Designing of Agricultural Product e-Marketplace by using UCD Method

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Abstrak - Sistem penjualan saat ini telah beralih dari penjualan secara konvensional menuju ke penjualan online dengan memanfaatkan teknologi sebagai media transaksi penjualan salah satunya dengan adanya website e-commerce dan e-marketplace (pasar digital). Konsep dari e-marketplace adalah sebuah wadah bertemunya penjual dan pembeli lalu melakukan transaksi jual beli secara online. Inovasi dari teknologi sudah membawa dampak baik untuk sektor pertanian dengan mulai banyaknya e-marketplace hasil pertanian. Namun saat ini masing terjangkau di ibukota atau beberapa daerah besar saja, masih banyak perkebunan yang hasil pertanianya belum terjangkau untuk menerapkan marketplace. Masalah ini didasari oleh faktor budaya penjualan hasil tani selama ini yaitu melalui tengkulak serta kurangnya edukasi para petani terkait penerapan marketplace, padahal ini dapat dimanfaatkan oleh petani untuk terjun langsung menjual hasil pertaniannya dengan menjadi mitra di e-marketplace. Tujuan dari penelitian ini merancang e-marketplace untuk para petani khususnya di Desa Bugis.. Dalam perancangan website digunakan User Centred Method dimana pendekatannya adalah berpusat pada pengguna baik konsumen ataupun mitra. Rancangan website dibuat dengan melihat kebutuhan dari sisi mengguna, tentang apa yang pengguna butuhkan dan harapkan sehingga mudah digunakan. E-marketplace ini juga dapat menjadi edukasi untuk pada pelaku usaha di bidang hasil pertanian untuk dapat terlibat dalam kemajuan teknologi dengan menjadi mitra di e-marketplace sehingga dapat memasarkan produknya secara online sehingga meminimalisir pemanfaatan hasil tani oleh tengkulak yang terkadang membeli dengan harga rendah. Hasil dari penelitian ini adalah website e-marketplace yang dapat memberikan kemudahan bagi pengguna yaitu konsumen dan mitra dalam melakukan transaksi dengan memanfaatkan gadget untuk mengakses hasil pertanian.

Kata Kunci: UCD, e-Marketplace, website

Abstract - *The current sales system has been moved from conventional sales into online sales by utilizing technology as a media for sales transactions. Then, one of them is the presence of e-commerce websites and e-marketplaces. The concept of e-marketplaces is a place where buyers and sellers meet, then they make online buying and selling transactions. However, there are still many plantations whose agricultural products have not been reached to be implemented by the marketplace. This problem is based on the cultural factors; it is called through the broker. Also, as well as the lack of education of farmers. The purpose of this study is to design the e-marketplace for farmers, especially in the Bugis Village. The user-centered method is applied where the approach is centered on users, then both consumers and partners. The website-designed is made by looking at the needs of the user side. This e-marketplaces can also be an education for businesses in the field of agricultural products. It is also to be involved in technological advancements by becoming partners in the e-marketplaces, so that they are able to market their products through online system. In addition, to minimize the use of agricultural products by broker, too. The results of this study are e-marketplace is able to provide convenient websites for users in conducting transactions by using gadgets to access agricultural products.*

Keywords: UCD, e-Marketplace, website

INTRODUCTION

In common understanding, the conventional market can be defined as a place to trade both goods and services; between sellers and buyers; from producers to consumers with the aim of fulfilling their individual needs (Susilowati & Negara, 2018). There seems to be the problem that arises in the conventional market, they are: market distance, limited time, differences in commodities between markets, and other problems that have impact toward sellers and buyers. It has the limited time of transaction and marketing by producers or seller (Haryanti & Fachrurozi, 2017). Therefore, it needs a way-out as the solution of the change in the sales system for the conventional market. One of those actions is by implementing *e-market* (online market).

Based on the previous explanation, the *e-marketplace* makes a new style of transaction form that has a more dynamic side, where customers are able to search and purchase goods from many sellers and makes payment transactions easily. Also, there are features to facilitate users and in their implementation with the internet, where buyers and sellers do not need to interact face-to-face (Suryanto, 2018). The *e-marketplaces* have appeared a lot, even though most forms are adopted by *e-marketplaces* in Indonesia in the form of advertisements. This tells that, the direct interactive occurs between buyers and sellers, while *e-marketplace* providers only serve to provide a place. (Andrean, Saputra, & Sugiarso, 2017)

There are many *e-marketplaces* in Indonesia, for instances: are *Tokopedia, Shopee*, *BukaLapak*, and many others. Currently, its website provides various types of categories of goods categorizing from electronics, household needs, fashion, food and beverage, automotive and many more. The *e-marketplace* has benefits for business people in creating new strategies for marketing, so the marketing reach will become more effective and efficient (Suryanto, 2018). Marketing is one of the business matters that must be carried out by businesses, which promotions for nowadays are mostly conventional; it has been through the involvement of brochures and information by mouth-to-mouth (Andrean et al., 2017).

As for the context of agriculture, long distribution process has been one of the factors causing farmers to have low harvest prices, because they go through a long process and pass through many sides of person, it is so called the broker. The distribution chain of strategic commodity trades from producers to consumers involving two to seven business actors. At present, there are *e-marketplaces* in agriculture; such as: *Agromaret, TaniHub,* and *LimaKilo*. These innovations have begun to be considered to be applied in areas of producing agricultural products. It happens at Sukatani village, West Java province which is still doing the conventional selling. Through long distribution patterns, exactly, will result in unstable product price variations that will indirectly harm producers and consumers. By a conventional system, the agricultural sales results of Sukatani village have not been reaching maximized, because the marketing range is only around Sukatani village area. Generally, the marketing system should be broader. By doing this, the information and contribution related to agricultural products in Sukatani village, hopefully, will be able to spread in Indonesia entirely.

Based on the above problems, researchers have created the *e-marketplace* website designing by using the *UCD* method to be a solution to the existed problems, so as the result, the farmers in Sukatani village will be able to become partners in the marketplace and carry out buying and selling transactions competition fairly by providing best quality service.

THEORETICAL REVIEW

The *User-Centered Design* (UCD) is covered by ISO standards related to a broader scope of human-centered design and usability (Nakić, Burčul, & Marangunić, 2019). The ISO 13407 standard (revised by the new ISO 9241-201:2010) provides guidance on achieving quality in using by incorporating the user centered design activities. It is throughout the life cycle of computer, which is appropriate to system (Albani & Lombardi, 2010). The *UCD* is not about asking user directly, but it tells the practitioner (such as a user experience architect, interaction designer, information architect, etc.) profiling users and defining their behaviors of use of and preferences for various aspects of a given application, and using that information to then make design decisions about the web application. In this regard, *UCD* is a collaboration between designer and user (Williams, 1986).

The *UCD* is a system development method that has the concept for the user to be the center of system development process (Kurniawati, Safitri, & Akbar, 2019). The *UCD* is a system development that has been designed by focusing on users in a flexible and interactive way (Anugrah, Santoso, & Budi, 2019). There are five stages in interdependent *UCD* activities (Albani & Lombardi, 2010). These stages can be seen in Figure 2.1 below.
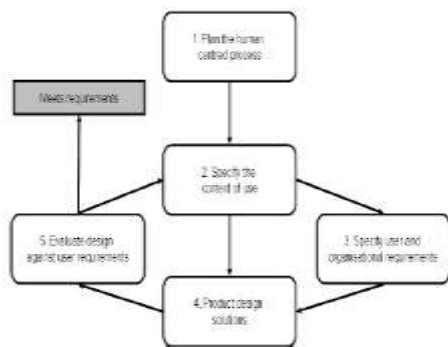
Figure 2.1. The steps of *UCD*.

The *UCD* refers to a multidisciplinary design approach, where it based on the active involvement of users for a clear understanding of user and task requirements. The iteration of design and evaluation. It is considered as the key to usefulness of product and the usability, too (Mao & Vredenburg, 2018)

In designing the agricultural product of *e-marketplace*, researchers analyze the *UCD,* it has five stages as follows: (1) Planning the human centered process or planning phase on *UCD*, (2) Specifying the context of use or determine the user context, (3) Specifying the user and organizing requirements or determining the needs of users and organizations, (4) Producing a design solutions or the resulting design solutions, and (5) Evaluating a design against user requirements or design evaluations of user needs.

DISCUSSION

These steps in implementing *User-Centered Design* for *e-marketplaces* for agricultural products are as follows:
1. Planning the human center process or the planning stage of the *UCD*
In this section, the researchers make a plan by observing the design of the *e-marketplace* of agricultural products centered on the user, to determine the needs of the system which is going to be built.
2. Specifying the context of use
The *e-marketplace* for agricultural products that is going to be designed is a web-based application, where the website is able to be accessed by consumers (buyers), partners, and administrators. At this stage, the researchers identify the user of the system to give an overview of the design based on the information system that is going to be built and explains its functions. The targets to be achieved by the agricultural product *e-marketplace* towards the needs of consumers (buyers) and partners are as follows:

1. Buyers are able to access the website to purchase agricultural products with various existing partners in accordance to the buyer's needs.
2. Buyers will get the convenience of buying agricultural products without having to shop to the market; so management time is held here.
3. It will be getting easy in selling agricultural products by registering as a partner in *e-marketplace* and marketing the agricultural products they want to sell.
4. Partners will get education in the form of the use of information technology in the field of sales; it is called the *e-marketplace*, where partners are able to sell without having a stall or store in the market or at home.

3. Specifying the user and organizational requirements
At this stage, the researchers identify the needs of the agricultural product of *e-marketplace* information system to be designed, they are as follows: (1) Information data requirements, in short, it is called the buyer data and partner data. (2) The functional requirements of the system that is being built are website applications with the concept of a marketplace, the system which is able to manage the master data; it is purchasing data and partner data, then transaction data, as known as sales and printing a report that is required.

In this agricultural product of *e-marketplace*, there is an analysis of user needs which consists of several matters, they are:
  a. Analysis of Buyer Needs
  - Buyers are able to register and log in
  - Buyers are able to see the catalogue of the agricultural products
  - Buyers are able to see partners registered in the agricultural product marketplace
  - Buyers are able to make purchases of agricultural products by filling shopping carts and making payments
  b. Partner Requirement Analysis
  - Partners are able to register and login
  - Partners are able to manage product catalogues, for examples: Add, delete and change.
  - Partners are able to confirm the buyer's shopping basket and make shipments of agricultural products
  c. Administrator Requirement Analysis
  - Admin is able to log in
  - Admin is able to manage buyer data and partner data
  - Admin is able to manage transaction and payment data
- Admin is able to manage data delivery of agricultural products by partners
- Admin is able to view and print sales reports

4. Producing design solutions

At this stage, the researchers design to produce the *e-marketplace* website which is stated as a solution to the problems encountered, the design consists of a lot of stages, and they are: (a) *Use Case Diagram*, (b) Activity diagram, (c) *Entity Relationship Diagram (ERD),* (d) Website Implementation Interface Design.

The *Use Case Diagram* that can be created from the *e-marketplace* website design of agricultural products, as follows:
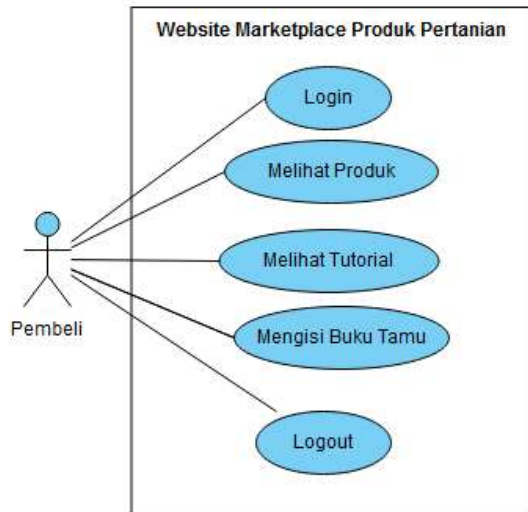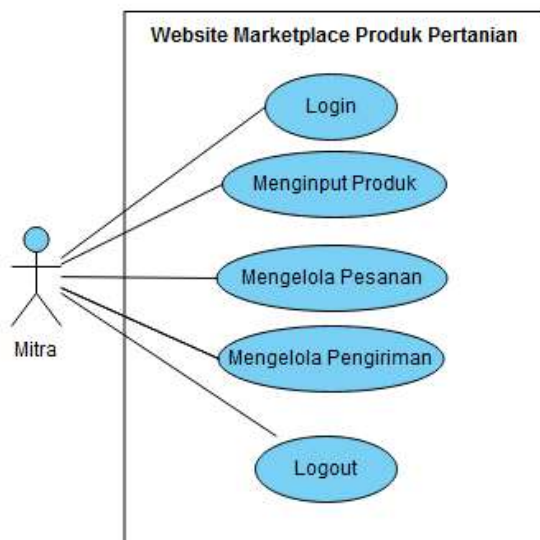

Figure 3.1. Use Case Diagram of Buyers

Figure 3.2. Use Case Diagram of Partners

After the database is formed, an interface is designed to implement the agricultural product *e-marketplace* website. The interface is as follows:

Figure 3.3. The Main Menu of Website

Figure 3.3. It shows the main page of the website consisting of the *Home Menu, Products, Tutorials* and *Guests*. On this page, there is an additional information, it tells the 'Popular Products' (can be seen below the chart) based on the most product sales within that period.

Figure 3.4. The Page of Product Menu

Figure 3.4. It shows the product menu pages and it contains several pictures and product information and specification.

Figure 3.5 The Webpage Menu of Registering

Figure 3.5 It shows the webpage for registering toward the partner. However, the partner should fill in the data first in the provided form to join this agricultural *e-marketplace*. After that, the partner is able to do the selling activity, sales transactions, and *etc* by uploading products that will be offered and sell.

Figure 3.6 The Page Menu of Customer Registration

Figure 3.6 It shows the page for customer registration where the customer first fills in the data of the provided form. After that, the customer is able to make a transaction by buying goods in the product catalogue which is available on this agricultural *e-marketplace*.

Figure 3.7 The Chat Page Menu

Figure 3.7. It provides the chat as the facility on the user's page; either customer or partner as a mediator. It is to ask directly with the administrator about products or other matters relating to the agricultural *e-marketplace*. This chat as the facility has been created to make it easier for users to use this *e-marketplace* website.

5. Evaluating of designing against user requirements

It is the final stage of designing the *e-marketplace* website for agricultural products, where before the implementation is tested and evaluated. After the website is implemented as a buying and selling media, the maintenance is always done to avoid the error system and database backups are performed as well.

6. Conclusion

The conclusions that can be drawn from the implementation of the *UCD* method in the web-based agricultural product of *e-marketplace* are as follows:

1. By providing the *e-marketplace*, it is able to facilitate partners in marketing agricultural products that are going to be sold by utilizing the advancement of information and communication technology. So, the sales system has switched; the conventional way.

2. The *e-marketplace* website for agricultural products is user friendly and easy to be accessed. So, the interaction between buyers, partners and admins are absolutely friendly; easy to be done.

3. The *e-marketplace* website that has designed, it is able to assist buyers in finding agricultural products directly from partners with good quality without having contributions more.

4. The *e-marketplace* website that has created, it is able to help partners in marketing agricultural products towards buyers without having to resell in the certain store or in markets.

5. By taking the concept of marketplace-based sales, it will bring benefits to shipping companies or expeditions, in which case agricultural products are sent by partners through the expedition.

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