

Designing a Livestock Ecosystem Platform for Smallholders Farmers

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ABSTRACT

This research aims to develop and create a simple of user-friendly marketplace platform called "Pasar Kebo" for the farming (livestock) ecosystem in Kudus Regency as well as testing the effectiveness of the product. With this platform, it is hoped to create an integrated farming ecosystem, thereby creating an efficient supply chain management system. This will make it easier for smallholder farmers to obtain livestock production facilities to sell their livestock products in the market. So this will certainly improve the welfare of the livestock ecosystem members. For the government, this platform can be useful to provide accurate data in the mapping and monitoring of animal production, as well as a basis for the implementation of appropriate policies in the livestock sector. Data collection was accomplished through direct interviews with several Kudus breeders as well as observations at the Office of Agriculture in the Kudus Regency livestock sector. This research is longitudinal, so it will be carried out in stages, and each stage uses a different method. For this step, we tried to develop a prototype. For the next stage, it will be developed until this breeding ecosystem market platform is really perfectly realized.

INTRODUCTION

The rate growth population , increasing income levels and higher education increased the awareness of consuming nutritious food. It also makes the national demand of meat are increase [6]. Indonesian poultry data shows the trend of animal food consumption tend to increase. That can be seen from the following table:

Table 1. Consumption Beef , Chicken and Eggs

Year	Meat Cow	Egg	Meat Chicken		
	(Pusdatin)	(Pusdatin)	(Pusdatin)	(PKH statistics)	GPU
2017	2,361	6.65	5.67	5,683	12.76
2018	2,500	6.49 ¹	5.55	5.579	13.12
2019	2,560	17.69 ²	5.80	-	15.50
2020	2,680 ³	-	6.03 ³	-	15.74 ³

Note :

1 = consumption egg house ladder

2 = total consumption eggs (RT, Horeka , and PMM, Industry and Services Health

3 = number prediction (before existence COVID-19 pandemic)

Source : Indonesia Poultry, 2020

From the economic perspective, this is of course a great opportunity the livestock industry sector. In the other side, the existing livestock business, generally still run with a simple way. That business is a side business [1] managed by traditionally, and not yet managed in a modern way [7] and [3]. Small business scale even "small", minimal investment and minimal use of technology, is indication of that. As a result, productivity and quality of livestock production becomes low [12]. Besides that, management by traditional makes the location of livestock scattered and there are no

facilities to consolidate them. This makes it difficult to mobilize people's livestock to fulfill people's food needs, especially meat. Breeding communities are slow in responding the price changes in the market, due to limited ability to adding livestock production factors [12]. It different with large livestock company have centralized storage facilities or farms, that make it easier to controlling supply in the market.

Another problem is the lack access of farmer communities to the markets [2]. Farmers lack to get market information especially regarding the price of cattle commodity in the market. As a result, they often toyed with by middlemen, so that didn't get the appropriate price and that is one of the reasons why breeders people have a low level of well-being.

Furthermore, teh pandemic condition demanding the buyers and sellers of animals cattle for not to interact directly. For cattle commodity especially ruminants, it is quite difficult if not seeing directly the animal that will be bought. Especially to check health and physical integrity of livestock animal that will be bought. A way is needed between buyers and sellers of livestock animal can still transact during the pandemic without having to meet in person, however the health and physical condition of livestock animal traded can be described accurately [1]. Besides that/in addition, post pandemic condition has provided a new experience for society , namely managing whole aspect of digital life. Because of that/therefore, a platform business of digital livestock reliable is needed, which able to answer these needs.

Another problem, until now, the majority of local government don't have accurate data about how many livestock in the area [11]. Availability of the data is very vital especially in the context of endurance food. Many things can conducted by Local Government with the valid and accurate data. For example, if there are a scarcity of meat, the government can easily mobilize livestock in the farmer to fulfill the meat needs of society. For that, the result of the development from this researche expected to be useful to obtain livestock data by *realtime-online*. This important, especially to ensure that current and future livestock programs are properly monitored. The program among others: livestock production improvement program, livestock vaccination program, livestock waste utilization program, and various other programs .

We consider that this study is very important and urgent to do, remembering until with there is no a marketplace platform in the people's livestock sector. In fact, livestock is sector that really touches people at the grassroot level. Whereas on the other side, the success of development , empowerment , and consolidation the potential farmer's people will have a huge impact towards improving welfare society. It's also reduce risk of scarcity of livestock products, especially ruminants animal meat, because of the democratization of supply , namely the farmer's people. This is the same as the main characteristic of industrialization 4.0, that is existence equal distribution of resource, everyone can participate, and there are no dominant player, so the characteristic of the Indonesian nation, is the spirit of gotong royong can manifested. For the reasons, then it must quickly start studies for create design build an application of *marketplace* platform in the livestock sector.

METHOD

This study included in research and development (R&D). The research with this type is used to produce a particular product while testing the effectiveness of the product. This study is longitudinally, so that study carried out in stages, and each stages uses a different methods. *Data collection is was carried out by direct Interview with a several number of breeders in Kudus and conduct observations at the office of the Department of Agriculture Kudus District Farm, from interviews and observations obtained information about the obstacles faced by farmers and staff of Department of Agriculture Kudus District Farm, then the data is analyzed and used as information to design a new system.*

In this study application, using ADDIE method which has the Analyze stage (Analyze), Design (Design), Development (Development), Implementation (Implementation), and Evaluation (Evaluation) with consideration can take a systematic approach [4]. To answer the problems as described above, this research will use a several stages as mentioned in [13] as following : (1) Problem identification, which is a method for find the existing problems in the work process of sustainability system, in order to reach solution the problem to be found handling solution. (2) Data

Collection Method, which is a way that carried out to collect data evidence. With aim of obtaining information needed to achieve a goals of the research. (3) Data analysis, which is an activity to change the data obtained in the research process into information that used to take conclusions in the research, either by using hypotheses or estimation result. (4) Design system, is an activity to design and determine the method of information system process from the results of system analysis so that it can fulfill the user needs. (5) Making the System, After the system design is done, the next system will be built based on the plans, that have been made using a programming language. (6) Testing System, is a complete and integrated software testing program. Software is a part or one of the element from based on bigger computers system. After the system is built, the next step is system testing, by testing and checking whether the function of the system created are working properly. (7) Implementation System, is procedure performed to complete an approved system design, as well as to install, start, test, and use new system, or already repaired. Here is the stage to determine the success or failure of the application system that's built .

RESULTS AND DISCUSSION

This study uses the ADDIE method [4] with the product developed are livestock ecosystem marketplace platform in Kudus Regency. As for data analysis techniques used is, *Analyze* (Analysis), *Design* (Design), *Development* (Development), *Implementation* (Implementation) and *Evaluation* (Evaluation). For this research, will only be limited up to the system development (*prototype*) stage. Whereas for implementation, and evaluation system will carried out in the next research.

1. Analyze (Analyze)

The analysis phase is done by analyzing the needs. Needs analysis is carried out to find out what the needs of *stakeholders* are member of cattle ecosystem are. From the results of in-depth interviews conducted with several *stakeholders* livestock ecosystem, some frequently encountered problems can be identified, among others:

a) Farmers find the difficult to access the market

This is occur because most of the farmers live in villages which is far from the market. To bring cattle to be sold to the animal market, they must to rent vehicle tub open. The average breeder must has to spend the money as much as Rp. 100,000 per head for goat. And Rp. 300.000,- per head for cow or buffalo. The nominal can be even haigher if the location of the cattle is in the remote village and difficult to reach by vehicle carrier. Beside that , the cost that must be incurred by the breeder for transport their livestock as well not standard. Sometimes cheap, sometimes very high. It depends the availability of transportation and the number breeders who need it, Futhermore, with such an expanse, there is no guarantee the cattle brought to the market will sell well. Sometimes cattle are brought along high cost for the farmers doesn't sell and only adds to the breeder burden. Because of that, breeder prefer to sell their cattle to collectors who visit the farmer from house to house. Because they don't want to bothered, the farmer then accepts it the price offered by collectors (*blanthic-language java*). Usually the blanthic are already bring they own vehicle and directly give money *cash* to breeders. Cattle purchased at a fairly cheap price, then sold back/resold to the market at many times the price more higher than the price received by the farmers. Here it is necessary to provide the farmers wider access to information, so that they they can recieve a more reasonable price. This is especially important especially to alleviate poverty and increase the welfare of farmers people. If the market and price access could be more opened and transparent, the farmers will enjoy the good profit. If the rate of profit in this livestock business well, then in long time it means provide incentives to farmers to raise cattle by sustainably (*sustainable farming*). This is important for endurance food nationally, especially for the availability of animal protein for Indonesian society . From this explanation, can be seen that farmers need land transportation services that are easily reliable and accessible with standard service fees, as well as services to be able to access market price information. This emphasizes the results of previous research [8] who stated that land transportation modes, specifically truck, are still the main choice, so that's important to build the better system.

b) Breeder find it difficult to get information livestock production facilities

To produce healthy and high-value livestock, farmers really need various livestock production facilities, such as: seeds (preparations), feed, medicines, or other services such as artificial insemination, vaccination, cage sterilization and so on. Various needs “sapronek” (*sarana produksi ternak*-needs production facilities livestock) so far it is quite difficult for farmers to access. For example seeds, breeders must come to the market to choose the seeds they want to buy. Also feed, medicine, must be bought to the city is quite far away. Farmers rely on visits from livestock extension workers who routinely visit them. However, with few extension workers every farm (only 3 people in Kudus) it is not sufficient to provide the service optimally. On the other side, sapronek providers such as feed and medicine cattle shop are also difficulty in accessing consumers who are scattered and located in remote areas. From result of Interviews with shop business owners of agriculture and animal husbandry. In fact, it is not a problem for them to deliver their merchandise (feed and medicine) to the farmers, if the quantity purchased is large. It will cover their transportation costs they incur. Some breeders sometimes order feed and medicine for the group collection of several breeders. Shop it serves booking through the media Whatsapp and SMS. From a survey that conducted by the Research and Development Center Implementation of Post and Information Technology Research and Development Agency Source Power Man Ministry Communication and Informatics in 2015, *Mobile* is Most widely used ICT facility after TV. Although there are still weakness in terms of quality, such as signal and HP capacity. From this description, can be understood, that farmers are already literate of technology, however there is still need more reliable communication media that can accommodate the needs of breeders and service sapronek providers so they can be more effective and efficient.

c) Buyer don't have time for choose directly livestock animal in the animal market .

In modern times like today where everything goes fast, to spare time to choose livestock animal in the market seems to be unattractive to consumers. Consumers tend to rely on collectors/middlemen/ cattle traders to fulfill the needs of cattle animal for various purpose. Such as Qurban, celebration, and so on. Especially now that we are in the *post era pandemic* that makes our Public have the habit of not crowding or coming to crowds. Some of the consumer candidate of cattle animal we interviewed ahead of Eid Qurban among them stated that it possible to interesting if we can choose our own qurban animal. How shape, how much is it? approximately their weight, knowing their health status, but without having to go the animal market and identical with dirty, muddy, and smelly place. They also quite object if asked to spare the time for come directly to the market animal to choose animal for sacrifice. Well, here it is seen that media is needed to bridge the consumer's desires. So that consumers can choose their own livestock animal to buy, where the cattle already has clarity regarding physical form, health status, origin of the livestock area and so on .

d) Livestock ecosystems are not well coordinated

So far, members of the livestock ecosystem still tend to go their own way. Researchers have not seen any a clear concept that work together to create collective welfare in the livestock sector. Some of the evidence is quite basic, among others, is the unavailability of data the number of farmers and amount of cattle are *up to date*. Data is very basic thing in development any business. If data is available confusing, it will be difficult to come up with a policy that comprehensive for livestock development. For that, needed some system that can coordinate various *stakeholders* of the livestock ecosystem in Indonesia, so that, they can move together, collectively to achieve common welfare. Through this application application system, it is hoped that productive interactions will be created between each member ecosystem. This productive interaction should covers involvement off all parties in the ecosystem from upstream to downstream. Start from shop *sapronek* providers (means livestock production) to meat sellers. Starting from artificial insemination services until giving livestock vaccination.

e) Unavailability of updated livestock data.

As explained earlier, one of the fundamental problems in the world of animal husbandry is the unavailability of accurate data. The difficulty in registering amount of breeders and the quantity of livestock managed is quite reasoned. First, the location of scattered breeders is troublesome for conducted data collection. Second, the average farmer is a side business in addition to his main business as farmer. This causes amount of livestock managed is unstable. The livestock owned - are family savings which can be sold any time when needed. For example, for school fees, various necessity for celebrations and other sudden needs. Third, the amount of field extension workers is still very small. In Kudus Regency, there are only 3 field extension workers in the field of farm. They are tasked with covering an area of 9 sub-districts. This of course will not be maximum. For that, need some enabling system that allows for data collection by *real-time online* as well as to map and monitor farmers. So that, with this data, the Government can take appropriate policies for farmers. Especially in dealing with the problems of livestock plague disease such as Medium Mouth and Nails Disease phenomenal in Indonesia.

With the above analysis related to the analysis of the needs of the *stakeholders* of the livestock ecosystem members, it is necessary to develop a platform related to the livestock ecosystem in the District. integrated Kudus, it aims to produce :

1. Design of a get up information system for maps and monitoring of breeders, especially ruminants cattle in the area of Kudus Regency;
 2. Design of a get up information system that allows farmers to access information on the market, so that created the design of an integrated livestock ecosystem *marketplace*.
2. Design

The second stage in the development of this application is to carry out design related components are required in the platform that will be designed. According the result of interview with a number of ecosystem livestock members, at least, there are 12 categories required in application system to be designed, such us:

- a) Transportation cattle
- b) Halal slaughterer
- c) Aqiqah Services
- d) Slaughterhouses
- e) Meats
- f) Health cattles
- g) Poultry
- h) Livestock Seeds
- i) Cattles
- j) Other Cattles
- k) Insemination
- l) Feed cattles

a. Transportation cattle

This category will contain livestock transportation service provides, complete with a simulation of the required rate paid by application users. Thus, there is certainty for users of livestock transportation services regarding the price. Beside that, by utilizing the *google maps* service, it is possible conducted tracking positions in *realtime*, even though the cost of using *google maps* is relatively expensive service. In the table below, it can be understood that as long as our usage is under USD200 per month so it will be free, if more than that so will be *charged* the difference by Google. This rate can be a consideration, whether this transportation service still uses Google Maps or other similar services, however with more cheaper rate.

In the future, ideally this livestock transportation service must also be equipped with insurance facilities, both for drivers, passengers, and cattle sent. Especially for close loss due to

accident and losses. This forward facility this will be offered to insurance companies that are ready to cover the risk.

b. Halal slaughterers

In the Halal Products Assurance Law Number 33 of 2014, it is explained about the standards that must be met so that a product can be classified as a halal products. However, in fact , very few Slaughterhouses (RPH), both RPH-R (for ruminants) and RPH-U (for poultry) have been certified Halal. The cost of establishing a standardized RPH is also quite high, because there is many special requirements are required a large investation. As an alternative, for ensure that the meat consumed by the Public has an element meeting halal, then the meat consumed by the Public at least, must be cut by interpreter slaughterers who has been certified halal.

Along with the haigh Public demand for Halal meat, it is certain that the need for service interpreter of halal slaughterers who has been certified Halal will also be high. Therefore, category of interpreter of halal slaughter is necessary raised in application will be designed later.

c. Aqiqah Services

This business included in-downstream industry group in the livestock ecosystem. As a country with Muslims majority, and with tendencies increase level of religion observance in Indonesia, business aqiqah services in the future will experience significant growth. This is also related to the pattern of life today where Public don't want to be too bothered to prepare aqiqah or thanksgiving for the birth sons and daughters. By showing the category of aqiqah service in application that will be designed, will make it easier for the Public to fulfill the need for aqiqah and other need. For this reason, it is necessary first emphasize the credibility of the partners, by selecting them to get quality partners so that they can provide professional services for the community.

d. Slaughterhouse

The existence slaughterhouse, both of ruminants (RPH-R) and poultry (RPH-U) occupies very strategic position in the meat supply chain system livestock ecosystem in Indonesia. In The Halal contexts, RPH occupies the first link in halal supply chain. This determines whether or not product of meat are suitable for consumed by the public. When the meat that comes out from RPH is not halal, then the meat products and its derivatives downstream to the dining table that are ready to be consumed are not halal. This is still a big problem , considering that the number of RPH that have been Halal certified is still very small. According to data from IPB University (2002), of the 1,331 abattoirs in Indonesia, there is not yet 15% who have Halal certified. In Kudus Regency itself, the only RPH belongs to the regency government not yet have a halal certificate. Even its existence stopped and did not operate. In the future, that will be great opportunities for the private sector to establish RPH to meet the needs of the Public, especially in the muslim public. In addition, there is the implementation of the Halal products Guarantee Act are starting enacted on October 17, 2019. Strictly, the JPH Law provides administrative and criminal sanctions in the form of imprisonment and fines. Sanctions are imposed to entrepreneurs who don't maintain halal products that have not been Halal certificate. The criminal threat is in the form imprisonment for a maximum of 5 years or a fine of maximum of 2 billion rupiah. Under these conditions, the halal RPH request forward services will be very high.

e. Meat

As one of the downstream products in the livestock ecosystem, meat product are a leading commodity which is one of the indicators of the national economy. Meat, especially beef and chicken, is one of the nine staples (groceries). The rise and fall of meat prices greatly affects the national inflation rate. For this reason, meat commodities, must be include in one category in the developed livestock medium ecoapplication system design.

f. Livestock Health

Livestock Health is also an important element in the livestock ecosystem. The presence of the Mouth and Fingernail Disease (FMD) virus attack this year has further emphasized that it is very important to build a reliable livestock health system, to create a healthy and sustainable livestock ecosystem. The livestock health element will among others, livestock health practitioners such as veterinarians, veterinarians, drugstores, and even traders of traditional herbal medicine for livestock whose benefits have been proven for generations.

g. Poultry

Poultry meat, especially chicken is an important commodity for the economy. Consumption of meat according to data from the Central Statistics Agency as of October 2021 it was recorded at 0.038kg/ capita / month. This is what makes chicken meat including nine ingredient the tree that becomes indicator the country 's economy. Availability meat and poultry meat such as duck, plays an important role to fulfill society needs. cultural factors also play an important role in influencing the height demand of poultry meat. Chicken meat is usually served either for the daily menu or to be for served on special occasions or religious events. Usually, poultry is cattle that is almost equally cultivated by farmers in rural areas. Poultry like native chickens, ducks, squid (pekingese duck), geese and turkeys are common species kept. Considering this, it makes sense if poultry falls into one category in the application that will be designed.

h. Livestock Seeds

To get quality of the cattle, of course, need quality seeds as well. Currently, to get livestock seeds, framers still have to come to the market and choose direct cattle seeds that will be raised later (*feedlot*). There must be more solutions for practical farmer in getting the best cattle seeds. With digital solutions through our current application this design, allows *breeder* manufacturer to enter. These *breeder* manufacturer have high product quality characteristics so that risk of failure for *feedlotter* breeders is smaller . This can directly increase cattle production nationally. With This digital solution also allows *breeders* to bring in the best seeds. This can be done, because with together through digital app, breeders manufacturer not worried about the product being supplied not selling, because seeds purchases conducted by pre-order. With system this all parties will benefit. Farmers get guarantee quality of seeds developed. and *breeders* companies also benefit because getting wider market, and easier to monitor the market. So that the profit obtained is also greater.

i. Cattle

Some consumers, need cattle not only in form carcasses meat, but can also buy alive and whole. This consumer type is for example goat satay traders, sacrifices (*mudhohi*), or even the merchants animal cattle (*blanthic*). This cattle cattle trader or *blanthic* usually buys cattle by going *door to door* to the house's breeder. The *effort* that must be done is quite large. Not infrequently, they have to the villages, but don't get the desired livestock . Some of cattle trader even has to tie up their cattle before they are actually ready to be sold to get cattle merchandise. This bonding practice is actually unhealthy and *unfair* to the second split party. If the market price turns out to be higher the previously agreed price, then the farmer is at a loss, because he should not get the money. On the other hand, if market price is lower than the deal that has been made, then the trader is at a loss because he pays more than he should. This application designed allows traders and breeders a reasonable price for the second party. This application allows merchants to get a database of more choice of merchandise without having to come one by one. Breeders also get the opportunity to be able communicate with more potential buyers, thus getting best price for their livestock.

j. Other Cattle

In addition to *mainstream* cattle, such as buffalo, cows, goats and chickens, breeders people in Indonesia also try various others cattle, for example: horses, donkeys, rabbits, guinea pigs, cats and so on. Though amount is still small, these livestock have the potential to be

developed further, and this application provides opportunities for these animal breeders to develop further, because digital solutions allow farmers to gain wider market access.

k. Artificial Insemination

One of the services that is quite difficult for small farmers to obtain is the Artificial Insemination (IB) service. This IB service is required especially for farmer *breeder* or those focus their efforts on producing livestock seeds. IB service have been obtained from nurses and veterinarians. On the other hand, amount of nurses and veterinarians is very small. Unattractive to the needs of breeders. With the application platform that we will design later, it is expected to make IB service becomes more efficient. Beside that, it will open up opportunities for other IB services providers to make the market becomes more competitive. If that happens, then farmers will benefit. They will have more choice, and of course only with a competitive market, the price of IB services will becomes more affordable for breeders. So that in long term, this will be positive for the development of the world of animal husbandry in Indonesia.

l. Feed cattle

To produce quality livestock, it can't be separated from quality feed in sufficient quantities. Traditionally, ruminants require feed in the form of forages such as grass and leaves. However if only feed is given in the form of forage, the progress of cattle and weight gain becomes fast, so its not economical. Cattle need additional feed to add nutrients in order to develop according to the target. During this, forage feeds are obtained directly from nature, either looking for themselves on agricultural land, or buying from other farmers/breeders. Even though it's free, this natural food sometimes also contains risk high. The grass, which is taken from nature, often times, anti weed drugs have been sprayed by other parties, so that when it is given to cattle, the grass becomes very poisonous, and its not seldom for many livestock to die causing this. Grass from nature in certain seasons, for example drought, also becomes difficult to obtained. With so many incident, then needs for feed becomes important. Artificial feed will not only constrained by season, but its nutrition value content is also clear. So that, make it easier to calculate the target of increasing the weight of animal cattle. With the current application platform designed, it will be make it easier for farmer to get to get animal feed that suits their needs. This application will also be an attractive sales medium for animal feed producers, both artificial feed and natural feed.

3. Development

The application ceiling that we design is called Pasar Kebo (Application Program) for People's Livestock and Resilience Food Online Based). Pasar Kebo is marketplace application where users who are divided into 12 categories of livestock service provider that make up the farms ecosystem in Indonesia can interact with each other, and hopefully becomes be an *enabler* for acceleration of livestock development especially smallholder farm.

This application system was developed for *web platform* using PHP (*Hypertext Pre Processor*) as a server side programming language that runs on the server side, *javascript* as *client side* programming language that runs on the client side, HTML (*HyperText Markup Language*) and CSS (*Cascading Style Sheet*) to create layouts on the system, MySQL as the database. In development, its planned to use Laravel version 5.6 which is PHP programming language framework, Vue JS as a framework for *JavaScript* and code written using the *Visual Code Studio* text editor .

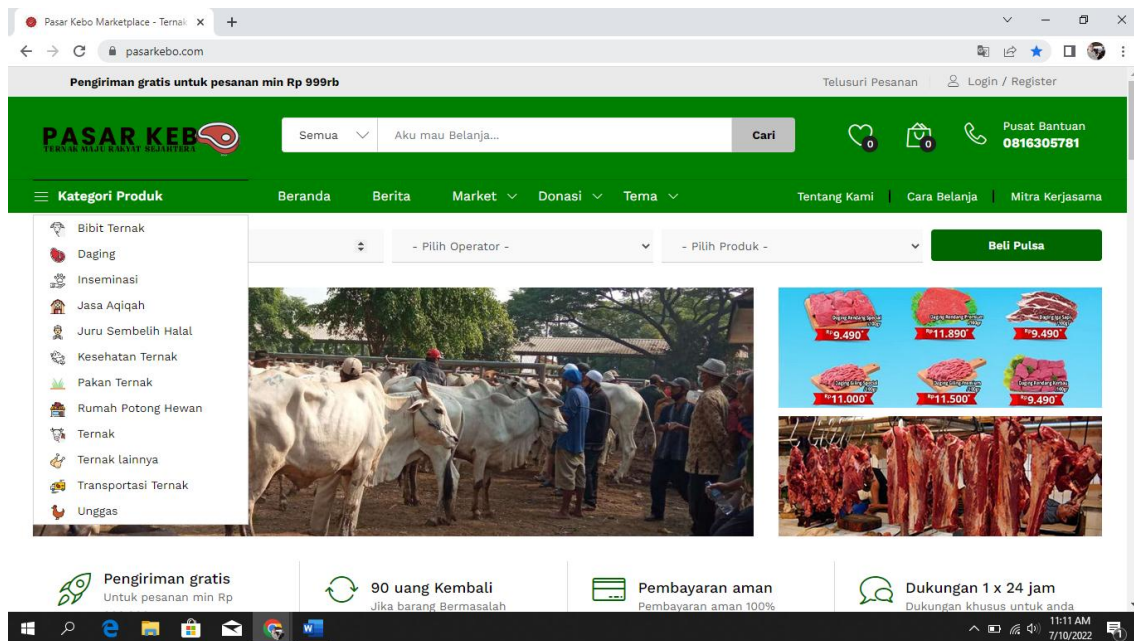


Figure 1. Display Kebo Market Application Visual Interface Design

From the front page view, it can be seen that 12 categories have been included in the application, namely: 1) Livestock Seeds; 2) Meat; 3) Insemination; 4) Aqiqah services; 5) Halal Slaughterer; 6) Livestock Health; 7) Animal Feed; 8) Slaughterhouse; 9) Livestock; 10) Other livestock; 11) Livestock Transportation; 12) Poultry.

CONCLUSION

From explanation above, it can be concluded that, although it is still in early stages and not yet completely perfect, at least the design of this application can answer several things including:

1. Application system allows for obtaining information and monitoring breeders. Even further, not only farmers however other member of the ecosystems can monitored and and their transaction patterns and behavior studied. This can be the basis for implementing policy by the Government (if the system is adopted by the Government), or the private sector can become a marketing *intelligent tool* as a basis for implementing marketing strategies.
2. Transactions introduced digitally through this application, allows the members of cattle ecosystem transact without face to face. So that this application becomes an alternative market that allows buyers and sellers to livestock and produce cattle to transact without face to face . But permanent can describe the actual condition of livestock, both physical and health conditions.
3. Application system allows breeders and other ecosystem members to gain access to wider market information. So, the opportunity to get a reasonable price, as well as maximum service from members other livestock ecosystem. This directly has an impact on improving the welfare of members of the livestock ecosystem, and has implications for the position of the sustainability cattle business in long term to realize national food sovereignty.

Suggestion

1. This application system that is being developed through this research is still in the early simple stages, so it needs to be developed further so that it does not just stop at the prototype.
2. Developing a professional system that is neither easy nor cheap. For that we need support from various parties so that this application system becomes more perfect and has a wider impact.

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