

UTILIZING EXTREME PROGRAMMING FOR LAPAKEMANE BREBES: A DIGITAL SOLUTION TAILORED FOR MSMEs

Kenneth Pinandhito¹, Dina Yeni Martia^{2*}, Alvianita Gunawan Putri³, Bayu Setyo Nugroho⁴, Erlina Dewi Endah Amaliyah⁵, Amran Yobioktabera⁶

^{1,2,3}Accounting Department, Politeknik Negeri Semarang, Indonesia

⁴Business Administration Department, Politeknik Negeri Semarang, Indonesia

⁵Management Department, Semarang University, Indonesia

⁶Electrical Department, Politeknik Negeri Semarang, Indonesia.

*Corresponding Author

Dina Yeni Martia

Accounting Department,
Politeknik Negeri Semarang,
Indonesia.

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Abstract: *The Lapakemane Digital Market is an innovation we developed to answer the challenges faced by MSMEs in the District Brebes. The Lapakemane digital market has the same goal as traditional markets in general: to be a forum for buying and selling transactions. However, the digital market has its characteristics, including that transactions can be carried out anytime and anywhere, using electronic media as the primary tool, the buying and selling process is carried out without face-to-face. By building a digital market system, Lapakemane can help simplify and increase the promotion of MSME products via the Internet to increase buyer interest. The impacts obtained from the stages and the entire program are as follows. First, it can increase market exposure (market share). Using a digital market, you can promote or offer various goods for sale to various regions. Second, increase customer loyalty. Implementing the Lapakemane digital market makes interaction easy, such as without waiting in line or coming directly to the outlets, making it easier to shop from anywhere. Third, increase brand awareness. With the broad reach of marketing, many consumers know about the products sold at the district MSME centers. Brebes.*

Keywords: Digital Market, Sales Scale Up, MSMEs.

Introduction

Lapakemane is a snack house for various Brebes Regency Micro, Small and Medium Enterprises (MSMEs) products. The opening of the lapakemane is a form of feedback from the Regency Government (Pemkab) to the actors to encourage innovation, creativity and high productivity. So far, promotions in Lapakemane are still done manually and sales are still done through word of mouth. Meanwhile, the products we have have many variations. The lack of promotion and marketing of the Lapakemane products that are owned has resulted in the production being only ordered around the local market in Brebes, even though the products that are owned promise the opportunity to spread to the outside world. Many buyers take the market portrait in the productive age range because the products are sold at the district MSME center. Brebes varies, therefore buyers prefer to be able to shop anywhere and anytime via the internet.

Problems with sales have occurred since the founding of Lapakemane in 2021 where marketing and promotions do not use digital technology so that if these problems are not resolved immediately there is the potential to lose potential buyers. Or even worse, you could lose existing buyers because they run to other

places with more intensive marketing. Another potential that arises if it is not addressed immediately is that the reach is not optimal. So far, most sales have only been made in the district. Just Brebes. To overcome the problems, Lapakemane has used Instagram for promotion but feels that there are still many shortcomings in its application, therefore implementing a digital market is the most appropriate way to overcome these problems. To be able to realize an increase in turnover by using an internet marketing method, media is needed to develop online sales, one of which is the Lapakemane digital market website. By building a digital market system, Lapakemane can help simplify and increase the promotion of MSME products via the internet to increase buyer interest, ultimately increasing MSME income.

Digital markets provide great opportunities to increase offerings and reach wider consumers. The research results by (Salam & Kho, 2023) found that digital marketing increased sales. Apart from that, (Naimah, Wardhana, Haryanto, & Pebrianto, 2020) also recommend using social media as a marketing strategy development or digital marketing application to optimize market expansion and make it easy for customers to reach it. Utilizing online platform facilities to market MSME products is closely related to branding. Branding is important as a differentiator,

attractiveness, building brand image, quality assurance, prestige and being able to control the market. Even (Jadhav, Gaikwad, & Bapat, 2023; Singh, Nanavati, Kar, & Gupta, 2023) also emphasized that the online marketing system (digital marketing) has a significant favorable influence on increasing marketing performance and MSME income. However, in its implementation, business actors face challenges in digital literacy skills, product quality, production capacity and market access.

Lapakemane has significant benefits and impacts in creating digital market innovations from the output produced on the proposing universities and partners. The benefit for universities is an increase in the number of research outputs and community service per lecturer, which have succeeded in gaining international recognition or being implemented by the community. Meanwhile, the benefits that partners will feel are assisting partners in providing guidance and facilitation in the fields of micro business, trade and market management as well as scale up sales of District MSME Products. Brebes.

The Digital Market is an innovation that we developed to answer the challenges in MSME District Brebes. The digital market is a medium for introducing certain goods, services, or brands using digital media, and it is usually done with the help of the internet network. Digital markets have the same goal as traditional markets in general: to be a forum for buying and selling transactions. But the digital market has its own characteristics, including that transactions can be carried out anytime and anywhere, using electronic media as the main tool, the buying and selling process is carried out without face to face (Hashim, Taleb, & Faudzi, 2023). The Lapakemane digital market has its advantages and uniqueness, namely that the Lapakemane digital market is designed to be user-friendly, making it easier for consumers to search for products. The Lapakemane digital market can also provide different product recommendations and offers for each person. This means that the Lapakemane digital market can personalize the customer experience which adds to the convenience of shopping. This is also beneficial for sellers because they can reach their target audience specifically and are able to offer them what they are really looking for. There are 5 main stages (key-phases) in achieving the creation of the Lapakemane digital market, namely planning, designing, developing, launching, and reporting.

Methods

Lapakemane has 3,546 MSMEs under its care, consisting of several categories: food, fashion, livestock, services, and agriculture. From this data, the sample that will be used to solve existing problems in Lapakemane is 80 MSMEs, and it consists of the food and fashion categories because these are the categories that are primarily sold in Lapakemane.

In building the Lapakemane digital market, the Extreme Programming methodology is suitable, this method is one of the Agile Software Development approaches. Extreme Programming is a software development method that focuses on fast, straightforward changes with iteration according to user requests (Hameed, 2016). Extreme Programming is a method that is in accordance with user requests because the developer immediately executes whatever the user wishes so that if changes occur, this method can adapt quickly during the system creation process. The goal of Extreme Programming is a team formed between small to medium-sized courses, and there is no need to use a large team. It is intended to address unclear requirements, which change very quickly (Lindstrom & Jeffries, 2003).

The stages of software development with Extreme Programming include: planning, design, coding and testing (Sohaib, Solanki, Dhaliwa, Hussain, & Asif, 2019). The stages of XP can be seen in Figure 1 below.

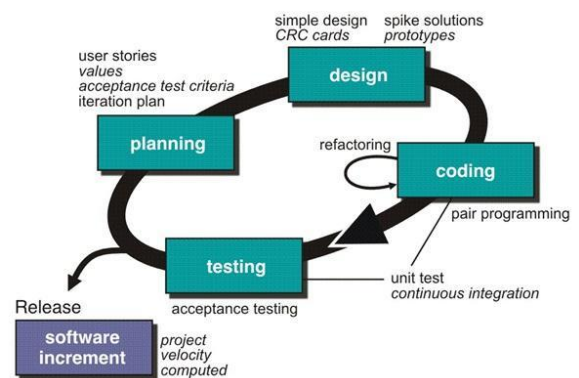


Figure 1. Extreme Programming

Results and Discussions

The design of the Lapakemane digital market application was developed using the XP methodology. Below are the results of each stage that was carried out.

1. Planning

Planning activities begin with listening to customers through interviews, this aims to gather information regarding the needs of the system to be built so that the business context of the system to be built can be known (Megawaty & Saputri, 2023). District MSME Center. Brebes still has several weaknesses from the sales system currently running. PIECES (Performance, Information, Economic, Control, Efficiency, Services) analysis aims to determine whether the current system is feasible or not (Li, Dai, & Cui, 2020). The old system analysis can be reviewed with the PIECES analysis as follows in table 1.

Table 1 PIECES Analysis Analysis

Analysis Type	Weaknesses of the Old System
Performance	All business processes still use conventional methods. Sales transactions are still carried out by meeting face to face. Administrative and financial records are still written in books and have not been properly documented.
Information	The resulting information cannot be produced up to date because you have to check stock availability manually. The customers they get usually come from exhibition events they participate in.
Economy	MSME centers require a lot of time to carry out business transactions. Then, customers also need more time and funds to obtain MSME products.
Controls	The process of data collection and transactions for MSME products is still manual through notes so data monitoring cannot be done at any time. Apart from that, there is no security for product data or transaction data. So we can't control if there is redundancy or data loss.
efficiency	While using conventional business methods, more time and costs are spent. Apart from that, more human resources are needed.
Service	Business services running in MSMEs are still slow and unprofessional.

2. Design (Designing)

The Lapakemane digital market application design uses UML (Unified Modeling Language) design. Use cases are described textually in the form of use case scenarios, which aim to explain the interaction between actors and the system, then illustrated in the form of use case diagrams to describe the context of the system being developed (Thaha, Maulina, Muftiadi, & Alexandri, 2021).

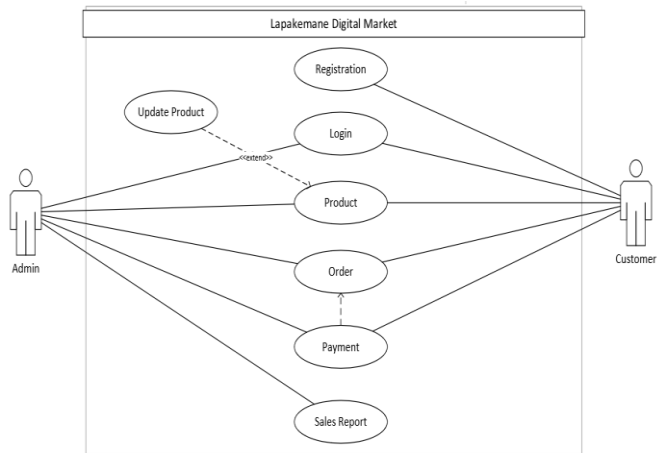


Figure 2. Unified Modeling Language

3. Coding

After the design is carried out, it is then implemented in the form of program code. Coding using the PHP programming language with the Visual Studio Code compiler and MySQL database (Sohaib et al., 2019). In accordance with the established functionality, before being able to carry out transactions on the Lapakemane digital market, buyers must register. After registering, buyers can log in to the application.

On the registration page, it is on the top right side and then will enter a list display as in Figure 3.

Use case diagrams describe the expected functionality of a system (Kannoth et al., 2021).

Figure 2. The Lapakemane digital market UML consists of 2 (two) users: admin and customer. Admin users can manage data such as Sentra Brebes MSME products, shoe product details, orders, shipping costs, and reports.

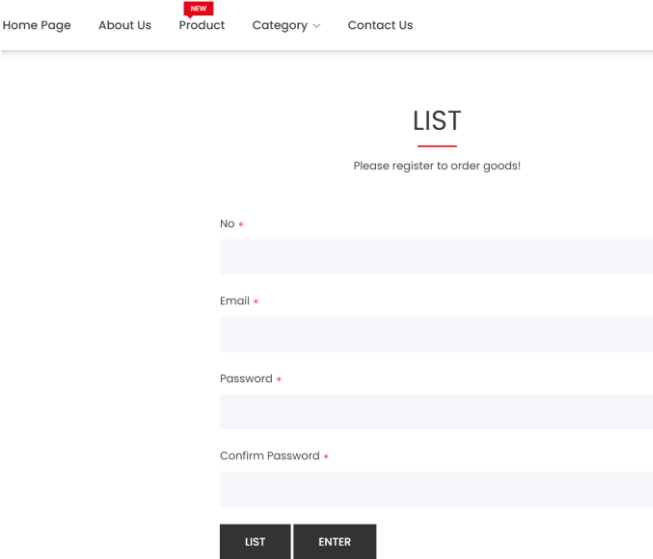


Figure 3. Registration Page

After being able to log in, both buyers and admins will enter their respective Dashboards. On the admin dashboard, according to Figure 4, the admin can add products and delivery lists and process orders that occur. Apart from that, the admin also changed the banner, added a backup admin, and set up a short description on the Lapakemane digital market.

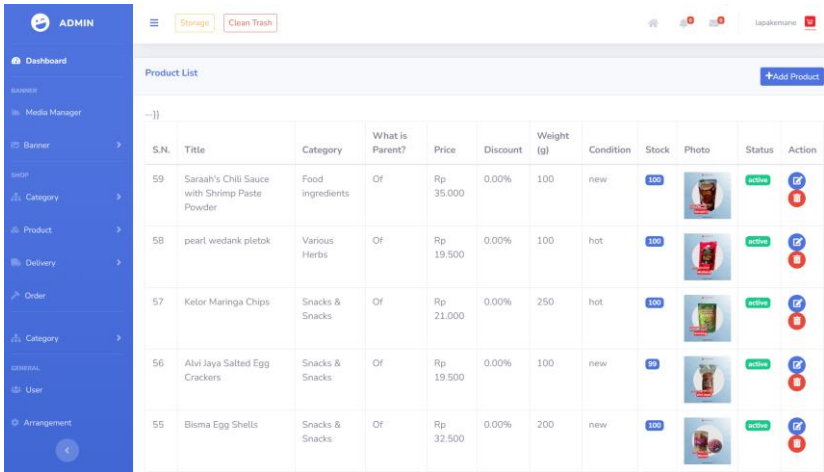


Figure 4. Admin Dashboard

The home page is complete in displaying the menu needed by buyers. So that when buyers have logged in they can immediately add the products they purchased to the chart. Buyers can also choose products based on the categories provided, making it easier to select the products they want. For details of the home page, see Figure 5

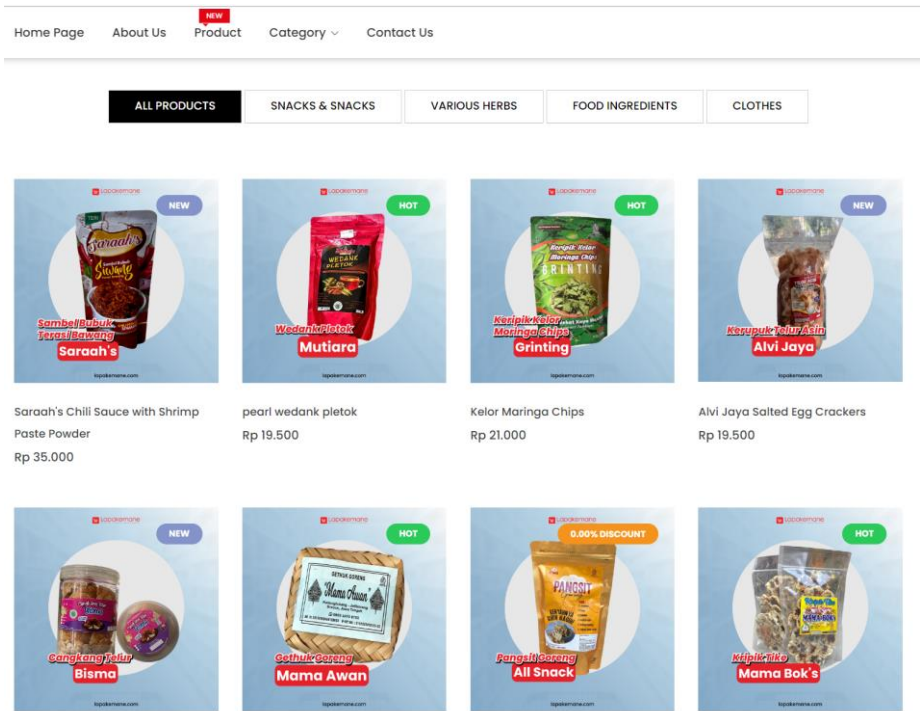


Figure 5. Home Page

On the dashboard page, buyers can update their profile and change their password, and buyers can also check the number of products purchased and view bills. Buyers can see whether the product they purchased has been sent or not. Details of the customer dashboard can be seen in Figure 6.

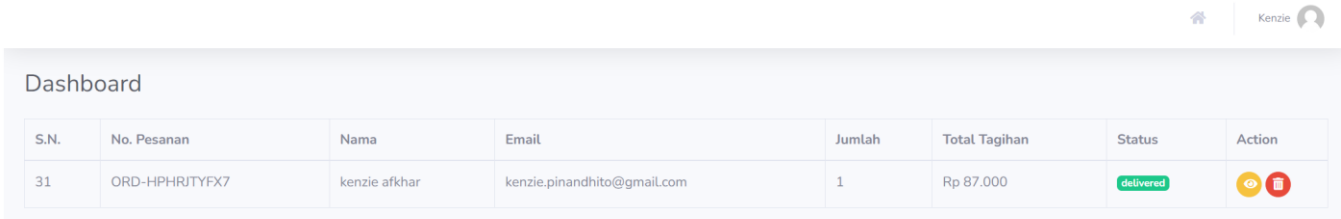


Figure 6. Customer Dashboard

4. Testing

At the testing stage, before the system is implemented or used directly by the user, the system is required to go through a testing and analysis stage first so that the system does not deviate from what the stakeholders expects or errors appear in the system when the system is applied directly (Zorzetti, Signoretti, Salerno, Marczak, & Bastos, 2022). This is done to find errors or deficiencies in the system being built. Table 2, This testing stage uses black box testing.

Table 2. Blackbox Testing

<i>Module</i>	<i>Testing</i>	<i>Results</i>	<i>Information</i>
<i>Login</i>	Entered an incorrect username or password	The user fails to log in if the username or password is incorrect, a warning message will appear.	In accordance
	Enter the correct username or password.	Login will be successful if the username and password are correct then will then enter the main dashboard page.	In accordance
<i>Dashboard View (Admin)</i>	Adding products	Admins can view, edit, and delete available products and add new product data.	In accordance
	Added shipping list	Admin can view, edit, add and delete shipping details	In accordance
	Processing orders	Admin can view, edit and delete orders as well as update the order process	In accordance
<i>Dashboard View (Buyer)</i>	Changing the Appearance of the Website	Admin can change the banner and edit the description of the website	In accordance
	Making Purchases	Add, delete products and checkout	In accordance
	Make a Payment	Add shipping address and make payment	In accordance
	Purchase Details	Buyers can view order details, cancel orders and find out the shipping process.	In accordance
<i>Dashboard View</i>	Checkout	Buyers can add items to include in the order	
	Product filters	Buyers can filter the products they want to buy according to their interests.	

Conclusions

E-Commerce has navigation features to check purchase history, online shopping carts, and customer testimonials to display the latest products. Facilitate visitor assurance services closer to customers and move to digitalizing marketing processes. The display of specific messages in directing visitors to potential buyers can make the process of e-commerce system capabilities offer many new opportunities, especially opportunities to expand the business transaction market. Based on the results of the research that has been carried out shows that the system makes it easier for the district MSME center. Brebes is in charge of carrying out promotions and managing orders.

Needs analysis produces 2 (two) users (visitor and admin). From these 2 (two) users, three features and nine functional requirements were produced. The final evaluation results from using this system received a good response, so the system is suitable for web-based sales.

Apart from that, Extreme Programming is very useful for speeding up work because it requires completing a series of activities in a very short time and the stages in Extreme Programming are considered simple because there are fewer stages in this method compared to other methods. Extreme Programming prioritizes good communication between clients and between teams.

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