PAPER • OPEN ACCESS

The E-Commerce Implementation to Improve the Agricultural Product by using User Centered Design Method

The E-Commerce Implementation to Improve the Agricultural Product by using User Centered Design Method

Popon Handayani [1*], Sri Utami[2], Wisti Dwi Septiani [3], Ida Darwati[3], Wati Erawati[3], Panji Madya Ramdani[3], Endang Suparni[3], Octa Pratama Putra[4], Aswan Supriyadi Sunge[5]

[1]STMIK Nusa Mandiri Jakarta, Jakarta, Indonesia
[2]AMIK BSI Bekasi, West Java, Indonesia
[3]AMIK BSI Jakarta, Jakarta, Indonesia
[4]STIBA Nusa Mandiri, Indonesia
[5]STT Pelita Bangsa Bekasi, West Java, Indonesia

*popon.pph@nusamandiri.ac.id

Abstract. Nowadays, information technology has altered the people's life in many aspects. Simply stated, there are lots of benefits of buying things online. The people only use their gadget simply of choosing the product they need. Likewise, for the field of agriculture. The farmers at Sukatani, Indramayu, West Java, are able to market their products in digital. In this context, the role of e-commerce is the solution to be done of selling process. The objective of this research is to create e-commerce of selling the agricultural products of farmers. Therefore, it is needed the method of User Centered Design in e-commerce designing by utilizing the income of user and behavior as well.

1. Introduction

Indonesia, it is known as the agricultural country, it is to make agricultural field of becoming one of the main factors of national economic growth. Based on the Social Economic data report, on July 98, 2018, Central Bureau of Statistics *(BPS* stands for *Badan Pusat Statistik)* stated, the prosperity of farmers is getting increased as seen from the better Farmer's Exchange Rate (*NTP* stands for *Nilai Tukar Petani*) and Agricultural Household Business Exchange Index (*NTUP* stands for *Indeks Nilai Tukar Usaha Rumah Tangga Pertanian*). According to *BPS*, it implied that nationally on June 2018 the rate of farmer's exchange is increased, it is 102,4 which means having increased for about 0,05% than May, 2018. Also, from the side of *NTUP*, it is increased 0,12% than May 2018. The improved or increased both *NTUP* and *NTP* show that the selling progress is really much better, automatically it gives back as the feedback toward the farmers.

As for the first pattern of seling distribution in strategic commodities from producers to consumers need for about seven businessmen. There is still a potential for the conventional distribution of trade from producers to consumers, one of the example is the Agroniaga in Sukatani, Indramayu, West Java. Unfortunately, it is still done conventionally. The main pattern of trade distribution starts from producers to consumers need a long process. So, it will affect the unstabilized price of the product. The impact, it will affect the producers and consumers. By using the conventional system, it will not have the maximal result. It is said so because the marketing range is still in the area around Sukatani only; it should be broader of marketing range. In addition, Sukatani's agricultural products is able to cover all of Indonesia. So, based on the aforementioned statement, the researcher creates the e-commerce design by using the method of User Centered Design to be the solution of the problems.

The User centered design is defined as the interface design process that focuses on the purpose, use characteristics, environment, task, workflow on its design. (1) How the system can be understood and used by users that should be a top priority in system development. (2) The purpose of using the *user centered design* method is to overcome the problem of the user's inability to use the system. (3) The user centered design method involves users in designing e-commerce system interfaces. The result of this research is expected that the e-commerce creating will able to produce a the layout and functionality and it has a high level of usability.

2. Theoretical Review
2.1. E-Commerce
It is a process which is done by consumers in buying and selling various products electronically from one company to other companies by using computers as the mediator of business transactions (4). E-commerce can be defined in several perspectives, they are:

1. Communication Perspective
    In this perspective, E-commerce is to deliver products, services, information or payments through network connection, such as the internet.
2. Interface Perspective
    E-commerce involves various information and transaction exchanges
3. Business process perspective
    E-commerce involves direct activities to support electronic commerce by using a network connection
4. Online Perspective
    E-commerce is an electronic environment that allows to buy and sell products, services and information on the internet
5. Structural Perspective
    E-commerce involves many media, such as data, text, web pages and the internet [5].

2.2. Buying and Selling Mechanisms in E-Commerce Systems
The process of buying and selling in the e-commerce system that distinguishes the traditional buying and selling process is the entire processes, starting from finding information about the goods or services needed, ordering, to payments are done electronically through internet media (6).

One of the design concepts from a certain research, [The Rural Digital Economy, Alan Chamberlain, Mark Davies, Andy Crabtree, Chris Greenhalgh and Tom Rodden] marketplace with the shareholders is the market portal, a solution which able to offer the possibilities of marketing/promotion, sales and development of new companies. Interviews with shareholders found that, it has a very few of the online attendance, and those who do not have an order of function, even though PO and customer data are activities that shareholders and customers take part in it. The ability to manage and secure data as a strategic asset, transactions from information utilization, and the step is used as a differentiator in doing the strategy, which stated as the primary contribution to gain success in any business operation.

2.3. User centered design
User centered design is an interface design process that focuses on purpose, user characteristics, environment, tasks, and workflow on the design (5). The implementation of user centered design in previous research (6) Explained that the implementation of UCD method, in this study, it involves four phases, they are: Analysis phase: This phase is to analyze specifically the game design for MIU. We analyze the game design elements and criteria for MIU based on the MIU-Game Flow Model. Design phase: At this stage, the storyboard is designed based on the elements and criteria in the MIU-Game Flow Model. Implementation Phase: In this phase, we apply the design to the system that is ready to be displayed based on MIU Game Flow Model and the storyboard that have received feedback from the real users. The last, Evaluation phase: In this phase, MIU evaluates the game in a usability testing session. Usability testing refers to user testing of applications. During the test participants usually will try to complete the task while the observer watches, listens, and takes notes. The objective is to identify usability problems, collect qualitative and quantitative data and determine

participants' satisfaction with the application. The principle that must be considered in the user centered design is the focus on the user, integrated design, user testing, and interactive design.

3. Discussion
3.1. Interface Designing
The stages of e-commerce website designing are a tool to design a new system that will be created.
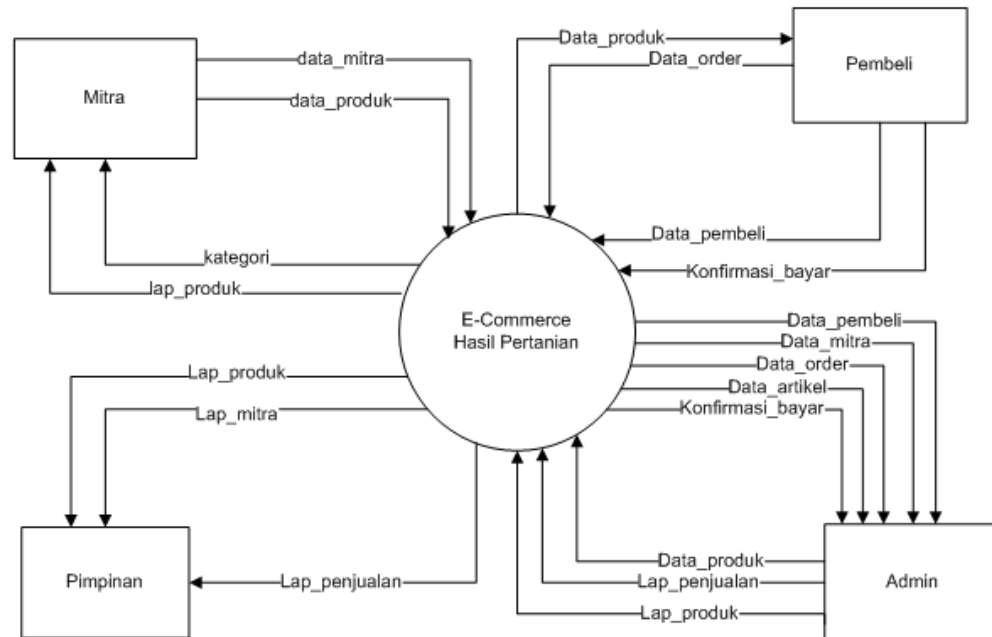

Figure 1. E-Commerce Context Diagram of Sukatani

Table 1. Specification of Mitra File

No.	Elemen Data	Name	Type	Size	Information
1	id_mitra	Id mitra	*Int*	5	*Primary Key*
2	nm_mitra	Nama mitra	*Varchar*	30	
3	alamat	Alamat	*Varchar*	30	
4	no_tlp	No telepon	*Varchar*	15	
5	email	Email	*Varchar*	25	
6	jns_produk	Jenis Produk	*Varchar*	25	

Figure 2. Specification of File Transaction

No	Element Data	Name	Type	Size	Information
1	id_trans	Id transaksi	*Int*	5	Primary Key
2	tgl_trans	Tgl transkasi	*Date*		
4	Id_pembeli	Id pembeli	*Varchar*	5	Foreign Key
5	Id_mitra	Id mitra	*Varchar*	5	Foreign Key
6	Jml_item	Jumlah item	*Int*		
7	Total	Total	*Double*		

Figure 3. Specification of File in Detail

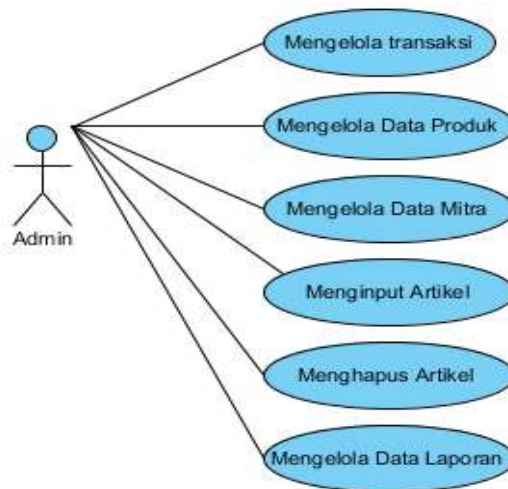| No	Element Data	Nama	Type	Size	Information
1	id_trans	Id transaksi	*Int*	5	*Foreign Key*
2	id_produk	Id Produk	*Varchar*	30	*Foreign Key*
3	qty	Qty	*Int*		
4	subtotal	Subtotal	*Double*		

Figure 2. Use Case of Diagram Admin
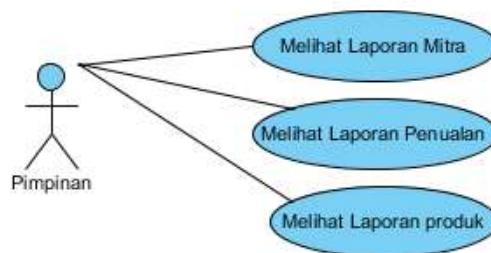

Figure 3. Use Case Diagram Pimpinan
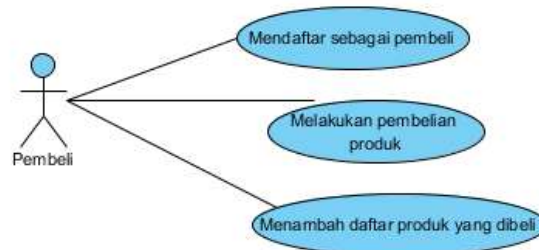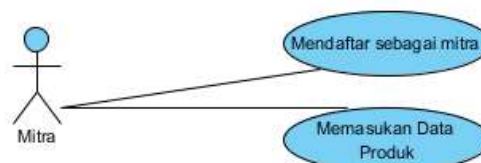

Figure 4. Use Case of Diagram Leader

Figure 5. Use Case of Diagram Buyer

Figure 6. Use Case of Diagram Partner

Figure 7. Log in Menu Form

Figure 8. Form of Consumers

4. Conclusion

Based on the formulation of the problem above, the drawn conclusions are:

1. In the old system, it uses conventional concepts in marketing the agricultural products of Sukatani. In the new system, it is already online-based, E-commerce was made for marketing it.
2. E-commerce in Sukatani is very easy to be used or *user friendly*
3. The e-commerce of Sukatani, which is designed, will help farmers in marketing their agricultural products so that, it is able to increase their income.

5. Referensi

[1] Baharum, A., & Jaafar, A. (2014). Evaluation Of Asean Mental Models Pattern Of Web User-Centered Interface Design Using Eye-Tracking Technology. *Journal of Computer Science 2014 Vol 10(2)*.

[2] Henry, S. L. (2004). *Notes on User-Centered Design Process* (UCD). Retrieved January 3, 2017 from http://www.w3.org/WAI/EO/2003/ucd.

[3] Kalakota, Whinston. (1996). Frontiers Of Electronic Commerce. Addison-Wesley Publilshing Company, Inc, Massachusetts.

[4] Laudon, K. C., Travis, J. (2002). *E-Commerce: Bussiness. Technology. Society,* United States of America: Prentice Hall.

[5] Nugroho, A. (2011). Perancangan dan Implementasi Sistem Basis Data. Yogyakarta: Andi.

[6] Saptuari, I. S. Y., Fadhli M., Surya, I. (2017). Penerapan Metode UCD (*User Centered Design*) Pada *E-Commerce* Putri Intan Shop Berbasis Web. Jurnal Teknologi dan Sistem Informasi (TEKNOSI) Vol 3(2) 2017.

[7] Shalahuddin, et al. (2011). Modul Pembelajaran Rekayasa Perangkat Lunak Terstruktur dan Berientasi Objek, Bandung: Modula.

[8] Sholiq. (2006). Permodelan Sistem Informasi Berorientasi Obyek dengan UML, Yogyakarta : Graha Ilmu.

[9] Suhendar, A., Gunadi, H. (2002). Visual Modelling Menggunakan UML dan Rational Rose, Bandung: Informatika.

[10] UX Mastery. (t.t). *UX Techniques*. Retrieved May 31, 2016 from http://uxmastery.com/resources/techniques

[11] Zain, N. H. M., Jaafar, A., Razak, F. H. A. (2015). A User-Centered Design: Methodological Tools To Design And Develop Computer Games For Motor-Impaired User. *Proceedings of the 5th International Conference on Computing and Informatics, ICOCI 2015 11-13 August, 2015, Istanbul, Turkey. Universiti Utara Malaysia (http://www.uum.edu.my)*