



Development of E-Commerce Application Using Customer Relationship Management to Increase the Turnover of Bendosewu Farmers

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<http://dx.doi.org/10.47814/ijssrr.v6i4.1157>

Abstract

The Tawang Makmur is a farmer group in Bendosewu Village, Blitar, Indonesia who still relies heavily on collectors to sell their crops. During the harvest season, farmers sell their agricultural products at prices that have been determined by collectors which are very low and inversely proportional to when the price is in the hands of consumers. This causes the turnover obtained by farmers from agricultural products to be low. The purpose of this service activity is to develop an e-commerce application using a Customer Relationship Management (CRM) strategy to increase the turnover of farmers in Bendosewu Village. E-commerce applications are built using the Laravel framework. The method used is the stages of preparation, system development, socialization, and evaluation. The result of this service is the development of e-commerce applications using a Customer Relationship Management (CRM) strategy. The e-commerce application that was built provides various features such as product management, transactions, product orders, product promotions, payments, questionnaires, FAQs, suggestions, and questions. In addition, the result of this service is the formation of understanding and skills of farmer group managers to manage e-commerce applications to support the increased agricultural productivity of these farmer groups.

Keywords: *E-commerce Application; Customer Relationship Management; Community Services; Agriculture*

Introduction

Tawang Makmur farmer group is a farmer group in Bendosewu Village, Blitar, Indonesia which is a provider of food needs for the community, especially for Blitar residents. Plants that are usually

managed by farmer groups consist of several types, namely staple crops such as rice, corn, wheat, vegetable crops such as kale, cabbage, shallots, mustard greens, chilies, beans and nuts and fruit crops such as passion fruit, tomatoes, oranges and melons.

Farmers who are members of the Tawang Makmur farmer group sell their crops to meet their daily needs. However, the majority of these farmers still rely heavily on collectors to sell their crops. During the harvest season, farmers sell their produce at a price that has been determined by the collectors. The prices set by the collectors are very low and are inversely proportional when the price is in the hands of consumers. This causes the turnover obtained by farmers from agricultural products to be low. Hence, a direct transaction media is needed between farmers and consumers so that agricultural products can be sold according to market prices so that the turnover obtained by farmers increases.

Transaction media that can facilitate farmers as sellers and consumers can be in the form of e-commerce applications or buying and selling systems (Chaffey et al., 2019; Dewantoro et al., 2020). Through e-commerce applications, agricultural products can be sold directly to consumers without intermediaries such as collectors. Consequently, the selling price of agricultural products can be competitive and the turnover of agricultural products will increase. Consumers are also facilitated by the existence of e-commerce applications that can buy agricultural products online. Consumers can find out information about the agricultural products they want to buy and make purchase transactions anywhere and anytime.

The strategy that can be applied to e-commerce applications to increase customer satisfaction is the Customer Relationship Management (CRM) strategy (Montana & Noor, 2010; Ranjan & Bhatnagar, 2008). The Customer Relationship Management strategy can increase sales of agricultural products in e-commerce applications so that the turnover obtained by farmers will also increase (Sha et al., 2020). Customer Relationship Management strategy is a strategy to create and maintain relationships with consumers to create consumer loyalty to business products (Guo, 2021; Yunitarini et al., 2012). This strategy can be developed to acquire new customers, improve relationships with consumers and retain customers to create consumer loyalty (Ratnasingam, 2010). CRM can be classified into three types namely operational CRM, analytical CRM, and collaborative CRM (Rigby & Ledingham, 2004). The CRM strategy is suitable to be developed in agricultural e-commerce applications because it makes it easier for consumers to buy agricultural products so that it can increase sales of agricultural products and have an impact on increasing farmer turnover.

Therefore, this service aims to develop an e-commerce application using a Customer Relationship Management strategy so that it can increase the turnover of agricultural products from the Tawang Makmur farmer group in Bendosewu Village. With the development of e-commerce applications using a Customer Relationship Management strategy, it is hoped that farmers can sell agricultural products directly to consumers so that they get competitive prices and can increase farmer turnover. Strategy Customer Relationship Management (CRM) can be applied in e-commerce applications to create and maintain relationships with consumers so as to create consumer loyalty to the product. The creation of consumer loyalty to agricultural products sold can increase sales of agricultural products on e-commerce applications so that the turnover obtained by farmers will also increase.

Method

The method of implementing service activities consists of five stages of the process starting from the preparation stage, the application creation stage, the socialization stage, and the evaluation stage. The flow of the service implementation method is shown in Figure 1.

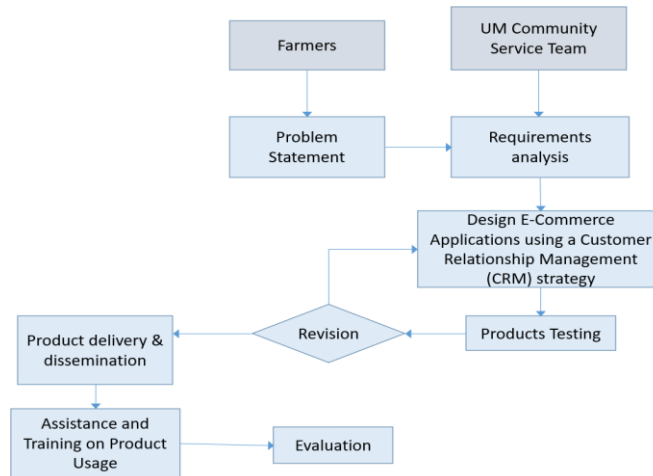


Figure 1. Flowchart of The Method of Community Service Activities Application Development Stage

Preparation Stage

All requirements are identified in the form of problems proposed by Partners to design activities at the preparation stage. At this stage, coordination is also carried out between the team proposing Service and Partners as a form of preparation for the implementation of the partnership activity program. After the coordination is complete, the Service team can conduct requirements analysis and design software related to e-commerce applications using the Customer Relationship Management (CRM) strategy to solve Partner problems.

The application development stage is carried out sequentially in stages, using the waterfall SDLC (Software Development Life Cycle) system development model (Pressman, 2015). The stages of making the application consist of the analysis stage, the design stage, the coding stage, the testing stage, and the program implementation and maintenance stage (Rastogi, 2015).

The analysis and design stage are the stage of analyzing the specifications of user needs for applications and designing e-commerce applications selling agricultural products. Coding stage implements the design into application code. This coding stage uses the Laravel framework based on the view controller (MVC) model (Subecz, 2021). The code model is a PHP program that is used to relate to the MySQL database as well as to manipulate it (input-edit-delete). The testing stage is the stage of testing and checking the functionality of the application that is built. This testing stage uses the Black Box testing method (Loyola-Gonzalez, 2019). The program implementation and maintenance stage are the stage of submitting the application to the user and maintaining the application to make repairs or errors that were not detected in the previous stages.

Product Usage Training Stage

This stage begins with the delivery of products that are ready to be used, then socialization and the last is training. The products submitted and socialized are e-commerce applications using the Customer Relationship Management (CRM) strategy and the application manual book.

Evaluation and Monitoring Stage

This stage is the evaluation and monitoring stage of the results of product training which is an e-commerce application. Evaluation is carried out to review the extent to which the product is successful in

responding to partner problems. Monitoring is the observation of the implementation of the product by partners as a track record of the success of this service.

Results and Discussion

The result of the service activity is the development of an e-commerce application using the Customer Relationship Management (CRM) strategy for the Bendosewu farmer group. This application is based on a website that can be accessed online via a computer or mobile device. The website address to access the application is <https://e-tani.simtani-bendosewu.com/> . In addition, other results also form the understanding and skills of farmer group managers for e-commerce applications that will be created and implemented to support the development of these farmer groups.

At the preparation stage, the results obtained are an analysis of the problem and requirements of farmer groups. Table 1 describes the requirements for e-commerce applications for Bendosewu farmers.

Table 1. Agricultural E-Commerce Application Requirements

No	List of Requirements
1	E-commerce applications are uploaded to trusted hosting providers
2	The application has two roles, namely as admin (seller and user (buyer).
3	Users (buyers) can see a list of agricultural products and prices. Then order the product and pay for the product
4	Admin (seller) can change the list of products for sale, install product promos, and process product purchases from users
5	The application is easy to operate by the user
6	The application has reliable security
7	The responsive application so it can be accessed quickly

The next stage of application development is the implementation of e-commerce applications using the Laravel framework. The e-commerce application consists of various menus that implement the CRM strategy. Table 2 shows a list of menus in e-commerce applications on the admin or seller side. While Table 3 shows a list of menus in e-commerce applications on the user or buyer side.

Table 2. List of E-Commerce Application Menu on the Admin side

No	Menu	Explanation
1	Login	Admin login to the system
2	Product Management	Admin can insert, edit and delete products
3	Promo Management	Admin can insert, edit and delete product promos
4	Management FAQ (Frequently Asked Question)	Admin can insert, edit and delete list of FAQs and answers
5	Transaction	Admin can view and edit user transaction status and view proof of payment and order details
6	Suggestions and Questions	Admin can view and send answers to suggestions and questions given by users and delete them
7	Logout	Admin can log out of the system

Table 3. List of E-Commerce Application Menu on the User side

No	Menu	Explanation
1	Registration	Users can register an account via the registration menu
2	Login	User login to the system
3	Product Promotion	Users can view the latest promos
4	Order Products	Users can view products and order these products via the shopping cart menu. Furthermore, the user can view the total shopping and payments
5	Payment	Users can pay via transfer to the account number listed and upload proof of transfer
6	Shopping History	Users can view shopping history, view order status, proof of payment and orders
7	Questionnaire	Users can fill out the questionnaire and save the contents of the questionnaire
8	FAQ	Users can view frequently asked questions and answers
9	Suggestions and Questions	Users can view suggestions and questions and admin answers. Users can also insert suggestions and questions
10	Logout	Admin logout to the system

The menu that is included in the collaborative type of CRM is the Question Suggestion Menu. Collaborative CRM is a service that collaborates to facilitate interaction between buyers and sellers. Meanwhile, the menus included in the type of CRM operation are FAQ, Shopping Cart, and Shopping History features. Operational CRM includes the automation of business processes that interact directly with buyers. While the menu included in the type of CRM analytics is a questionnaire. CRM analytics is an analytical process from the data generated in CRM operations. CRM which has three types of menus (collaborative, operational, and analytical) aims to maximize buyer profits and increase buyer satisfaction (Al-Homery et al., 2019).

The following is a screenshot of some of the menus in the e-commerce application that has been built. Figure 2 shows the product management menu on the Admin side. While Figure 3 shows the transaction menu on the Admin side.

While on the user side, Figure 4 shows the product order menu. Figure 5 also shows the user payment menu.

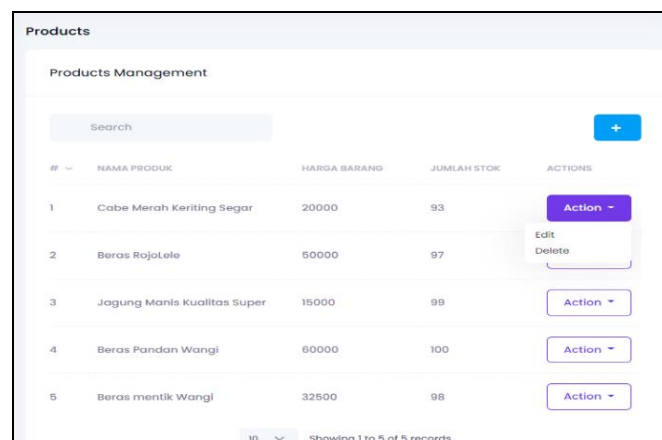



Figure 2. Product Management Menu Page on Admin Side

Transaksi User

Search

#	KODE UNIK PESANAN	STATUS PESANAN	ACTIONS
1	668	VERIFIKASI PEMBAYARAN	Action
2	367	DIPROSES	<ul style="list-style-type: none"> Ubah Status Bukti Pembayaran Detail Pesanan
3	257	MENUNGGU PEMBAYARAN	Action
4	146	MENUNGGU PEMBAYARAN	Action

Figure 3. Transaction Menu Page on Admin Side




Cabe Merah Keriting Segar

Jumlah stok: 97

Deskripsi
Cabe Merah Keriting Segar Fresh Setiap Hari Harga 20000/500gram

Tambah ke Keranjang




Beras RajoLele

Jumlah stok: 98

Deskripsi
Beras RajoLele terbaik dengan kualitas Super. Hasil Sals, promo hingga 20%. Harga 50.000/5kg

Tambah ke Keranjang




Jagung Manis Kualitas Super

Jumlah stok: 99

Deskripsi
Jagung Manis Kualitas Super 15000/kg

Tambah ke Keranjang




Beras Pandan Wangi

Jumlah stok: 100

Deskripsi
Beras terbaik dengan aroma wangi pandan 5kg. Harga 60000/5kg

Tambah ke Keranjang

Keranjang




Cabe Merah Keriting Segar
Rp20.000

-

2

+



Jagung Manis Kualitas Super
Rp15.000

-

1

+

Ringkasan belanja

Total belanja 55.000

Beli

Figure 4. Product Order Menu Page on User Side

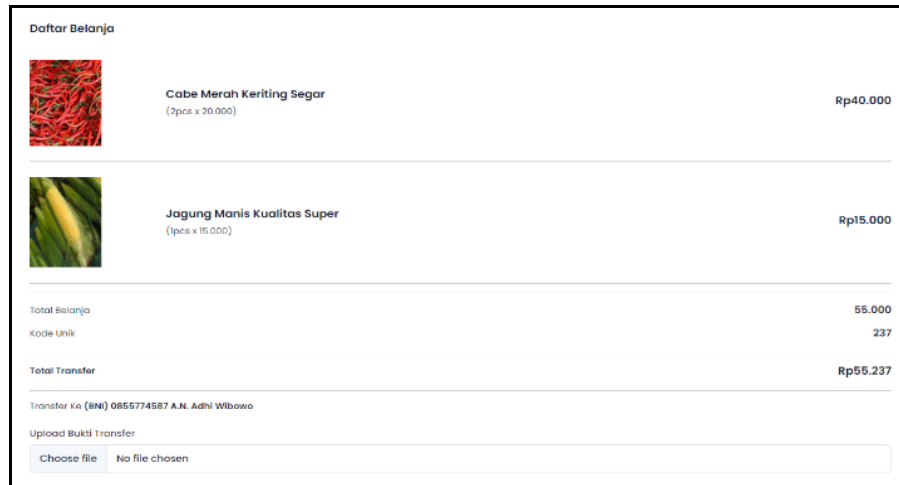


Figure 5. Payment Menu Page on User Side

The testing stage is carried out using the Black Box testing method. the functionality of each menu on the application is tested. Table 4 contains examples of tests using the Black Box testing method. In the final results of testing using black boxes, no errors were found in any functional testing process of the application.

Table 4. Example of Application Testing Results

No	Name	Expected Output	Validity	
			Yes	No
1	Login	Validated username and password	V	
2	Order Products	Products sold and product orders are displayed	V	
3	Insert Products	Insert products into the system database	V	
4	Edit Products	Edit product on the system database	V	
5	Delete Products	Delete product data on the system database	V	
6	Logout	Logout from the system and return to the login menu	V	

In the next stage, agricultural e-commerce applications are socialized to farmer groups. The place of socialization is in Bendosewu Village, Talun District, Blitar Regency. Figure 6 shows the documentation during the socialization with the Bendosewu farmer group.

In addition, training was also conducted on the socialization of using agricultural e-commerce applications. A manual for using the system was also handed over to farmer groups to facilitate the use of the application. Figure 7 shows documentation of training on agricultural e-commerce applications to farmer groups.



Figure 6. Socialization of Agricultural E-Commerce Applications to Farmer Groups



Figure 7. Agricultural E-Commerce Application Training for Farmer Groups

Members of the Tawang Makmur Farmer Group were very enthusiastic about participating in this activity from the responses given during the training session and question and answer session. The existence of this agricultural e-commerce application makes the Farmers Group believe that this e-commerce application can be one solution to the problem of the low selling price of agricultural products. In addition, the economy and welfare of the farmers will also increase and become an encouragement for the farmers to continue to work hard in producing good and quality agricultural products (Edelia & Aslami, 2022).

Conclusion

The e-commerce application using the Customer Relationship Management (CRM) strategy for farmer groups in Bendosewu Village has been successfully developed. Farmer groups get the convenience of selling agricultural products directly to consumers, which were initially sold to collectors at low prices. Farmer group managers can use agricultural e-commerce applications well. This activity can improve the understanding and skills of farmer groups in utilizing information technology to increase agricultural turnover.

The next effort to sustain service activities is the implementation of agricultural e-commerce applications which are not only intended for farmer groups in Bendosewu village but can be broader to other farmer groups so that the benefits of agricultural e-commerce applications can be felt for selling agricultural products to increase farmer turnover.

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