

E-Commerce Information System for Marketing Agricultural Products in Kutai Kartanegara Regency

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Abstract: The research aims to develop an innovative solution to address the marketing challenges faced by Kutai Kartanegara Regency, where a majority of the population is engaged in agriculture. Limited access for farmers to sell their harvests poses a significant obstacle. The proposed solution involves the implementation of a Business-to-Business (B2B) e-commerce system to enhance sales and expand marketing opportunities. In the context of global digital transformation, the integration of e-commerce is not only advantageous but also deemed a necessity. Adopting a research and development approach, the study utilizes the PHP programming language and MySQL database to create a dynamic, web-based B2B sales application. The potential broader impacts of this research extend beyond facilitating agricultural product sales; the envisioned e-commerce system holds the promise of catalyzing economic growth. By providing farmers with a platform not only for selling their products but also for engaging in strategic B2B transactions, the system becomes a driver of economic empowerment. The research incorporates insights from relevant studies emphasizing the role of e-commerce in enhancing agricultural outcomes, addressing both technological and socio-economic factors comprehensively. The research methods, including interviews, direct observations, and literature studies, reflect a holistic understanding of the challenges and needs faced by the agricultural community. The outcome is the proposed B2B e-commerce system, which has the potential to streamline processes, enhance efficiency, and broaden market reach. Use case diagrams and class diagrams serve not only as technical guides but also as visual representations of a user-friendly system, emphasizing a user-centric approach and the potential for transformative change from the main page to sales reports. The significance of this research extends beyond technological advancements; it holds the potential to redefine the socio-economic landscape of Kutai Kartanegara Regency. By empowering farmers, facilitating strategic transactions, and fostering collaboration between traditional agriculture and modern commerce, the proposed B2B e-commerce system becomes a catalyst for sustainable growth and a potential contributor to broader economic prosperity.

Index Terms: Information Systems, e-Commerce, PHP, MySQL, Database.

1. Introduction

In the current business landscape, the use of e-commerce has become an essential requirement to enhance [1,2] and excel in business competition [3-5], both in terms of promotion and the sale of produced goods[2,6,7]. The

implementation of e-commerce provides significant efficiency in purchasing, selling, and marketing activities [8-10]. It offers convenience in promotional efforts [11-15], facilitates transactions [16], reduces costs [17], and expedites the transaction process [9,18]. The use of e-commerce also indicates an improvement in the quality of data transfer compared to manual processes [19-21], eliminating the need for re-entry that could lead to human errors in data input [22].

There are two previous studies relevant to the role of e-commerce in the development of the agricultural sector. The first study, titled "Implementation of E-commerce as an Online Promotion and Sales Medium to Enhance Agricultural Results in Pringsewu Regency" by Afifa Septriasih and Nur Aminudin [23], explores the development of e-commerce to facilitate and enhance progress in promotion and sales, with the primary goal of business development and improving agricultural outcomes in Pringsewu Regency. Through e-commerce, consumers from distant locations can access and view products via the internet. The study identifies issues in the Pringsewu region, particularly the lack of understanding among farmers regarding internet technology as a means of online marketing and sales. Therefore, an alternative idea is proposed involving the implementation of e-commerce as an effort to build and develop entrepreneurship in the online world. The goal is to provide solutions to these issues and enhance knowledge and utilization of internet technology among farmers[23].

The second relevant study, titled "Design Of Web-Based Agricultural Product Marketing Information System In Pagar Alam City" by Adil, Ahmat Triwijoyo, Bambang Krismono [24], aims to design an information system that promotes agricultural products from Pagar Alam City through a website. This information system facilitates farmers in marketing their agricultural products with the assistance of a website and provides comprehensive and useful information for consumers of agricultural products [24]. Thus, the integration of these two studies provides a more comprehensive understanding of the implementation of e-commerce in overcoming challenges and enhancing agricultural outcomes and the marketing of agricultural products. In response to the prevailing challenges faced by farmers in Kutai Kartanegara Regency regarding limited market access for their agricultural products, this research endeavors to develop and implement a web-based Business to Business (B2B) e-commerce information system. By seamlessly connecting farmers with potential buyers and streamlining the sales process, the proposed system is anticipated to significantly enhance the efficiency and reach of agricultural product marketing. Through increased accessibility and a broader market presence facilitated by the e-commerce platform, we expect this initiative to empower local farmers, catalyze economic growth, and foster sustainable development in the agricultural sector of Kutai Kartanegara Regency. This paper delves into the detailed design, implementation, and potential benefits of this system, aiming to provide not only a solution to current marketing constraints but also a catalyst for positive transformation within the agricultural landscape of the region

2. Research Methods

2.1 Data Collection Techniques

The techniques for collecting data are as follows:

[1] Interview

The first step in the process of building or developing information systems is to identify system needs, analyze the existing situation, and identify real problems while simultaneously connecting them to the causes of these problems. The Interview Technique is one of the best methods that can be used for this activity[25].

[2] Observation (Observation)

Direct observation or observation is a data collection technique by directly observing activities carried out by users. One advantage of this direct observation technique is that the analysis system can become more familiar with the physical environment[25].

[3] Literature Study

Literature review is conducted to obtain theoretical data; therefore, the author collects data by reading and studying literature such as books, papers, or other relevant references related to the discussed issue[25].

2.2 Research Flow Chart

See Fig.1 the following is a research flow chart used in this research. Fig 1 shows the research flow chart utilized in this study is presented. This diagram provides a visual representation of the steps taken in the research process. These stages include identify problems, problem analysis, collecting data, system planning, system testing, and evaluation of results. The research flow chart visualizes the methods employed and the sequence of steps in systematically conducting this research.

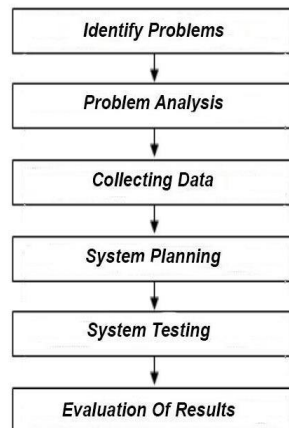


Fig. 1. Research Flow Chart

3. Results and Discussion

3.1 Current System Analysis

See Fig.2 it can be observed that the current system operating in Kutai Kartanegara Regency involves the following steps: the seller delivers agricultural products to the buyer, and then the seller or middleman inspects the goods. Afterward, the seller creates a payment record, and the buyer pays the corresponding amount. The money from the sale of agricultural products is then received by the seller.

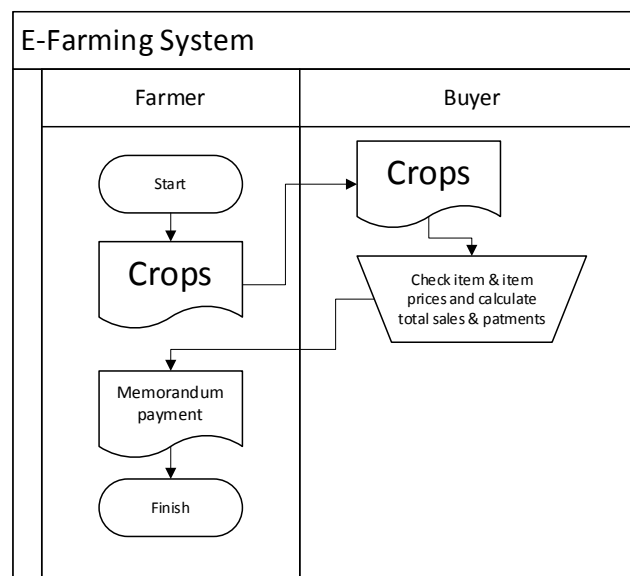


Fig. 2. Current system flow

This process depicts the general flow of the agricultural product sales system in the region. However, it is important to note that this system may have limitations, such as farmers' restricted access to market their products widely. Therefore, this research aims to identify potential improvements and system development, particularly by considering the implementation of a B2B-based e-commerce system to enhance efficiency and market access for farmers in Kutai Kartanegara Regency.

3.2 Proposed System

Fig. 3 shows the proposed system for the e-commerce information system for marketing agricultural products in Kutai Kartanegara Regency is as follows.

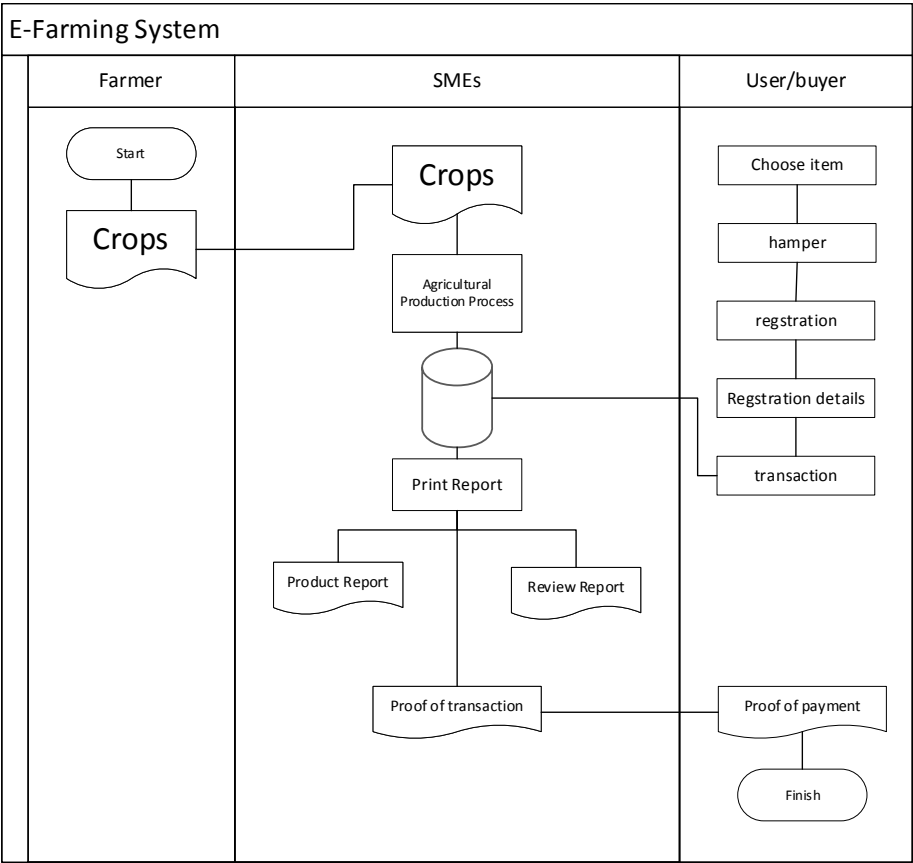


Fig. 3. Proposed System

This process is designed to enhance the efficiency of agricultural product marketing by utilizing a B2B-based e-commerce platform. Further discussion will detail the implementation specifics and expected benefits of this system to support the development of agricultural product sales in the region.

3.3 Use Case Diagram

Fig.4 shows, this diagram illustrates how the Actor integrates with the system. The use case is described as follows. In this user case diagram, there is an understanding of the interaction between actors (users) and the system. The system to be developed will have two actors who will interact directly with the system. These two actors are the Admin and the User[5].

It is crucial to ensure that each step in the system's usage is accessible and well-understood by the users involved. By simplifying interactions and explaining its functionalities, the implementation of this e-commerce system is expected to be more easily accepted and utilized by stakeholders in Kutai Kartanegara Regency.

3.4 Class Diagrams

Fig.5 shows, the following is an overview of the Class Diagram in designing this system, for more details can be seen in the image 5. The Class Diagram illustrates the main object structure and relationships between them in the system. Each class represents an entity or object, and the relationships between these classes depict the connections and interactions between objects. By understanding the class structure, developers and stakeholders can gain a clearer picture of how the system's data and functionality are organized.

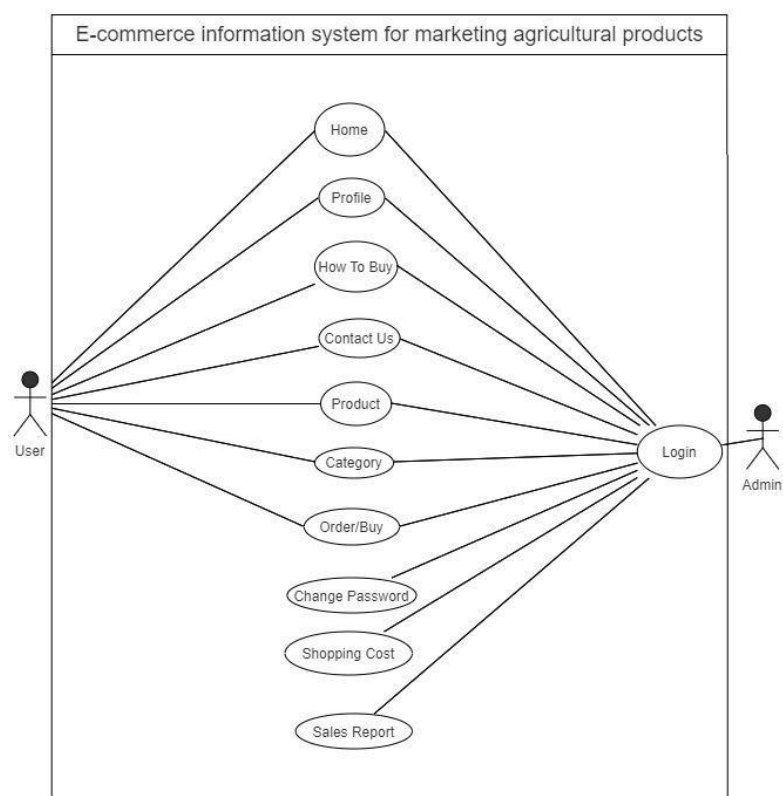


Fig. 4. Use Case Diagram

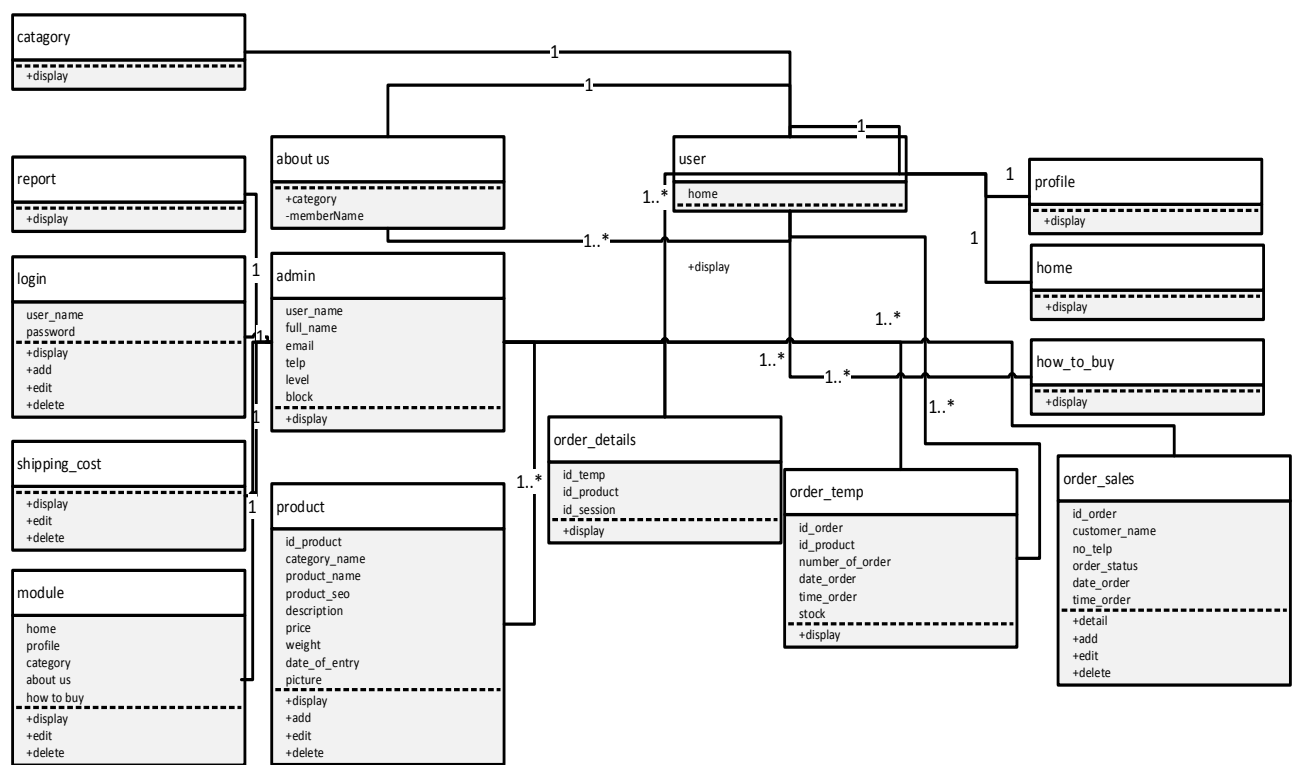


Fig. 5. Class Diagram

The implementation of this class diagram will assist in guiding the application development by providing a systematic and structured view of the key components involved in this e-commerce system.

3.5 System Implementation

The following is the system implementation which the author can describe as follows:

1. Main page

See Fig.6 On the system's main page, users will be presented with the primary interface that provides access to various features and functionalities offered by this e-commerce system. The design of the main page is crafted to deliver an intuitive and easily understandable user experience.



Fig. 6. Main page

2. How to Purchase

Fig.7 shows in this purchasing guide, it explains the steps or procedures that users need to follow to make a purchase through the e-commerce system. Typically, this information includes details on how to find products, add them to the shopping cart, the checkout process, and other relevant steps in completing a purchase transaction.

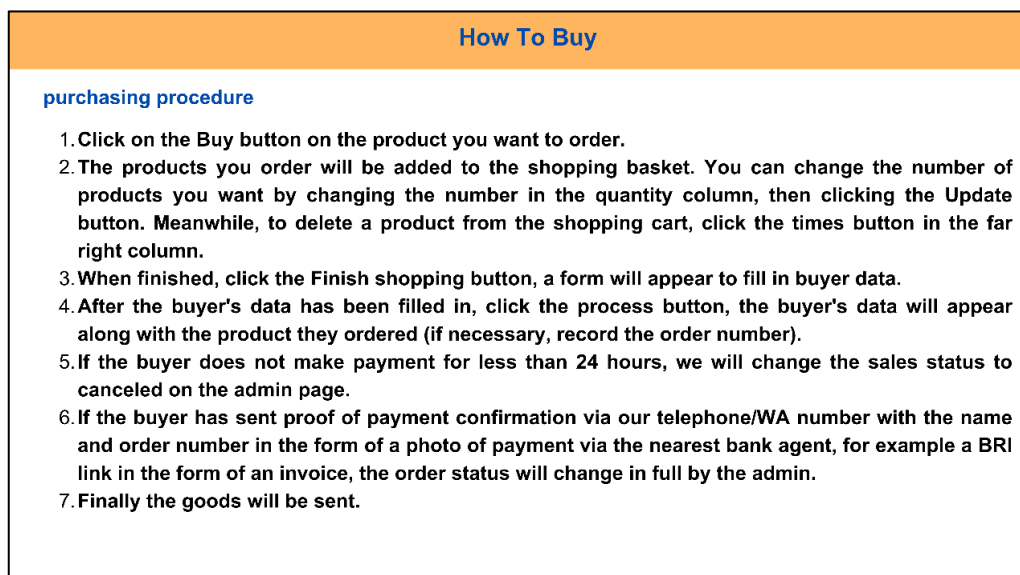


Fig. 7. How to Purchase

3. Purchase Invoice

In the Purchase Invoice shown in Fig. 8, it is the display of the purchase invoice created by the consumer after completing the transaction process through the e-commerce system. This purchase invoice contains details about the purchased products or services, prices, quantities, and the total cost to be paid by the consumer. The purchase invoice plays a crucial role as proof of purchase and serves as a reference for tracking transactions.

Convenient Transaction Process

Order data and orders are as follows:

Name : Nuratika

Full Address : Samratulangi Street. Gg Gotong Royong Samarinda Sebrang, city. Samarinda

Telephone : 058-2359-3999

Email : nuratika0552@gmail.com

No. Orderan : 7

NO	PRODUCT NAME	WEIGHT(KG)	QTY	PRICE	SUB TOTAL
1	Water spinach	1.00	1	Rp. 3.000	3.000
Total : Rp. 3.000 Shipping Cost for Your City Destination : Rp. 20.500/kg Total Weight : 1 kg Total Shipping Cost : Rp. 20.500 Grand Total : Rp. 23.500					

Fig. 8. Purchase Invoice

4. Sales Report

The display in Fig. 9 represents the sales report generated by the e-commerce system. This sales report provides detailed information about sales performance, including the quantity of products sold, generated revenue, and possibly other transaction-related statistics. The report serves as a crucial tool for business owners or relevant stakeholders to analyze sales performance, identify trends, and make strategic decisions for further development.

Sales Report e Farming						
Address: Kutai Kartanegara						
No	Invoice	Date	Product Name	Qty	Price	Sub Total
1	10	30-08-2023 : 1	Water spinach	1	3.000	3.000
2	10	30-08-2023 : 1	Pepper	1	3.000	3.000
3	11	30-08-2023 : 1	Tomato	1	3.000	3.000
4	11	30-08-2023 : 1	Candlenut	1	3.000	3.000
Grand Total : Rp.12.000						
Quantity sold : 4 Product						
Overall number sold : 4 Product						

Fig. 9. Sales Report

4. Conclusion

After conducting a comprehensive study and analysis of the e-commerce information system's application for marketing agricultural products in Kutai Kartanegara Regency, it is evident that the system plays a significant role in facilitating the marketing of agricultural products with the collaboration of regency agencies, particularly in the SME sector. The application has proven to be instrumental in expanding the sales network beyond Kutai Kartanegara Regency. However, there is room for further development to enhance its functionality, particularly in areas such as the payment menu and payment confirmation. Currently, telephone/WA numbers are utilized for these functions to ensure user convenience. Suggestions for improvement include continuous implementation and development of the system to achieve ongoing enhancements. To prevent errors, data entry into the application should be carried out by a responsible user with a deep understanding of the application's design. This ongoing improvement process will contribute to the system's effectiveness, ensuring its adaptability to changing market demands and user needs.

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Reza Andrea earned his Bachelor's degree from Computer Science, Mulawarman University in 2012. In 2013 he was involved in a game development project as a leader of Bibir Design Studio and he was awarded the best 2D game developers of Indonesia Game Show (IGS). In 2014, Reza Andrea earned his Master's Degree in Business Engineering from Department of Computer Engineering, STMIK Eresha, Jakarta. Now, he is a lecturer in Software Engineering Department in Polytechnic Agriculture of Samarinda and Expert Staff of Research Department in STMIK Widya Cipta Dharma.



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