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Customer Satisfaction Analysis of Android-Based E-Commerce Applications based on Ui /Ux using Structural Equation Modeling (SEM) Methods

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Abstract:- The rapid development of industry 4.0 and continues to grow, has ushered in humans in the human approach with technology. In this development internet and smartphone users who want to make transactions online in the need to shop. Create a variety of opportunities to create an e-commerce application that can be accessed through a smartphone. Various e-commerce companies fight for competition between competitors to keep users from turning to other e-commerce and can develop strategies. To get a good strategy so that users do not turn away. E-commerce application based on android as e-commerce that cando various types of shopping online. In this study has the goal to find out the convenience and pleasure of users when using e-commerce applications based on appearance. The method used in this study uses the Structural Equation Model (SEM). The type of data used uses primary data in the form of questionnaires obtained from Google Form. Sampling uses non-random sampling techniques. The results of this analysis can show that the quality of information delivery and customer satisfaction can be found to be an important factor for companies in developing applications and customer decisions to make transactions and re-order e-commerce applications.

Keywords:- *Customer Satisfaction, User Experince, User Interface, Repurchase intentions.*

I. INTRODUCTION

Communication as one of the most commonly used activities of humans in the era of technology 4.0, either directly or indirectly. The era of technology 4.0 is widely used by companies as a market to develop business models whose competition is increasingly complex. One of them is in the form of an application. The main thing that is favored from an application to attract the attention of users (users) is contained in the display (user interface). User interface as a page of information that can represent a particular agency to offer a product or feature that can be used by users precisely and quickly. Not only intended to meet the needs of users, this user interface is also needed to meet the user's wishes in terms of comfortable appearance and informative content. If the user's wishes can be conveyed properly, then the user will be more interested in the user interface than the user interface.

II. LITERATURE REVIEW

A. User Interface

User Interface or user interface uses a form of graphical display that relates directly to the user. An interface is a place where an interaction occurs between the system and the user as its optimizer and effective operating control and feedback from the system that helps the operator make operational decisions.

B. User Experience

User experience or commonly called user experience is a process of increasing user satisfaction in improving the usability of applications and the interaction provided between users and products. The User Experience itself is a design display that collaborates with various functional flows, finding the sweet spot between user needs, business goals, and technological advances, then generating magical experiences through meaningful, useful, and fun product design. UX aims to make a website or application easier to use and less confusing when used by users (Allend &chudley, 2012). As for the 5 elements that follow usre experience Surface, Skeleton, Structure, Scope and Strategy.

C. Satisfaction Customer

The company needs to measure customer satisfaction in order to see the feedback and input that can be taken by the company for the purposes of developing and implementing Kotler's customer satisfaction improvement strategy (1999: 54) Structural Equation Modeling (SEM).

According to Bollen (2011) as quoted by Latan (2013: 5), "Sem are sets of equations that encapsulate the relationships among the latent variables, observed variables,and error variables". SEM can be used to answer various research problems (research questions) in a set of systematic and comprehensive analysis. According to Bollen (2011) as quoted by Latan (2013: 5), "Sem are sets of equations that encapsulate the relationships among the latent variables, observed variables and error variables". SEM can be used to answer various research problems (research questions) in a setof systematic and comprehensive analysis.

D. SmartPls

SmartPLS uses the Bootstrapping method or random doubling. Therefore, the assumption of normality will not be a problem. In addition, by doing bootstrapping, SmartPLS does not require a minimum number of samples, so it can be applied to research with a small sample number.

III. METHODS RESEARH

A. Reserch Stage

The stages in this study consist of several stages, such as the stages of determining problems, stages of determining variables, determining the sample, stages of determining samples, stages of making questionnaires, stages of spreading

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questionnaires, stages of validity tests and rehabilitation tests, stages of processing data, stages of results and recommendation stages. Research stagebelow image:

The image above is a research stage to test customer satisfaction on the Shoppe app based on how it looks. At the time of determining variables to determine the variables used to test customer satisfaction against the appearance of the mobile-based Shopee application with the dimensions used namely Skeleton, Surface, Scope and Structure.

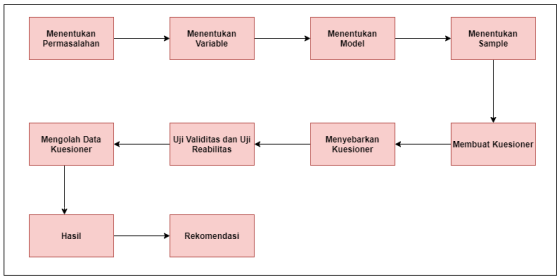

Fig. 1

B. Model Study

The research model features some customer satisfaction that can be affected by the appearance of the app. Some that affect the appearance of a product consists of several dimensions, namely surface, skeleton, structure, and scope. (Gareth,2015). Gambar 2 Model User Experince.

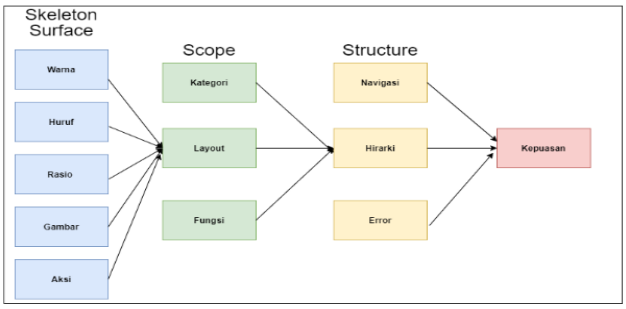

Fig. 2: Dimension Model

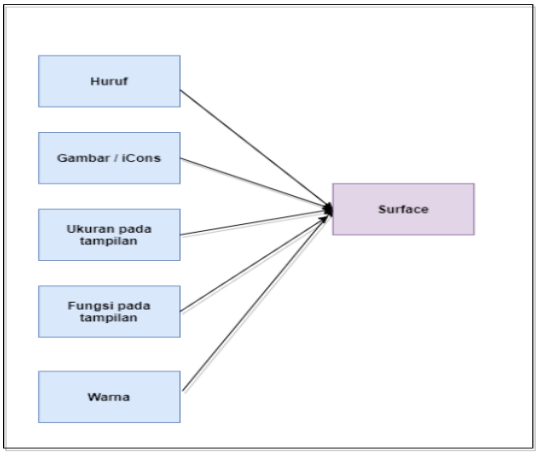

Fig. 3

On the surface dimension is related to the design of sensory design which includes the human five senses in terms of color, typeface and image on a display. The details of the surface dimension model in this study are described in the image below.

In this skeleton dimension consists of interface design, navigation design and information design. In this dimension it is necessary to design an interface design that includes the components of the interface design on the display. The details of this surface dimension model are described in the image below.

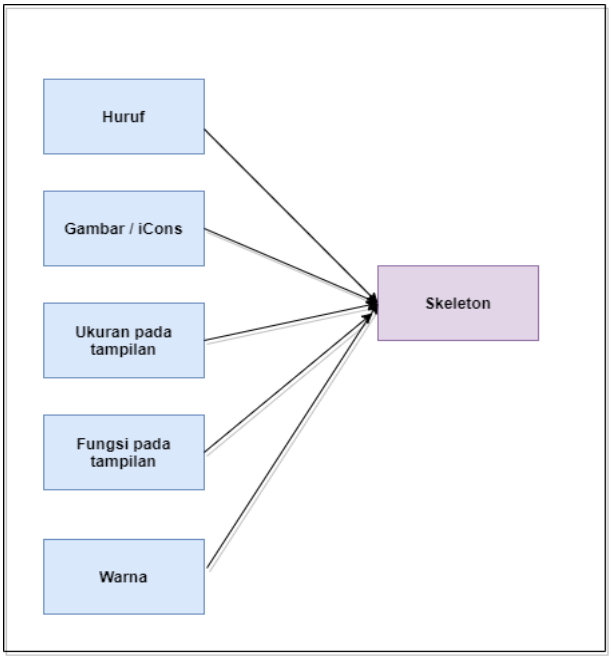

Fig. 4: Dimension Surface

In the structure dimensions are explained as product components in order to understand the user in accordance with the product to be developed. The details of this dimensional model are described in the image below.

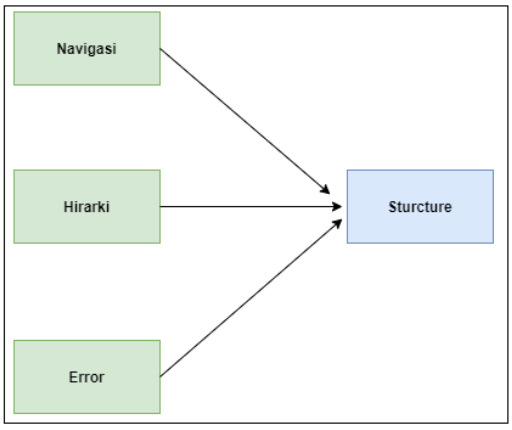

Fig. 5: Dimension Structure

Scope dimensions are applied to define and find what users need with business goals translated in the form of requests. Details of this dimensional model are described in the image below.

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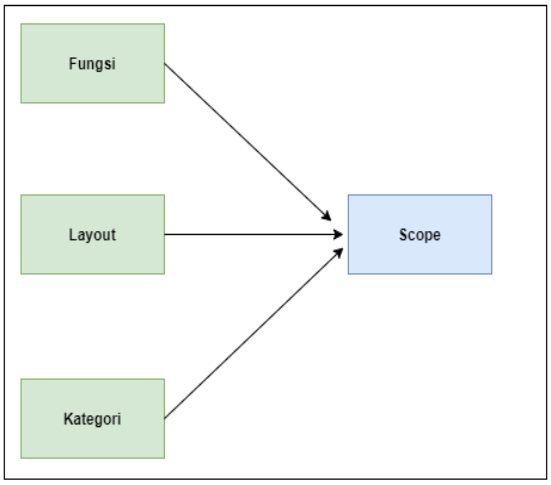

Fig 6: Dimension Surface

C. Analysist Technique

The data collection technique carried out in this study is to use questionnaires. Questionnaire is a data collection technique that is done by providing a set of questions or written statements to respondents to answer. Questionnaires are distributed through an online platform and spread manually. In the study using respondents taken randomly (randomly) as many as 48,964 users.

D. Populationand Sample

In this research, all users of the mobile-based Shopee application located in kranji village amounted to 48,964 people with the number of women 25,007 and the number of men 23,957 people, out of a total of 12,330 family cards..

$$n = \frac{48.964}{1 + 48.964\ x\ 0.1^2} = 99{,}79$$

The result of this population is the population size (N) in the slovin formula. The specified tolerance degree of 0.1% is obtained based on accuracy of 90% reduced by 100%. The results of the calculation of the formula above amounted to 99.79 and then rounded to a minimum of 99 people who will be used as samples for research, so that in this study the sample will be used as many as 99 people in kranji. To serve his sample with a known population of 48,964 with a precision of 0.01%.

$$ni = \frac{48.964}{48.964}\ \text{X}\ 99\ =\ 99$$

The number of samples needed amounted to 99 respondents from Kranji Village, West Bekasi District of Bekasi City.

IV. RESULTANDIMPLEMENTATION

The samples used in the study were randomized from various segments. Questionnaires that have been filled out as many as 99 respondents. Questionnaires are distributed online. This questionnaire uses Google Form. In this section, the description of the respondent is explained..

A. Uji Validitas and Reabilitas

The results of the questionnaire are entered into the validity and reliability test using Smart PLs3. Indicators on the group questionnaire into variable diagrams based on the output of variables A1, A2, B1, B2, B3, C1, C2, C3, D1, D2, E1, E2, E3, F1, F2, F3, G1, G2, G3, H1, I1, I2, J1, J2, K1, K2, K3, and L1 that have relationships with other variables. Like a picture give met:

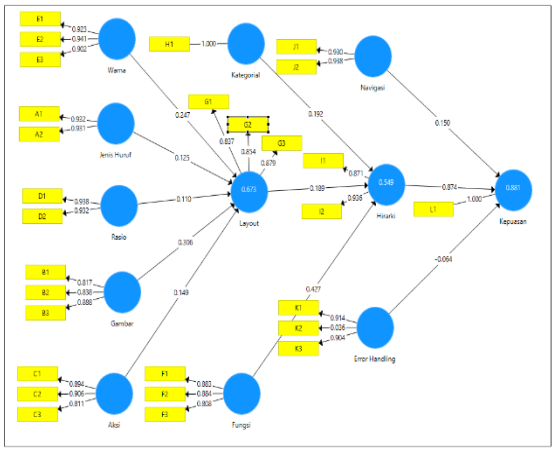

Fig. 7: Result Smart Pls 3.0

. At this stage tested the reliability of each variable and the validity of each indicator against variables, with a significant level of 7% and a total data of 99 respondents, then obtained a limit of R moment of 0.78. If the validity value is below 0.78 then the indicator is declared invalid. The value of rehabilitation is obtained by looking at the value. If getting a value of less than 0.700 means that the value is bad, about 0.700 is accepted and more than 0.800 is good. As in the table below:

Dimension	Variable	Description
Surface/ Skeleton	Warna	Accept
	Huruf	Accept
	Rasio	Accept
	Gambar	Accept
	Aksi	Accept
Scope	Kategori	Diterima
	Layout	Diterima
	Fungsi	Diterima
Structure	Navigasi	Diterima
	Hirarki	Diterima
	Error	Diterima
Kepuasan	Kepuasan	Diterima

Table 1: Results Reabilitas and Validitas

B. Average Variance Extracted (AVE)

The value of each variable AVE (Average Variance Extracted) is above 0.7 if below 0.7 there is an invalid indicator. If the AVE is below 0.7 it will be invalid. Below is a table of 4.14 values of Average Variance Extracted.

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Variable	Average Variance Extracted (AVE)
Warna	0,850
Huruf	0,868
Gambar	0,720
Aksi	0,759
Rasio	0,874
Fungsi	0,738
Layout	0,734
Kategori	1,000
Hirarki	0,818
Navigasi	0,873
Error Handling	0,551
Kepuasan	1,000

Table 2: Average Variance Extracted

C. Uji Composite Reliabilty

Composite reabilty test is to measure the reality value of the rehabilitation of Smartpls.

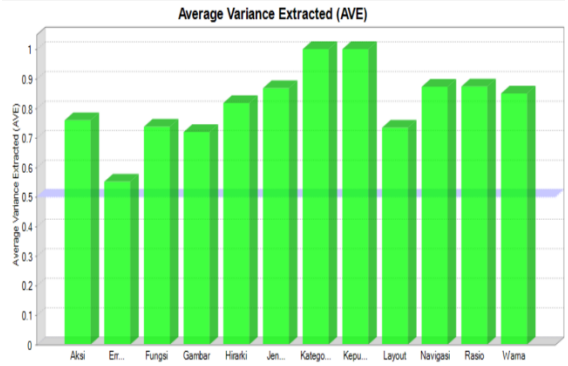

Fig. 8: Results Composite Reliability

D. Cronbach's Alpha

Cronbach's alpha stage, it is to measure the reality value of a questionnaire that will be declared reliable or consistent from Smartpls.

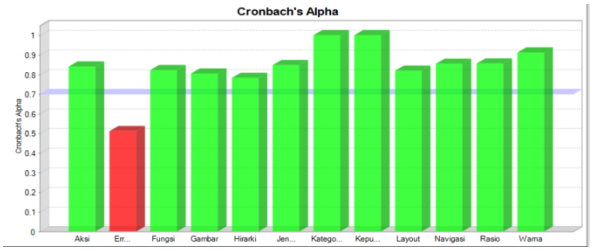

Fig. 9: Results Cronbach's Alpha

E. Hasil Pengujian Bootstrapping

Structural model testing or inner model test there is one test done, namely with T- Statistic (Boostrapping). As in the table below:

Variable	Original Sample (O)	Sample Mean (M)	Standart Deviation (STDEV)	T Static (O/STDEV)	P Values
Aksi -> Layout	0,149	0,152	0,152	0,989	0,327
Error Handling -> Kepuasan	-0,064	-0,046	0,108	0,595	0,552
Fungsi -> Hirarki	0,427	0,435	0,128	3,341	0,1
Gambar -> Layout	0,306	0,309	0,141	2,217	0,3
Hirarki -> Kepuasan	0,874	0,872	0,053	13,386	0.000
Huruf -> Layout	0,125	0,122	0,086	1,442	0,15
Kategori -> Hirarki	0,192	0,185	0,0132	1,449	0,148
Layout -> Hirarki	0,189	0,188	0,131	1,439	0,151
Navigasi -> Kepuasan	0,15	0,133	0,097	1,546	0,123
Rasio -> Layout	0,11	0,103	0,112	0,983	0,326
Warna -> Layout	0,247	0,251	0,138	1,786	0,075

V. CONCLUSION

The result of the connection between the Skeleton dimensions to there are 12 relationships. The Skelton dimension consists of variable layouts, categoryal and functions, while structure dimensions consist of navigation variables, error handling and hierarchy. From the results of the analysis it is known that all of them are interconnected and unidirectional. Where if one dimension increases then the other dimension will increase as well.

Based on the value obtained from the questionnaire, after being calculated using SmartPls software there has been no negativ result against variable action at the layer to variable layout, also on the ratio of letters to function variables. From these results get added value to build other variables to increase customer satisfaction.

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