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Design and Construction of Salapak MSME Kawaluyaan Marketplace, Bandung City

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ABSTRACT: Micro, Small, and Medium Enterprises (MSMEs) are a vital component of the Indonesian economy. MSMEs have proven to significantly contribute to employment, increase public income, and enhance the country's economic resilience. However, MSMEs still face several obstacles in developing their businesses, particularly in implementing digital technology, online marketing, and ensuring easy access for consumers. Many MSME entrepreneurs in Bandung City still rely on traditional promotional methods such as word of mouth, exhibitions, or distributing brochures, which are less effective in reaching a wider market. This study designs and develops an Android-based marketplace application called Salapak, which serves as a platform for promoting and selling MSME products in Kawaluyaan, Bandung City. The development method used in this study was Agile Extreme Programming, which allowed for a more flexible and faster development process, involving direct collaboration with users. Data collection was conducted through field observations, interviews, documentation, and direct evaluations of MSMEs and relevant agencies. The research results show that the Salapak application has been an effective solution in helping MSMEs expand their marketing reach, increase the visibility of superior products, and make it easier for consumers to find and purchase MSME products digitally. The application also provides automatic notification features, a shopping cart, a product catalog, a product detail page, and an emailed invoice page. For further development, it is recommended to add digital payment integration features, improve the UI/UX, implement delivery tracking, and incorporate an artificial intelligence-based product recommendation system.

Keywords: MSMEs, Salapak, Marketplace, Extreme Programming, Android.

INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are an integral part of the national business community, possessing a strategic position, potential, and role in achieving national development goals and are highly sought after by the Indonesian people (Gao et al., 2023; Poole et al., 2021;

Wang et al., 2021). The middle class has proven capable of surviving the global economic crisis, the impact of which continues to this day (Hadi & Zakiah, 2021; Putu et al., 2023). However, a lack of market knowledge and information is one of the weaknesses hampering the development of MSMEs. According to Law No. 20 of 2008, microenterprises are productive businesses owned by the private sector or individuals (Endris & Kassegn, 2022; Ika, 2023). The mission of the Bandung City MSME Office is to assist the community in their business activities and develop community businesses and support micro, small, and medium enterprises (MSMEs) that collaborate with the community in accordance with applicable procedures. Services must also be implemented in accordance with the principles of good service, as one indicator of the success of MSME services in Bandung is public satisfaction (Fauzi & Sheng, 2022; Siriwat & Nijman, 2020).

The number of MSMEs in Bandung is often too large for the city government to reach, yet some residents are unaware of the products produced by MSMEs in Bandung, especially newcomers (sirkuit.bandung.co.id). In the current situation, promotion by MSMEs in Bandung is still very limited; promotion is still carried out through word of mouth or through exhibitions, according to an interview with Dedy Kurniawan, S.H., Head of the Promotion and Marketing Section for Micro Enterprises and MSME Facilities at the Cooperatives Office (Alba et al., 1997).

The lack of digital promotional efforts makes it difficult for small and medium enterprises (SMEs) to compete with products from larger companies that already utilize various digital platforms, such as social media, marketplaces, and online promotional sites (Kilay et al., 2022). Yet, digital marketing has the ability to reach a wider market, more effectively, faster, and more cost-effectively than conventional marketing methods (Dwivedi et al., 2021; Sharabati et al., 2024). Digital transformation in marketing is a pressing need for SMEs to survive amidst increasingly dynamic market competition. By utilizing digital marketing technology, SMEs can increase product popularity, attract new potential customers, and strengthen customer relationships through quality digital content (Deku et al., 2024; Salah & Ayyash, 2024). From the explanation above, it is clear that SMEs in Bandung City have significant potential as drivers of the local economy. However, the main challenges lie in limited access to information and inappropriate marketing strategies (Costa Melo et al., 2023).

This situation requires attention from the government and various relevant parties to ensure effective and sustainable MSME development. Innovation, supportive policies, and facilities that enable SMEs to receive marketing training, access to technology, and integrated promotional tools through modern platforms are needed (Purwanti et al., 2022; Rahayu & Day, 2017). In this way, SMEs can not only increase their competitiveness but also contribute more significantly to long-term economic development (Maycotte et al., 2025; Ramanathan et al., 2012; Wijaya et al., 2025).

Based on this phenomenon, ten related studies were reviewed, consisting of five web-based systems and five Android-based applications available on digital marketplaces. The benefits of these applications include marketing MSME products and increasing sales results and achieving targets (Agustina & Sukmono, 2023; Aremu & Arfan, 2023).

In line with previous research, this study will create an Android-based system with an official platform managed directly by the Bandung City Cooperatives, Micro, Small, and Medium

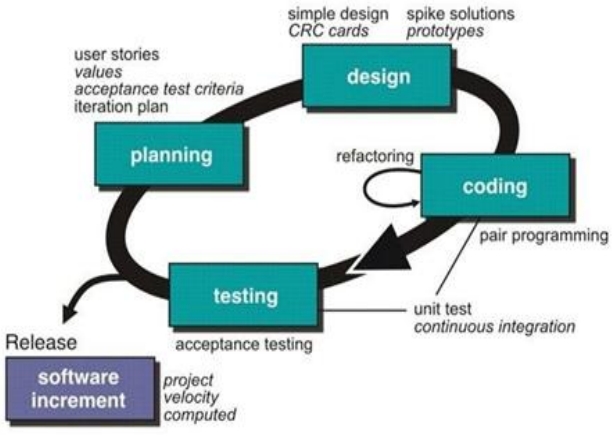
Enterprises Office, as a marketing platform for MSMEs in Bandung. Furthermore, this application will be developed for Android, aiming to assist MSMEs, equipped with comprehensive features to easily market their products to the wider community, particularly in the Kawaluyaan area of Bandung City.

Several previous studies have shown that Android-based marketplace systems for MSMEs at the local government level are still rarely explored, creating an interesting research gap that warrants further in-depth investigation. In addition to utilizing Android technology, the MSME website will be equipped with a detailed page display and invoice details, allowing users to receive notifications from the Salapak application via Gmail after completing the checkout process. The purpose of this study is to help increase MSME product sales in Kawaluyaan, Bandung. Based on the aforementioned conditions, the researchers will create a marketplace application as a platform for MSMEs to assist in their marketing promotion strategies, particularly in the Kawaluyaan area of Bandung City.

METHOD

The use of the Agile Extreme Programming method aims to develop systems that focus on simplifying the system development process. This Agile Extreme programming method does not only focus on coding or programming code, but also pays attention to all changing trends to be more adaptive and efficient (Pambudi & Apriandari, 2023). The use of this method must go through several stages, namely: design, planning, coding, and system testing. This Agile Extreme Programming method has advantages in the development stage, namely that the method can outperform system design, where needs are relatively unclear and changes are relatively fast. Figure 1 presents the stages of the Agile Extreme Programming process(Redmiles & Hilbert, 2000).

Figure 1. Agile Extreme Programming Stages



The steps of the extreme agile programming method are: 1) Design, which is the initial step in system development, implementing several design operations. This stage involves problem identification and requirements analysis; 2) Planning, which is the modeling stage, starting with system modeling, architecture modeling, and database modeling; 3) Coding, which is the implementation of the modeling, performed in the form of a user interface in a programming

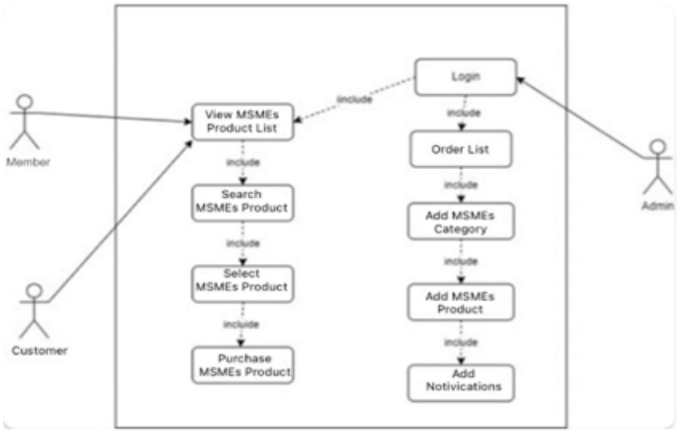
language; and 4) System testing, which aims to identify errors that occur during application operation and determine whether the system being built meets user needs. The Agile Extreme Programming method has been widely discussed and applied in various studies (Denny Jean Cross, 2024; Wood et al., 2013). Agile Extreme Programming allows developers and customers to interact with each other during the system development process (Dingsøyr et al., 2012).

RESULT AND DISCUSSION

In this study, the Unified Modeling Language (UML) was used for system design, with diagrams that include use case diagrams and modeling of system data structures. This aims to visualize and document the system design and illustrate the interactions between actors and the system.

To achieve the research objective of designing a system that can effectively meet user needs, a modeling tool is needed that is able to describe the interaction process between users and the system in detail. One of the modeling tools used in this research is the Use Case Diagram, because this diagram can represent the complete functional requirements of the system without having to display the internal structure or details of how the system is implemented. By using the Use Case Diagram, the relationship between actors and application features can be explained through structured usage scenarios, making it easier for researchers to ensure that every function needed by users is covered in the system design process. The visualization form of the Use Case Diagram used in this research can be seen in Figure 2 below as a clear illustration of the interaction scheme that occurs in the system.

Figure 2. Use Case Diagram



Based on Figure 2 above, it can be seen that this system involves three (3) main roles: admin, customer, and member. Each role has different access rights and functions according to the system's needs. The member role can only view the product list for micro, small, and medium enterprises (MSMEs). Meanwhile, the customer role has broader functions, such as viewing the MSME product list, searching for products, selecting products, and purchasing products. The admin has full access to the system, allowing him to log in, manage MSME categories, add products, and send notifications within the application. The different access rights and functions

of these three roles form the basis for establishing the system structure so that each user can carry out their tasks according to their planned needs.

Therefore, the Use Case Diagram not only shows the parties involved in the system but also shows the boundaries of each role's interaction with the application's features. To better understand the roles and functions of each actor in the Use Case Diagram, see Table 1 below. Table 1 aims to clarify the relationship between system design and user needs, allowing for a deeper understanding of the interaction structure in Figure 2.

Table 1. Explanation of Use Case Diagram

No.	Aktor	Deskripsi
1.	**Member**	The person responsible for viewing the list of MSME products.
2.	**CustomeR**	The person responsible for viewing the list of MSME products, searching for MSME products, selecting MSME products, and purchasing MSME products.
3.	**Admin**	The person responsible for logging in, creating order lists, adding MSME categories, adding MSME products, and adding notifications.

The system structure and data modeling in this study are as shown in Figure 3 below.

Figure 3. System and Data Structure Modeling

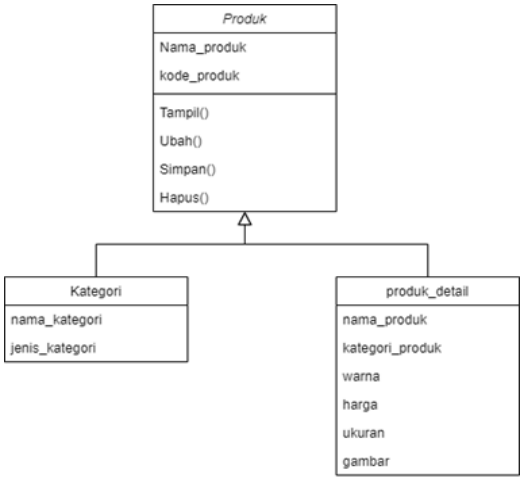


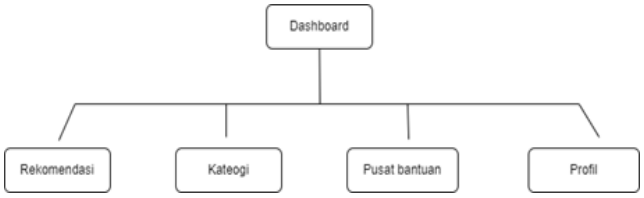
Figure 3 above shows that the product structure consists of the product name, product code, and several features, including display, edit, save, and delete. Furthermore, the category structure

consists of the category name and category type, while the detailed product structure consists of the product name, product category, color, price, size, and image.

Data collection techniques are one of the most important factors for research success. This refers to how information is collected, who the data sources are, and what instruments are used. In this method, data is collected through several techniques, such as 1) Observation, which involves direct observation and understanding of the research locations, namely SMEs in Bandung, to obtain the necessary information for the research. 2) Interviews or user stories, which are explanations or conclusions obtained during interviews with the users. During the story explanation process, users are asked to imagine the possibilities that might occur during implementation and are structured in simple sentences. 3) Documentation, which involves collecting information by reviewing related documents. The goal is to determine the management of the MSME list in Bandung.

The system was developed using the UML methodology, which offered a systematic basis for outlining user interactions and system functionalities. Furthermore, the interface framework that emerged from this design serves not only as a technical deliverable but also as a strategic answer to the difficulties encountered by MSMEs in Kawaluyaan. By establishing straightforward navigation paths, Salapak assists MSMEs, who frequently struggle with digital literacy by ensuring that the features for product browsing, ordering, and communication are easy to use and comprehend. This approach is in line with insights from earlier studies on digital adoption, highlighting that user-friendliness is a key factor influencing MSME adoption of digital platforms.

Figure 4. Interface Implementation

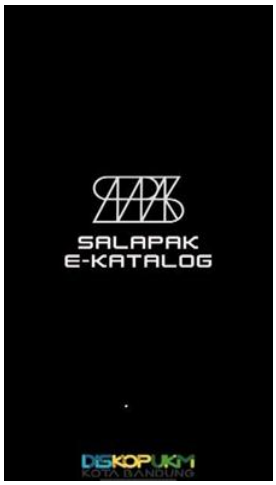


The components of the dashboard such as recommendations, product categories, help center, and user profile possess functional implications that go beyond the simple arrangement of the interface. For MSMEs, the recommendation feature enhances product visibility, tackling a frequent issue where less prominent MSME products find it challenging to compete in digital marketplaces that are largely influenced by larger brands. At the same time, the Help Center aids users with limited technical expertise, which is essential considering that many MSME owners in Bandung still depend on traditional marketing practices. This demonstrates how Salapak not only incorporates usability principles but also takes into account socio-economic factors in its design.

The application interface used in this study is presented in the following sequence, starting from the logo, homepage, and other supporting menus.

Logo Display

Figure 5. Application Logo Display



On this page, users can see the initial application display, which displays the Salapak logo and the DISKOP UMKM logo. This display serves as a welcome page, informing users that this application is an official platform designed to support MSMEs. Furthermore, these two logos also indicate that the application is supported by relevant agencies and serve as the first step before users enter other menus or features.

Application Main Page Display

Figure 6. Application Home Page

The app's main page displays various products produced by small and medium enterprises (MSMEs) in Bandung. These products are presented in an organized catalog, with categories such as clothing, shoes, snacks, wallets, and other types of products available for purchase. This design aims to make shopping easier and more informed for users, as each product is accompanied by an image, price, and a brief description. This makes the homepage the primary place for users to browse and select desired products.

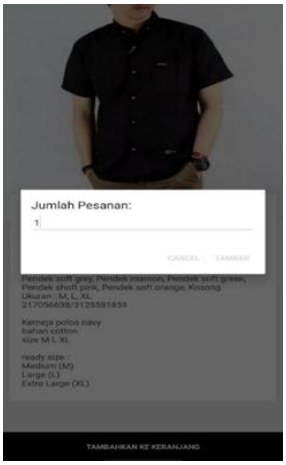
Product Search Page

Figure 7. Product Search Display

The search functionality is one of the most crucial aspects for MSMEs, as it influences how easily products can be found. A robust search system guarantees that MSME offerings are not eclipsed by more popular alternatives a challenge frequently encountered on larger platforms like Tokopedia or Shopee. By sorting results according to relevant keywords, Salapak enhances the chances of product visibility and aids MSMEs in competing more equitably in the online marketplace. This is in line with findings that indicate a strong relationship between search precision and heightened purchase intent in small-business marketplaces.

Product Selection Page Display

Figure 8. Product Selection Display

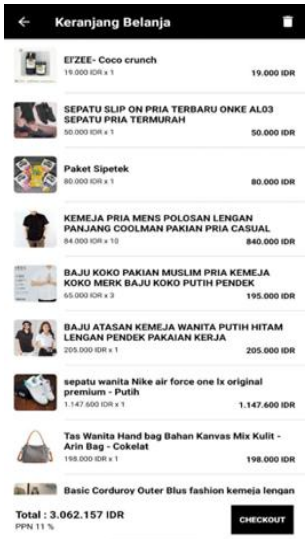


The product detail page is essential in establishing consumer trust, which is a major hurdle for MSMEs moving to digital platforms. Many consumers from MSMEs are reluctant due to insufficient information or transparency issues. Salapak tackles this trust issue by providing clear information (price, size, description, quantity). Nonetheless, the existing version is missing

advanced features like customer reviews or seller ratings, which previous research has highlighted as vital for enhancing perceived credibility and boosting purchase confidence.

Shopping Cart Display

Figure 9. Shopping Cart Display



The shopping cart improves the accuracy of transactions and decreases the occurrence of abandoned checkouts, a frequent challenge seen in early MSME digital platforms. By allowing users to review and modify order quantities, Salapak boosts decision-making and helps avoid user frustration. However, the lack of built-in payment options still requires users to resort to manual or external payment methods, which can negatively impact conversion rates. This limitation highlights the necessity of integrating digital payment solutions to provide a comprehensive e-commerce experience.

Payment Page Display

Figure 10. Payment Screen

The existing payment page guarantees accurate data gathering and assists MSMEs in recording transactions, which is essential for managing both inventory and finances. The automated email invoices enhance transparency and professionalism, allowing MSMEs to present a more trustworthy image to buyers. However, the system's dependence on manual confirmation leads to delays and increases the risk of human error. In contrast to larger e-commerce platforms that offer automated payment verification and shipment tracking, Salapak functions at a more basic level. This reveals both the strengths (clarity and organization) and weaknesses (lack of automation) of the current system.

Displaying the Invoice Details Page

Figure 11. Invoice Details Display

After the user completes the checkout process in the previous step, they will receive an official notification from the Salapak application. This notification is sent via the email address provided by the user. This email confirms that the transaction has been recorded in the system and provides additional information regarding the purchase status, order details, and next steps, if necessary.

To conduct this research, several methods and steps must be carried out in a structured, step-by-step manner. This implementation will be explained using established methods, along with a series of steps, from the initial process to the final implementation stage of the Salapak marketplace design for MSMEs in Bandung City, using the Extreme Programming method. During the system development stage, the system was built according to the previously developed design, ensuring that every feature, workflow, and supporting component ran optimally. This design served as the primary guideline for building a more focused, systematic, and easily developed system in subsequent stages.

Table 2. Activity Implementation

No	Activity	Symbol	Provious Activity	Duration (Weeks)
1	Data Collection	A	-	1
2	Database Creation	B	A	1
3	Device Creation	C	B	2
4	Software Creation	D	C	8
5	Application Testing	E	D	1
6	Application Improvement	F	E	2

The findings from both phases of testing indicate that Salapak's primary features function reliably. This affirms that Salapak is a feasible digital marketing solution for MSMEs. Nevertheless, the testing uncovered important insights: initial challenges with product listings and search accuracy suggest that MSME platforms need special attention when managing dynamic product information. These challenges are often found in early marketplace applications and underline the importance of enhanced backend optimization. While the success of the second test reflects progress, the system still requires stress testing and scalability assessment, which are crucial for its long-term viability.

In the first stage, testing was conducted to validate the application's basic functions. The goal was to ensure that all key features function without errors and to verify that the application's workflow aligns with the previously created system design. This stage also identified deficiencies, technical issues, and inconsistencies that could disrupt application use if not corrected.

After the evaluation results from the first test were analyzed and the system components requiring improvement were fixed, a second test was conducted to re-evaluate the improved application. The primary focus of this stage was to ensure that the improvements were truly effective, evaluate the application's stability when the features were used repeatedly, and assess the system's consistency in displaying results according to user input across various scenarios. Therefore, the second test aimed to validate the system's reliability in more depth as a final form of verification before the application's widespread use.

With this goal in mind, it can be concluded that the testing process is not only conducted to verify the application's functionality, but also to obtain a comprehensive picture of the system's overall quality, including performance, accuracy, and user experience when interacting with the application.

The complete results of the first test, including a list of test scenarios, the resulting output, and a conclusion on the system's initial success rate, can be seen in detail in Table 3 below, as a reference and comparison in analyzing the results of the second test.

Table 3. Results of the First Test

Tested Functionality	Test Method	Expected Results	Test Results
Product List Display	Opens the main page	The system displays the dashboard or main application page	Success
	Product Selection	The system displays the product	Success
Product Search	Displays the main page.	The system displays the dashboard or main application page.	Success
	Click the search menu	The system displays the search results.	Success
Product Selection	Displays the main page	The system displays the dashboard or main application page	Success
	Click a product	The system displays product details	Success

In the first test of the application, it was discovered that several important aspects still needed attention and improvement to improve the system's performance. Several shortcomings were apparent in the application's main features, particularly in the product list display process. Currently, product data is not consistently displayed every time a user opens the main page. Furthermore, the search feature still requires further improvement, particularly in the system's ability to receive, process, and display search results based on the product name entered by the user. Improvements in this area are crucial because they directly impact the ease with which users can find the information they need.

Furthermore, improvements to the search mechanism are expected to not only improve the accuracy of search results but also provide a better user experience through a more structured and responsive result display.

Overall, these improvements are necessary to ensure the application runs stably, is easy to use, and more fully meets user needs.

The results of the second test and a detailed evaluation summary of each tested function can be seen in Table 4 below, as a continuation of the overall system quality analysis.

Table 4. Second Test Results

Tasted Function	Testing Method	Expected Results	Test Results
Product list Display	Opens the main page	The system displays the dashboard or main application page.	Success
	Product Selection	The system displays the product	Success
	Product List Display	The system displays the product List	Success

Product Search	The system displays the main page.	The system displays the dashboard or main application page.	Success
	Click the search menu	The system displays a successful search.	Success
	Enter the product name	The system displays the product you are searching for.	Success
Product Selection	The system displays the main page	The system displays the dashboard or main application page.	Success
	Click a product	The system displays product details.	Success

As shown in Table 4 (four) above, the results of the second test, indicate that several additional test points were added, referring to the first phase of testing. The first test focused solely on the system's ability to display a product list and ensure that each product could be accessed through the search function. However, in the second test, the evaluation scope was expanded to not only test the system's ability to display a product list, but also include the process of entering a product name in the search field, verifying the system's response after the user clicks on a displayed product, and ensuring that the system displays detailed product information consistently and without errors. This was done to assess the system's stability and reliability when faced with various repeated usage scenarios(Mandler et al., 2021).

Furthermore, testing was conducted to determine whether all interface elements functioned as a unified whole, from the dashboard display, product list function, product search feature, to advanced user information search. The results of the entire testing process conducted in the first and second phases indicate that the system was able to perform all functions according to user requirements, with each step, from input to output, being processed quickly, accurately, and without interruption. In summary, these results suggest that Salapak fulfills its functional goals, but there is still potential for strategic improvement. From a functional standpoint, the application offers MSMEs a well-organized digital environment to showcase their products more professionally and connect with a larger audience. In practical terms, the system tackles particular challenges faced by MSMEs, such as limited visibility, low digital literacy levels, and inadequate promotional outreach. However, Salapak still faces constraints due to the lack of digital payment options, absence of AI-driven product suggestions, and no capabilities for real-time tracking. features that contemporary consumers are increasingly looking for. Resolving these shortcomings will be crucial for the platform's competitiveness against established marketplaces and its ability to maintain long-term usage by MSMEs.

CONCLUSION

Based on the research results, it can be concluded that the Android-based Salapak marketplace application can significantly address the key challenges faced by MSMEs in Kawaluyaan, Bandung City, particularly the difficulty in accessing digital technology for marketing and promotional activities. By implementing Agile Extreme Programming methods, the application development process can be carried out flexibly and more tailored to user needs, resulting in an effective digital platform for increasing product awareness and expanding the market for MSMEs.

The results of two-stage testing indicate that all key application features, from the product catalog display and search feature to product information, the ordering process, and even email invoice delivery, operate smoothly, accurately, and stably. This demonstrates that the Salapak application can efficiently facilitate digital communication between consumers and MSMEs and strengthen the digital marketing ecosystem at the local level. Therefore, this study demonstrates that adopting digital technology through an organized, official platform can increase MSME competitiveness and encourage community-based economic growth. However, several improvements are still needed to meet more comprehensive standards for the app, such as integrating a secure digital payment system, developing a better user interface and experience, implementing real-time delivery tracking, and implementing artificial intelligence to provide more relevant product recommendations. These improvements are expected to strengthen the Salapak app's capabilities and make it a more competitive and sustainable digital marketing platform.

REFERENCE

Agustina, A., & Sukmono, R. A. (2023). Social Media As Digital Marketing Tool in MSMEs : Systematic Literature Review [Media Sosial Sebagai Alat Pemasaran Digital di UMKM : Tinjauan Literatur Sistematis. *Universitas Muhammadiyah Sidoarjo*, 1–10.

Alba, J., Lynch, J., Weitz, B., Janiszewski, C., Lutz, R., Sawyer, A., & Wood, S. (1997). Interactive Home Shopping: Consumer, Retailer, and Manufacturer Incentives to Participate in Electronic Marketplaces. *Journal of Marketing*, *61*(3), 38–53. https://doi.org/10.1177/002224299706100303

Aremu, A. Y., & Arfan, S. (2023). Factors Influencing the Usage of E-Business to Improve SME Performance. *International Journal of E-Business Research*, *19*(1), 1–16. https://doi.org/10.4018/IJEBR.324065

Costa Melo, D. I., Queiroz, G. A., Alves Junior, P. N., Sousa, T. B. de, Yushimito, W. F., & Pereira, J. (2023). Sustainable digital transformation in small and medium enterprises (SMEs): A review on performance. *Heliyon*, *9*(3), 13908. https://doi.org/10.1016/j.heliyon.2023.e13908

Deku, W. A., Wang, J., & Preko, A. K. (2024). Digital marketing and small and medium-sized enterprises' business performance in emerging markets. *Asia Pacific Journal of Innovation and Entrepreneurship*, *18*(3), 251–269. https://doi.org/10.1108/apjie-07-2022-0069

Denny Jean Cross, S. (2024). Regional Potential Information System: Implementing Extreme Programming Methodology for Sustainable Development-Denny Jean Cross Sihombing Regional Potential Information System: Implementing Extreme Programming Methodology for Sustainable Development. *Informatika Dan Sains*, *14*(1), 1–11. https://doi.org/10.54209/infosains.v14i01.3685

Dingsøyr, T., Nerur, S., Balijepally, V., & Moe, N. B. (2012). A decade of agile methodologies: Towards explaining agile software development. *Journal of Systems and Software*, *85*(6), 1213–1221. https://doi.org/10.1016/j.jss.2012.02.033

Dwivedi, Y. K., Ismagilova, E., Hughes, D. L., Carlson, J., Filieri, R., Jacobson, J., Jain, V., Karjaluoto, H., Kefi, H., Krishen, A. S., Kumar, V., Rahman, M. M., Raman, R., Rauschnabel, P. A., Rowley, J., Salo, J., Tran, G. A., & Wang, Y. (2021). Setting the future of digital and social media marketing research: Perspectives and research propositions. *International Journal of Information Management*, *59, 102168*. https://doi.org/10.1016/j.ijinfomgt.2020.102168

Endris, E., & Kassegn, A. (2022). The role of micro, small and medium enterprises (MSMEs) to the sustainable development of sub-Saharan Africa and its challenges: a systematic review of evidence from Ethiopia. *Journal of Innovation and Entrepreneurship*, *11*(1). https://doi.org/10.1186/s13731-022-00221-8

Fauzi, A. A., & Sheng, M. L. (2022). The digitalization of micro, small, and medium-sized enterprises (MSMEs): An institutional theory perspective. *Journal of Small Business Management*, *60*(6), 1288–1313. https://doi.org/10.1080/00472778.2020.1745536

Gao, J., Siddik, A. B., Khawar Abbas, S., Hamayun, M., Masukujjaman, M., & Alam, S. S. (2023). Impact of E-Commerce and Digital Marketing Adoption on the Financial and Sustainability Performance of MSMEs during the COVID-19 Pandemic: An Empirical Study. *Sustainability (Switzerland*, *15*(2). https://doi.org/10.3390/su15021594

Hadi, D. F., & Zakiah, K. (2021). Strategi Digital Marketing Bagi UMKM (Usaha Mikro Kecil Menengah) untuk Bersaing di Era Pandemi_Strategi Digital Marketing Bagi UMKM (Usaha Mikro Kecil Menengah) untuk Bersaing di Era Pandemi. *Competitive*, *16*(1), 32–41. https://doi.org/10.36618/competitive.v16i1.1171

Ika, S. (2023). a Systematic Literature Review on Financing Micro, Small and Medium Enterprises (Msmes. *Journal of Social Political Sciences*, 397–409. https://e-journal.unas.ac.id/jsps/article/view/210%0Ahttps://e-journal.unas.ac.id/index.php/jsps/article/download/210/165

Kilay, A. L., Simamora, B. H., & Putra, D. P. (2022). The Influence of E-Payment and E-Commerce Services on Supply Chain Performance: Implications of Open Innovation and Solutions for the Digitalization of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, *8*(3). https://doi.org/10.3390/joitmc8030119

Mandler, T., Bartsch, F., & Han, C. M. (2021). Brand credibility and marketplace globalization: The role of perceived brand globalness and localness. *Journal of International Business Studies*, *52*(8), 1559–1590. https://doi.org/10.1057/s41267-020-00312-2

Maycotte, S., Alvarez-Risco, A., Garcia-Valenzuela, E., & Kuljis, M. (2025). Digital capabilities in emerging market firms: Construct development, scale validation, and implications for SMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, *11*(2), 100513. https://doi.org/10.1016/j.joitmc.2025.100513

Pambudi, A., & Apriandari, W. (2023). An Extreme Programming Approach for Instructor Performance Evaluation System Development. *Journal of Informatics Information System Software Engineering and Applications (INISTA*, *5*(2), 126–135. https://doi.org/10.20895/inista.v5i2.1050

Poole, S. M., Grier, S. A., Thomas, K. D., Sobande, F., Ekpo, A. E., Torres, L. T., Addington, L. A., Weekes-Laidlow, M., & Henderson, G. R. (2021). Operationalizing Critical Race Theory in the Marketplace. *Journal of Public Policy and Marketing*, *40*(2), 126–142. https://doi.org/10.1177/0743915620964114

Purwanti, I., Lailyningsih, D. R. N., & Suyanto, U. Y. (2022). Digital Marketing Capability and MSMEs Performance: Understanding the Moderating Role of Environmental Dynamism. *Jurnal Manajemen Teori Dan Terapan | Journal of Theory and Applied Management*, *15*(3), 433–448. https://doi.org/10.20473/jmtt.v15i3.39238

Putu, A., Mas, Y. M., Andi Reza, P., & Hanifah, M. A.-Z. (2023). Perancangan Antarmuka Website E-commerce UMKM Pertenunan Pelangi Dengan Metode Design Thinking. *Jurnal Teknik Informatika Dan Sistem Informasi*, *10*(4), 453–466. http://jurnal.mdp.ac.id

Rahayu, R., & Day, J. (2017). E-commerce adoption by SMEs in developing countries: evidence from Indonesia. *Eurasian Business Review*, *7*(1), 25–41. https://doi.org/10.1007/s40821-016-0044-6

Ramanathan, R., Ramanathan, U., & Hsiao, H. L. (2012). The impact of e-commerce on Taiwanese SMEs: Marketing and operations effects. *International Journal of Production Economics*, *140*(2), 934–943. https://doi.org/10.1016/j.ijpe.2012.07.017

Redmiles, D. F., & Hilbert, D. M. (2000). Extracting usability information from user interface events. *ACM Computing Surveys*, *32*(4), 384–421.

Salah, O. H., & Ayyash, M. M. (2024). E-commerce adoption by SMEs and its effect on marketing performance: An extended of TOE framework with ai integration, innovation culture, and customer tech-savviness. *Journal of Open Innovation: Technology, Market, and Complexity*, *10*(1), 100183. https://doi.org/10.1016/j.joitmc.2023.100183

Sharabati, A. A. A., Ali, A. A. A., Allahham, M. I., Hussein, A. A., Alheet, A. F., & Mohammad, A. S. (2024). The Impact of Digital Marketing on the Performance of SMEs: An Analytical

Study in Light of Modern Digital Transformations. *Sustainability (Switzerland*, *16*(19), 1–25. https://doi.org/10.3390/su16198667

Siriwat, P., & Nijman, V. (2020). Wildlife trade shifts from brick-and-mortar markets to virtual marketplaces: A case study of birds of prey trade in Thailand. *Journal of Asia-Pacific Biodiversity*, *13*(3), 454–461. https://doi.org/10.1016/j.japb.2020.03.012

Wang, L., Chen, J., & Song, H. (2021). Marketplace or reseller? Platform strategy in the presence of customer returns. *Transportation Research Part E: Logistics and Transportation Review*, *153*(August 2020), 102452. https://doi.org/10.1016/j.tre.2021.102452

Wijaya, L. I., Zunairoh, Z., Izharuddin, M., & Rianawati, A. (2025). Scope of E-Commerce use, innovation capability, and performance: Food sector MSMEs in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, *11*(1), 100459. https://doi.org/10.1016/j.joitmc.2024.100459

Wood, S., Michaelides, G., & Thomson, C. (2013). Successful extreme programming: Fidelity to the methodology or good teamworking? *Information and Software Technology*, *55*(4), 660–672. https://doi.org/10.1016/j.infsof.2012.10.002