Analysis of E-Commerce Features Using Kano Methods

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Abstract: E-commerce is an innovative step in marketing electronically. This business electronically is more emphasis on customers in meeting their needs independently. The existence of customers not only as a source of revenue for the sustainability of electronic business activities, but rather as an asset that needs to be managed and maintained. Services in e-commerce can be identified by the features provided within the site. These features can affect customer interest in transactions, so that customers feel satisfied or not with the services provided. Customer satisfaction with services of these features can be measured by Kano methods. The object of this research using various types of e-commerce. Depend on the habit of respondents in using e-commerce.

Keywords : E-Commerce, Kano Methods

PRELIMINARY

The developments of technology have changed theway people meets their needs. The existence of e-commerce has changed the way they purchase their needs. Ecommerce users are currently faced with many selection of e-commerce sites, so users should be selective in choosing sites to use. The large number of e-commerce site allows users to compare each other which one more ease and convenience to use. The difference of e-commerce sites in services and feature availability can be effect of user satisfaction. E-commerce administrators have different perspectives in determining the services of existing features in e-commerce. Differences in these features make the difference in the service presented, thus affecting the user's satisfaction in using the e-commerce site. At this time to determine which features should be available in e-commerce can not be set with clear standards. User perceptions in determining e-commerce features can be used as the basis for choosing these features.

Based on this thoughts, to know which features should be available in the e-commerce site service that assure user's satisfaction, need to do analysis of user satisfaction of the features contained in e-commerce site. The first step is identify the features in e-commerce. Secondly, once identified these features will be analyzed by Kano method. Robinson (2009) explained that Kano method is a tool used to produce a quality product or service. Kano method can be use in order to improve the product or service quality based on customer perception.

LITERATURE REVEW

E-COMMERCE

Laudon and Traver (2010) classifies e-commerce in five types. There are : Business to Consumer (B2C) is an online business that sells to individual customers, Business to Business (B2B), an online business that sells to other businesses,Consumer to Consumer (C2C) is a business model where consumers sell to other consumers, Peer to Peer (P2P), and Mobile commerce (m-commerce), defined as the use of wireless digital devices to enable transactions on the web.

There are 6 bussiness models in e-commerce (Laudon & Traver, 2010):

1. Portal : is a business model that offers service pack and content research, news, e-mail, chatting, music download, streaming video, calendar, etc. Exp : google.com and yahoo.com
2. E-trailer : is a business model that offers product and service to individual customers. Exp : amazon.com
3. Content provider: is a business model that offers information and entertainment such as newspaper, sports sites, and others online source that offers customer other content from latest news to other special interest. Exp : youtube.com
4. Market creator: is a web-based business that uses internet technology to create markets and collect buyers and sellers together. Example is e-bay.com
5. Service provider: is a business model that offers the use of a service for internet users. For example rapidshare.com
6. Community provider: a site where everyone can gather and socialize. For example facebook.com and twitter.com

E-COMMERCE FEATURES

The research of e-commerce feature done by Budiardjo dan Irwiensyah (2008), that research analyzed Costumer Relationship Management (CRM) feature to get the right CRM feature in order to create the patient loyalty to the Department of Obstetrics and Gynecology FKUI RSCM. These features then used to arrange the Software Requirement Specification (SRS) at the hospital. Another research of analysis feature in e-commerce was done by Wijaya et al (2012), Fuad et al (2014), (Nuraminudin et al, 2016) that researcg adopted the feature of Budiardjo dan Irwiensyah (2008) research as provide in table 1 below.

Tabel I. E-commerce features (Nuraminudin et al, 2016)

No	Features
1	How to shop online
2	Product searching
3	Product info which offer
4	Product info best seller
5	New product info
6	Info about promo
7	Product category by brand
8	Testimony from customer who have purchased the product
9	Customer Service Online

No	Features
10	Info about the company
11	Product details offered
12	Product review
13	Customer/member registration
14	Product searching is based on the customer interests or needs
15	New product info and promo sent to customer email
16	Link to corporate social media account
17	Share company products via email, social media
18	Featur Contact Us
19	Existance of membership and affiliation system
20	Shopping cart
21	Transaction History
22	Customer/member data management
23	Customer/member purchase statistics

KANO METHOD

There are six categories in Kano method that affect customer satisfaction :

a. Must-be : This attribute signifies a fiture is basic feature that must be exist in a product/service. If the feature doesn't exist can be the cause of customer dissatisfaction. For example : a leaked milk package. Customer aren't satisfied when the package leaked, but when the package is in good condition, it won't affect to customer satisfaction.

b. One-dimensional : this attribute produce satisfaction when fulfilled and dissatisfaction when not fulfilled. This is the feature that mostly talked and can be used in competition with other company. For example : when the milk package give extra 10% bonus for the same price, it will increase the customer satisfaction. But if the amount of the contents of the milk package doesn't match the label then the customer will be disappointed.

c. Attractive : this attribute give the satisfaction when fully fulfilled, but not affect dissatisfaction when not fulfilled. This attribute is usually unthinkable. For example, a thermometer on the milk package shows the milk temperature.

d. Indifferent : this attribute refers to the not good aspect or not bad neither, and the feature that have this attribute will not effect the customer satisfaction.

e. Reverse : this attribute aimed to show if this feature exist, it will be the cause of customer dissastifaction.

f. Questionable : this attribute shown inconsistency of respondent. The inconsistency can be regarded as an error and can be occur due to poorly questionnaire or other factors. So needs a deeply study of questions in questionnaire.

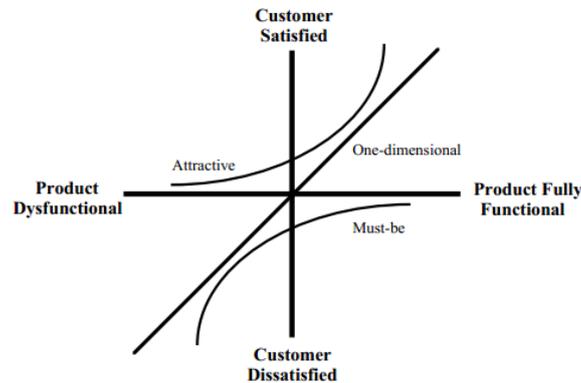The Kano method diagram can be seen in the following figure I:

Figure I. Diagram of Kano (Walden, 1993)

Professor Kano and his colleagues developed a set of concepts that could summarize several categories of customer satisfaction with the services or products of an organization (Walden, 1993). The concept is as follows :

1. Unclear ideas even the invisible regarding the quality can be classified using this method. Customer needs will determine how satisfied they are with product and service provided. Unthinkable new ideas sometimes can be seen using this Kano method.

2. Customer satisfaction is proportional to the functional of a product or service (one-dimensional). According to Kano, the more the fulfillment functionality of a product will increase the satisfaction of its users.

3. according to Kano, user need not only one dimensional, means increased user satisfaction as the functionality of a product or service increases. Kano added there's one thing that can be affect customer satisfaction.

4. Each product has its own basic function (must-be), if the basic function does not exist then the users will feel less satisfied. Meanwhile, if the basic functions are met then they will feel normal.

5. Each product development has new ideas that if applied can make the user feel satisfied, just or even even feel dissatisfied.

6. User needs can be classified using questionnaires. Kano believes that consumen needs can be classified through a questionnaire for users. In this questionnaire each question has two parts.

7. A positive functional part, where the question will ask the user's opinion if a service uses a particular feature.

8. A negative functional part, where the question will ask the user's opinion if a service does not uses a particular feature.

Following will be explain formation questionnaire using Kano method. In forming the questionnaire there are several things to note, where each feature has one functional question and one dysfunctional question as mentioned earlier. At the time of calculation, Kano used statistical methods to classify features into categories. For more details can be seen in the following sections:

1. Example of Kano questionnaire, which has two questions for each feature that can be seen in table II:

Table II. Examples of Kano Questionnaire Items (Walden, 1993)

Type	Question	Answer Option
Functional	If the car brakes work properly, how do you feel?	1. I like it 2. It should be 3. I'm neutral 4. I think it does not matter 5. I do not like it
Dysfunctional	If the car brake is not working properly, how do you feel?	a. I like it b. It should be c. I'm neutral d. I think it does not matter e. I do not like it

2. Based on accepted respons on two parts of question (functional and dysfunctional), product or service feature can be classified into six Kano categories. How to classify it using an evaluation table owned by Kano. The evaluation table can be seen in table III below:

Table III. Tabulation of Kano (Walden, 1993)

		DYSFUNCTIONAL				
		1	**2**	**3**	**4**	**5**
FUNCTIONAL	**1**	Q	A	A	A	O
	2	R	I	I	I	M
	3	R	I	I	I	M
	4	R	I	I	I	M
	5	R	R	R	R	Q

Information :
Q = Questionable
R = Reverse
A = Attractive
I = Indifferent
O = One-dimensional
M = Must-be
1 = I like it
2 = It should be

3 = I'm neutral
4 = I think it does not matter
5 = I do not like it

Based on table III above, it will be categorized every feature answered by the respondent into the tabulation table that contains the overall result of the answer. To be more clear in entering the whole answer will be explained in the following sections.

3. For each answer on each feature will be classified according to the Kano evaluation table. Then summed into the following table according to the number of questionnaires distributed. For more details can be seen in the following Picture II.

Picture II. Feature Tabs (Walden, 1993)

4. Kano calculations use the mode statistical methods developed and modified by Walden. This method analyzes the frequencies of data that often appear. In the case of the Kano method seen is the frequency of Kano classification in each category. This is done to answer the lack of noise level. Noise level is a situation where there is no dominant difference between the six categories in each feature, so the six categories have a dominant effect and it is difficult to determine the category of a feature. With the following formula $(O + A + M) > (I + R + Q)$ then the value used is (O, A, M) selected the highest value, otherwise the value used is (I, R, Q) is selected for the highest value.

CONCEPTUAL MODEL AND ANALYSIS

Here is described conceptual model of research conducted, presented in Figure III.
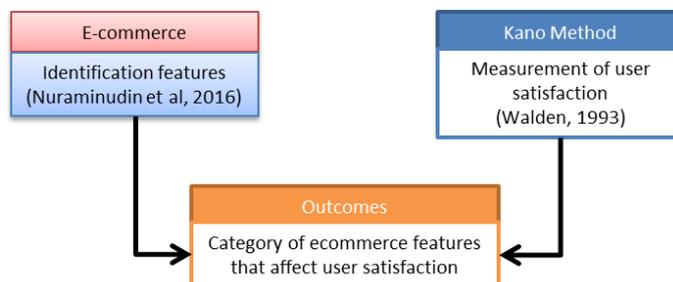

Figure III. Conceptual Model

The first step is to identify e-commerce features. By adopting from Budiardjo and Irwiensyah research in Nuraminudin et al (2016), there are 23 features that will be used to analyze e-commerce, presented in table I. The second step is to test the research instrument

by using questionnaire. The questionnaire was made according to the rules contained in the Kano method (Walden, 1993). Questionnaires were distributed to 100 respondents randomly and online, with e-commerce options determined by the respondents. The questionnaires distributed are then tested for validity and reliability, the results show all the features contained in valid and reliable questionnaires. So all the features can be used in the analysis phase. Outcomes from this research is to categorize the features in accordance with the level of influence on e-commerce user satisfaction.

KANO METHOD ANALYSIS

Based on the respondents' answers by matching the categories of Kano methods, it can be known the number of each each feature. Determine the Kano categories for each feature by using the following formula:
a. If (one dimensional + attractive + must be) > (indifferent + reserve + questionable) then the grade is obtained from the maximum of (one dimensional, attractive, must be).
b. If (one dimensional + attractive + must be) < (indifferent + reserve + questionable) then the grade is obtained from the maximum of (indifferent + reserve + questionable).

Suppose that in question 1 respondent answered positive or functional question with answer I like (1) and answer negative or dysfunctional question with answer dislike (5) then respondent's answer included into one-dimensional category.
Based on the assessment of respondents' answers already received on two parts of the question (functional and dysfunctional) method of Kano. Product or service features can be classified into six categories that Kano owns. How to classify it using an evaluation table owned by Kano. By using table III it is known interpretation as follows:

MUST BE

This attribute signifies a feature is a basic feature must exist in e-commerce products/services. If the feature does not exist then it can lead to dissatisfaction from the users. The features included in this category are:
a. Product searching
b. Product info which offer
c. Product info best seller
d. New product info
e. Info about promo
f. Product details offered
g. Product searching is based on the customer interests or needs

ONE DIMENSIONAL

Is an attribute which produce the satisfaction when fulfilled and dissatisfaction if not. This is a feature that belongs to a very important category in e-commerce to be a priority because the level of satisfaction is linearly related to the service of this feature. Features that fall into this category are as follows:
a. Testimony from customer who have purchased the product
b. Product review

c. Shopping cart
d. Transaction History
e. Existance of membership and affiliation system

ATRACTIVE

This attribute satisfies when fully achieved, but does not cause dissatisfaction if it is not met. This is a feature that is usually unthinkable. Is a feature that belongs to the category needs to be maintained because the level of user satisfaction will be very high with the availability of this feature, but the unavailability of attributes will not cause a decrease in the level of satisfaction. The features included in this category are:
a. How to shop online
b. Product category by brand
c. Customer Service Online
d. Info about the company
e. Customer/member data management
f. Customer/member purchase statistics

INDIFFERENT

This attribute refers to either bad or bad aspects, and features that have this attribute will not affect customer satisfaction. Is an aribut in the category of less attention by the customer so that the presence or absence of these attributes will not affect the increase or decrease in customer satisfaction levels. The features included in this category are:
a. New product info and promo sent to customer email
b. Link to corporate social media account
c. Share company products via email, social media
d. Featur Contact Us
e. Customer/member registration

CONCLUSIONS

This research yields the following conclusion:
1. Each e-commerce feature under study has varying degrees of influence in determining user satisfaction. So that determines the priority of services that must be provided in e-commerce.
2. There are 7 features included in the must-be category. This shows that features belonging to the must-be category are very influential features for customer satisfaction in e-commerce products / services. In other words this feature is included features that must exist in e-commerce.
3. There are 5 features included in the one-dimensional category. This shows that this feature produces satisfaction when fulfilled and dissatisfaction if not met. This is a feature that is often talked about and can be used in competition with other e-commerce.
4. There are 6 features included in the category attractive. This indicates that the features included in the category of attractiveness is a feature that goes into the category needs to be maintained because the level of user satisfaction will be very high with the availability

of this feature, but the unavailability of attributes will not cause a decrease in the level of user satisfaction.

5. There are 5 factors included in the indifferent category. These features are features that, when present or not, do not affect e-commerce user satisfaction.

6. The absence of a feature belonging to the reserve or questionable category indicates that all features have an influence on satisfaction even though the levels vary. And show the consistency of respondents in the answer and good quality questionnaire used.

The results of this study required a further and deeper review in order to have a common perception of the user towards e-commerce. Among others, the need for uniform e-commerce research objects, thus raising the focus of research on e-commerce features contained in one type of e-commerce only.

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