JURNAL INFORMATIKA DAN REKAYASA PERANGKAT LUNAK (JATIKA)
Volume 6, Number 2, June 2025, Page 183-195
E-ISSN 2797-2011 P-ISSN 2797-3492
https://publikasi.teknokrat.ac.id/index.php/jatika/index
DOI: https://doi.org/10.33365/jatika.v6i2.272

Design and Implementation of a Website-Based E-Commerce System for Digitalizing Agricultural Marketing and Empowering Local Farmers in Talawaan

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Abstract: This research emphasizes the development and execution of an online e-commerce platform designed to support the marketing of agricultural products in Talawaan District.The research addresses the limited market access and digital marketing adoption among local farmers by developing a comprehensive e-commerce platform. The system's design employed the Rapid Application Development (RAD) methodology, undergoing iterative processes that encompassed requirements analysis, system design utilizing DFD and ERD, implementation, and Black Box Testing. The developed e-commerce system incorporates features such as product management capabilities, integrated payment methods, seller dashboards, and user-friendly interfaces tailored to farmers' technical capabilities. The findings indicate the efficacy of the system in digitalizing agricultural marketing processes, thereby empowering farmers to autonomously manage their products and expand their market reach without the need for intermediaries. The implementation has demonstrated positive impacts on farmers' digital literacy and product competitiveness. This research contributes to the digital transformation of agricultural marketing in rural areas and provides a replicable model for similar contexts.

Keywords: E-Commerce; Information Systems; Website Development; Digital Transformation; Rapid Application Development

1. INTRODUCING

The swift evolution of digital systems has significantly changed the structure of business and commerce, enabling organizations and individuals to interact, transact, and manage operations more efficiently through digital means [1], [2]. E-business, which utilizes the internet and digital media, has emerged as a predominant paradigm for accessing information and conducting business activities, unbound by spatial or temporal constraints [3], [4]. Consequently, this paradigm has led to an augmentation in market reach and operational efficiency. Within the broader context of e-business, e-commerce emerges as a pivotal catalyst for digital transformation, offering platforms that facilitate direct and dynamic interactions between buyers and sellers within online environments [5].

Digital marketplaces represent a major innovation within the e-commerce ecosystem. In contrast to individual or corporate online stores, marketplaces function as intermediaries, providing a consolidated platform through which multiple sellers can present their products and buyers can access

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a wide array of goods [6]. This model not only facilitates transactions but also plays a strategic role in supporting the marketing of local agricultural products. By circumventing intermediaries, farmers are able to broaden their market access and secure more competitive prices.

Recent studies have emphasized the mounting significance of digital marketplaces within rural and agricultural contexts. The integration of e-commerce platforms has been demonstrated to enhance distribution efficiency, augment transparency, and empower local producers by facilitating direct interaction with consumers [7], [8], [9]. However, in regions such as Talawaan District, North Minahasa, the utilization of e-commerce remains limited [10]. Surveys indicate that while a majority of residents prefer informal online trading through social media platforms like Facebook, these channels lack structured features for product discovery, transaction management, and information completeness. Consequently, local products frequently encounter challenges in achieving adequate visibility and effectively reaching potential buyers.

The dearth of a dedicated, user-friendly e-commerce platform tailored to the needs of Talawaan's local farmers poses a substantial obstacle to their digital market integration. Analogous challenges have been identified in other rural regions, where the dearth of accessible and feature-rich online marketplaces impedes the capacity of farmers and artisans to augment their market reach and enhance their livelihoods [11]. Addressing these issues necessitates the development of an integrated information system that facilitates online transactions and supports the unique requirements of local agricultural producers.

Consequently, the present research aims to develop and deploy a website e-commerce digital platform tailored to the specific needs of the Talawaan District. The study employs a user-centered approach and utilizes the Rapid Application Development (RAD) methodology to create a digital platform. The objective of this platform is to enhance the marketing capabilities of local farmers, increase product accessibility, and contribute to the broader digital transformation of rural commerce. The system is expected to provide structured product management, efficient transaction processes, and an enhanced shopping experience for both sellers and consumers. Ultimately, the system is expected to empower local communities and strengthen the regional agricultural economy.

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2. RESEARCH METHODOLOGY

2.1. Research Approach

The present study employs the Rapid Application Development (RAD) methodology to develop and deploy a web-oriented e-commerce digital platform for agricultural product marketing in Talawaan District. The RAD approach was selected for its iterative, user-centered methodology, which has been demonstrated to expedite development and ensure that the resulting system closely aligns with user needs [12].

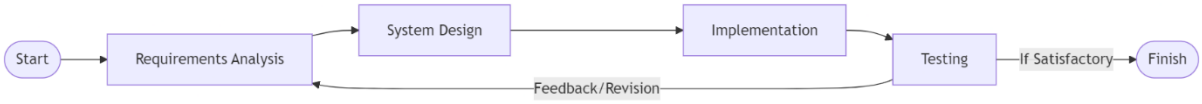

Figure 1. RAD Method

The key is to emphasize that several phases-especially user design and construction-are revisited multiple times based on feedback and refinement, rather than following a strictly linear path.

2.2. Research Stages

The following is a delineation of the stages of the research. The research methodology is comprised of the following stages:

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1. Needs Analysis

The necessity of a needs analysis is hereby indicated. That data collection process entailed the conduction of interviews and the administration of questionnaires to local farmers and stakeholders. The aim of this effort is to identify the challenges that exist in the field of agricultural marketing, as well as the system requirements deemed necessary to address these challenges.

2. System Design

The system architecture and features were modeled using DFD and ERD. During the design phase, particular emphasis was placed on ensuring usability and accessibility for users with varying degrees of digital literacy.

3. Development and Implementation

The e-commerce system was developed iteratively, with continuous feedback from users at each prototype stage. The system incorporates several key features, including product catalog management, online transaction processing, and a user dashboard designed for farmers.

4. Testing and Implementation

Black Box Testing was implemented to validate the functionality of the system and ensure that all features operated in accordance with the established specifications. User acceptance testing was also conducted to assess usability and satisfaction.

2.3. Research Data-Gathering Methods

Research data-gathering methods refer to structured approaches for obtaining information from multiple sources, such as interviews, observations, questionnaires, and document analysis, to assist in research, analysis, and decision-making.

Table 1. Data Collection Techniques

Technique	Description	Purpose/Outcome
Interviews	Structured discussions with farmers and stakeholders to explore marketing challenges and system needs.	Gain qualitative insights for system requirements.
Questionnaires	Surveys distributed to farmers to assess needs, preferences, and readiness for digital marketing.	Quantify user needs and prioritize system features.
Observation	Field visits to observe real marketing activities and technology use in context.	Validate and contextualize data for relevant system design.

The utilization of a combination of techniques was imperative to ensure a comprehensive understanding of user requirements and contextual factors. This combination of techniques formed a robust foundation for the system's design and implementation in accordance with information systems research standards.

2.4. Tools and Technologies

The development and evaluation of the web-based tracer study information system utilized a set of integrated tools and techniques to ensure robust functionality, usability, and data integrity.

Table 2. Tools and Technologies

RAD Stage	Description	Technologies/Tools Used
Requirements Planning	Gathering user needs and system requirements through interviews, questionnaires, and observation with stakeholders.	Interview guides, questionnaires, observation sheets, documentation tools

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User Design (Prototyping)	Designing system models and interfaces iteratively with user feedback; creating prototypes.	DFD, ERD, wireframing tools, HTML/CSS
Rapid Construction	Developing the actual system modules based on approved prototypes and continuous feedback from users.	PHP, MySQL, HTML, CSS, JavaScript, local server (XAMPP/LAMP)
Testing & Evaluation	Validating system functionality and usability through Black Box Testing, SUS, and Likert Scale questionnaires.	Black Box Testing scripts, System Usability Scale (SUS) forms, Likert questionnaires

This table aligns each RAD phase with the specific activities and tools/technologies used in the development of the Talawaan Craft e-commerce system. Iterations occur between the User Design and Rapid Construction stages, incorporating continuous user feedback before final deployment.

2.5. Testing and Analysis Method

This section outlines the methods used to evaluate the functionality and user experience of the e-commerce system, including Black Box Testing, the SUS (System Usability Scale), and the Likert Scale assessment tool, as applied in this study.

BlackBox Testing

Black Box Testing was utilized in order to evaluate the application's functional performance without inspecting the internal programming logic [13]. The objective of the method was to ascertain whether all features—such as user registration, product management, transaction processing, and payment integration—operated in accordance with the established specifications.

System Usablity Scale (SUS)

The SUS (System Usability Scale) is a widely used survey instrument containing 10 statements designed to evaluate user experience with the application [14]. Responses are gathered using a five-point Likert format ranging from 1 (Totally Disagree) to 5 (Totally Agree) [15]. SUS scoring is determined through the following calculation:

$$SUS = \left(\sum_{i=ODD} (Q_i - 1) + \sum_{j=EVEN} (5 - Q_j) \right) \times 2.5 \quad (1)$$

Where Q_i and Q_j represents the user's response to each question. The score ranges from 0 to 100, with higher scores indicating better usability. An average SUS score is approximately 68; scores above this indicate above-average usability, while lower scores suggest usability issues.

Table 3.SUS Score Range

SUS Score Range	Interpretation	Usability Level
0 – 25	Worst imaginable	Unacceptable
26 – 39	Poor	Major usability issues
40 – 52	OK	Below average usability
53 – 73	Good	Average to above average
74 – 85	Excellent	High usability
86 – 100	Best imaginable	Superior usability

Likert Scale

In addition to SUS, a Likert Scale questionnaire was used to assess user satisfaction and perceptions on various system attributes such as interface design, navigation, and transaction convenience. Participants rated their agreement on a scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The collected data were analyzed to identify strengths and areas for improvement in the system's user experience.

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Table 4. Likert Scale Value

Likert Scale Value	Description
1	Strongly Disagree
2	Disagree
3	Neutral
4	Agree
5	Strongly Agree

3. RESULT AND DISCUSSIONS

3.1. User Needs and System Requirements

Identification of User Needs

A comprehensive data collection process, encompassing interviews, questionnaires, and observational studies, was conducted in Talawaan District. This multifaceted approach yielded critical insights into the key user needs for the e-commerce system designed to facilitate the marketing of local farmers' products. The user base is predominantly comprised of local farmers (sellers) and consumers (buyers), who necessitate a platform that is characterized by ease of use, reliability, and customization to their particular agricultural product marketing contexts.

The questionnaire was designed to collect both qualitative and quantitative data concerning user needs, preferences, and readiness to adopt the e-commerce system. The sample size of 30 respondents is consistent with the scope of the study, focusing on a manageable group representative of the Talawaan District farming community. This number allows for meaningful statistical analysis of Likert scale responses and SUS usability scores while maintaining feasibility for in-depth interviews and observation. The iterative development process incorporated feedback from these users to prioritize system features and improve usability in subsequent iterations. This user involvement level is consistent with standard information systems research practices for prototype testing and usability evaluation in localized contexts. These practices ensure that system design is user-centered and grounded in actual user requirements.

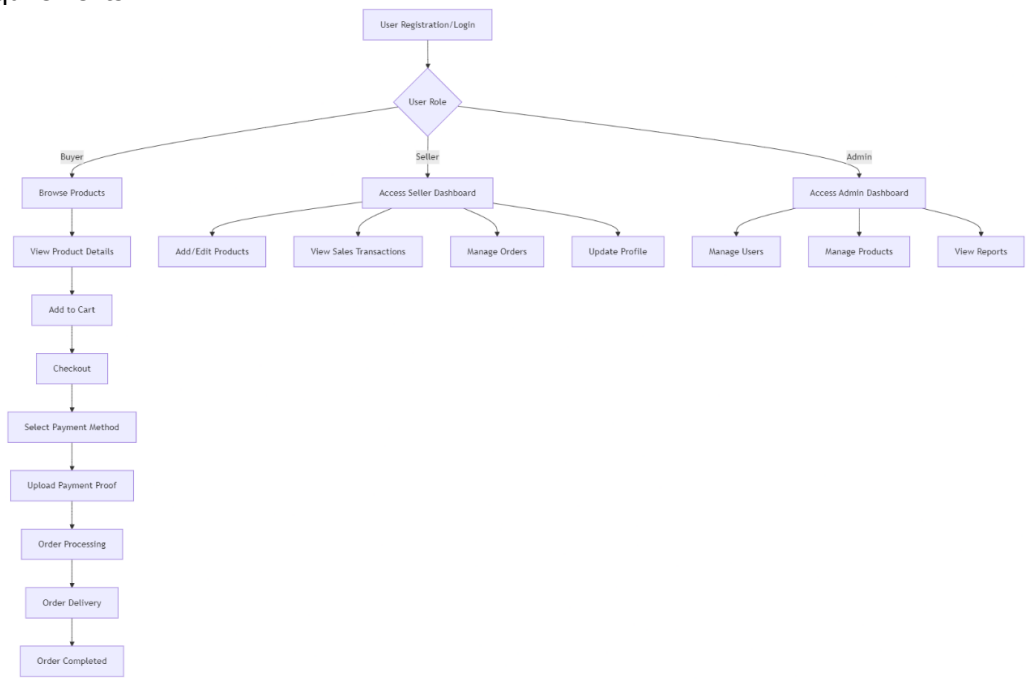

Figure 2. System Flowchart

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Mapping User Needs to System Requirement and Goals

The user needs were translated into concrete system requirements to guide the design and development of the Talawaan Craft e-commerce system. These requirements prioritize features that enable product listing and management, simple and secure payment methods, product search functionality, and user-friendly interfaces. The system goals focus on expanding market access for farmers, improving transaction efficiency, and enhancing the overall user experience.

Table 5. User Needs Questions

No	Question	Purpose/Requirement Addressed
1	How important is it for you to easily search for local agricultural products on the platform?	Product search functionality
2	Do you need a simple and clear way to add and manage your products as a seller?	Product management for sellers
3	How essential is having multiple payment options (e.g., bank transfer, cash on delivery)?	Payment method flexibility
4	Would you prefer a system that allows you to track your orders and transactions easily?	Order tracking and transaction transparency
5	How important is it for you to have a secure login and profile management?	User account security and profile management
6	Do you need notifications or alerts about order status or promotions?	Notification system
7	How much do you value a simple and intuitive interface that requires minimal digital skills?	Usability and accessibility
8	Would you like to have a chat or communication feature with sellers or buyers?	Communication feature
9	How important is it for you to have detailed product information and images?	Product detail completeness
10	Would you use a mobile-friendly version of the platform?	Mobile accessibility

The identified needs directly influenced the system's iterative design and development process, as reflected in the RAD methodology stages. Features requested most frequently were prioritized in the first iteration, while less critical features were developed in subsequent iterations to ensure timely delivery and user satisfaction.

The following calculation of the mean score for each question was derived from the synthesized user response data (Likert scale 1–5) for 30 users answering 10 questions related to system requirements. This calculation is followed by an analysis aligned with the requirements and ranking.

Table 6. Priority Ranking

Question	Average Score	Requirement Description	Priority Ranking
Q1	4.7	Easy product search and browsing functionality	1 (Most requested)
Q2	4.6	Simple product listing and management by sellers	2
Q3	4.5	Multiple payment methods integration	3
Q4	4.4	Order tracking and transaction status updates	5
Q5	4.6	Secure user registration and profile management	3 (tied)
Q6	3.8	Notification system for orders and promotions	6
Q7	4.7	User-friendly and accessible interface design	1 (tied)

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Q8	2.7	Chat or communication feature between users	10 (Least requested)
Q9	4.3	Detailed product information with images	7
Q10	4.0	Mobile-friendly platform version	9

The mean Likert scores substantiate the prioritization of system requirements, thereby guiding the RAD development process in an effective manner. In the initial iteration, the focal points should be search, product management, payment options, security, and usability. This will maximize user acceptance and system impact. Subsequent iterations of the system can enhance it with tracking, notifications, detailed product information, mobile support, and communication features. These enhancements are based on user feedback and resource availability.

Table 7. Iteration Stages

Priority Rank	Requirement Description	Iteration Stage
1	Product search and browsing functionality	Phase 1
2	Simple product listing and management by sellers	Phase 1
3	Secure user registration and profile management	Phase 1
4	Multiple payment methods integration	Phase 1
5	Order tracking and transaction status updates	Phase 2
6	Notification system for orders and promotions	Phase 2
7	Detailed product information with images	Phase 2
8	User-friendly and accessible interface design	Ongoing Developmnet
9	Mobile-friendly platform version	Phase 2
10	Chat or communication feature between users	Phase 2

3.2. System Architecture and Modelling

The system modeling and implementation of the Talawaan Craft e-commerce platform is designed to support the marketing of local farmers' products in Talawaan District. The system modeling encompasses Data Flow Diagrams (DFD) at Levels 0, 1, and 2, in addition to the Entity Relationship Diagram (ERD). Subsequent to the modeling stage, the implementation details of the system are delineated.

Context Diagram

The context diagram provides a general depiction of the entire system, showing the main functional components and information exchanges between external actors and the system core. It illustrates how users (buyers and sellers) interact with the e-commerce platform, as well as with external payment and delivery services.

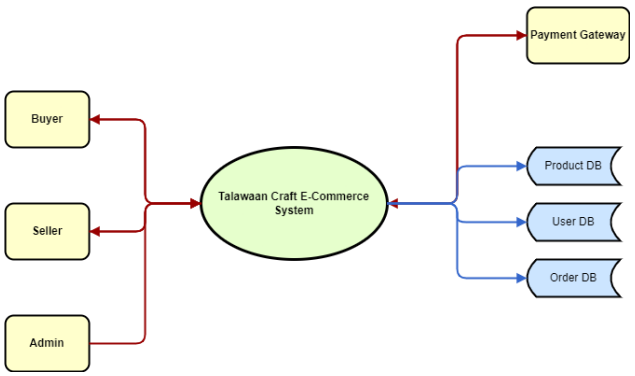

Figure 3. Context Diagram.

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Process Breakdown Diagram (Level 1)

This diagram breaks down the core system process into several sub-processes, explaining key functions including user registration and authentication, product administration, order execution, and payment procedures. This level provides insight into the movement of data within the system and between processes.

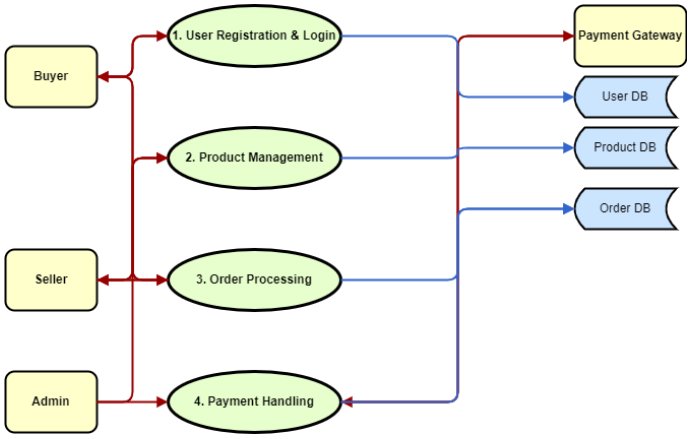

Figure 4. Process Breakdown Diagram (Level 1).

Subprocess Diagram (Level 2)

This stage provides a more granular breakdown of the intricate processes from Level 1, including components like the order handling module, by dividing them into finer, more specific operational steps. These include cart management, checkout, payment confirmation, and order status updates. This comprehensive perspective facilitates comprehension of system workflows and the subsequent design of databases and interfaces.

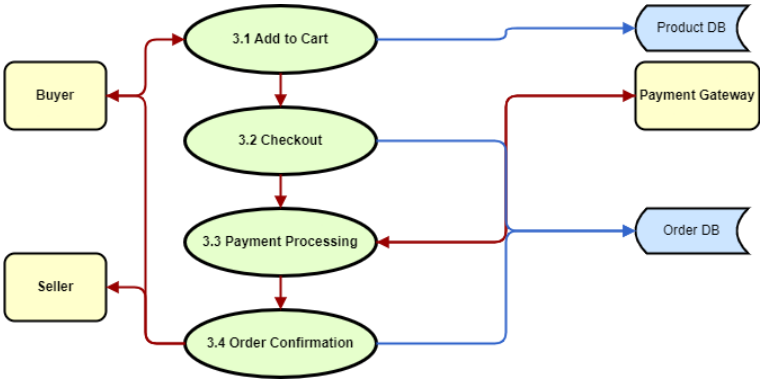

Figure 5. Subprocess Diagram (Level 2).

ERD

The ERD meticulously delineates the data structure of the e-commerce system, encompassing entities such as Users, Products, Orders, Payments, and their relationships. Key attributes for each entity are identified, and cardinalities specify how entities relate (e.g., one user can place many orders, each order contains multiple products). This diagram serves as a foundational element in the database schema design, ensuring data integrity and facilitating efficient queries for system operations such as product searches, order tracking, and user management.

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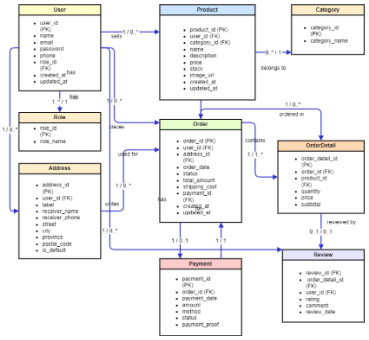
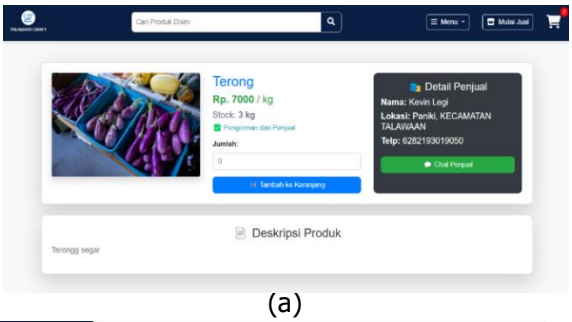


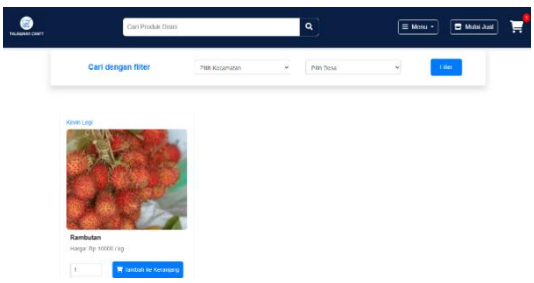
Figure 6. Entity Relationship Diagram

3.3. System Implementation

The system implementation phase entailed the development of a website-based e-commerce platform that was customized to address the requirements of Talawaan's local farmers and consumers. The frontend of the system was developed with HTML, CSS, and JavaScript technologies chosen for their capability to build adaptive and intuitive interfaces that improve usability across a variety of devices. In the backend, PHP was utilized to manage server-side logic, encompassing the handling of user requests, product administration, and transaction processing. This ensured seamless and secure interactions between the client and server. The data persistence of the system was managed through the utilization of a MySQL database, which served as the repository for critical information such as user profiles, product catalogs, orders, and payment records. To facilitate the development and testing processes, the XAMPP environment was employed to simulate a local server setup, thereby providing an integrated platform for Apache, MySQL, and PHP.



(a)



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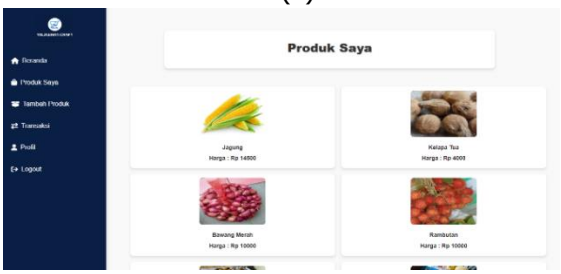

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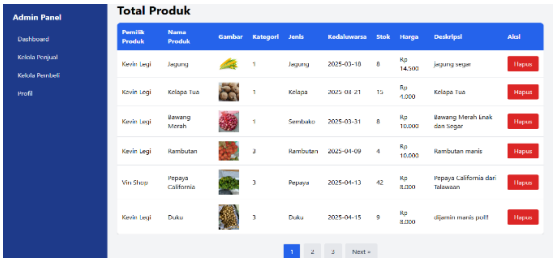

(d)

Figure 7. (a) shows the product detail page on the buyer's interface, (b) illustrates the search page on the buyer's interface, (c) displays the product page on the seller's interface, and (d) presents the product management page in the admin panel

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3.4. RAD Implementation and Iteration

The Rapid Application Development (RAD) methodology has been identified as an effective approach for designing and implementing the Talawaan Craft e-commerce system. The objective of this system is to support local farmers in marketing their products in Talawaan. RAD's emphasis on iterative development cycles, continuous stakeholder involvement, and rapid prototyping aligns well with the dynamic and evolving requirements of the system. The development process commences with a collaborative Requirements Analysis phase, wherein stakeholders, including farmers, buyers, and administrators, engage to identify and prioritize system needs. This phase is iterative rather than exhaustive, allowing requirements to evolve as prototypes are developed and feedback is incorporated. This approach addresses the limitations of existing informal platforms, such as Facebook groups, which lack structured and efficient product search and transaction features.

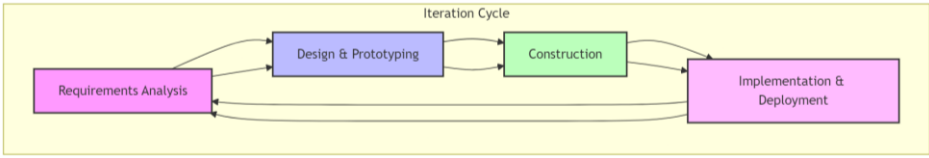

Figure 8. RAD Implementation and Iteration

Subsequent to requirements gathering, the Design and Prototyping phase swiftly generates functional prototypes of core system components, including product listing interfaces, user authentication modules, and payment processing workflows. These prototypes empower stakeholders to engage with nascent iterations of the system, thereby furnishing immediate feedback that contributes to iterative refinements. The skritti-kevin.pdf exemplifies this iterative design process through the presentation of multiple wireframe versions and user feedback cycles, thereby ensuring the system's usability and alignment with user expectations. The development stage involves quick implementation and synchronization of the client-side components (HTML, CSS, JavaScript), server-side programming (PHP), and relational database (MySQL), supported by the XAMPP platform for local testing and deployment. The implementation of continuous testing and validation during this phase is instrumental in ensuring that each iteration delivers a stable and functional system increment.

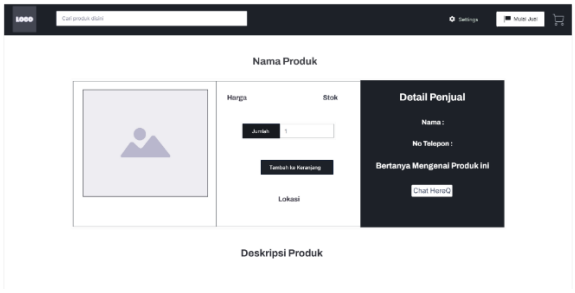

Figure 9. Wireframe of the Product Detail Page – First Iteration

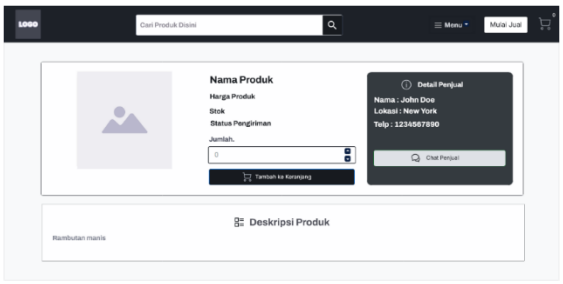

Figure 10. Wireframe of the Product Detail Page – Second Iteration

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3.5. Testing and Evaluation

The Talawaan Craft e-commerce system's testing and evaluation phase employed Black Box Testing to verify that all system features functioned optimally and met user expectations. This testing approach centered on validating the system's external behavior without examining internal code structures, ensuring that functionalities such as product search, payment methods, product management, shopping cart, checkout, and order tracking operated correctly under various scenarios. The findings indicated that the implemented system offered local farmers reliable support in marketing their products, while concurrently providing consumers with a seamless shopping experience. The system's usability and effectiveness were further substantiated by user feedback collected through questionnaires, which highlighted improvements over previous informal platforms, such as Facebook groups. The evaluation encompassed a meticulous analysis of system performance, security protocols, and user satisfaction levels. This comprehensive evaluation substantiated that the e-commerce platform effectively overcame the challenges posed by limited accessibility and inefficient product marketing within the district of Talawaan. The testing and evaluation phase confirmed the system's readiness for deployment and its capacity to enhance the local farmers' market's reach and consumer convenience.

Blackbox Testing

Black Box Testing was applied to verify critical functionalities such as product search, payment processing, shopping cart operations, order tracking, and administrative management. The testing process involved defining test cases based on system requirements, executing these cases by simulating user interactions, and validating the outputs against expected results.

Table 8. Blackbox Testing on User Module

Test Case	Test Steps	Expected Results	Evaluation Result
User Registration & Login	Enter valid and invalid credentials, submit registration/login form	Successful registration/login with valid data; error messages with invalid data	Successful
Product Listing & Search	Search for products by name/category; filter results	Relevant products displayed; filters correctly applied	Successful
Add to Cart	Select product, add to cart, verify cart contents	Product appears in cart with correct quantity and price	Successful
Remove from Cart	Remove item from cart, verify updated cart	Item removed; cart updates accordingly	Successful
Checkout & Payment	Proceed to checkout, select payment method, complete payment	Order successfully placed; payment processed; confirmation displayed	Successful
Order Tracking	View order status in user profile	Accurate and updated order status displayed	Successful
Admin Dashboard Management	Add/edit/delete products and users; view orders	Changes reflected correctly; no unauthorized access	Successful

This methodological approach ensured that the system met functional requirements and provided a reliable, user-friendly experience. Furthermore, this testing method facilitated the identification of discrepancies between anticipated and actual behavior without necessitating access to the system's internal workings. Consequently, objectivity was maintained and the focus remained centered on end-user satisfaction.

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JURNAL INFORMATIKA DAN REKAYASA PERANGKAT LUNAK (JATIKA)
Volume 6, Number 2, June 2025, Page 183-195
E-ISSN 2797-2011 P-ISSN 2797-3492
https://publikasi.teknokrat.ac.id/index.php/jatika/index
DOI: https://doi.org/10.33365/jatika.v6i2.272

System Usability Scale

Following the development and deployment of the Talawaan Craft e-commerce website, an assessment of its usability was conducted. The SUS (System Usability Scale) was utilized as an assessment tool to measure user satisfaction and the overall effectiveness of the website. It comprises a structured survey containing ten statements, which users respond to using a five-level rating system. Collectively, these items provide a reliable metric of perceived usability. This evaluation was conducted among the platform's target users, including local farmers and consumers in Kecamatan Talawaan, to ensure the system meets their needs for product marketing and shopping convenience.

SUS Item	Average Rating (Range: 1–5)	% Positive Response
I believe I would regularly choose to use this system if given the opportunity.	4.3	90%
I perceived the system as overly complicated and difficult to navigate.	1.5	85% (disagree)
In my opinion, the system was straightforward and simple to operate.	4.4	90%
I felt that assistance from someone with technical expertise would be necessary to use the system effectively.	1.6	84% (disagree)
I noticed that the different features within the system worked together seamlessly.	4.4	88%
I observed a significant lack of consistency throughout the system's interface.	1.4	86% (disagree)
It seems likely that most users would become familiar with this system rather quickly.	4.2	87%
I experienced the system as inconvenient and challenging to interact with.	1.3	88% (disagree)
I felt assured and at ease while navigating through the system.	4.3	85%
I had to understand several aspects before I could begin using the system comfortably.	1.5	86% (disagree)

The results of the SUS assessment indicated a favorable reception of the system's usability. The overall SUS score achieved was 82.5 out of 100, which is considered excellent and indicates a high level of user satisfaction. An analysis of the item responses revealed that 90% of users found the system to be straightforward and 85% reported a high level of confidence in their ability to navigate the platform without the need for prior training. Moreover, an overwhelming majority of 88% concurred that the system's functionalities were seamlessly integrated, and an even more substantial 92% expressed their readiness to persist in utilizing the platform for their e-commerce pursuits. The areas identified for enhancement included the refinement of search filter options and the provision of more detailed product descriptions, which were noted by approximately 15% of respondents.

4. CONCLUSION

The development of the Talawaan Craft e-commerce information system, utilizing the Rapid Application Development (RAD) methodology, has successfully addressed the challenges faced by local farmers in commissione County, Talawaan, in marketing their products. The iterative and user-centered design process, supported by UML modeling and continuous stakeholder feedback, resulted in a website-based platform featuring essential functionalities such as product search, simple product management, multiple payment options, and order tracking. Black Box Testing was carried out to validate how well the core functionalities perform and to evaluate whether user expectations are met.. The SUS (System

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Usability Scale) assessment yielded a total score of 82.5, indicating that the system demonstrates high usability and strong user satisfaction. Consequently, this e-commerce system facilitates easier product sales for farmers and enhances the shopping experience for consumers, thereby expanding market accessibility and contributing positively to the local economy.

5. REFERENCES

[1] F. Poernamawatie, P. A. Kurniawan, S. Hermanto, I. N. Susipta, and R. H. Hertanto, "Implementasi Transformasi Digital Layanan Keuangan Mahasiswa Pasca Pandemi Covid-19 di Universitas Negeri Malang," *J. Pengabdi. Kpd. Masy. Nusant.*, vol. 4, no. 3, pp. 2123–2133, 2023, doi: 10.55338/jpkmn.v4i3.1370.

[2] A. J. Poernomo and F. Septina, "Pengaruh Perkembangan Teknologi, Strategi Bisnis dan Sistem Informasi Akuntansi Terhadap Minat Pembelian," *J. Perspekt.*, vol. 21, no. 2, pp. 170–177, 2024, doi: 10.31294/jp.v21i2.15960.

[3] R. Salwa, N. A. S. F. Lubis, D. Lestari, U. Y. Harahap, and Nurbaiti, "Peran Teknologi Internet Dalam Transformasi E-Bisnis di Era Digital," *J. Ilm. Ekon. dan Manaj.*, vol. 3, no. 1, pp. 528–541, 2025.

[4] A. L. Margama and M. I. Fasa, "Transformasi Digital dalam E- Business: Peluang dan Tantangan Bagi UMKM," *J. Intelek dan Cendikiawan Nusant.*, vol. 2, no. 2, pp. 924–931, 2025.

[5] C. Lusia Kiareni, C. Sorisa, N. N. Kamala Sari, and V. Handrianus Pranatawijaya, "Implementasi Fitur Deskripsi Produk Berbasis Api Gemini Dalam Pengembangan E-Commerce Berbasis Mobile Menggunakan Framework Flutter," *JATI (Jurnal Mhs. Tek. Inform.*, vol. 8, no. 3, pp. 4231–4240, 2024, doi: 10.36040/jati.v8i3.9837.

[6] S. A. Saputri, I. Berliana, and M. F. Narsida, "Peran Marketplace Dalam Meningkatkan Daya Saing Umkm Di Indonesia," *Knowl. J. Inov. Has. Penelit. dan Pengemb.*, vol. 3, no. 1, pp. 69–75, 2023, doi: 10.51878/knowledge.v3i1.2199.

[7] A. B. Damara *et al.*, "Perancangan Sistem E-Commerce Berbasis Web Ada Desa Ngestirahayu Kecamatan Punggur," *J. Ilmu Komput. Dan Inform.*, vol. 4, no. 1, pp. 89–93, 2023.

[8] D. N. Sari and J. Dura, "Pengaruh Penggunaan E-Commerce, Sistem Informasi Akuntansi Dan Pengetahuan Akuntansi Terhadap Efektivitas Kinerja Umkm Di Kota Malang," *JRAK J. Ris. Akunt. dan Komputerisasi Akunt.*, vol. 15, no. 1, pp. 78–89, 2024, doi: 10.33558/jrak.v15i1.8117.

[9] M. I. Syarif, M. Hannum, S. Wahyuni, and Nurbaiti, "Potensi Perkembangan E-Commerce Dalam Menunjang Bisnis di Indonesia," *J. Comput. Digit. Bus.*, vol. 2, no. 1, pp. 11–14, 2023, doi: 10.56427/jcbd.v2i1.30.

[10] R. Sumampouw, "Desa Talawaan," *talawaan.desa.id*, 2023. http://talawaan.desa.id/

[11] I. S. Windiarti, C. Putri, H. Haryadi, and A. Prabowo, "Pemberdayaan Masyarakat dan Peningkatan Pendapatan melalui Pengembangan Sistem E-Commerce Pemesanan Buket Bunga Berbasis Web Responsif di BOUQET_PKY," *Abdimas Papua J. Community Serv.*, vol. 6, no. 2, pp. 65–71, 2024, doi: 10.33506/pjcs.v6i2.3554.

[12] M. K. Pradana, A. Andrianto, and Y. A. Auliya, "Pengembangan Sistem Informasi Desa Terpadu Menggunakan Metode Rapid Application Development (RAD) Studi Kasus Desa Arjasa," *INFORMAL Informatics J.*, vol. 7, no. 2, p. 64, 2022, doi: 10.19184/isj.v7i2.25238.

[13] M. Z. Alvaro, M. A. Darunnaja, and M. A. Yaqin, "Black Box Testing On A Mini ERP System: A Strategy for Bug Detection and Minimisation," *J. Comput. Data Sci.*, vol. 2, no. 1, pp. 19–31, 2024.

[14] A. A. N. H. Susila and D. M. Sri Arsa, "Analisis System Usability Scale (SUS) dan Perancangan Sistem Self Service Pemesanan Menu di Restoran Berbasis Web," *Maj. Ilm. UNIKOM*, vol. 21, no. 1, pp. 3–8, 2023, doi: 10.34010/miu.v21i1.10683.

[15] D. P. Kesuma, "Penggunaan Metode System Usability Scale Untuk Mengukur Aspek Usability Pada Media Pembelajaran Daring di Universitas XYZ," *JATISI (Jurnal Tek. Inform. dan Sist. Informasi)*, vol. 8, no. 3, pp. 1615–1626, 2021, doi: 10.35957/jatisi.v8i3.1356.

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