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Development of a Responsive Portfolio Website and Online Ordering System for CV Putra Pahala Tua

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Abstract

The importance of a portfolio website cannot be ignored, especially for micro, small, and medium enterprises (MSMEs) who want to increase their business visibility and credibility. Therefore, this website development project is expected to provide MSMEs like CV Putra Pahala Tua an effective tool to compete in an increasingly digitized market. The entire portfolio website and its complementary systems (online ordering system and admin panel) development process uses the Scrum framework guided by Agile principles. The website was developed using the PHP programming language with the CodeIgniter framework. The features developed included: home page, news page, catalog page, login page, as well as an online ordering system for customers to make order requests and an admin panel for company employees to manage front-page content and order requests from customers. Once developed, the website went through black box testing, and was ultimately deployed on the internet through shared hosting, before being handed over to the MSME for management. The website was rated positively by the MSME and is expected to help in enhancing its reputation and provide sustaining benefits.

Keywords: *portfolio website, online ordering system, MSME, digitalization*

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I. INTRODUCTION

Technological developments throughout the decade have significantly impacted various parts of human life, including the business sector. Digital technology enables businesses to reach broader markets and various market segments [1]. Besides helping businesses create opportunities for growth and development, digital transformation fosters efficiency via process automations and cost reductions [2]. Technological integration into business

operations also enhances productivity, streamlines processes, and bolster innovation, ultimately contributing to competitiveness and business sustainability. From a communication perspective, digital marketing enables efficient one-to-many interactions, ensuring timely, relevant, highly personalized, and cost-effective promotion of products and services [3].

Micro, small, and medium-sized enterprises (MSMEs), however, often fail to utilize the potential and opportunities of digital technology. This failure could be attributed to limitations in

terms of expenses, resources, and digital literacy [4], [5], [6]. The cost of technology infrastructure or hiring professionals is often too high for MSMEs operating on limited budgets, posing a financial challenge. Additionally, many MSME owners lack training or access to resources for implementing and understanding digital solutions.

These limitations mentioned earlier could significantly impact the visibility, marketing, and customer service of MSMEs. Without a strong digital presence, MSMEs may struggle to be discovered by potential customers who are increasingly relying on the internet to find products or services. This also restricts their ability to effectively market products and garner wider market shares. In terms of customer service, MSMEs lacking digital technology tend to respond slower and may fail to meet customer needs on time, potentially losing business. Without adequate digital capability, MSMEs eventually face difficult challenges competing with large companies that incorporate digital technology into their marketing and operational strategies.

Several steps can be taken to address the challenges previously mentioned. The government could provide MSMEs with subsidies or incentives to aid in digital technology adoption. Training programs and workshops should also be proposed to improve digital literacy among MSME owners. With proper support, MSMEs can leverage digital technology for innovation and sustainable growth.

The importance of a portfolio website cannot be simply overlooked, especially for MSMEs that aim to enhance their business visibility and credibility. A portfolio website serves as a digital showcase, allowing MSMEs to display their products and services thus constructing a professional image in the eyes of customers and potential business partners. It also helps MSMEs sharpen their digital literacy and improve their capabilities in digital marketing [7]. Therefore, development of portfolio websites is expected to provide an effective tool for MSMEs such as CV Putra Pahala Tua to compete in an increasingly digitized world and market. Additionally, this initiative supports the government's mission to empower MSMEs as the backbone of the nation's economy, to contribute for economic growth and social progress.

II. RESEARCH METHODS

Data collection is conducted through interviews with the MSME owner the authors decided to partner with. In this case, it is a small pet food distribution company based in the city of Batam named CV Putra Pahala Tua.

After interviewing the owner and gaining further insights into the company's technological needs, the authors decided to develop a portfolio website equipped with an online ordering system and an admin panel for managing the front-page portfolio content and incoming orders.

Development of the portfolio website, its features, and the complementary systems are carried out using the Scrum method. Scrum itself is a software engineering methodology that uses agile principles based on team collaboration, incremental product development, and iterative processes to achieve the final result [8]. The steps involved to develop the website are as follows:

- a. Product Backlog
The product backlog is a list of tasks that need to be completed in a project [9]. The product owner, along with the team, creates this list of project requirements and sorts their priorities.
- b. Sprint Planning
During sprint planning, the team selects a set of tasks from the product backlog to work on during a sprint.
- c. Sprint
A defined period during which the team works on a set of tasks from the project backlog.
- d. Daily Stand-Up
A daily meeting where the team evaluates progress and obstacles encountered during the last sprint.
- e. Sprint Review
At the end of each sprint, the team showcases tasks accomplished to the product owner for review against predetermined criterion.
- f. Spring Retrospective
The team reflects on the previous sprint, evaluating what went well, what didn't, and steps to improve efficiency of the next sprint.
- g. Backlog Refinement
The product backlog is updated and reprioritized based on feedback from

product owner and the team's capacity for the next sprint.

h. Next Sprint Planning

The cycle of Scrum repeats with a new sprint planning meeting.

Development of the website began with the creation of product backlog. The authors began gathering information about the company and features needed for the website from the company owner as the product owner of this Scrum project instance. During sprint planning, the authors plan upcoming sprints by setting goals and selecting tasks from the product backlog while keeping priority in mind. Throughout a sprint, the author must have a clear understanding of the tasks to be completed and follow accordingly to the plan established. Daily stand-up meetings are also held to evaluate project progress and identify obstacles faced during a sprint. The author notes the challenges faced followed by devising solutions for it. At the end of each sprint, the author notifies the product owner regarding the tasks accomplished during the sprint review meeting, where it is reviewed against guidelines initially laid. Consequently, during sprint retrospective, the authors reflect on and evaluate the previous sprint. The evaluation results are then used to enhance the efficiency of subsequent sprints, as the authors are committed to continuous performance improvement based on lessons learned through experience. Later, the product backlog is updated and reprioritized based on feedback from the product owner during backlog refinement. Backlog refinement also provides an opportunity for the authors to ensure that the list of requirements remains relevant and aligned with any changes that occur during development. Finally, in the next sprint planning, the Scrum cycle repeats itself with the selection of new tasks to be worked on in the next sprint.

In designing a portfolio website, the authors prepare several diagrams to serve as a visual representation for conveying the website's structure and features to the product owner. The design of the entity relationship diagram (ERD) helps illustrate the relationships between entities, where each entity has attributes or content related to other entities [10]. On the other hand, the flowchart is used to map user navigation processes, making it easier to understand the stages of a problem by using visual representations [11]. Likewise, a low-fidelity prototype is designed to provide a simple

representation of a website's layout along with the planned features.

III. RESULTS AND DISCUSSION

Initially, the authors meet the company owner as part of the community service project to help support MSMEs. The authors explained the purpose and objectives of the project and sought permission from the owner to develop a website. After obtaining verbal consent, the author began collecting related data, digging into the company profile, determining the website's scope, features, and scheduling a follow-up meeting for technical discussions and the signing of Memorandum of Understanding (MoU) and Memorandum of Agreement (MoA).

Once the MoU and MoA are signed and technical aspects of the project are discussed, the development process is officially initiated. The authors began designing the website structure and features after analyzing all the collected information. The authors created an ERD and a flowchart to represent the database relationships and user navigation flow respectively. After the company agreed to the design met the partner's requirements, the author proceeded to develop the site according to the partner's specifications.

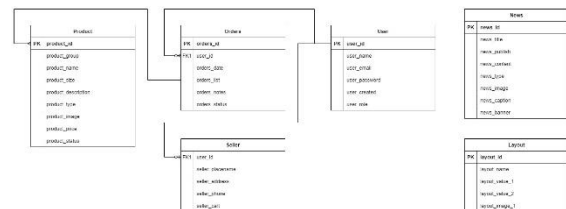


Figure 1. Website Database ERD

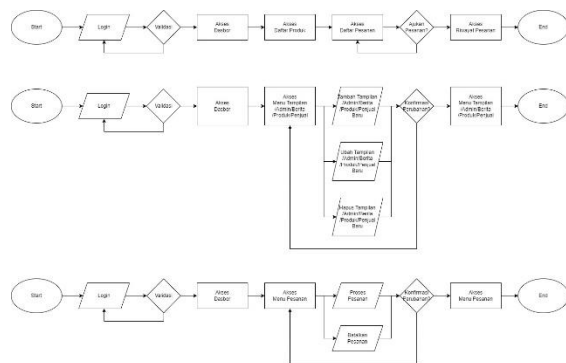


Figure 2. Website Navigation Flowchart

After the website's features and structure have been agreed upon, the authors begin crafting a low-fidelity prototype using the web-based design platform Figma. The features designed to be developed are as follows:

a. Home Page

Public visitors can read about the company’s profile and portfolio, such as organizational structure, product catalog, recent company news, and contact details.

- b. Product Catalog Page
 Public visitors can view the complete list of products distributed by the company and sort them based on predetermined categories.
- c. News & News Detail Page
 Public visitors can view the complete list of company related news or activities on the news page and access the news details page to read the complete information.
- d. Login Page
 Registered customers and employees can log in through this page to access the online ordering system or the admin panel respectively.
- e. Online Ordering System
 Registered customers can create order requests and access the following menus: dashboard, product list, order checkout, order history, and profile.
- f. Admin Panel
 Registered employees can manage the front-page portfolio content (news and products), manage customer accounts, and process/reject orders. Additionally, super administrators could also manage the front-end contacts, appearance, and manage employee accounts.



Figure 3. Website Design Prototype

After the Figma design prototype satisfies the company’s needs and meets the owner’s vision, the authors developed a high-fidelity prototype by coding using the PHP version 8.2 programming language coupled with the CodeIgniter version 4 framework. The authors also use Visual Studio Code as the code editor and XAMPP as the local development server.



Figure 4. Home Page Development

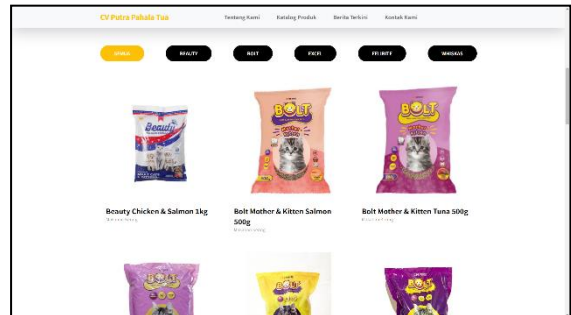


Figure 5. Product Catalog Page Development

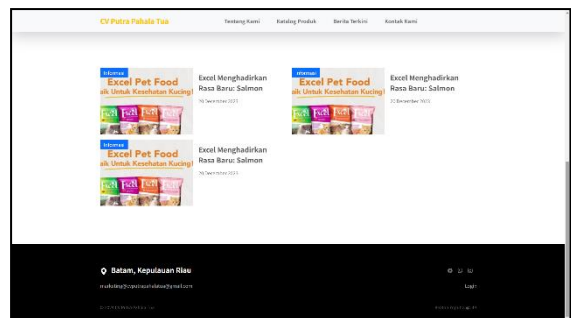


Figure 6. News Page Development

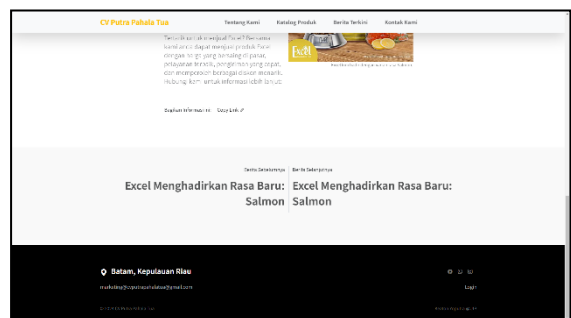


Figure 7. News Detail Page Development

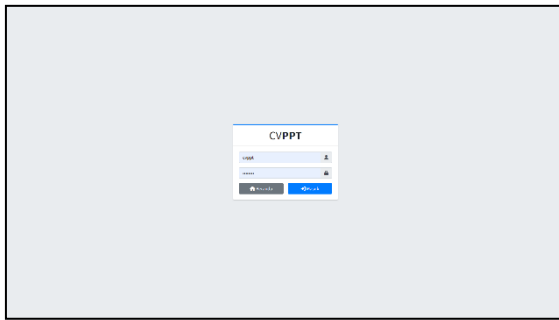


Figure 8. Login Page Development



Figure 9. Online Ordering System Dashboard

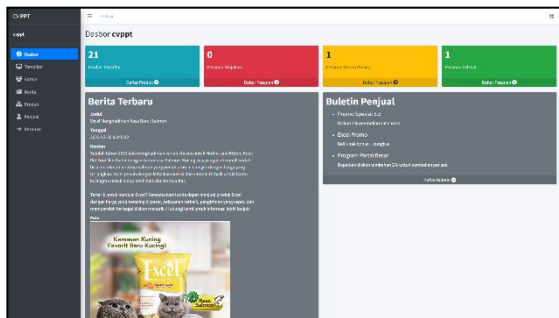


Figure 10. Admin Panel Dashboard

Once the website developed met the owner's requirements, the authors conducted rigorous black box method testing to ensure no errors, bugs, or security issues are left behind. This test examines how the website interacts with users, assesses the features visible to visitors, and ensures that all links, forms, and pages function properly. In a black box testing, the source code is not directly inspected; instead, various usage scenarios are tested without prior knowledge of the implementation details behind the scenes.

Once test results indicate no further issues, the authors proceed with implementation on the internet by deploying it on a shared hosting provider. Afterwards, a user guide for the website is documented to assist registered customers and company employees in understanding and operating the website's features and its complementary systems. After the website has been fully implemented, the authors evaluate the entire design to

implementation process with the product owner. This evaluation ensures that the owner's needs and requirements are met, and that the website is ready for use. After delivering the website user guide, the authors request feedback from the company. The website and its complementary systems receive praise and positive feedback from the company owner who serves as the president director.

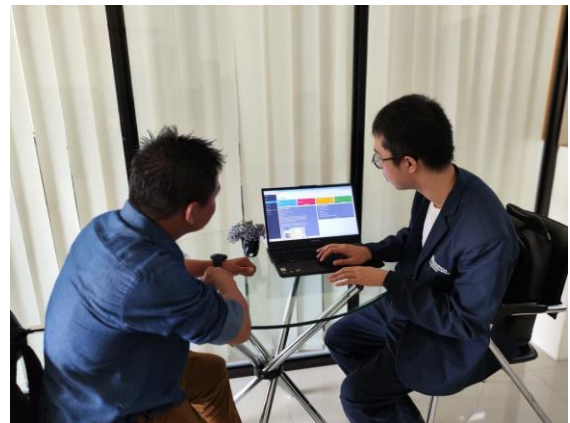


Figure 11. Website Usage Training and Feature Demo with Company Owner



Figure 12. Project Handover from the Authors to the Company Owner

IV. CONCLUSION

With the deployment of this portfolio website, CV Putra Pahala Tua could now showcase their credibility and market their products to a much broader audience. Additionally, the MSME now has an online ordering system where customers can make order requests and no longer need to wait for visits from sales representatives. On the other hand, the admin panel allows the company to receive and manage orders, complementing the existing inventory management and point of sales system. Additionally, the admin panel also

facilitates management of the front-page portfolio content.

The MSME the authors partnered with positively welcomes the outcomes of this community service project and accepts it to be used immediately. The website is expected to assist the company in online marketing, as an offline product promotion tool to be used by their sales team, and to streamline the handling of customer order requests.

By actively managing content and updating information within this website, the company can continuously strengthen its image, attract potential customers, and assist said customers in making order requests efficiently. Furthermore, the website enables effective communication between the company and customers through relevant and up-to-date content with accessible contact options. The authors hope this website could bring sustainable benefits to the company in many years to come.

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