



Artikel

# Analysis and Design of E-Commerce Information Systems Using the User Centered Design Method at PT. Pure Healthy Nature

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## SUBMISSION TRACK

Received 11 December 2018;  
 Revised 20 December 2018;  
 Accepted 10 February 2019;  
 Available online 20 February 2019

## KEYWORD

*E-Commerce, UML, UCD*

## KORSPONDENSI

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## A B S T R A C T

PT.Murni Alam Sehat is one of company sell medical device and medicine by prescription or without doctor's prescription. The problem in marketing department in this company do not have promotion media for offer the products to consumer, no online sell, and order only by phone. To solve the problem in marketing department is build up e-commerce system. E-commerce system use Unified Modelling Language (UML); Activity Diagram, Use Case Diagram, Sequence Diagram, and Class Diagram. User Centered Design (UCD) as design method. Program language for e-commerce system is PHP and MySQL for database. The result of research is a e-commerce system website base to help search information product, company could get report easier, consumer can do purchase by online everywhere and everytime.

## INTRODUCTION

As time goes by technology, especially the Internet, now the reach between buyers and sellers is extensive, all time constraints, distances, and costs can be resolved easily. One of the types of technology implementation in terms of improving business, sales and purchasing products is to use e-commerce [1]. PT. Murni Alam Sehat is a company supplies medical devices and medicines by a receipt orgeneric type. The problems that occur in PT. Murni Alam Sehat are in the sales. Issues that occur among others ; (1) The company do not have promotional media to offer their products to consumers. (2) Do not have E-commerce system, so consumers must go to company to buy product. (3) The order process is by telephone only and directly. Based on the

problems that are needed in the e-commerce system to assist the company's business processes designed with Unified Modeling Language (Activity Diagram, Use Case Diagram, Sequence Diagram, Class Diagram). Program language used in making this information system is PHP, MySQL database, and User Centered Design method. This system is expected to facilitate consumers in ordering products quickly, consumers can access the information needed at any time and anywhere without having to come directly to the company, facilitate the company in the activities Business such as sales and promotion of new products, helping the company's business process become faster and expanding its marketing reach.

## LITERATURES REVIEW

This Research of User Centered Design is familiar, one of them research by [2]. In the research explained the difficulties of current users is that the company still use the conventional sales system, where the customer directly to the company to make the purchase of the product. With the conventional system often the company is experiencing problems such as limited reach of purchasing to customers who are outside the city. This is because information about the company's sales is not yet accessible to all customers. Then the solution of the problem is solved by designing an e-commerce website using the User Centered Design method by involving the participation of users into its design. The methods used in system development use Questionnaires and usability testing.

## FRAMEWORK

Here is the framework created:

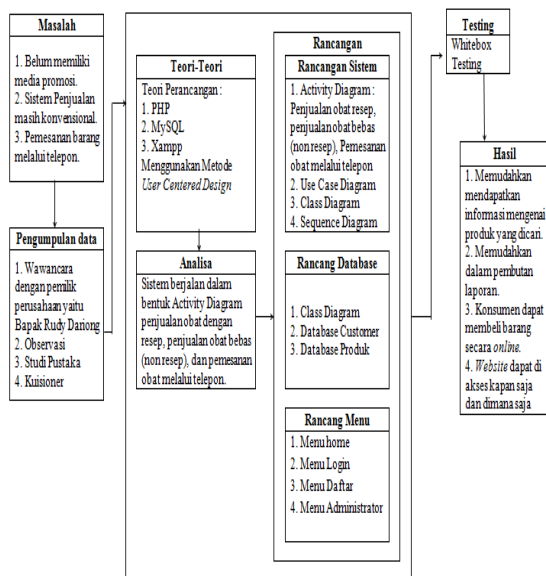


Figure 1. Framework

## METHODS

### E-Commerce

E-Commerce is the dissemination, purchase, sale, marketing of goods and services by electronic systems such as internet or television, WWW (World Wide Web), or other computer networks. E-commerce involves electronic funds transfer, electronic data exchange, automated inventory management system, and automatic data collection system [3].

E-commerce has benefits and advantages for various parties, among others [4] :

1. For the company :
  - a. National and international market availability
  - b. Decrease costs for processing, distribution, and withdrawal of information
2. For Community
  - a. Can access products and services, 24 hours a day
  - b. Providing information services easily and comfortably to consumers

### User Centered Design

User Centered Design (UCD) is a new paradigm in the development of web-based systems. The concept of UCD is the user as the center of the system development process, objectives, context and system environment are all based off the user experience [5].

The process in User Centered Design is [6]:

- a. UCD Planning
- b. Understand and determine user context
- c. Determine user needs
- d. The resulting design solutions
- e. Evaluation of design to user needs

### Website

Website is a collection of pages used to display text, image, animation, sound, or

combination of all, both static and dynamic, forming a series of interrelated buildings, and each of them connected by a network of pages [7].

The website is divided into 2 groups, among others [8]:

- a. Static Website
- b. Dynamic Website

**RESULT**

**User Requirements Analysis**

In this step is carried out the distribution of the questionnaire to 15 respondents to know user needs for features and visual design such as what is needed and liked by the user. The questionnaire that was spread before the construction of this system consisted of 10 numbers of questions, such as :

Table 1. User Requirements Analysis Results

No	Pertanyaan	1	2	3	4	5
1	Apakah aplikasi mengenai pembelian obat secara online harus memberikan informasi secara lengkap dan detail?			2	7	6
2	Apakah aplikasi mengenai pembelian obat secara online perlu mengelompokkan obat berdasarkan jenis penyakit?			1	7	7
3	Apakah keterangan mengenai obat perlu ditampilkan dengan penjelasan yang cukup lengkap disertai dengan gambar produk?			2	7	6
4	Menurut saudara, perlukah menampilkan form pencarian pada website?				8	7
5	Apakah tampilan daftar produk pada website ditampilkan dalam bentuk grid?		1	3	5	6
6	Apakah tampilan daftar produk pada website ditampilkan dalam bentuk list?		4	6	3	2
7	Apakah warna yang cerah lebih menarik untuk tampilan website?		2	2	5	6
8	Apakah perlu menampilkan promo produk pada halaman depan?		2	3	5	5
9	Apakah penggunaan bahasa Indonesia lebih baik digunakan pada website?		2	2	3	8
10	Apakah letak form login dan register sebaiknya ditempatkan di bagian atas?		2	3	4	6
<b>Total</b>		<b>0</b>	<b>13</b>	<b>24</b>	<b>54</b>	<b>59</b>

Data obtained from the respondent can be known percentage for each assessment as follows :

Strongly disagree = (0/150) x 100% = 0

Disagree = (13/150) x 100% = 8.67%

Neutral = (24/150) x 100% = 16%

Agree = (54/150) x 100% = 36%

Strongly agree = (59/150) x 100% = 39.33%

**Usability Value testing (Usability Testing)**

The following is a usability testing conducted using the Likert scale calculation method :

$$\%score = \frac{\text{actualscore}}{\text{idealscore}} \times 100\%$$

After get the result in the quantitative value from calculation, then the value is converted to a qualitative value of 5 with the reference of Likert scale as in:

Table 2. Percentage interval

No	%	Kriteria
1	0,00 – 20,00	Tidak Baik (1)
2	20,01 – 52,00	Kurang Baik (2)
3	52,01 – 68,00	Cukup Baik (3)
4	68,01 – 84,00	Baik (4)
5	84,01 – 100	Sangat Baik (5)

Usability Valuation Testing was conducted using the usability testing questionnaire completed by 15 respondents. The following is the data obtained from usability test.

Table 3. Usability Value Results

No	Pertanyaan	1	2	3	4	5
<b>A. Mudah di pelajari (Learnability)</b>						
1	Apakah tulisan yang digunakan pada halaman utama dapat di baca?			5	5	5
2	Apakah menu yang ada sudah lengkap serta mudah dipahami dan dimengerti?			6	4	5
3	Apakah secara visual pengguna dapat mengerti kegunaan tiap tombol yang disediakan pada <i>commerce</i> ini?			6	5	4
4	Apakah sistem dapat memberikan tahap-tahap penggunaan sistem ( <i>user manual</i> )		2	4	5	4
<b>B. Efisiensi (Efficiency)</b>						
5	Apakah pergantian satu halaman ke halaman lainnya tidak membutuhkan waktu yang lama?			2	7	6
6	Apakah sistem tidak mengandung halaman yang tidak dibutuhkan pengguna?		2	3	5	5
7	Apakah saat diketikan pada form pencarian produk dapat ditampilkan?			3	6	6

C. Mudah Diingat ( <i>Memorability</i> )					
8	Apakah tampilan halaman <i>website</i> mudah diingat?		3	7	5
9	Apakah, warna latar belakang <i>website</i> menarik dan sesuai dengan visualisasi pengguna?		4	6	5
D. Kesalahan ( <i>Errors</i> )					
10	Apakah ditemukan link sistem yang salah atau <i>error</i> ketika di klik?		6	4	5
11	Apakah ada halaman bantuan pada saat melakukan pembelian produk?	2	5	4	4
E. Kepuasan ( <i>Satisfaction</i> )					
12	Apakah informasi mengenai detail produk disajikan secara lengkap?	1	3	6	5
13	Apakah gambar dari produk di <i>website</i> ditampilkan dengan jelas?		3	5	7
14	Apakah saudara merasa nyaman menggunakan aplikasi <i>website</i> ini?		4	7	4
15	Apakah saudara ingin mengunjungi kembali halaman <i>website e-commerce</i> PT. Murni Alam Sehat?		5	6	4

Table 4. Analysis of Test Data

Pertanyaan No	Skor Total	Skor Maksimal	Presentase
1	60	75	80,00%
2	59	75	78,66%
3	58	75	77,33%
4	56	75	74,66%
5	64	75	85,33%
6	58	75	73,33%
7	63	75	84,00%
8	62	75	82,66%
9	61	75	81,33%
10	59	75	78,66%
11	55	75	73,33%
12	60	75	80,00%
13	64	75	85,33%
14	60	75	80,00%
15	59	75	78,66%
<b>Total</b>	<b>898</b>	<b>1125</b>	<b>79,02%</b>

Calculation result from table 4 as follows:  
 Percentage of usability value =  $889/1125 \times 100\%$   
 Percentage of usability value =  $889/1125 \times 100$   
 Percentage of usability value = 79.02%  
 Based on the calculation of usability value data, the system has usability value of 79.02% and has a good scale.

**System Testing**

To find out the results of a website e-commerce system, then disseminated the questionnaire to collect data. From the results of the questionnaire we can see the respondents response to the e-commerce system created.

Here are the 3 questions selected as a system test result:

Table 5. System Test Results

No	Pertanyaan	Ya	Tidak
1	Apakah dengan adanya sistem <i>e-commerce</i> mendapatkan informasi mengenai produk menjadi lebih mudah ?	5	0
2	Apakah sistem <i>e-commerce</i> ini mudah digunakan ?	3	2
3	Apakah dengan adanya sistem <i>e-commerce</i> dapat memudahkan saudara melakukan pembelian <i>online</i> ?	4	1

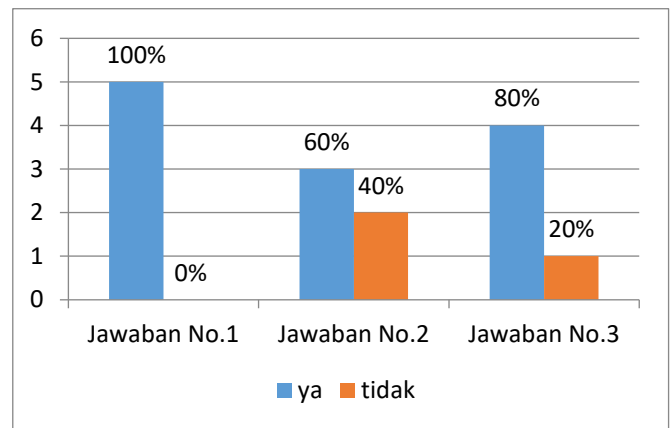


Figure 2. System test Results Diagram

From the whole questionnaire, it was concluded that all respondents agreed that this e-commerce system can provide information about the product more easily, 60% of respondents agreed that the e-commerce system is easy to use, and 80% of respondents Agree that this e-commerce system can facilitate the online purchase process.

**DISCUSSION**

**Design Analysis Using Activity Diagrams**

Activity Diagram used to proposed system illustrates to make it easier and understand the proposed system.

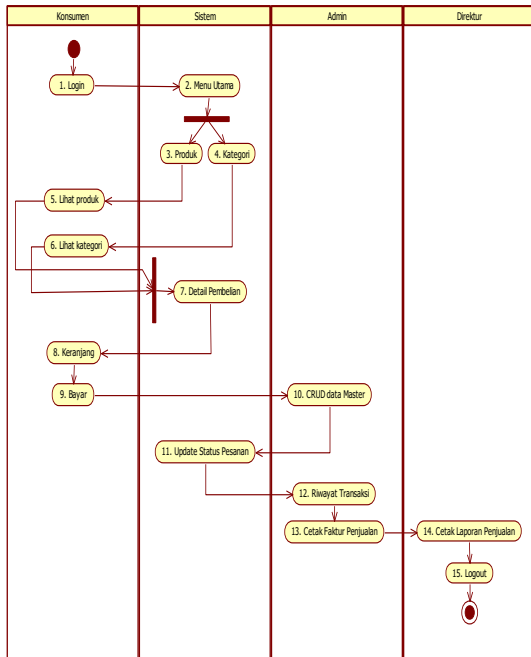


Figure 3. Activity Diagram

Use Case Diagram

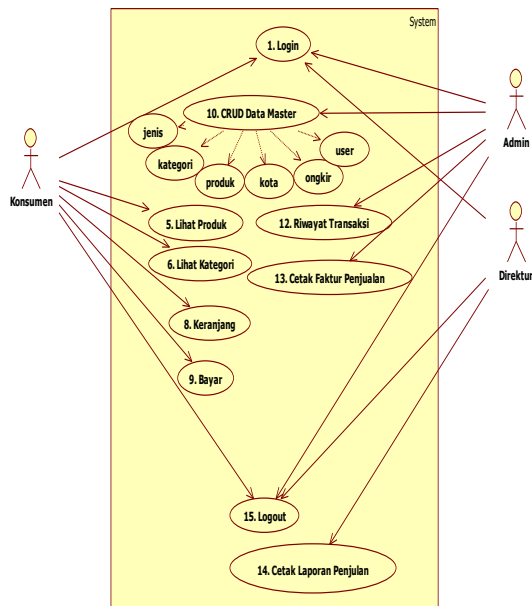


Figure 4. Use Case Diagram

Sequence Diagram

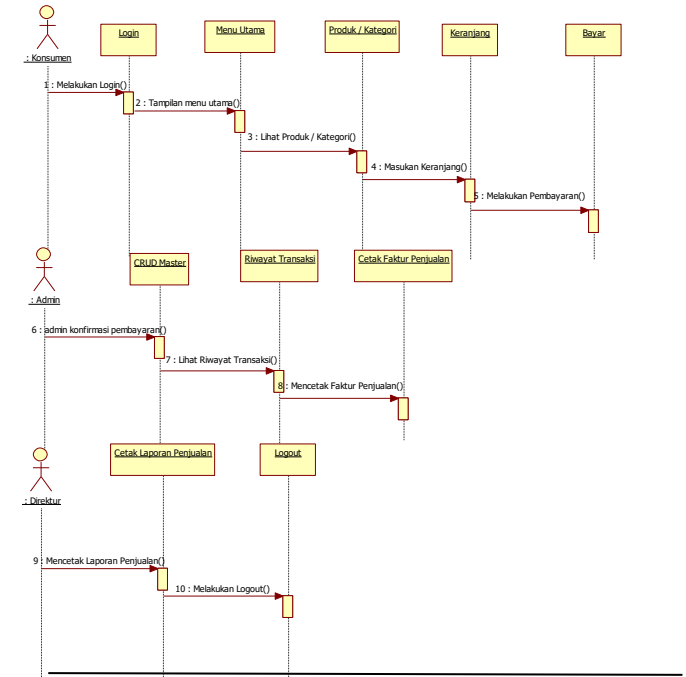


Figure 5. Sequence Diagram

Class Diagram

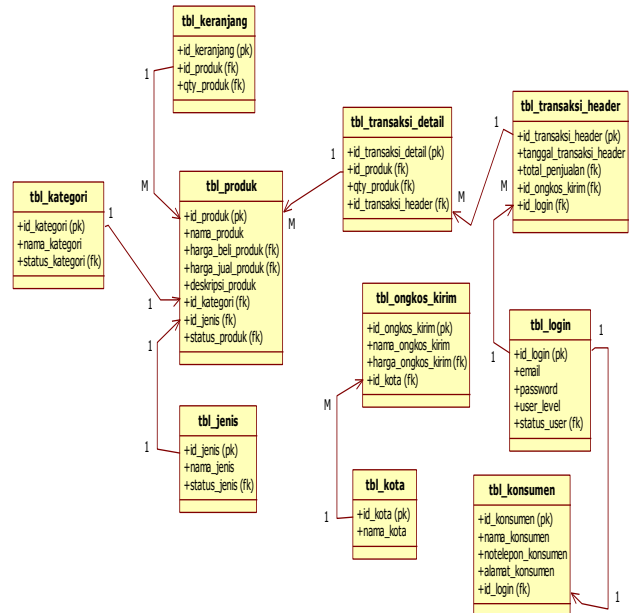


Figure 6. Class Diagram

User Interface

Here are some of the user interfaces / views of website have been created or implemented :

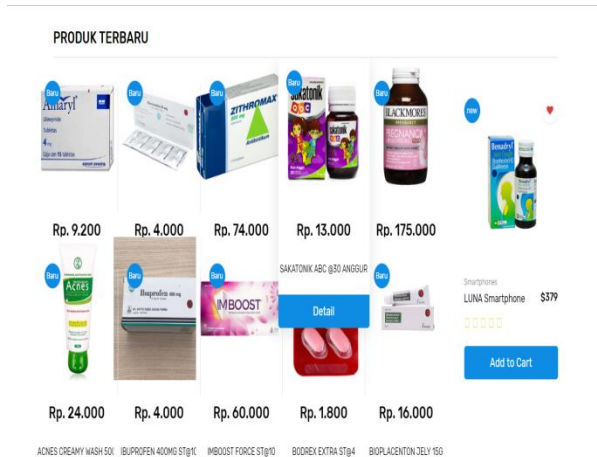


Figure 7. Product View

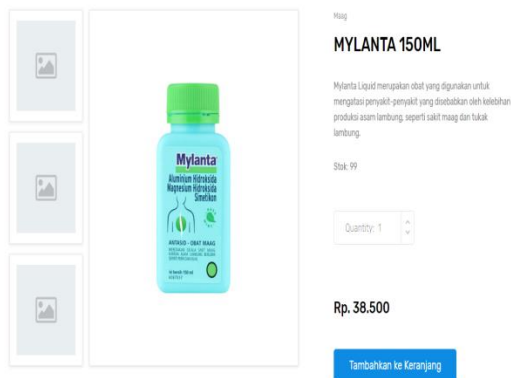


Figure 8. Product Details

PT. Murni Alam Sehat  
 Jl. Pintu Air No. 9 RT.001/RW.001 Kel. Mekarsari,  
 Kec. Neglasari, Kota Tangerang, Banten. Kode Pos: 15129.

LAPORAN HISTORY TRANSAKSI - BULAN Juli 2019

Dicetak Oleh : ameliaandy@gmail.com Tanggal Cetak : 2019-08-03

No.	Kode Transaksi	Tanggal Pembelian	Total Pembelian
1.	TR20190708001	2019-07-08 04:44:59	Rp. 45.500
2.	TR20190708002	2019-07-08 04:50:07	Rp. 20.800
3.	TR20190722003	2019-07-22 08:43:06	Rp. 64.000
4.	TR20190722004	2019-07-22 13:11:08	Rp. 182.000
			Rp. 312.300

Figure 9. History Transactions Report

## 1. CONCLUSION

After research and observation at PT. Murni Alam Sehat can be concluded as follows:

- Based on system testing, all respondents agreed the e-commerce system made it easy consumers to get information about the products they are making quickly and easily without come to the company.
- This e-commerce system makes it easy to create a purchase transaction history report because it can automatically be printed according to company needs.
- Based on a system testing conducted as many as 80% of respondents agree with e-commerce system, consumers can buy product by online system.
- Based on a system testing as many as 60% of respondents agree this e-commerce system is easy to use and can be accessed anytime and anywhere.

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### **BIOGRAPHY**

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