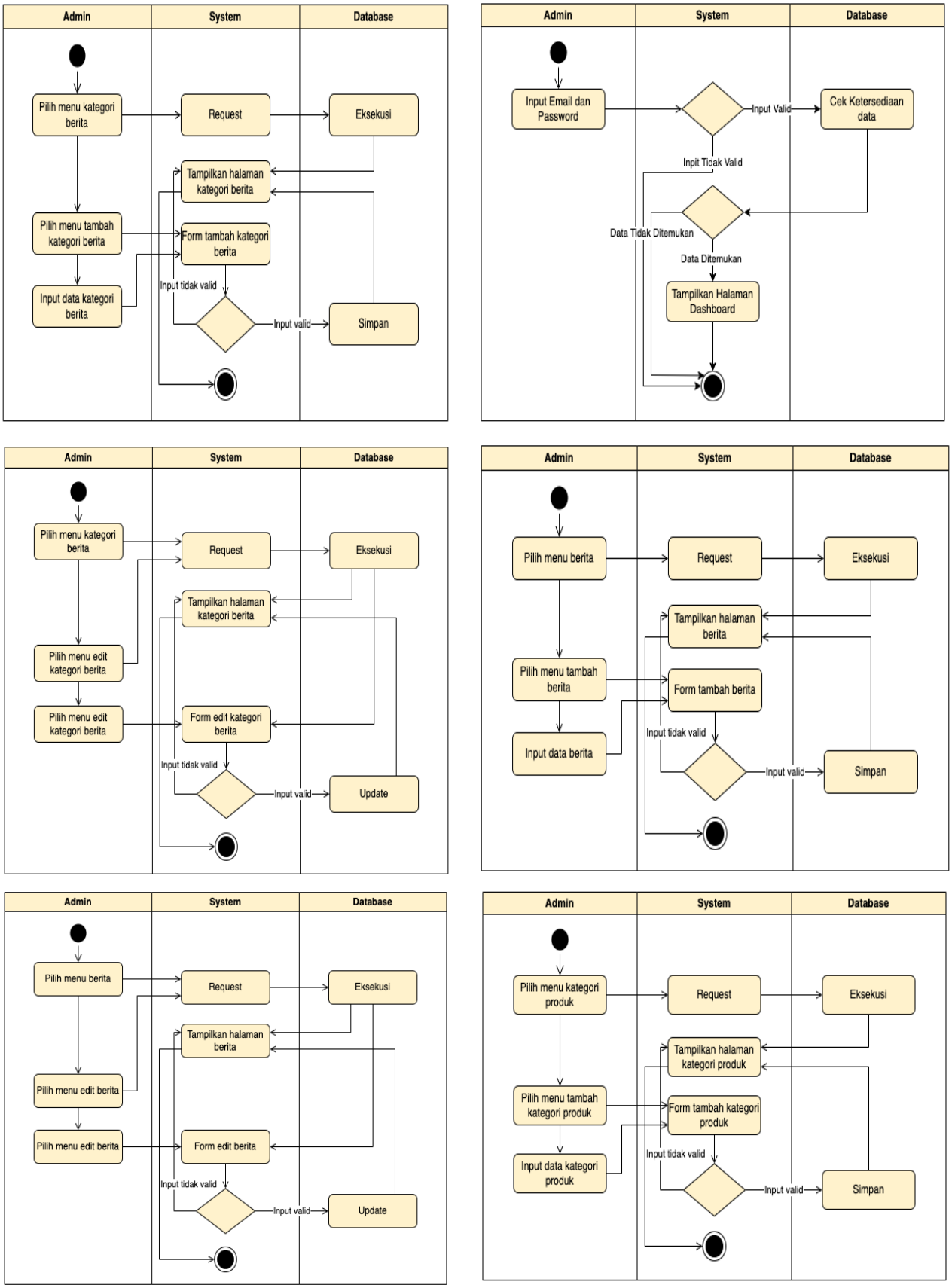

Figure 4. Activity Diagram for Chicken Farming Zoeya Berkah

System Design Sketching

System Design Sketching is an essential part of the system development process, where the overall structure, user interface, and key components of the system are visually outlined. This sketch serves as a preliminary blueprint, helping to plan the system's functionality and user interaction. In the case of a layer chicken farming website, the design sketch would include elements such as the homepage layout, which displays farm information and products, and the navigation structure, which ensures easy access to various sections, including product listings and order placement. Interactive features, such as contact forms or direct communication options like WhatsApp, are also considered. Additionally, the sketch would detail the admin interface for managing farm information and orders, as well as ensure mobile responsiveness to make the website accessible on both desktop and mobile devices. This design sketch provides a clear and organized visual representation of how the system will work, helping developers and stakeholders align on the goals and expectations for the website before it is built. The System Design Sketching is presented in the image below:

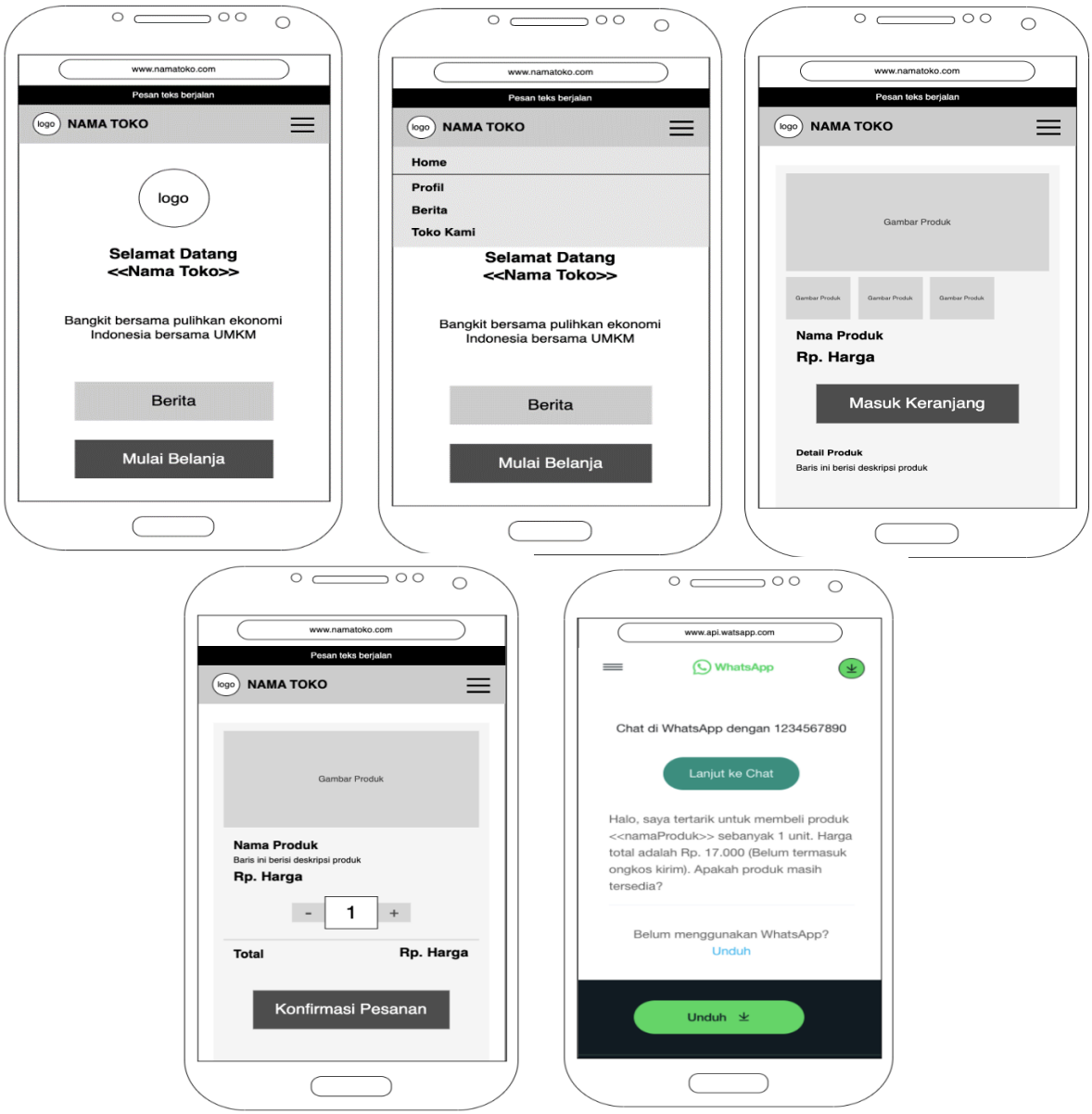

Figure 5. Activity Diagram for Chicken Farming Zoeya Berkah

Designing the System Activity Diagram

In this phase, the activity diagram of the system is designed to visually represent the flow of processes and activities within the system. The activity diagram illustrates how different components of the system interact, displaying the sequence of actions or tasks carried out by users or the system itself. This diagram helps in understanding the workflow and identifying any potential bottlenecks or inefficiencies in the process. By mapping out the activities, the diagram provides a clear view of the system's operations and serves as a foundation for further development and optimization. The website system for Zoeya Berkah Layer Chicken Farm's sales was developed using the PHP programming language and MySQL as the database, with the domain https://zoeya.online/ for consumer access and https://zoeya.online/manager for access by the owner of Zoeya Berkah Layer Chicken Farm. The System View Results Website with the domain https://zoeya.online/ is presented in the image below:

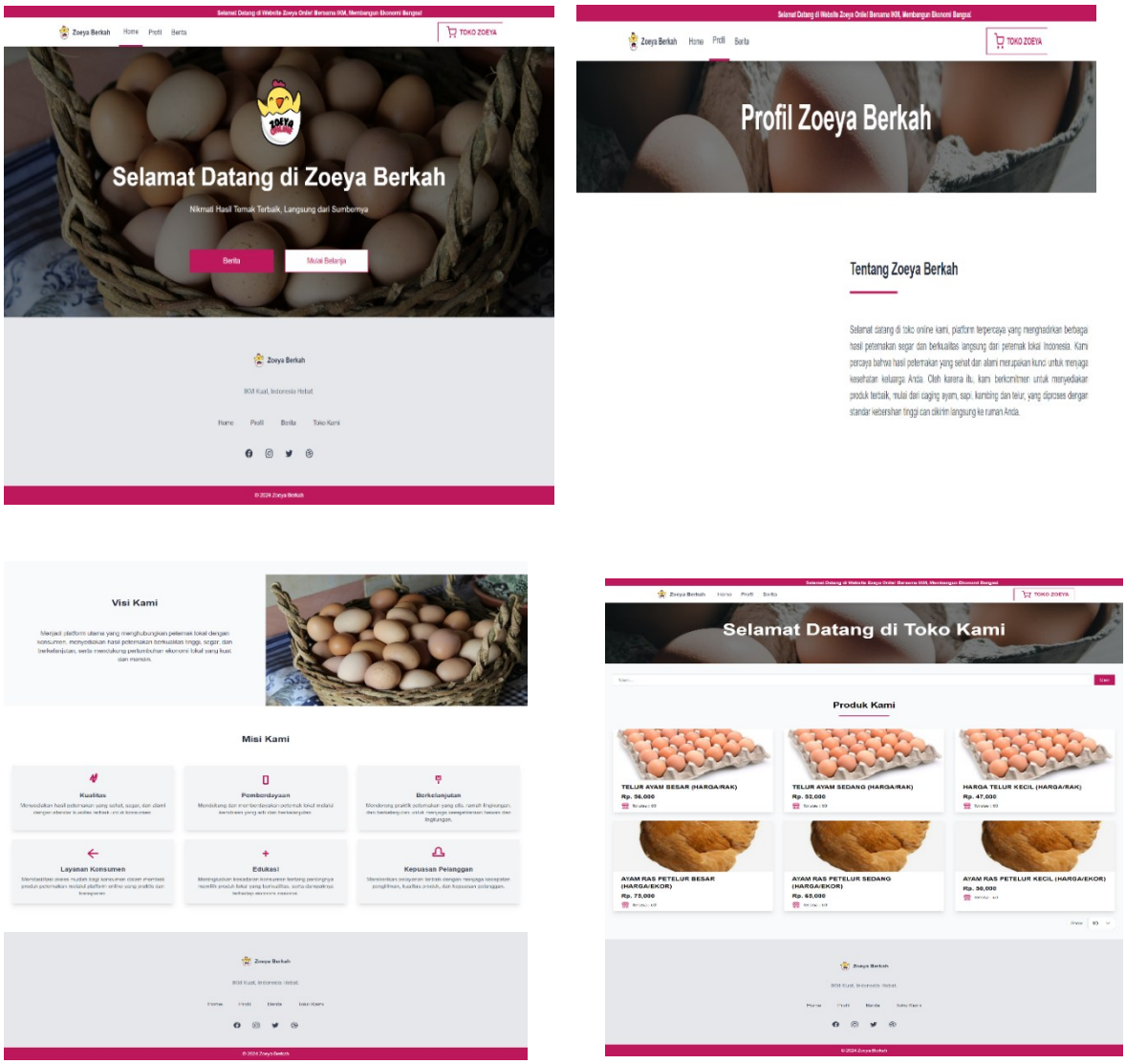

Figure 6. System View Results Website with the domain https://zoeya.online/ for Chicken Farming Zoeya Berkah

This page will appear when the admin has not logged into the website https://zoeya.online/manager. This section contains a login form with fields for email and password, along with a login button at the bottom. The login page can be seen in the illustration below:

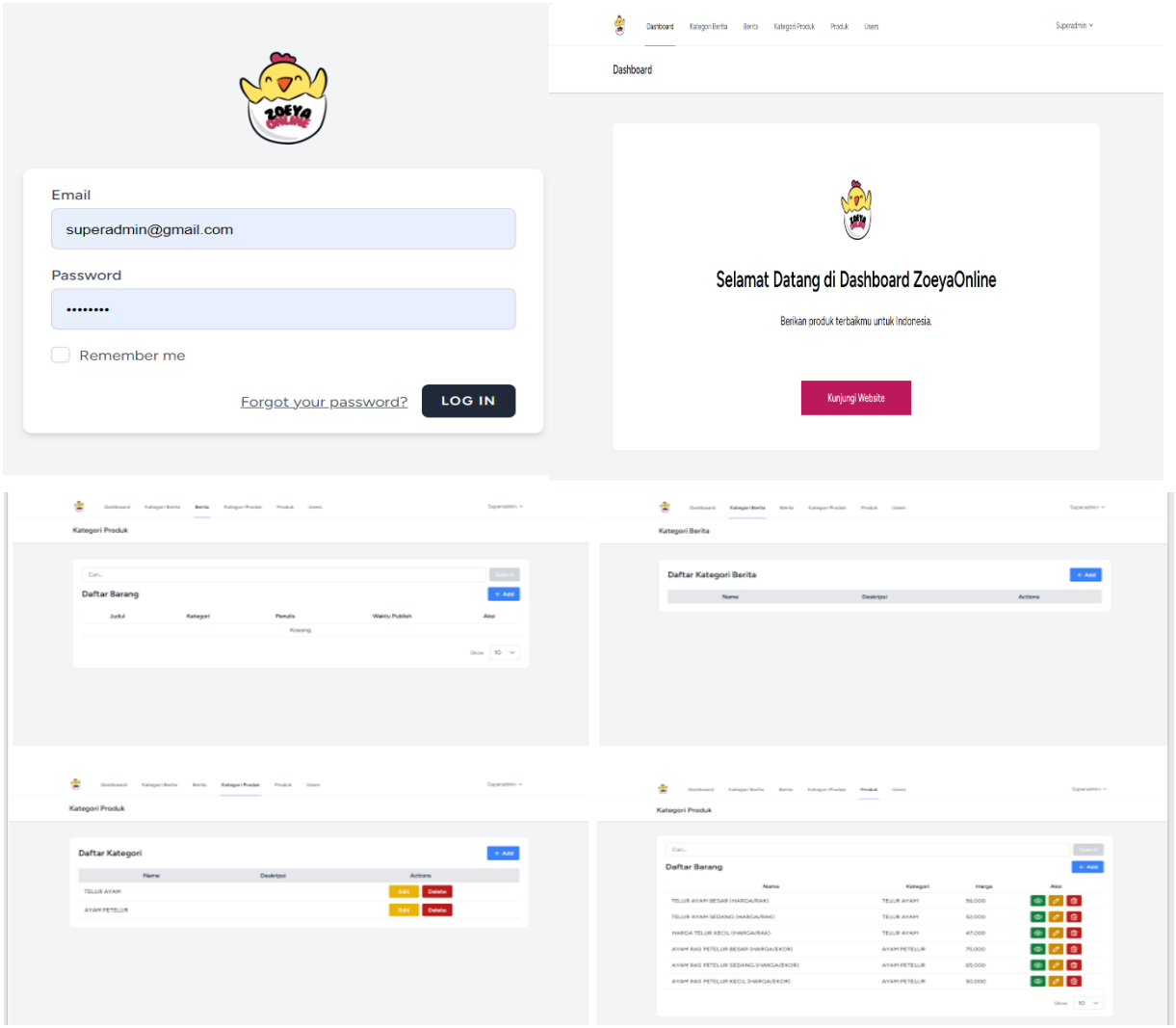

Figure 7. System View Results Website with the domain https://zoeya.online/manager for Chicken Farming Zoeya Berkah

Testing Website Device Focused on Logic and Functional Testing

In this phase, the website undergoes rigorous testing to ensure its functionality and logic meet the expected standards. The primary focus of the testing is on verifying that all features and functionalities of the website are operating as intended. Functional testing is conducted to ensure that each element, such as user login, product ordering, and data retrieval, works correctly according to the defined requirements. Logic testing is performed to verify that the underlying processes, such as calculations, data flow, and decision-making, are accurately executed by the system. The testing process involves checking user interactions on various devices, including desktops, smartphones, and tablets, to ensure the website's responsiveness and compatibility across different screen sizes and resolutions. The goal is to minimize errors, enhance user experience, and confirm that the website meets the expectations of both consumers and administrators.

Stakeholders, including government representatives, the local community, and system users, were involved in the testing process. Their feedback was crucial in identifying areas for improvement. The test results indicate that the system is functioning; however, further development is required. Based on public testing, the system needs to incorporate a Supply Chain Management method, allowing for the addition of a Sales Agent category to partner with those outside Baolan District, Tolitoli Regency, to enhance sales. Therefore, future research should focus on improving and optimizing the system to ensure it is fully effective and seamlessly

integrated into the daily operations of the Zoeya Berkah laying hen farm.

CONCLUSION

The system development process started with the Activity Diagram phase, followed by sketch designs that illustrate the layout and user interaction flow, ultimately resulting in a website that is easy for business owners to use. The website is also designed with a responsible buying and selling concept, as consumers are directed to the business owner's WhatsApp number for transactions and further communication. Therefore, this website is expected to enhance marketing effectiveness and simplify the sales process for poultry farmers in Tolitoli Regency.

The research results indicate that although the website is functioning well, further development is still necessary. The system currently lacks a Sales Agent category to partner with and expand marketing beyond Baolan District, facilitating product distribution for the Zoeya Berkah laying hen farm. Involving stakeholders, such as the government, the local community, and system users, is crucial during both the evaluation and implementation stages. Further testing involving these parties will help ensure that the system fully meets the needs of all parties involved. With appropriate development and evaluation steps, this system can be fully integrated into the daily operations of Zoeya Berkah Layer Chicken Farm, helping to improve revenue and efficiency for poultry farming SMEs in Tolitoli Regency.

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