DESIGN AND DEVELOPMENT OF SMARTKULINER: A MULTIMEDIA-ENHANCED WEB PLATFORM FOR CULINARY PRODUCT PROMOTION

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ABSTRACT	*This paper presents the design and development of SmartKuliner, a web-based culinary marketplace enhanced with multimedia features to support culinary product promotion. The platform integrates visual design, user-centered interface, and multimedia content to improve user engagement and trust. The development process adopts a multimedia development life cycle (MDLC) and emphasizes usability testing. Results indicate that SmartKuliner provides an effective medium for culinary businesses to promote products and for users to discover trusted local culinary items.*
KEYWORDS	Multimedia, Web Platform, Culinary Marketplace, SmartKuliner, User Experience

INTRODUCTION

The rapid growth of digital marketplaces has significantly transformed the way consumers discover, evaluate, and purchase products(S Devaraja T & Ramya D J, 2024). In the culinary sector, digital platforms play an important role in connecting micro, small, and medium-sized enterprises (MSMEs) with potential customers(Purnama et al., 2022). However, competition in the online marketplace is increasingly intense, and visual as well as interactive elements are becoming key factors in attracting consumer attention(Abdullah et al., 2025; Md Humayun Kabir et al., 2025). Multimedia integration such as high-quality images, appealing layouts, and interactive content has been proven to enhance user engagement and improve purchasing decisions(Cano et al., 2023; Petcharat & Leelasantitham, 2021; Rahmanto, 2024).

Despite the potential, many culinary MSMEs still face challenges in promoting their products effectively in digital environments(Rahman, 2023). Existing platforms often provide only basic transactional features, with limited support for multimedia-driven promotion(Fernanda & Hariyanto, 2024). As a result, culinary businesses struggle to highlight the uniqueness of their products and to differentiate themselves in a crowded market(Anindhita et al., 2022). This limitation not only reduces their competitiveness but

also constrains their ability to adapt to the evolving expectations of digitally savvy consumers(Nugroho Luthfi Imam Fahrudi et al., 2025).

This condition reflects a clear research gap in the design of culinary-focused marketplaces. While most platforms concentrate primarily on facilitating transactions, few emphasize the role of multimedia in shaping user experience and promoting trust(Ekasari, 2024). Addressing this gap requires a platform that not only supports buying and selling but also empowers MSMEs with multimedia-rich promotional tools(Tan & Chen, 2021).

To respond to this challenge, SmartKuliner was developed as a web-based platform that integrates multimedia features to enhance product promotion and user interaction(Juanna et al., 2024). By combining modern UI/UX design, interactive product presentation, and multimedia-driven engagement, SmartKuliner seeks to create a differentiated digital environment where culinary MSMEs can compete more effectively(Telaumbanua et al., 2025). The platform is envisioned not merely as a marketplace, but as a promotional medium that prioritizes user experience, thereby bridging the gap between digital commerce and multimedia-based engagement(Liu, 2024).

RESEARCH METHOD

This research adopts the Multimedia Development Life Cycle (MDLC) approach(Roedavan et al., 2025), which provides a structured framework for designing and implementing multimedia-based applications(Hariandja, 2025). MDLC was chosen because it emphasizes the integration of multimedia elements such as images, visual design, and interactivity, which are crucial for enhancing user engagement in digital marketplaces(Roedavan et al., 2025). In addition, agile principles were applied to ensure flexibility and iterative improvement during development(M. Arrasyid Rakhmadaszan et al., 2024). The development process consists of the following stages:

1. **Concept**

In this stage, the main idea of SmartKuliner was formulated as a culinary marketplace that not only facilitates transactions but also emphasizes multimedia-based product promotion. The scope, target users, and key features were identified.
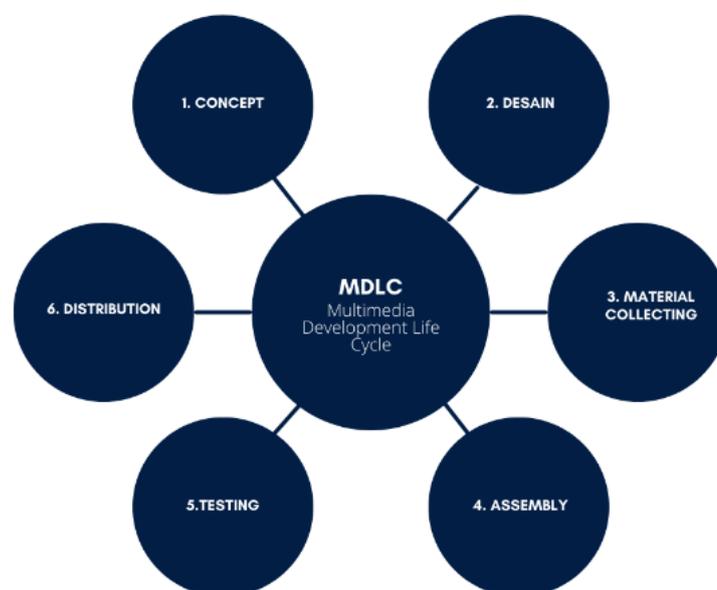

Figure 1. MDLC workflow diagram

2. Design

User Interface (UI) and User Experience (UX) mockups were developed to illustrate the structure and navigation of the platform. Multimedia integration such as product images, color schemes, and layout organization were considered to improve user interaction.

Figure 2. UI/UX mockup of SmartKuliner

3. Material Collection

Culinary product data including descriptions, images, and in some cases videos were collected from local MSMEs. This material was prepared to be integrated into the platform for demonstration and testing.

4. Assembly

The system was implemented using Next.js as the primary framework, with TailwindCSS for styling. The application was deployed on Vercel for fast and reliable hosting. Multimedia assets such as icons and product photos were integrated into the interface.

Figure 3. Screenshot of SmartKuliner interface after assembly

5. **Testing**

Usability and functional testing were conducted with participants to ensure the platform met user needs. Usability testing focused on navigation ease, interface clarity, and multimedia effectiveness, while functional testing verified system stability and feature performance.

6. **Distribution**

The platform was hosted on Vercel, making it accessible to users for real-time testing and demonstration

RESULT AND DISCUSSION

Design Outcome

The design of SmartKuliner emphasizes a clean and modern user interface. A dark sidebar layout was combined with bright product cards to create visual contrast and improve readability. Each product card integrates multimedia elements such as high-resolution photos, product descriptions, and a rating system that enhances user trust and engagement.

Figure 4. Screenshot of SmartKuliner homepage Login and product cards

Features Implemented

Several core features were successfully implemented in SmartKuliner, including:
a) Guest Mode Browsing: Users can explore products without requiring immediate registration.
b) Login/Registration: Registered users gain access to advanced features.
c) Product Rating and Reviews: Users can rate and provide feedback on culinary items.
d) Categorized Content and Recipes: Products and recipe-related content are organized for easier discovery.

Table 1: Summary of features implemented in SmartKuliner

Feature	Description	Status
Guest Mode Browsing	Users can explore products without registration.	Implemented
User Registration & Login	Allows sellers and buyers to create accounts for personalized features.	Implemented
Product Catalog	Culinary products displayed with images, prices, and descriptions.	Implemented

Product Rating System	Buyers can rate products to build trust and credibility.	Implemented
Categorized Content	Products and recipes organized by categories for easy navigation.	Implemented
Recipe Section	Provides cooking tips and recipe sharing to engage users.	Implemented
Responsive UI/UX	Clean, modern design with sidebar navigation and bright product cards.	Implemented
Multimedia Integration	High-quality images and visual elements enhance engagement.	Implemented
Basic Seller Management	Sellers can list products, but with limited dashboard features.	Partial
Payment Gateway	Secure online payment options.	Not yet implemented

Table 1 summarizes the core features currently implemented in the SmartKuliner platform. The system provides essential functionalities such as guest browsing, user registration, product catalog with multimedia integration, and a product rating system that enhances buyer trust. Additionally, categorized content and a recipe section were designed to increase user engagement and differentiate the platform from conventional marketplaces. While most features are fully implemented, seller management tools remain limited, and payment gateway integration has not yet been developed, highlighting areas for future enhancement.

Usability Testing

Following the implementation of these features, usability testing was conducted to evaluate how effectively SmartKuliner supports both sellers and buyers in navigating the platform. The testing aimed to measure user satisfaction with the interface, assess the role of multimedia elements in product promotion, and identify potential usability issues. This step was essential to validate whether the features summarized in Table 1 meet the expectations of typical culinary marketplace users in Surakarta.

Usability testing was conducted with 20–30 participants consisting of culinary MSME sellers and potential buyers. The evaluation revealed:

a) The majority of users reported that navigation was intuitive and easy to understand.
b) Multimedia integration (images, layout, and color scheme) contributed positively to user satisfaction and engagement.
c) Identified limitations included the absence of a payment gateway and limited functionality for the seller dashboard.

Table 2: Usability testing results with percentage of user satisfaction per criterion

No	Evaluation Aspect	Indicators	Average Score (1–5)	Remarks
1	**Navigation**	Ease of finding products, menu consistency, and user flow	4.3	Easy to use
2	**Interface Design (UI/UX)**	Layout clarity, color combination, text readability, and visual aesthetics	4.5	Attractive & clear
3	**Multimedia Content**	Quality of product photos, clarity of descriptions, usefulness of ratings	4.6	Good photos & descriptions
4	**Speed & Responsiveness**	Page loading time, compatibility on desktop and mobile devices	4.2	Fairly fast
5	**Login/Registration Ease**	Simplicity of registration process, accessibility of additional features	4.1	Easy process

6	**Overall Satisfaction**	General satisfaction after using the platform	4.4	Overall satisfied

The usability testing results of SmartKuliner indicate that the platform provides a positive user experience, particularly in terms of navigation, design, and multimedia integration. The navigation aspect scored an average of 4.3, suggesting that participants found it relatively easy to explore products and access features. Similarly, the interface design received a high score of 4.5, showing that the combination of clear layouts, color schemes, and readable typography contributed to user satisfaction. These findings highlight the importance of visual clarity and intuitive structure in supporting a seamless browsing experience.

Multimedia content achieved the highest score of 4.6, emphasizing its role in enhancing product appeal and building trust among users. Participants noted that high-quality product images, descriptive text, and the rating system made the browsing experience more engaging and informative. This aligns with existing research suggesting that multimedia elements are key drivers in online purchasing behavior, particularly for culinary products where visual cues strongly influence customer perception.

Although the overall results were positive, certain areas require improvement. Speed and responsiveness (4.2) and the login/registration process (4.1) were rated lower compared to other aspects, indicating that technical optimization and simplified authentication workflows are necessary. Nevertheless, the overall satisfaction score of 4.4 demonstrates that SmartKuliner has strong potential as a multimedia-enhanced culinary platform. Future iterations can further strengthen the system by integrating additional features such as payment gateways, seller dashboards, and video-based promotions to increase scalability and user engagement.

Discussion

The results indicate that multimedia integration in SmartKuliner significantly contributes to enhancing user trust and product appeal. Culinary products displayed with appealing photos and detailed descriptions received higher engagement compared to text-only presentations. This finding aligns with prior studies that highlight the role of multimedia in increasing consumer confidence in online marketplaces.

Although SmartKuliner successfully demonstrated its capability as a multimedia-enhanced culinary platform, certain limitations remain. The lack of a payment gateway and limited seller-side features suggest the need for further development. Future iterations of the platform could incorporate advanced features such as video-based product promotion, interactive live selling, and integration with digital payment systems to expand usability and scalability.
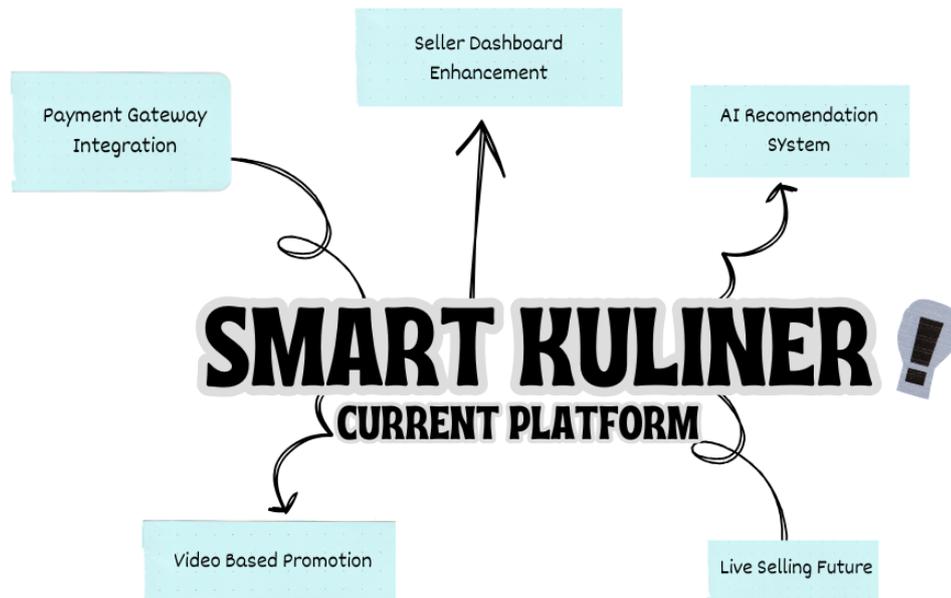
Figure 5. Illustration or conceptual diagram of potential future enhancements

CONCLUSION

This study presented the design and development of SmartKuliner, a multimedia-enhanced web platform aimed at supporting culinary product promotion. By adopting the Multimedia Development Life Cycle (MDLC), the system was successfully implemented with key features such as guest browsing, login/registration, product ratings, and categorized content. Usability testing with participants from the Surakarta community demonstrated that the platform is easy to use, visually appealing, and effective in presenting culinary products. The integration of multimedia elements, including product photos and descriptive content, significantly improved user engagement and trust.

Despite its positive outcomes, SmartKuliner still has certain limitations. The absence of a payment gateway and a limited seller dashboard reduce its functionality as a fully transactional marketplace. Technical aspects such as responsiveness and login procedures also require further optimization.

For future works, the platform can be expanded in several directions. First, integrating secure digital payment systems and logistics features will enhance transactional capabilities. Second, incorporating video-based product promotion and live-selling features can further strengthen user engagement. Third, developing a mobile application version will improve accessibility for broader audiences. Finally, future research may explore artificial intelligence (AI)-driven recommendation systems to personalize user experiences and increase marketplace competitiveness.

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