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Marketing Information System for Maize Commodities in Soppeng Regency to Increase Agricultural Productivity and National Food Security

Asnia Minarti [1], Ismail[2], Nursakti[3]
[1]Prodi Manajemen, Universitas Lamappapoleonro
[2]Prodi Sistem Informasi, Universitas Lamappapoleonro
[3]Prodi Teknik Informatika, Universitas Lamappapoleonro

Email: asnia.minarti@unipol.ac.id[1], ismail@unipol.ac.id[2], nursakti@unipol.ac.id[3]

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ABSTRAK

Maize in Soppeng Regency is a strategic commodity and has bright marketing prospects. Therefore, efforts to increase maize production need to receive great attention, because with sufficient availability, maize is one of the main food needs in the world after rice. It is expected that the community's need for maize can be met and the selling price remains stable. This research aims to increase the productivity of corn commodity marketing in Soppeng Regency based on the application of online marketing information systems, so that the market world can be wider and make it easier for farmers to sell their corn commodity products and become corn crop production centers, in order to increase the productivity of food crops, especially in Soppeng Regency. This study uses preliminary data on corn production from villages and sub-districts sourced from the Office of Food Crops, Horticulture, Plantations, and Food Security of Soppeng Regency which consists of 49 villages, 21 sub-districts and 8 sub-districts. The system development method uses the SDLC (System Development Life Cycle) system development technique, the application of this method starts from the field condition analysis stage, the system design stage, the system creation stage, the system testing stage, the system usage stage in the field. In addition, to meet the sustainability of the program, technical guidance on the use of the system will be provided to each user at the sub-district level. The results of this research are in the form of using an online-based corn commodity marketing information system

Kata Kunci: Information System, Maize Commodity, Online Marketing, SDLC, Website

INTRODUCTION

Indonesia, as an agricultural country, is rich in abundant natural resources, both biological and non-biological. This potential includes a variety of natural products that thrive throughout its territory, including food crops which are one of the main sectors in supporting national food security. Food crops such as rice, corn and soybeans are superior commodities that not only fulfill domestic needs but also have the potential to become high-value export products (Prasetya, 2022). Food crops play a vital role in meeting the basic needs of the Indonesian people, especially as the main source of food. One of the most important food crops for the people of Indonesia is corn (Podomi, 2024). Maize not only serves as the main food ingredient in some regions, but also as an industrial raw material and animal feed, making it a commodity with high economic value (Endriastuti, 2018). The existence of maize as an alternative food source to rice helps

maintain national food stability and provides diversification of healthier consumption patterns (Kurnianto, 2024). In addition, maize has advantages in terms of resistance to varied weather conditions, so it can be cultivated in various regions in Indonesia (Bahtiar, 2023). The potential of maize as an important food crop is also supported by various government programs that encourage increased production and quality of maize through research, extension, and technological assistance to farmers (Beding, 2023).

Maize is one of the national food crops that has a crucial role, parallel to rice as the main food source in Indonesia (Panjaitan, 2023). In some areas, such as Soppeng Regency, maize is even a staple food for the local population. This shows the importance of maize in fulfilling the carbohydrate needs of people in various regions. In addition to its role as a source of carbohydrates, maize also has a high economic value as it is widely utilized by the food, beverage and chemical industries. The food industry uses maize as a raw material for products such as maize flour, syrup, and various snacks (Ismail, 2022). While in the chemical industry, maize is the basic ingredient for the production of bioethanol and other chemicals. This extensive utilization of maize makes it a strategic commodity that is not only important for national food security, but also for the development of domestic industries (Shuaib, 2023).

The utilization of maize as an industrial raw material provides significant added value to maize farming in Soppeng District. In the form of whole kernels, maize has the potential to be processed into various high-value products, such as maize flour, maize rice, and various types of snacks (Prayoga, 2023; Rawat, 2023). These products not only increase the selling value of maize, but also open up opportunities for business diversification in the agricultural sector. In addition, maize can be further processed into cooking oil, margarine, and food formulas, all of which are in high demand in both domestic and international markets. By developing processing technologies and expanding market access, farmers in Soppeng Regency can improve their welfare through increased productivity and added value of the maize produced. This potential also opens up opportunities for the development of local industries based on agricultural products, thus making a positive contribution to the regional economy.

Maize in Soppeng Regency is a strategic commodity and has bright marketing prospects. Therefore, efforts to increase the productivity of maize commodity sales need great attention, in addition to the sustainability of maize production as national food security, increased sales of maize commodities can prosper maize farmers in Soppeng Regency. The problem that exists in corn farmers in Soppeng Regency is that there is a lot of corn commodity production but the price is cheap, besides that farmers also only sell their corn commodity at the nearest traditional market in Soppeng Regency so that it does not bring in more customers because the marketing area is still limited in Soppeng Regency. From these problems, an online-based marketing information system is needed in each sub-district in Soppeng Regency to facilitate farmers in selling their corn agricultural products widely in order to increase sales productivity and income of corn farmers. The online-based marketing information system was built using Website technology/platform which was created using Codeigniter software and MySQL database (Ismail, 2020).

The results of an online-based marketing information system market corn agricultural products widely and manage corn production data centrally so that it makes it easier for the government and farmers to know the results of corn agricultural production and sales per year. Research conducted by Kango (2019) found that the marketing mix starting from product, price, place and promotion has not been implemented properly, besides that research conducted by Maskur (2019) states that the online sales media built received a positive response from the manager of the farming

village because it was very helpful in online sales. Research conducted by Nurcaya (2020) on the Analysis of Hybrid Corn Commodity Marketing System (Zea Mays L) obtained conclusions related to profit. Of the three studies conducted previously, they have in common a research case study on corn marketing strategies, as well as the research that will be carried out now lifting the case study of online-based corn commodity marketing. The novelty of the current research compared to previous research is the application of new methods, methods that are different from previous research. The method used for the current research is the SDLC method for system development and the system that is built is an online marketplace.

METHODS

This research is carried out based on important stages that are carried out oriented towards indicators of success in creating a Corn Commodity Marketing Information System in Soppeng Regency to increase agricultural productivity and national food security so that it can be used to solve existing problems. To achieve these indicators, the stages of this research are described in the form of the following Flowchart:

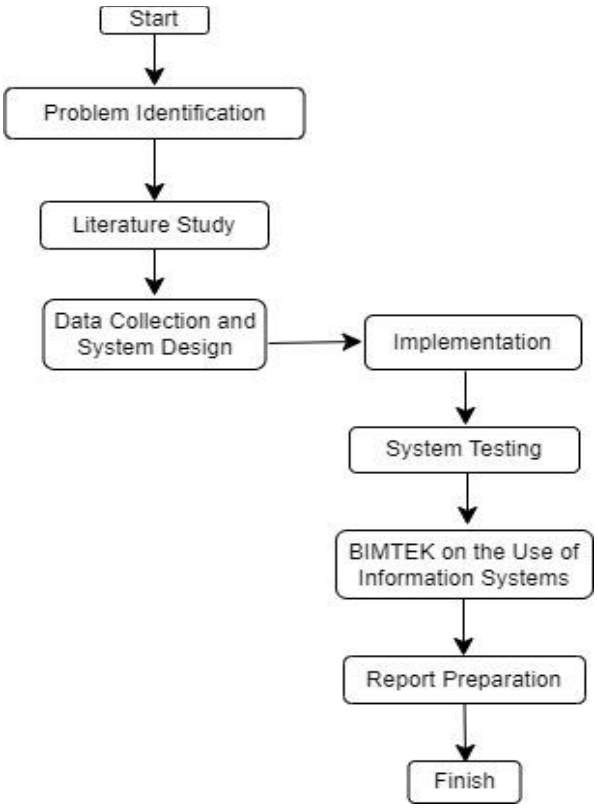

Figure 1: Research Stages

The initial step taken in this research is to identify the problem as an initial basis for understanding and determining the solution and method to be used. The literature used is a journal that has a theme or discussion that is in accordance with the research to be carried out, namely the Corn Commodity Marketing Information System in Soppeng Regency to increase agricultural productivity and national food security. In this research, the data required is data taken from the agriculture office and farmers in each sub-district in Soppeng Regency. Data from the agriculture office and farmers of Soppeng Regency were obtained directly. After collecting data, a conceptual system design is carried out to

facilitate the creation of a Corn Commodity Marketing Information System in Soppeng Regency to increase agricultural productivity and national food security.

From the initial stages of identifying problems, literature studies, data collection, to System Design, then data that has passed through the previous stages will be implemented. The results of the system implementation are the Corn Commodity Marketing Information System in Soppeng Regency to increase agricultural productivity and national food security. The system is implemented using the Php programming language, codeigniter framework and mysql database. The Corn Commodity Marketing Information System in Soppeng Regency to increase agricultural productivity and national food security that has been completed is tested using the blackbox testing method. Testing is focused on testing the functionality of the application. BIMTEK System, at this stage technical guidance is carried out to all system admins at the sub-district level in using the application or Corn Commodity Marketing Information System in Soppeng Regency to increase agricultural productivity and national food security as a form of program sustainability efforts.

RESULTS AND DISCUSSION

1. Stages of Implementation

Research on the marketing information system for maize commodities in Soppeng District began with several stages of systematic implementation to ensure the validity and completeness of the data collected. The initial stage of the research focused on preparation, which involved intensive communication and coordination with research partners. This process began with coordination with Lamappapoleonro University's Institute for Research and Community Service (LPPM) to obtain a Research Task Letter. This letter became the formal basis for the research team to continue the next stage of research in the field. Good communication with research partners enabled the development of a clear and structured activity plan, which facilitated the implementation of the research.

The next stage was a field survey, which was conducted at the Office of Food Crops, Horticulture, Plantations and Food Security of Soppeng Regency. At this stage, the research team met with the Head of the Food Crops Division to obtain primary data through direct observation and in-depth interviews. The field survey aimed to directly identify the current conditions in the field, including the potential of maize crops in Soppeng District. The process also included collecting data on the number and distribution of maize farmer groups across the districts, as well as their production potential. The survey was conducted by visiting maize farming centers to get a comprehensive picture of the practices and challenges faced by local farmers.

Data collection took place intensively using observation techniques and interviews conducted with the Head of the Food Crops Division. Data obtained included detailed information on the number and distribution of maize farmer groups, as well as various initiatives and programs that have been implemented by the local government to support the development of maize crop potential in Soppeng District. Observations were made to understand market dynamics, agricultural practices, and how farmers utilize information technology in marketing their commodities. In-depth interviews helped reveal farmers' perceptions and attitudes towards technological innovations, as well as how marketing information systems can be integrated with their farming activities. From the interviews, it was found that farmers and relevant officials strongly support the development of the proposed marketing information system, given the importance of better access to market information to improve farmers' welfare.

The final stage of the research is data analysis, which is a crucial phase in determining the design and model of the marketing information system to be implemented. The research team conducted thorough data processing to ensure the accuracy and relevance of the information collected. The analysis involved assessing the completeness of the data, such as market prices, production volumes, and distribution of maize commodities, as well as other factors affecting maize marketing in Soppeng District. This process is important to identify the information system model that best suits local needs and how it can be effectively implemented to support increased agricultural productivity and marketing efficiency. The results of this analysis show that the appropriate use of information technology can provide significant benefits to maize farmers, especially in terms of access to markets, better price negotiations, and more efficient management of product distribution.

2. Information System Implementation

The implementation of a web-based corn commodity sales information system was designed using the PHP programming language and MySQL database to support business development in marketing corn products effectively. The system includes several main pages accessed through the official website, such as the main page, product page, user registration page, manage store page, and checkout page, each of which has a specific role and functionality. On the main page of the app, which can be accessed through the link https://jagungta.shop, users will find five main menus covering various functions. The “Products” menu displays a catalog of corn products, the “User Account” provides access for registration, store management, and account settings, the “Shopping Cart” is used to hold products that have been selected by the user, and the “Checkout” menu allows the user to complete the purchase process. This main page layout is designed to facilitate user navigation and provide quick access to product and service information.

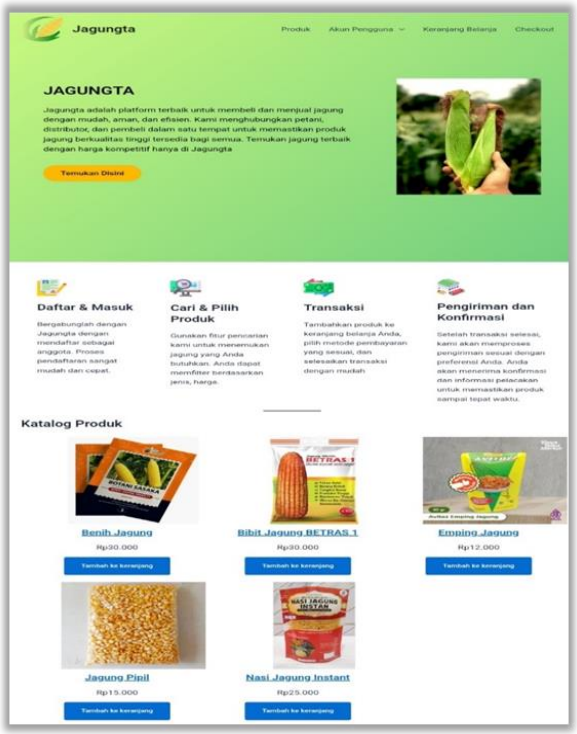

Figure 1. Application Home Page

The product page displays a list of various corn products available, including raw corn, processed corn, and other derivative products. Users can view product details such as price, description, photos, available stock, and reviews from previous buyers. Products are categorized by maize type, condition (fresh or dry), and use (consumption or animal feed), for easy searching. This allows buyers to select products that suit their needs more efficiently.

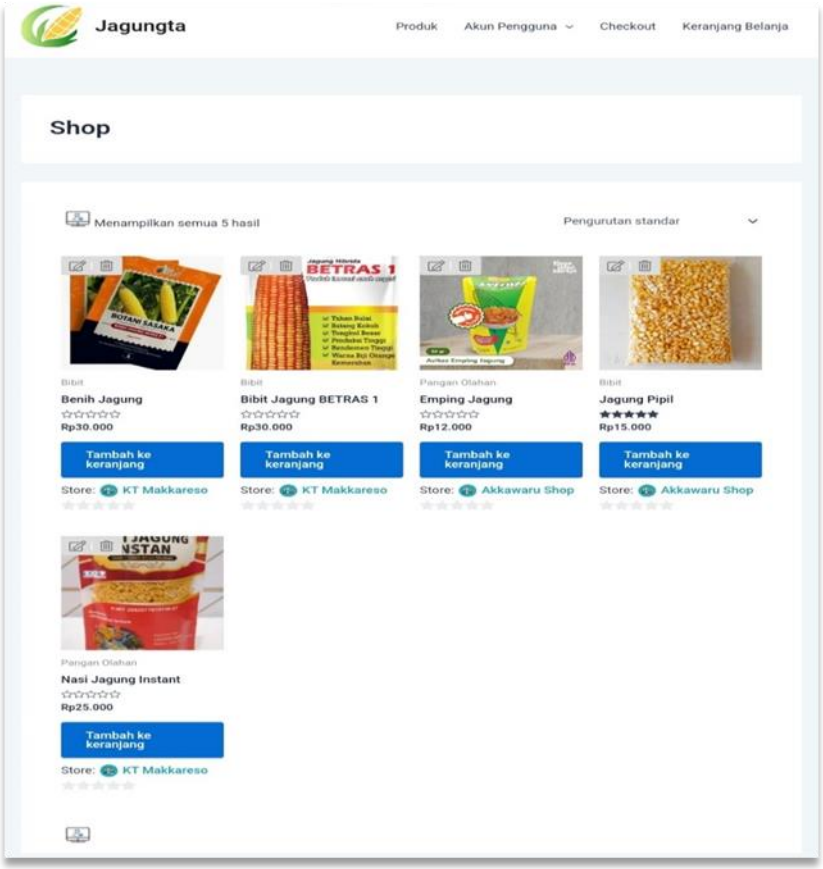

Figure 2. Product Page

The user registration page allows new users to create an account on the marketplace by entering important information such as name, email address, store name (for sellers), address, and phone number. The system is also equipped with a verification feature via email or phone number to ensure account security and validity. This registration process gives users access to choose the role of buyer or seller on the platform, and allows the admin to verify the inputted data.

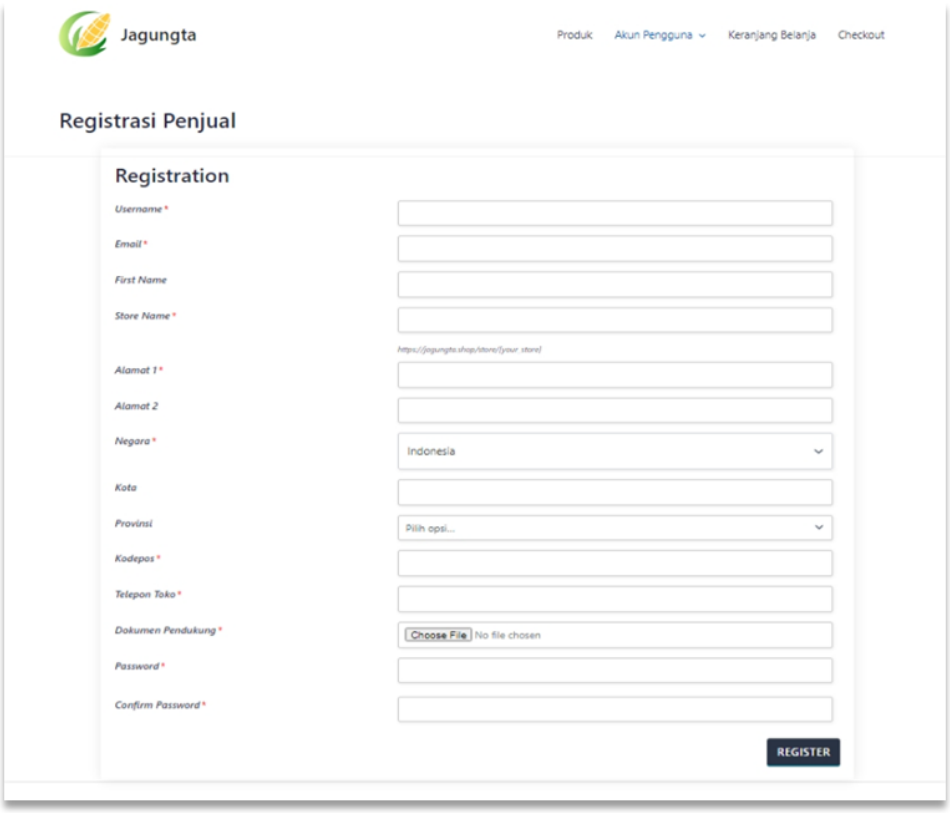

Figure 3: User Registration Page

The store management page provides various features designed specifically for sellers, such as a store dashboard that displays sales and visitor traffic data, a media manager to manage visual content, and the option to add promotional articles. The product management feature allows sellers to add new products, manage stock, and update product information. Sellers can also use the order management feature to track and manage incoming orders, and the coupon feature to create attractive discount promotions. Store settings can be customized according to business needs, including tax settings, payment methods, and shipping, while detailed reports on sales and store performance can be accessed for further analysis.

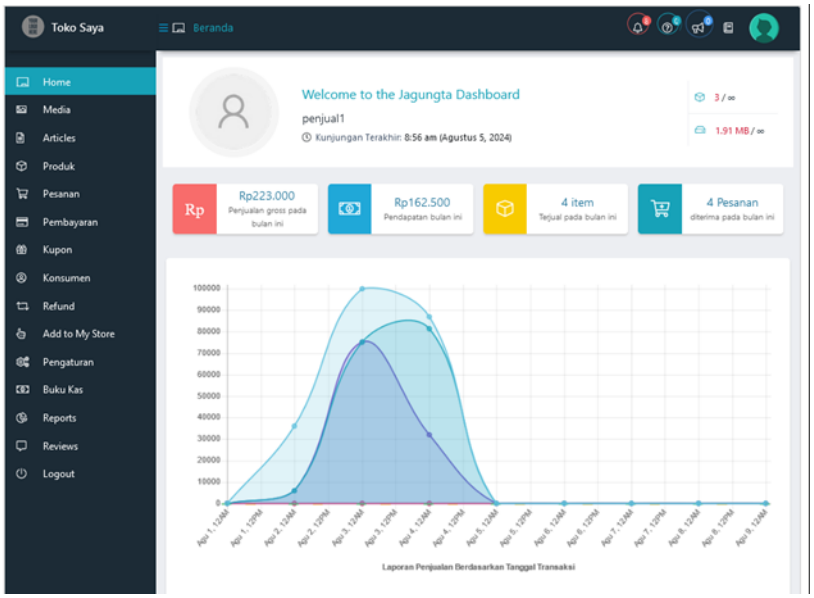

Figure 4. Manage Store

The checkout page is the last stage in the purchasing process on Jagungta.shop, where customers can finalize their purchase by entering shipping information and selecting the desired payment method. The page includes a billing details form, shipping options, order summary, and a confirmation button to finalize the purchase. The design of this page is focused on making it easy for customers to complete orders quickly and securely, ensuring a convenient and efficient shopping experience on this platform.

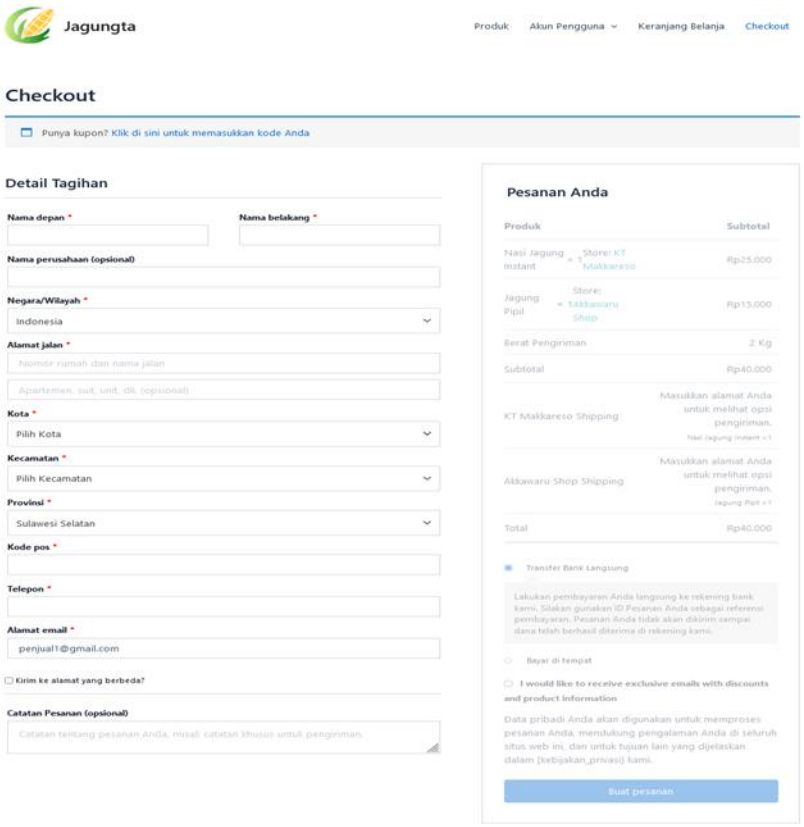

Figure 5. Checkout page

3. System Testing

Table 1. System Testing

Test	Procedures followed	Expected results	Test results	
			Success	**Failed**
Add Product	*Admin enters Product data then saved*	A message appears to add data successfully	5	0
Edit Product Data	*Admin selects the Product Data that needs to be changed*	Data is successfully changed then the system directs Admin to the Product page	5	0
Add Product Type	*admin enters Product Type data then saved*	A message appears to add data successfully	5	0
Edit Product Type	*admin selects the Product Type data that needs to be changed*	The data is successfully changed then the system directs the admin to the Product Type page	5	0

Delete Product Data	*Admin selects the desired Product Type data then deleted*	An option message appears, after being successfully deleted, the system directs the admin to the Product page	5	0
Add Order data	*User enters Order data then saved*	A message appears to add data successfully	5	0
Edit Order data	*User selects the Order data that needs to be changed*	The data is successfully changed then the system directs the User to the order data page	5	0
Delete Order data	*User selects the desired Order data then deleted*	An option message appears, after being successfully deleted, the system directs the User to the Order data page.	5	0

Testing is done five times for each function, where if the test of each function is successful then it is worth 1 and if it is not successful then it is worth 0.

From the five test tables for each function above, the percentage value of the overall test results will be obtained as follows:

Formula: (P1 + P2 + P3 + P4 + P5) X 100%

Where:

P = Total Testing of Each Table
F = Function (Testing)
F= 30

Results: 6 + 6 + 6 + 6 + 6 X 100% = (30/30) X 100% = 100%

Based on the above calculations, it can be concluded that the value of the results of testing the designed system is one hundred percent (100%) success.

CONCLUSION

Based on the results of research that has been conducted on the Application of Maize Commodity Marketing Information Systems in Soppeng Regency to Increase Agricultural Productivity and National Food Security, it can be concluded that, with the creation of the following information system can improve farmers' marketing of sticky corn and make it easier for sticky corn sellers to have stores online, as well as to facilitate the general public so that people can find out traditional food sales information no longer need to remember the price of goods because they can directly see on the sticky corn marketing website where the information is directly provided by the seller directly.

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