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Mobile Commerce Establishment for Livestock Marketing Development in West Sumatera: An Approach to Systems Requirement Analysis

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***ABSTRACT**--A new innovation available via internet program can be accepted and adopted for it easily when integrated with a traditional method. Majority in West Sumatera, that the livestock market was still classified as the traditional method and had not undergone a modernization yet, while still being shown a function in the livestock marketing forms such as the distribution, the price formation, and the promotion; each of them was not still optimal in West Sumatera yet. Therefore, the development of the livestock market by mobile commerce establishment can overcome problems about the distribution, the price formation, and the promotion above. The purpose of this research has to be analyzed requirement of system for the mobile commerce establishment for the livestock marketing development in West Sumatera. Methodology is taken a System Development Life Cycle (SDLC); it is a method which shows about the life cycle of system development in a design and information construction. Primarily the data are issued from the secondary data. So that the data analysis technique usage was as the descriptive method and use for case the diagram usage. The diagram usage of the approachable analysis system needs the livestock marketing by the mobile commerce establishment to produce the functional analysis and nonfunctional usages in West Sumatera. The analysis system usages are displayed in the use case diagram forms.*

***Key Word**-- Mobile Commerce, Development, Livestock, Market, Systems Requirement*

I. INTRODUCTION

An existence of livestock market will determine in the development of livestock population indirectly. The livestock marketing condition influences a passion and breeding enthusiasm. One of the best facilitating factors is the animal livestock marketing development more efficiently. If farmers get some difficulties for the marketing, thus the farmers' motivations will decrease. Hopefully it is really hoped that the livestock market will truly provide to get profit and advantage optimally as marketing practitioners and consumers (Nuryono, 2012).

Majority in Indonesia, the livestock market is still classified as traditional and has not undergone modernization. The sales, purchase transactions and mechanisms for determining the livestock prices are still dominated by collectors and traders. The livestock body weight determination is done by estimating based experiences on traders and inaugurations. They determine the livestock price not based on the body weight or the certain criteria. Most of the breeders do not have some knowledge and experiences in the estimating livestock body weight so that the transaction process is submitted by the breeders to the inauguration as a broker. The profit

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margins are dominated by both large collectors and traders. This condition is due to the farmer strengths in the determining of the cattle price is very weak. Therefore, the farmers as livestock producers get the low profit margins. When viewed from the function of the livestock market as distribution, the livestock market physical building where the transaction takes a place is still perfect in the facility as limited condition (Elly, 2009).

Moreover, deliberately the purchasing and selling transactions are not transparent in West Sumatera. The selling and purchasing transactions of the livestock are done and applied with a *marosok* system. These transactions are carried out away from crowd and hideaway. They are only done for sellers and buyers by using a signal language and without speaking. Simply the traders and buyers made their transaction forms using shake hand and hold hand symbols only. Also the nodding and shaking heads are being seen for their transactions meanwhile holding their hands which are being hidden and closed. The word of *Marosok* in Indonesian are, *meraba, merasakan atau memegang* (touching, *feeling or holding*) some things without seeing some of items, but only it feels based on the braining and feelings. Uniquely, the transactions are hidden for other people. The sellers and buyers usually cover their hands with the gloves, the skullcap, the clothing or the others. In meaning of the *marosok* that each of fingers symbolizes a rate number of 10.000, to 100.000., till 1000. 000. Yet this tradition weakness that all people cannot do for trading in using this tradition, they are only certain persons who can bargain by using the tradition "*Marosok*", because the bargaining with this method is a direct very quickly to influence prices to be offered. A few mistakes in the bending fingers, the offered price will be different very much (Rhizky, 2018).

In this modern era, there are so many technological tools that can be used to facilitate community in communicating, but the tradition phenomenon of the Marosok is still maintained by Minangkabauness until now (Regina, 2017). But for other business actors who do not have a middleman status, determination of the price for using the system “marosok” is not transparent.

It can be concluded that the livestock market available in West Sumatera where has not been efficient yet. An efficient livestock market could be said more efficiently if the criteria of efficiency livestock market can be reached and met, for example there is a fair marketing margin for each institution. the price level is not too high at the consumer, the physical market facility availabilities and also the low market competition intensities (Madarisa et al, (2012), therefore in the efforts provide better benefits for all parties, the livestock marketing system must be more transparent both in determining the price and the livestock weight (Rahardi et al, 1999). The modern livestock market must be able to support the market functions more comprehensively so that they require the business facilities that can integrate upstream, on farms and downstream sectors (Directorate General of Processing and Marketing of Agricultural Products, 2012). The livestock market needs to pay attention for the marketing, technical, organizational, regulatory, financial, economic and environmental aspects. All these aspects will determine and influence the feasibility of establishing a market. The existence of the animal market in turn is expected to produce the sale and purchase of animal transactions, good, safe, hygienic meat products orderly, not contaminated by animal and legal diseases for public’s consumptions. On the other hand, its existence does not solve for the environment and can be an income source for local governments at the same time (Nuryono, 2012). The livestock market can protect both sides, both producers and consumers, namely the protections against the price exploitation, misinformation, and dishonesty measuring and weighing.

Along with the existing problems and the need for an ideal livestock market so that the benefits both the parties, producers and consumers, a cattle market model is urgently needed. One of the livestock market models that can

overcome the livestock marketing problems from the viewpoint of its function as distribution, price formation, and promotion is by implementing the livestock marketing in the Mobile Commerce establishment forms. A need and necessity of using is an android-based on the mobile commerce in the livestock trade today. The need for the mobile commerce will be increasing in the future because we live in the industrial era 4.0. This era is marked by the technological advances in various fields; especially the internet of things.

E-commerce changes an arrangement rule for the business and its guarantee life will be spectacular in the future. They use it early will be a winner even more they are doubt whom will be eliminated. It has penetrated the agriculture in California and all over the world. In 2000, one of the US farms had bought or sold the agricultural products on the Internet (USDA, the Agricultural Resources of Management Study, 1999). Goldman Sachs estimated at that time that 12 % of all the agricultural sales in the US would be made by the Internet in 2004, only compared to 4 % in 1999 (Mueller, 2000).

E-Commerce in the Market of Florida Cattle has a considerable potential. The research result gets 40% of the cattle which is marketed via the internet. The Internet marketing transaction is 50% fee for reducing the transaction costs. A number of the cattle are marketed increased from 46,000 to 402,959. The aggregate producer surplus increased to $ 48 and $ 68 million as a result of the reduced transaction costs associated with the internet auctions. In addition, the aggregate consumer surplus rose between $ 95 and $ 76 million. The total welfare of the feeder livestock sector raised about $ 144 million in the US as a result of the internet auction. In Florida, a number of cattle going for sale increased from 854 and 7,389 as the internet auction results. In Florida's producer surplus increased between 886,000 and 1.25 million. (Schmitz et al, 2002)

On the other hand, the community is very motivated to do for the purchases of livestock products via online in Oklahoma. Their main motivations are for the buying cattle online as a variation in the product and seller choices, availability of more cattle to see. In addition, animal selection, time savings, convenience, ability to compare livestock influence their choice to buy online. Oklahoma agricultural education teachers feel the difference in the quality of livestock sold through online auctions compared to traditional auctions. Oklahoma agriculture education teachers prefer photos and videos when viewing online auction websites, suggesting they want to see livestock in pictures and videos to evaluate the right animal to buy. (Wendt, 2014).

Therefore, the development of mobile commerce is very urgent needed in West Sumatra to facilitate the marketing of livestock products and can solve livestock marketing problems so far that have an impact on the motivation of livestock farmers. For the initial stage, this paper describes the development of mobile commerce for the livestock market in West Sumatra using a system needs analysis approach.

II. METHOD

The data collection methods are used to determine the needs of the mobile commerce system for the livestock marketing through interviews and observations about the problems and needs of the actors in the livestock market. A literature study is also conducted as the supporting and existing complement data. The literature study was conducted on that article related to this research. The data analysis techniques are analyzing the system requirement and using the qualitative descriptive analysis by identifying each users need and illustrated using a use case diagram. As an initial description, the user of this application is a farmer or business actor in the animal husbandry

field who acts as the seller, buyer and government (extension and veterinarian). For products the on farm, thus it is needed a legalization of the livestock what sold from the extension agent or veterinarian is required.

III. RESULTS AND DISCUSSION

The system requirement analysis is very needed in supporting a work performance system. The need analysis of the mobile commerce system for the livestock market is really needed that the extended system is suitable in accordance with the system of requirement. The mobile commerce system needs for the livestock market consists of the actors' identification, the functional and non-functional needs. It's based on the functional need or requirement which has already been described, thus it can be made with the use case diagram.

IV. IDENTIFICATION

Based on the analysis process what is done or carried out, there can be three actors who will use this system. The actor is an administrator, seller and buyer. The description of the actors can be seen in Table 1.

Table 1: Description of Mobile Commerce Actors for the Livestock Market

Actor	Actor Description
Administrator	Mobile commerce owner who acts as an administrator and monitoring of the selling and buying process. That the admin can find out the member data and He can change it and do for the member moderation (sending a warning, blocking account when a member violates the rule), sending an announcement and notification for the updating application.
Seller	The seller is a visitor who has done for the registration and selling goods process. The seller can change his personal data, and carry out the product sales process (upload pictures, set prices and price types (negotiable, fix, etc.), meeting address (if you want to meet), etc.
Buyer (Member)	The buyer is a visitor who has done for the registration process. Buyers can change his personal data that will be used to send some orders by the seller. The buyer can only see and order the product but is not entitled to change the product data, the buyer can give a rating of the goods what be bought for it as an assessment of the product.
Non Member	M-commerce visitor who has not registered yet. The visitor is only able to see the product data.

V. FUNCTIONAL

Functional requirement is a system's ability to do the process and can display all the needed information. It is a need on the system as a service in the application that must be provided, even more as well, it is a process description of the system's reaction to the input system and which will be done by the system.

The functional requirement of the mobile commerce systems for the livestock market is:

1. The system is able to carry out an administrative processes

a. Admin Seller Account Validation (automatic validation using a verification code sends to a member email)

b. The system sends the Activation code to the registered Consumer email.

c. The system is able to display a use rule

d. The system is able to display an announcement

e. The system is able to display the rules of being a seller, a buyer

f. The system is able to display how to shop and sell

g. The system is able to block / banned / and delete member account that violate the rules of sale and purchase

h. The system is able to create a group of the product categories and sub- categories

i. The system is able to manage the used currency

j. The system is able to receive the violation reporting

k. The system is able to notify when there is an application update to the user

2. The system is able to do for the sales process

a. To do for a registration to the system admin (do the input process store name, seller's name, address, and number contact and seller category: breeder or trader)

b. The system is able to display the seller's profile

c. The system is able to display the categories and sub of products or livestock

d. Product data input (product name, product or livestock image, product or livestock specification (livestock weight, livestock type, animal health certificate if any, livestock ownership certificate from guardian or village head, if applicable), quantity of goods, unit price, rubble price, negotiable price, right price, COD (cash on Delivery) ,and store / seller account number.

e. Sellers who have already made the purchase transactions what are required to confirm with the system

3. The system is able to make the purchase process

a. Register on the system admin

b. The system is capable of inputting, changing and deleting: Username, Input Password, Input Full Name, Active Email Input, Input Shipping Address, Input Mobile Number and Consumer categories: retail merchants / tokens.

c. Consumers who have already made the purchase transactions what are required to confirm with the system

d. The system is able to receive the complaints from consumers (rating system)

e. The system is able to provide the buyer to seller chat (negotiations, appointments, product discussions, and complaints)

f. The system is able to display the order data (note: this can't be done because we don't provide for shopping carts and we don't administer for buying and selling)

VI. NON-FUNCTIONAL

Besides the functional and, the non-functional requirement is also needed to support this mobile commerce application. Analysis of the non-functional requirement can be used as a need form in the hardware form which needed the system. The analysis of the Non-functional requirement is performed to find out the requirement

specification for the system. This matter needs to be described in order to support the functional requirement implementation. Here is detail information from the non-functional requirement:

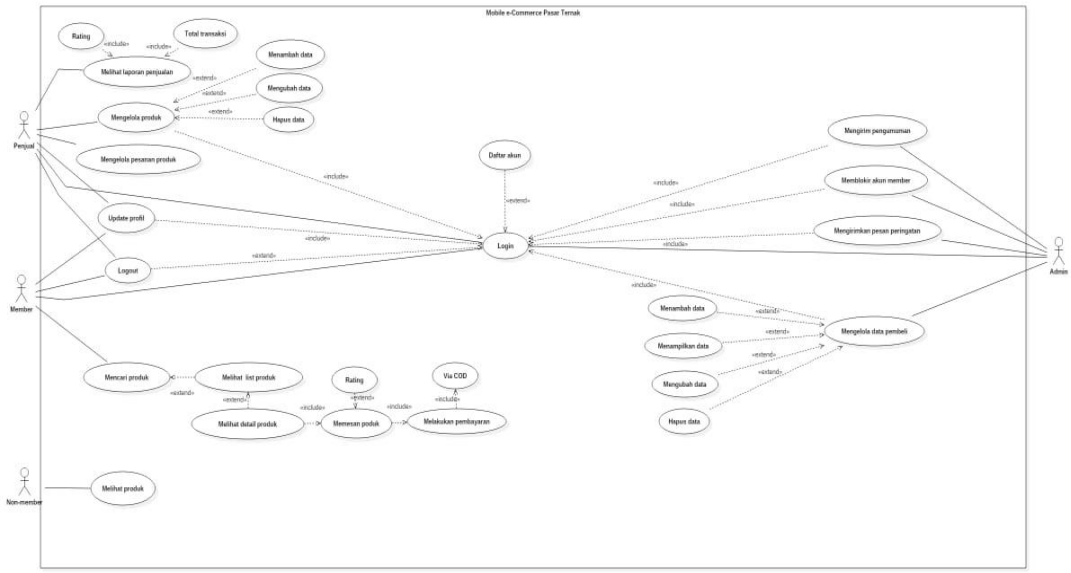
1. Web Development and Apps Development
   a. Backend
      i. PHP programming language
      ii. MySQL database
      iii. HTML + CSS interface (bootstrap)
   b. Frontend apps
      i. Use Firebase for Real-time Chat
      ii. The Integration API uses the RESTFul API
      iii. Java programming language
2. Hardware Requirement
   i. Android Device for frontend apps
   ii. Internet connected laptop or PC for backend management
   iii. Software Requirement
3. Software Requirement

Table 2: Software Requirement

No.	Software	Software Used
1.	Operating system	Windows / Mac / Linux
2.	Supporting Software	Android Studio
3.	Text Editor	Android Studio Built In
4.	web browser	Chrome / Firefox / Edge
5.	Web Server	Apache
6.	Database Server	MySQL. Firebase

VII. USE CASE DIAGRAM

Interaction between actors is illustrated using use case diagrams. This picture shows the usefulness of the system being built. Based on the functional requirements described above, a use case diagram is constructed. Use case diagram illustrates the actors involved and the actions that can be carried out by these actors.



VIII. CONCLUSION

This mobile commerce application in the form of a market place originates from problems faced by farmers in selling their livestock, especially a large livestock such as cattle, buffalo and goat. But from the thinking development of a mobile commerce is also designed to sell the livestock products from upstream to downstream, such as selling livestock, seeds, and feed, farming facilities and infrastructures and post-harvest products. These are post-harvest products such as nuggets, sausages, milk, curd and other. Sales of the large livestock such as cows, buffaloes and goats are carried out following the procedures and standards for the sale of livestock, especially cattle. Farmers sell their cattle to provide the livestock health certificates what are obtained from the veterinarians or extension workers and cow ownership documents from the Guardians.

Actors are from this market place like admin, seller, buyer, and non member. Interaction between them is carried out in it but the payments are made COD. This system also provides a web block that can be used by the actors to increase knowledge in the field of animal husbandry. Academicians can publish their writings on this web block. This application can be developed more broadly. It can be a basis for the initial management formation as part of the livestock marketing development and it's a follow-up. This application is very useful as the community to get the livestock products. It is expected that this application will be a forerunner to the animal husbandry development particularly in West Sumatra and become a solution to the problems in the livestock marketing and market.

This application can pave away for the information system developments in the countryside. This application can provide the internet of thinking education for the rural communities; it's especially for the breeders.

IX. SUGGESTION

Based on the design results of this system, we recommend:

1. Research on the implementation of this system needs to be done
2. Future research needs to be done by evaluating products that are often seen and sought in this Market place system.

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3. Further research needs to be done to add actors, features, categories and security systems

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REFERENCES

1. Directorate General of Processing and Marketing of Agricultural Products. 2012. Indonesia
2. Elly, F.H. 2009. Peranan Pasar Blantik dalam Menunjang Penjualan Ternak Sapi di kabupaten Minahasa. Jurnal Zootek. Vol 4 No. 2
3. Madarisa, F., Edwardi., Armadhyah., & Lazuardi. 2012. Potret Pasar Ternak Sumatera Barat. Jurnal Peternakan indonesia. Vol 14 No. 3. 433-440
4. Mueller, R.A.EE. 2000. Emergent E- Commerce in Agriculture Issue. University California
5. Nuryono, R. 2002. Studi Kelayakan Pengembangan Pasar Hewan di Kabupaten Bekasi. Jurnal AKP. Vol 1 No. 2
6. Rahardi, F., I. Satyawibawa,dan R.N. Setyowati. 1999. Agribisnis Peternakan. Penebar Swadaya, Jakarta.
7. Regina. 2017. Tradisi Marosok dalam Transaksi Jual Beli Ternak di Pasar Ternak Kota Payakumbuh, Sumatera Barat. Jom FISIP Vol. 4 No. 2
8. Rhizky, D.P; Widodo, and Mahendra, W. 2008. Asian Journal f Applied Science and Tehnology. Vol 2. Issue 1. 120-134
9. Schmitz, T.G. 2002. Measuring Inefficiency in the Presence of an Export Tax, an Import Tariff, and a State Trading Enterprise. Journal of Agricultural and Applied Economics.
10. Wendt, Kari.L. 2014. Percepcitions of and Motivations For Purchasing Exhibition Livestock Through Online Auctions. Thesis of Master Science Oklahoma State University