Journal of Theoretical and Applied Information Technology
15th April 2020. Vol.98. No 07

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

ANALYIS ON FACTORS INFLUENCING CUSTOMER EXPERIENCE OF E-COMMERCE USERS IN INDONESIA THROUGH THE APPLICATION OF CHATBOT TECHNOLOGY

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ABSTRACT

Currently ChatBot technology is widely used by e-Commerce to help customers make transactions easier. This research aims to find out factors that are affecting customer experience the e-Commerce, which has applied ChatBot, as a technology feature to help customer do transactions in e-Commerce. The research has a total sample of 385 respondents, who active transactions during the last three years (2016-2019) in e-Commerces have implemented ChatBot technology in Indonesia. Analysis method used in this research is referencing to IS Success Model developed by DeLone and McLean. The resulth of this research is the correlation between Information Quality, System Quality, Service Quality, e-Trust, e-Satisfaction, and e-Loyalty are to be found positively affecting Customer Experience of customers who use e-Commerce with ChatBot in it for their transactions.

Keywords: *E-Commerce, ChatBot, Customer Experience, IS Success Model, Technology Acceptance Model.*

1. INTRODUCTION

The contribution of E-Commerce in economic growth in Southeast Asia is an undisputed fact. An example of what we can see in the rise of social media portals is the place to transact online trading. A study was conducted [1] showed that E-Commerce users, both active in transaction and just looking for products online, are in the range of 40% of the total of 400 million Southeast Asian population who are 16 years old to Top. This number continues to grow in line with the increasing users of E-Commerce technology in southeast Asia. Indonesia as a country in South East Asia with the most population in the study has contributed 34% in E-Commerce usage. The figure shows the biggest contribution that Indonesia has given in E-Commerce in 2015 for the scope of Southeast Asia.

The importance of providing easy transaction for E-Commerce users is a major concern for E-Commerce actors. This is reinforced by a study that has been conducted against 1,000 people in the United Kingdom at a productive age [2] who use E-Commerce services that have not yet been utilizing ChatBot technology. Related to the E-Commerce service they use, 46% said detailed information such as time and services are not available yet. 40% said they could not get a quick response or answer to a simple question, 33% of E-Commerce services were very lacking and the support Center was not responsive. 31% confused with navigation on E-Commerce so it is difficult to get service. The rest is filled with complaints such as unanswered questions, at least the item search options, the service is not yet supported for a smartphone platform, and so on. It can be seen several things that are behind the bad experience of the E-Commerce user on their expectations with the application of ChatBot technology in E-Commerce.

The fact of the experience that E-Commerce users feel is strengthened by another study conducted [3]; the main problem lies in the Customer Experience experienced by E-Commerce users, so that the author wants to find out what factors are affecting Customer Experience for E-Commerce users in Indonesia, with the application of ChatBot technology.

Unlike the previous research related to ChatBot, in [4] it has learned the interaction between

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business people and consumers with ChatBot as a method of communication. Knowing the relationship between consumer behavior / attitudes with the level of adoption of ChatBot technology [5]. Information system success models about customer experience in Using Chatbot Banking [6].

These studies have in common a TAM assessment. Another similarity lies in the purpose of research that aims to find out the causal relationship of ChatBot to business activities. As for the difference lies from the perspective in terms of the advantages of ChatBot as an intermediary between business people and users.

Meanwhile, this study tries to look at the customer experience perceived by e-Commerce users in utilizing Chatbot for transactions, taking into account a number of factors; namely (1) Information Quality, (2) System Quality, (3) Service Quality, (4) e-Trust, (5) e-Satisfaction, and (6) e-Loyalty.

2. LITERATURE STUDY

2.1 ChatBot on E-Commerce

The ChatBot technology can now be found in existing E-Commerce. Users who visit an E-Commerce will search for an item, or simply browse the page, and usually search sites that can be used in searching [4]. For example, ShopBot on eBay e-Commerce, which is visualizing in the form of conversation windows. ShopBot users can type the items you want to search for, or by providing a link URL instead of an item to the Conversation field.

ChatBot technology is becoming so important in E-Commerce because it can provide convenience for E-Commerce users when doing transactions. These facilities include comparison of prices for the items they are looking for and can be more accurate in finding items [5].

At the Customers perspective, it is explained that the need for E-Commerce users to be able to utilize ChatBot technology in providing accurate data, as this has contributed to them before the buying decision is made. In addition, the variety of sellers as well as prices demands ChatBot to be able to display searches in detail. It is also related to buying decision making, because E-Commerce users need to know the market price in the outline of what they want to buy, and before searching intensively to each existing seller.

For ChatBot Designers' perspectives, designers should pay attention to the speed of search processing. In addition, there is a ranking process that can be applied in ChatBot search. This is tailored to the needs and demands of E-Commerce, e.g. search results are sorted by price, response time/delivery, and location closest to the address of the registered E-Commerce user.

An assess the existing ChatBot technology also need to understand the search patterns by E-Commerce users, so that they can ratify the ChatBot and set new standards for future development.

2.2 Factors Influencing Customer Experience

There are several factors that influence the customer experience in using e-commerce, namely: Information Quality, System Quality, Service Quality, e-Trust, e-Satisfaction, and e-Loyalty. The information Quality available on the E-Commerce online page as well as the ease of access to detailed on the products becomes so important [6]. Especially in the buying decision-making process — there are at least four indicators that play in it: accuracy, content, format and affordances [6]. The relevance of the information becomes so important, because it directly affects the buying decision [7], as well as determining a person potential to be a repeat customer, with confidence in the E-Commerce [8]. It also gives an impact on increasing buyer experience, especially fixed buyer [9].

The quality of the system in E-Commerce is also a concern in user experience. Because ChatBot's existence as an application feature is the development of sub-systems an E-Commerce service [9]. The concern is the speed of information processing [7], as well as the requirements needed to be able to use a technology [10]. Thus, all constraints, especially from the technical side for operation, should be considered in order to keep the service user can use [11].

Service quality is also one of the most important aspects of user experience in e-Commerce operations. This is need for the supervision of transactions occurring in the E-Commerce [12]. The things of concern are the need for a guide that users can get from ChatBot itself, including supplementary, and follow-up that ChatBot can provide to its users [13].

Customers on E-Commerce conduct virtual transactions as a experience. It means that appropriate measures are needed to ensure that Customer can feel secure in providing information for the continuity of a transaction [9]. By strengthening the online transaction security layer,

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

it is worth noting from the problem-solving side when an error occurs in an online transaction [7], or at least minimizing the possibility of a mistake [11]. Generally, it is not very concern for repeat customers in an E-Commerce, namely who have long known and used the ChatBot itself [10].

The e-satisfaction in [14] mentions customer experience as one factor of the company's success. This measurement is based on the transactions made and the frequency or intervals of the initial transaction to the next transaction by the customer against the E-Commerce. So, the context of customer experience on this research is directed to the E-Satisfaction side.

There are at least four information that can be used from this E-Satisfaction indicator, which is the satisfaction of virtual interactions [12], satisfaction due to the needs and expectations of the user to fulfill [15], satisfaction because the availability of systems/services [7], and satisfaction of the system/Service consistency [6].

E-Loyalty is another aspect that has an influence on the use of the service as user experience [16], in this case E-Commerce. ChatBot Service can increase customer loyalty in trading in E-Commerce [8], even making a high dependency effect because of the facilities offered by ChatBot [10] to monitor their transactions [11]. Thus, ChatBot is reason for online trading. But when the service is not available or is in the development stage, while there are ongoing transactions, the customer needs to be directed to stay in touch with the seller on E-Commerce [16].

2.3 Customer Experience

The factor will be reduced if there is poor service provided, dissatisfaction with the item, and the high price compared to competitors [17], which also concluded that there are three attributes in Customer Experience in ChatBot in e-commerce; (1) more insight than using Chatbot, and (2) The importance of the role of ChatBot. Thus, Customer experience in e-commerce that represent the experience in ChatBot.

The customer experience also there is a link between customer experience and the high recommendations for using Chatbot [18]. Then participation in the development of ChatBot level is also an indicator influence user experience [19].

3. RESEARCH METHODOLOGY

3.1 Research Model

This research model is one of the references of one model of information system that becomes common ground to measure the success of an information system. This study tries to look at the customer experience perceived by e-Commerce users in utilizing Chatbot for transactions, taking into account a number of factors; namely (1) Information Quality, (2) System Quality, (3) Service Quality, (4) e-Trust, (5) e-Satisfaction, and (6) e-Loyalty. Figure 1 shown the research model.

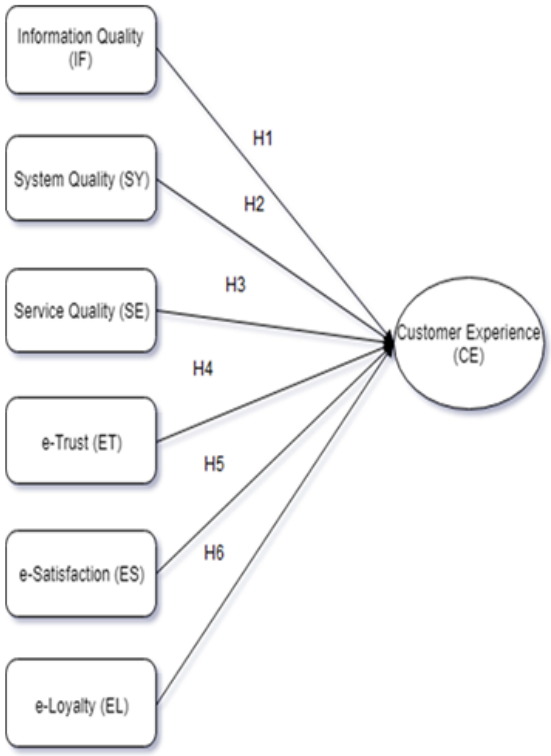

Figure 1: Research Model

Based on the research model, this study is to find out the influence of the application of ChatBot technology to increase the Customer Experience of e-Commerce users in Indonesia, so that the research hypotheses are as follows.

- ✓ H1: Information Quality (IF) offered by ChatBot technology has a positive influence on increasing Customer Experience (CE) e-Commerce users in Indonesia.
- ✓ H2: System Quality (SY) offered by ChatBot technology has a positive influence on increasing Customer Experience (CE) e-Commerce users in Indonesia.

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- ✓H3: Service Quality (SE) offered by ChatBot technology has a positive influence on increasing Customer Experience (CE) e-Commerce users in Indonesia.
- ✓H4: E-Trust (ET) offered by ChatBot technology has a positive influence on increasing Customer Experience (CE) E-Commerce users in Indonesia.
- ✓H5: E-Satisfaction (ES) offered by ChatBot technology has a positive impact on improving Customer Experience (CE) E-Commerce users in Indonesia.
- ✓H6: E-Loyalty (EL) offered by ChatBot technology has a positive influence on increasing Customer Experience (CE) E-Commerce users in Indonesia.

Then table 1 explains the indicators for each variable that are used as a basis for questions to get research data.

Table 1: Variables and Indicators

Variables	Indicators
Information Quality (IF)	Display interesting Chatbot information (IF1)
	Chatbot information is accurate and up to date (IF2)
	Completeness of information by Chatbot (IF3)
	Alignment of Chatbot information with the seller (IF4)
System Quality (SY)	Chatbot response speed (SY1)
	Ease of operation of Chatbot (SY2)
	The convenience of using Chatbot (SY3)
	It's fun using Chatbot (SY4)
Service Quality (SE)	The simple operating requirements of Chatbot (SE1)
	Chatbot services are always available (SE2)
	Chatbot guides users in transactions (SE3)
	Update the latest information for transactions through Chatbot (SE4)
E-Trust (ET)	Guaranteed security of Chatbot operation (ET1)
	Latest knowledge about Chatbot (ET2)
	Get to know Chatbot through good service (ET3)
	All complaints can be handled by Chatbot (ET4)
E-Satisfaction (ES)	Latest knowledge about Chatbot (ES1)
	The needs and expectations of Chatbot users are fulfilled (ES2)
	Consistency in developing Chatbot (ES3)
	Satisfaction of interacting with Chatbot media (ES4)
E-Loyalty (EL)	Dependence on Chatbot services (EL1)
	Preferences using Chatbot (EL2)
	Choose to transact with e-Commerce that has implemented Chatbot (EL3)
	The main reason for transacting online with Chatbot (EL4)
Customer Experience (CE)	More insight than using Chatbot (CE1)
	The importance of the role of Chatbot (CE2)
	Recommend Chatbot (CE3)
	Participate in the development of Chatbot (CE4)

3.2 Object and Data

The research objects are the three largest e-commerce sites in Indonesia namely Tokopedia, Shopee, and BukaLapak only. This is to get data that better represents the e-Commerce conditions that have used Chatbot in Indonesia. One of them is by using ChatBot technology owned by Tokopedia e-Commerce. Its main function is to track user-made orders, information about promos, and assist the refund process. There are a number of limitations, the platform is supported by the new Android-based system, and it can only be accessed by users who have GOLD membership status. Figure 2 shows the appearance of Tokopedia Chatbot.

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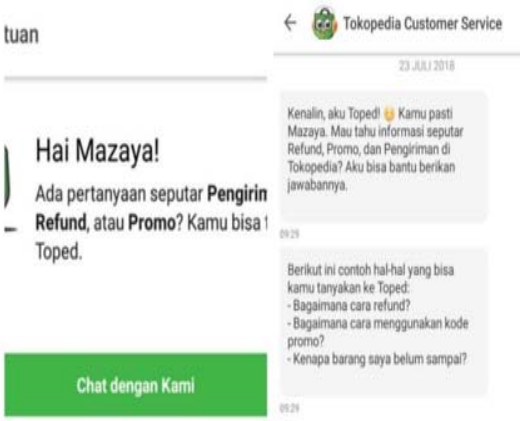

Figure 2: Tokopedia Chatbot

The data of this research is the entire E-Commerce users, who has implemented ChatBot technology in Indonesia that is active in the past three years (2016-2019). The questionnaires with 5-levels Likert Scale answers: with 1 being the "Totally Disagree" to 5 being "Totally Agree" answers. The number of samples needed in this study was determined using the Lemeshow formula [20], because the population of E-Commerce users with ChatBot in Indonesia is specifically unknown.

$$n = \frac{Z^2 s \sigma(1-\sigma)}{e^2} \quad (1)$$

Where n is the sample size, Z is Z-score, σ is the standard deviation, and e is the margin of error. For this research, researchers set a standard deviation of 0.5, confidence level at 95% and margin of error at ± 5%. With confidence level 95%, the existing Z-score is 1.96 [21]. Using the formula given, the sample for this study is set at 385, after rounding to higher amount.

3.3 Analysis

After the data is collected to the determined amount of sample, the hypothesis testing is carried out to find out if there is a link between predefined research variables. Statistical methods to prove this hypothesis use the following formulations.

$$\gamma = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 \quad (2)$$

Where: y = Customer Experience; β0 as an intercept is 0; β1, β2, β3, β4, β5, β6 are a regression coefficient for each independent variable (X1, X2, X3, X4, X5, X6) which each of them represents IF, SY, SE, ET, ES, EL respectively. To gain the value for the formula, the statistical testing is conducted using statistical methods.

H will be accepted when any of β1, β2, β3, β4, β5, or β6 equals to zero. For each hypotheses H1, H2, H3, H4, H5, H6 will be accepted when β1, β2, β3, β4, β5, β6 is greater than zero, respectively.

4. FINDINGS AND DISCUSSIONS

4.1 Findings

Based on data obtained by researchers from the results of the distribution of questionnaires with the Google Form, there were 569 respondents contributing to the collection of this data, with 385 meeting the constraints criteria and scope of research; namely active transactions in the last three years (2016-2019) and use one of the third E-Commerce in Indonesia (Tokopedia, Shopee, and/or BukaLapak). The remaining 184 respondents did not meet one or all these criteria, so it is not involved in the data analysis process.

187 of the respondents are currently residing in Indonesia while the 198 are outside Indonesia, where 197 of them are Female and the rest 188 are Male. In productivity category, 197 are outside of the productive age, while 188 of the respondents are in the productive age. About 194 respondents are incapable of understanding ChatBot thoroughly while the 191 of the respondents are confident in their knowledge on ChatBot—but 208 of the respondents are frequent users of ChatBot, leaving 177 respondents out of the category of frequent ChatBot users. In this research, the respondents choosing the following E-Commerce (BukaLapak, Shopee, Tokopedia), in order: 138, 121, and 126. The tables 1 describes the findings in this study.

Table 2bn: Descriptive Statistics of the Study

Variables	Questions	Mean	Standard Deviation
Information Quality (IF)	IF1	3.65	1.252
	IF2	3.05	1.334
	IF3	3.10	1.314
	IF4	3.13	1.349
	IF (Mean)	3.23	1.135
System Quality (SY)	SY1	2.85	1.437
	SY2	2.85	1.375
	SY3	2.82	1.415
	SY4	2.87	1.387
	SY (Mean)	2.85	1.267

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Service Quality (SE)	SE1 SE2 SE3 SE4	2.89 3.09 3.13 3.12	1.432 1.294 1.273 1.274
	SE (Mean)	3.06	1.121
E-Trust (ET)	ET1 ET2 ET3 ET4	3.08 3.09 3.08 3.05	1.272 1.261 1.289 1.278
	ET (Mean)	3.07	1.062
E-Satisfaction (ES)	ES1 ES2 ES3 ES4	3.17 2.86 3.05 2.85	1.283 1.416 1.277 1.410
	ES (Mean)	2.98	1.176
E-Loyalty (EL)	EL1 EL2 EL3 EL4	2.81 3.09 2.90 2.89	1.411 1.329 1.425 1.446
	EL (Mean)	2.92	1.257
Customer Experience (CE)	CE1 CE2 CE3 CE4	3.11 2.86 3.14 2.81	1.282 1.372 1.259 1.376
	CE (Mean)	2.98	1.145

Based on table 2, IF ranks first for the factors that most influence the Customer Experience of e-Commerce users who use Chatbot for transactions. This is indicated by an average value of 3.23 and a standard deviation of 1.135. Then proceed with ET, with an average of 3.07 and a standard deviation of 1.062. The SE is the next one which has an average of 3.06 and a standard deviation of 1.121. In the next position there is an ES, an average of 2.98 and a standard deviation of 1.176, and EL has an average of 2.92 and a standard deviation of 1.257. System Quality (SY) occupies the last position for factors affecting Customer Experience with an average of 2.85 and a standard deviation of 1,267.

In the results of the data processing questionnaire obtained using SPSS-Statistics, it can be said that the independent variables (IF, SY, SE, ET, ES, and EL) have a contribution of 88.4% (R Square = .884) against the dependent variable of this study (CE). Table 3. indicated that the value of the Sig or P-value of the collected data is. 000; This means that the research model can conclude the linkage of the variables independent of the research variables, since the value is < 0.05.

Table 3: ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	444.769	6	74.128	479.905	.000 [b]
	Residual	58.387	378	.154		
	Total	503.156	384			

[a] Dependent Variable: Customer Experience (CE).
[b] Predictors: Intercept, E-Loyalty, E-Trust, Service Quality, Information Quality, E-Satisfaction, System Quality

Table 4: Coefficients [a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	β		
(Constant)	.102	.071		1.440	.151
IF	.142	.047	.141	3.003	.003
SY	.206	.052	.228	3.983	.000
SE	.107	.049	.105	2.187	.029

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	β		
ET	.197	.046	.183	4.274	.000
ES	.104	.048	.107	2.170	.031
EL	.201	.048	.221	4.164	.000

[a] Dependent Variable: Customer Experience (CE)

In Table 4, it is shown that the coefficient B of each independent variable in the study is positively valued. This means that each of those independent variables has a positive influence over the dependent variable of the study. So that it can be concluded that the Information Quality (IF), System Quality (SY), Service Quality (SE), E-Trust (ET), E-Satisfaction (ES), and E-Loyalty (EL) have a positive influence on Customer Experience (CE).

4.2 Discussions

Referring to the results of the research as stipulated in Subsection 4.1. Overall, the results of the hypothesis can be seen in Figure 3.

H1: Information Quality (IF) has a positive impact on the Customer Experience (CE) of E-Commerce users who use ChatBot. This is evidenced by the value of the IF p-value of the < 0.05 (0.03) and the positive standardized coefficient value (.141). This indicates there is a positive influence of IF against CE.

H2: System Quality (SY) has a positive influence on the Customer Experience (CE) of E-Commerce users who use ChatBot. This is evidenced by the value of the P-value SY which is < 0.05 (0.00) and the value of the positively standardized coefficient (. 228). This indicates there is a positive influence from SY to CE.

H3: Service Quality (SE) has a positive influence on Customer Experience (CE) of E-Commerce users who use ChatBot. This is evidenced by the value of P-value SE which is < 0.05 (0.029) and the value of the positively standardized coefficient (. 105). This indicates there is a positive influence from SE against CE.

H4: E-Trust (ET) has a positive influence on Customer Experience (CE) of E-Commerce users who use ChatBot. This is evidenced by the value of the P-value ET which is < 0.05 (0.00) and the value of the positively standardized coefficient (. 183). This indicates there is a positive influence from ET to CE.

H5: E-Satisfaction (ES) has a positive influence on Customer Experience (CE) E-Commerce users who use ChatBot. This is evidenced by the ES p-value value of < 0.05 (0.031) and the positive standardized coefficient value (. 107). This indicates there is a positive influence from ES to CE.

H6: E-Loyalty (EL) has a positive influence on Customer Experience (CE) of E-Commerce users who use ChatBot. This is evidenced by the value of the EL p-value which is < 0.05 (0.00) and the value of the positively standardized coefficient (. 221). This indicates there is a positive influence from EL against CE.

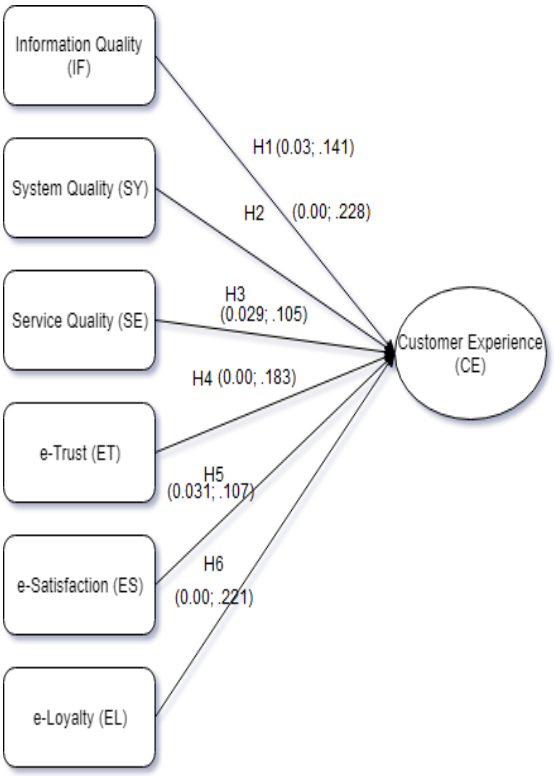

Figure 3: Result of Hypothesis Testing

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

4.3 Recommendations

After knowing the outcome and magnitude of the impact and/or correlation between variables in Subchapters 4.2., here are the recommendations the authors told for the next development of ChatBot, with the context of implementing the E-Commerce.

System Quality (SY; R Square =. 228). Because ChatBot is part of a system; A sub-systems, it is good that system availability needs to be awake. This can be done by periodically performing system maintenance, as well as providing an alternative system to temporarily replace the main system role, in case of failures or barriers operating on the main system. And because ChatBot itself continues to evolve in terms of services offered, it becomes so important to do renewing the latest version. ChatBot does not necessarily run online; ChatBot E-Commerce that supports activities via text messages such as SMS.

E-Loyalty (EL; R Square =. 221). Customer has a transaction interest, especially in places or facilities that provide appreciation for those customers who are loyal and active in the transaction, in the valuation of a certain period. Then the author recommends granting benefits to their customers who actively do transactions in E-Commerce, especially in their users ChatBot to transact.

E-Trust (ET; R Square =. 183). Because the transaction is virtual on E-Commerce, it is worth noting in terms of its security layer. E-Commerce service providers need to consider deploying the latest virtual security system — especially those that support subsystem functions such as this ChatBot. Data storage that flows through ChatBot is also worth noting, so that no data loss occurs when the information is provided by Customer.

Information Quality (IF; R Square =. 141). What distinguishes transactions through ChatBot with ordinary media conversations on the seller is, information services that can be accessed quickly, and anytime and anywhere. Keep in mind for the information display provided, so as not to be too crowded with text (wall-of-text), but Customer as a ChatBot user can sort out what information they need; Can by checking the Checkbox for every detail of information needed. The recency of the information is also worth noting, in order not to occur Customer's understanding of a product. It also relates to synchronizing the seller, so that the seller also gets feedback directly for each transaction activity that occurs in his/her virtual store.

E-Satisfaction (ES; R Square =. 107). Customer satisfaction is the main one for the life of a trading facility. It is the obligation of the seller, and the E-Commerce service provider in this regard, to ensure the Customer satisfaction level is high, so that the repeat order from the high-frequency Customer can be continuously ongoing. To guard it, necessary assessment media from the Customer for the services they receive — this is a feedback from the side of the merchant and the E-Commerce service provider.

Service Quality (SE; R Square =. 105). To continuously optimize the service, the need to assistance by ChatBot with Customer service manual. This is intended to address problems that may occur with the operation of ChatBot. As a subsystem, there needs to be intensive supervision for ChatBot operation to be uninterrupted. On the Customer side, the need for a direct approach to Customer — especially those with a high frequency of transactions, in order to get direct criticism and/or suggestions useful for E-Commerce development, especially for ChatBot development.

Thus, this research model one of which gets a reference from one of the information system models that becomes the common ground to measure the success of an information system; Information System Success Model. The concepts of information quality (IF), system quality (SY), and service quality (SE) are the focus of the available independent variables. But what needs to be prioritized is the SY problem, because the Chatbot service base depends on the availability of the system, which is also directly related to the compatibility of the platform being used. In principle Chatbot can be made with any web-based platform, but there are limitations to the media used to access it. It is necessary to avoid implementing Chatbot with a platform that does not yet have the support of other systems. The ChatBot service base relies on the availability of the system, which directly also relates to the suitability of the platform used. In principle ChatBot can be created with any web-based platform, but there are limitations on the media used to access it. It is necessary to avoid the implementation of ChatBot with a platform that has not been supported by many other systems.

From the third side digital factors (ET, ES, EL), need to be considered in terms of customer loyalty. The need for incentives that aims to give appreciation to customers who diligently use Chatbot to transact. The reason, developments in the system will always depend on the feedback coming from users.

ISSN: 1992-8645 www.jatit.org E-ISSN: 1817-3195

5. CONCLUSIONS

This research model is used to measure the customer experience perceived by e-Commerce users in utilizing Chatbot for transactions, taking into account a number of factors: namely Information Quality (IF), System Quality (SY), Service Quality (SE), e-Trust (ET), e-Satisfaction (ES), and e-Loyalty (EL). From the variables used in the research model (IF, SY, SE, ET, ES, and EL) was found that the entire variables have a positive impact or influence on the CE of this study. The variables of Information quality (IF), System quality (SY), and service quality (SE) are significant influence. But what needs to be a priority is System Quality (SY) problem, because this variable has no effect on customer experience.

The research still refers to the use of Chatbot for the e-Commerce industry. There are still other uses such as the banking industry and the creative industry. Good research further considers these recommendations, due to the high functionality of Chatbot, as well as its large and positive potential to make the work regarding data more effective and efficient to do. On the other hand, this research still needs development from the side of the model used. For the success side and the level of acceptance can be assessed, but it would be better when viewed from the perspective of other research models commonly used in research on information systems.

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