

Mobile Commerce model for Medium and Small-Scale Agriculture in Indonesia

Inayatulloh

Information System Department
School of Information System
Bina Nusantara University
Jakarta, Indonesia
inay@binus.ac.id

Abstract

Indonesia is an agricultural country that relies on the country's economy, one of which is through the agricultural sector. However, farmers in Medium and Small-Scale Agriculture are the ones who are most disadvantaged when the harvest arrives. The problem is that when the harvest arrives, the yields are abundant while demand is stable, sometimes even decreasing because farmers do not have direct access to markets or buyers who will buy their crops. This research aims to build mobile commerce for farmers to make it easier for farmers to sell their crops directly through customer. The result of this research is mobile commerce model for farmers in Medium and Small-Scale Agriculture to sell their crops.

Keywords

mobile, commerce, farm small scale

1. Introduction

Agriculture in Indonesia is one of the key sectors of the Indonesian economy. Although the contribution of the agricultural sector to national gross domestic product has decreased significantly in the last half century, currently the agricultural sector still provides income for the majority of Indonesian households. Agriculture in Indonesia is lead with middle and small-scales agriculture (Quince ,2015) since furthestmost of the agrarians in Indonesia have been agriculture independently in traditional techniques (Maat,2016). It is threatening for Indonesia to chance local food requirements. It is recognized that till 2018 Indonesia stagnant imports farming goods from other nations (Hisyam,2017). Growing the populace in Indonesia makes the requirement for food surges. In order to meet food needs, the evolution of the agricultural sector is needed. Problems found Based on observations in several Medium and Small-Scale Agriculture, it is difficult for them to sell their crops at a fair price due to their limited ability to sell their products. On the other hand, farmers have a community or cooperative that can be used as an institution to help their sales by using information technology. The aim of this research is to help farmers sell their crops using information technology through community or farmer cooperatives with mobile commerce. The result of this research is mobile commerce model for farmers to sell their crops

2. Literature Review

2.1 Cooperative Farming.

Cooperative in English is called the Cooperation comes from the word co means joint and operation contains the meaning of work. This cooperation is to achieve common goals, for the benefit and benefit of all. This word in Indonesian in general it is called a cooperative. Cooperative Farming includes Joint Farming occurs in small

agricultural areas, which if carried out individually is not economical. Work on this small piece of land finally handed over to the cooperative, so that it is possible to do it more efficiently (Batubara,2012).

2.2 Mobile Commerce

Mobile commerce can be observed as a subsection of e-commerce (Coursaris,2002) and refers to any business with fiscal value that is showed via a mobile technology (Clarke,2001).

When users behavior electronic commerce such as mobile banking or buying products, they do not necessity to use a PC system. Certainly, they can merely use some mobile devices such as PDA and mobile device to conduct numerous electronic commerce actions. In the previous, these mobile technologies were observed as a generous o extra for individuals. Nevertheless, this condition has different. The market for mobile phone has seen important growing in the past insufficient years (Kumar, 2003). Mobile commerce is a technological border and is an good-looking area for study because of its qualified novelty, fast progress, and potential requests (Sadeh, 2002). M-commerce applications have two major characteristics: mobility and broad reach. Mobility implies portability, e.g., users can conduct business real time via mobile devices. With m-commerce, people can be reached at any time via a mobile device

2.3 Mobile Application

Mobile applications are contain of software that goes on a mobile scheme and achieve certain jobs for the operator. Mobile application is a innovative and fast emerging Section of the worldwide Information Technology. Mobile application is easy, user friendly, cheap, download able and ride able in most of the smart phone with low-cost and admission equal phone. The mobile application has extensive uses for its massive working area similar business, messaging, surfing, talking, social media communication, audial, audiovisual etc. In great amount of mobile application around are preinstalled in phone and others customer can transfer from internet and connect it in smart phone.

This huge amount of mobile application marketplace helped by cumulative no of mobile application designer, producers and suppliers. Today a day each standard moveable has Facebook. User can portion with their groups and household from wherever and any residence like in carriage, in sleeper. Persons can usage messenger for talking. We can produce call to any angle of the domain with little price using internet. Then we can dialog about Global Positioning System. Present location tracing in atlas, Street navigation, car following etc. are the greatest usages application using Global Positioning System. The Google Map aids us to discovery out any habitation. Using m-commerce we can observation merchandise, choice product and demand for merchandise. One-time mobile commerce application like Mobile Wallet uses in eatery or marketplace for implementation imbursement. Persons can performance business effort using mobile app. M-banking and e-Ticketing is additional piece of mobile app (Islam,2010)

2.4 Model

The purpose of this research is to build a mobile commerce model to describe sales with mobile technology where some other research also builds models with different objectives such as the IT Governance model for SMEs (Inayatulloh,2020), block chain models for regional head elections(Inayatulloh,2020), CSF UKM models(Inayatulloh,2020), early detection models of infectious diseases(Inayatulloh,2020), DSS model(Inayatulloh,2020), TAM for SME(Inayatulloh,2020), commerce learning(Inayatulloh,2020) and others

3. Methods

Figure 1 explain the research method. This research begins with activities to identify problems related to farmers and their crops. The second step is to identify their potential strengths. The third step is to find alternative solutions using information technology. After it is determined to use mobile technology, the next step is to identify the resource requirements to support the mobile technology that will be built. Finally, build a mobile commerce model for farmers

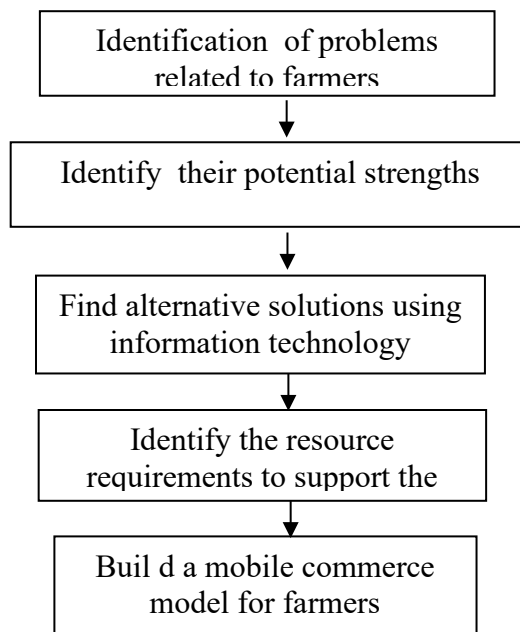


Figure 1. Research method

4. Results and Discussion

Figure 2 explain M-commerce model for farmers is divided into:

1. Users are farmers or farmer cooperatives, buyers where the requirements for both types of users are to use a mobile device that has a mobile commerce application installed
2. The second part is the technology that supports mobile commerce, namely:
 - a. Firewall aims to protect the system from attempts that aim to damage the system. The use of a firewall has an important role because this application is made based on the internet which is at high risk of being attacked by viruses, hackers and the like
 - b. HTTP REST or Hypertext Transfer Protocol Representational state transfer which functions to send and receive data from the user to the server. Every interaction between users when registering, ordering products, updating data and other transactions will use this facility.
 - c. REST API or Representational state transfer Application Programming Interface which is responsible for receiving all traffic sent from farmers and buyers. Interaction between all users involved in the system using this feature.
 - d. WEB SOCKET NODE Is a 2-way bidirectional communication that serves to continually connect farmers and buyers. This facility also functions as a medium of communication between farmers and buyers during the negotiation, coordination and transaction processes between users involved in the system. This feature also facilitates system communication with third parties involved in the system
 - e. Dispatch Optimization builds on consistent hashing of the GPS farm location and servers. This feature serves to provide the location of agricultural land using the global positioning system. This feature is needed if the buyer wants to directly view and transact at the farm location or other place agreed by both parties
 - f. Supply represents farmers who offer their crops
 - g. Demand represents buyers who are potential buyers
 - h. Farm is a farm location represented as a node in the system.
3. The third part is the back office and database that manages the system so that it can run properly. The back office is responsible for carrying out all system monitoring and maintenance activities while the system is running

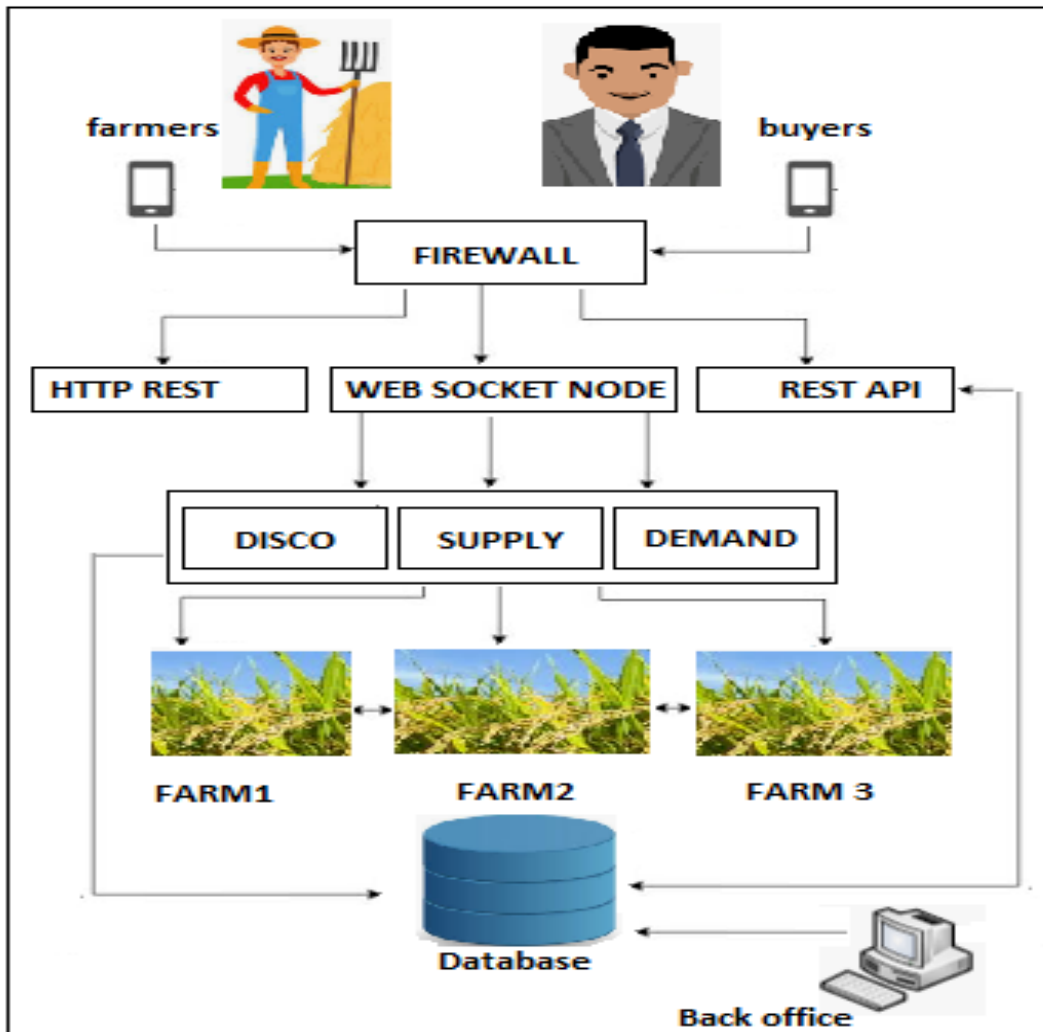


Figure 2. M-commerce model for farmers

The existence of a mobile device that is used by almost everyone when it provides new opportunities to support sales, including farmers. The existence of farmer cooperatives or farming communities is a separate force that can help farmers sell their crops using mobile commerce.

This mobile commerce model will greatly help farmers sell their crops directly to buyers at reasonable prices even when the harvest time arrives. Buyers are greatly assisted by the existence of this mobile commerce because they can get cheaper prices without having to go through intermediaries which cause the price of goods to be very high

Figure 3 show design of user interface

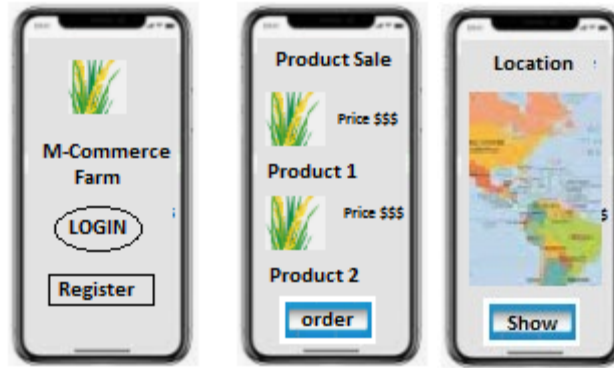


Figure 3. example of user interface

References

- Batubara, M. M. (2012). Koperasi Pertanian. Palembang. Faperta Universitas Muhammadiyah Palembang
- Coursaris, K. Hassanein, Understanding m-commerce, Quarterly Journal of Electronic Commerce 3 (3) (2002) 247 – 271.
- E. Quince, 2015. "Summary of Indonesia's agriculture, natural resources, and environment sector assessment," ADB Pap. Indones. (8), pp. 1-7.
- H. Maat, 2016. "Encyclopaedia of the History of Science, Technology, and Medicine in NonWestern Cultures," Encycl. Hist. Sci. Technol. Med. Non-Western Cult.
- Hisyam, 2017. "Revenue management for foodstuff production to secure domestic supply in Indonesia," AIP Conf. Proc. 1855
- I. Clarke III, Emerging value propositions for m-commerce, Journal of Business Strategies 18 (2) (2001) 133 – 148
- of Mobile Communications 1 (1/2) (2003) 180 – 193.
- Inayatulloh, " IT governance training for small medium enterprises Model" Proceedings of 2020 International Conference on Information Management and Technology, ICIMTech 2020, 2020, pp. 876-880, 9211276
- Inayatulloh, Cahya, S. P. (2020, August). Block Chain Model for Regional Elections in Indonesia. In 2020 International Conference on Information Management and Technology (ICIMTech) (pp. 61-66). IEEE.
- Inayatulloh, Hartono, I. K., & Alianto, H. (2020, August). Improving SMEs Knowledge and Performance With Cloud Computing CSF Model Approach: Systematic Literature Review. In 2020 International Conference on Information Management and Technology (ICIMTech) (pp. 664-668). IEEE.
- Inayatulloh, Hartono, I. K., & Alianto, H. (2019, August). Decision Support System Model for Badan Ekonomi Kreatif Indonesia. In 2019 International Conference on Information Management and Technology (ICIMTech) (Vol. 1, pp. 498-502). IEEE
- Inayatulloh, "Technology acceptance model (TAM) for the implementation of knowledge acquired model for SME" Proceedings of 2020 International Conference on Information Management and Technology, ICIMTech 2020, 2020, pp. 767-770, 9211279
- Inayatulloh, "Successful of SMEs through Electronic Commerce Learning Model", International Journal of Innovation, Creativity and Change, ISSN: 2201-1315/E-ISSN: 2201-1323. July, 2020
- Inayatulloh, "Successful of SMEs through Electronic Commerce Learning", International Journal of Innovation, Creativity and Change, ISSN: 2201-1315/E-ISSN: 2201-1323. July, 2020
- Islam, R., Islam, R., & Mazumder, T. (2010). Mobile application and its global impact. International Journal of Engineering & Technology (IJEST), 10(6), 72-78.
- N. Sadeh, M-commerce: Technologies, Services, and Business Models, John Wiley and Sons, New York, 2002
- S. Kumar, J. Stokkeland, Evolution of GPS technology and its subsequent use in commercial markets, International Journal

Biography

Inayatulloh is a candidate doctor at Bina Nusantara University's Doctor of Computer Science. Since 2000, Inayatulloh has been a lecturer at Bina Nusantara University, school of information system. I am experienced in system development in several companies such as garment, petroleum, retail and others. Scopus indexed publications have been produced with topics related to information systems such as e-learning, e-SCM, e-CRM. E-government, block chain and others