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# Customer Loyalty in Marketplace: Structural Equation Modeling Analysis

I Gusti Ngurah Satria Wijaya  
Information System  
ITB Stikom Bali  
Denpasar, Indonesia  
ngurah\_satria@stikom-bali.ac.id

Evi Triandini  
Information System  
ITB Stikom Bali  
Denpasar, Indonesia  
evi@stikom-bali.ac.id

Ezra Tifanie Gabriela Kabnani  
Information System  
ITB Stikom Bali  
Denpasar, Indonesia  
180030695@stikom-bali.ac.id

**Abstract**—The rapid development of the three business models, namely online stores via social media, e-commerce with the Consumer to Consumer concept, and e-commerce with the Business to Consumer concept, caused a high level of competition so owners must know and fulfil customer wishes. This challenge was certainly not easy, e-commerce owners provided the best service by maintaining the quality of the website especially security factor to convince visitors so that they gain trust and develop into customer loyalty. This research aimed to analyze the effect of website security on customer loyalty with trust as Shopee web moderation variable. Primary data collection technique used in this study is by spreading questionnaires to the student respondents of the ITB STIKOM Bali information system study program. The data analysis method used Structural Equation Model. Based on the results of the analysis that has been obtained, it is discovered that the web security had a significant effect on the customer trust, the web security had a significant effect on the customer loyalty, and the customer trust variable did not have a significant effect on the customer loyalty variable on the Shopee website. The results of this research were considered by Shopee's management to pay attention to the variables of web security and customer trust that can-shaped customer loyalty so that later the company's goals will be achieved.

**Keywords**—e-commerce, website security, customer trust, customer loyalty, structural equation model

## I. INTRODUCTION

Development of the internet in the digital era has influenced changes in the lifestyle of the Indonesian people, including shopping. Indonesians who previously preferred to shop face to face with sellers and see the items they want to buy are now starting to switch to using online shopping facilities so that online seller opportunities are increasingly wide open. Data from Bank Indonesia (BI) states, online store transactions (e-commerce) in Indonesia throughout 2018 achieved IDR 77.766 trillion. This figure skyrocketed 151% compared to the previous year which achieved IDR 30.942 trillion collected from around eight major e-commerce players in Indonesia.

The rapid development of the three business models, namely online stores via Facebook and Instagram, e-commerce with the C2C (Consumer To Consumer) concept, namely the marketplace and e-commerce with the B2C (Business to Consumer) concept, causes a high level of competition so owners must know and fulfil customer wishes. This challenge is certainly not easy, like a shop that competes for customers from visiting people, marketplace and e-commerce B2C owners must provide the best service by maintaining the quality of the website especially security factor to convince visitors to gain trust, and then develop into customer loyalty.

This study is a development of studies conducted by Afsar, Nasiri, and Zadeh [1] stated that in the commercial

competition by developing technology-based companies, customer loyalty is a significant factor for gaining continued competitive advantage. The results showed that the demographic characteristics of customers and security and trust were effective factors in loyalty. Berraies, Chtioui, and Ben Yahia [2] stated that there is a significant and positive influence of website functional characteristics (privacy and perceived security) on online trust among customers, which in turn proves to be the main activator of their loyalty to banks. Safa and Solms [3] stated that customer perceptions of security have a positive connection with electronic trust. Electronic trust has a positive and strong connection with the establishment of electronic loyalty in e-commerce. Wong, Tan, Inkgo, and Chiu-yiong [4] stated that security, privacy and trust are positively connected to customer electronic loyalty. This study also highlights the important role of trust as a mediator of these relationships. Different results were obtained by Putra, Dantes, and Candiasa [5] namely that security protection has a negative and insignificant effect on customer trust, risk and security systems are not important to consider in increasing customer trust because the effect is insignificant.

From the above background, development and the occurrence of differences in results in prior studies, the authors performed research aimed at the effect of website security on customer loyalty with customer trust as moderation variable. This research will contribute to the strategic decision of Shopee Website management to pay attention to the factors that affect e-commerce customer loyalty. This case study takes research object Shopee.co.id website and subjects from students of the ITB STIKOM Bali information system study program, because these students are generation Z from the era of the industrial revolution 4.0 and are quite familiar with advances in digital technology, especially in the field of information systems so that generally they are used to making online purchases.

Based on the aim requested above, three research questions were then proposed to guide the implementation of the research, i.e.:

- Does the website security have a significant influence on customer loyalty?
- Does the website security have a significant influence on customer trust?
- Does the customer trust have a significant influence on customer loyalty?
- Does user ability have a significant influence on employee performance?

## II. LITERATURE REVIEW

In considering the security factor in e-commerce, always refers to the perception or perception of customers about the

security of all transactions (including means or means of payment, payment methods and distribution of all personal information). Lack of perceptions of security is a common reason for potential consumers not to shop online, because of the general perception of the risk of loss involved in the distribution of highly confidential personal information such as credit card numbers on the internet. Customers who provide this personal information during a transaction have the risk of being compromised by irresponsible parties. Therefore, the main concern of online customers is the security of their transactions. Therefore the definition of security is something that is felt by potential customers, how much they trust a trading website, safe in managing sensitive personal information. This definition represents a personal perception rather than an objective measure and assumes a customer's intuitive ability to assess risk or loss [6].

According to [7] defines trust is the desire or willingness of a business entity to rely on a business partner or friend. This is related to several interpersonal and inter-company or organizational factors such as competence or ability, integrity, honesty, and the perceived benefits of the company.

According to [8] keeping customers loyal makes economic sense. Loyal customers use the company's products more and for a longer time. Losing a loyal customer can mean losing the revenue stream from that customer in the future. There are three characteristics of loyal customers, including Repeat Purchase, which is a customer's willingness to buy or reuse the same product or service in the future. Referrals are defined as customers' willingness to provide recommendations for products or services they use to others. , and retention is a condition where feeling tied to a brand or store which causes consumers to choose the product or store even though there are many other alternatives.

According to Ribbink in [9] who investigated the evaluation of electronic customer service and e-trust in explaining customer loyalty for online retailers. More specifically, the mediating role of e-trust between service quality and loyalty is modelled. More specifically, the role of trust mediation between service quality and loyalty is modelled. Satisfaction also contributes to loyalty, can be increased substantially through services that are attractive to users and ease of operation. For electronic customer service evaluation, there are five dimensions of service quality identified as the Servqual method (namely reliability, responsiveness, assurance, empathy, and physical evidence) which link certain service characteristics to consumer expectations. The Ribbink model illustration is as follows:

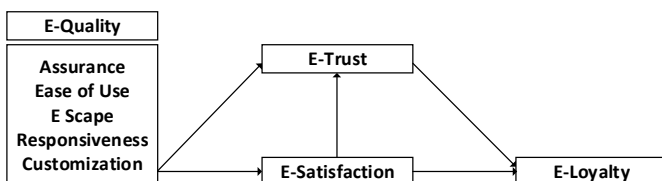


Fig 1. Ribbink Model

Based on the model from Ribbink and research gaps from previous studies, from Fig. 2 the model are adopted as the framework for the research below.

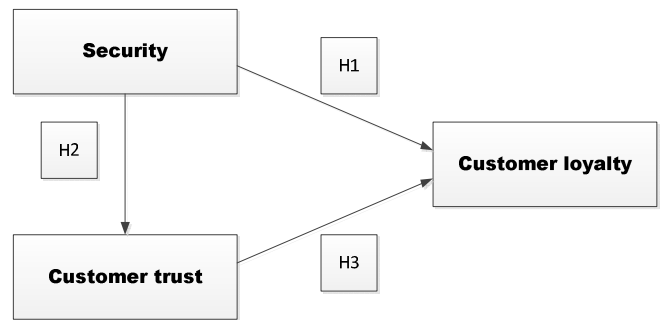


Fig. 2 Conceptual Model.

### III. RESEARCH METHOD

#### A. Population and Sample Research

Primary data collection technique applied in this research is by spreading questionnaires. The questionnaire was distributed online to the student respondents of the ITB STIKOM Bali information system study program, where the determination of the respondents was done by using purposive sampling technique [10]. The number of respondents used was 104 respondents. This has met the minimum requirement for the number of samples used is 100-200 respondents [11].

#### B. Data analysis method: Structural Equation Model (SEM)

The data processing and analysis technique used in this research is SEM analysis, which is a multivariate statistical technique composite of factor analysis and regression analysis (correlation), which aims to verify the relationships among variables in a model, both among indicators. with the construct, or the relationship among constructs [1]. This technique is used to thoroughly explain the relationship between variables in the study. SEM Analysis used statistical programs/software Amos.

### IV. RESULT AND DISCUSSION

#### A. Description of Respondents

The collected questionnaires were 115, after the selection results, the number of respondents used in this study was 104 respondents. This has met the minimum requirement for the number of samples used is 100-200 respondents. Respondent profiles consist of gender, age, date of registration, have made transactions at Shopee website, how many times the respondent made purchases at Shopee website. First, as many as 44 respondents had male gender and as many as 60 respondents had female gender. For the age profile of respondents, as many as 88 respondents aged between 18-22 years, as many as 14 people aged 23-27 years, and respondents aged 2 people aged 28 years and over. To register a Shopee website account and make purchase transactions, all respondents have registered an account and have made purchases at Shopee website Finally, for the number of purchase transactions in 6 months, the results obtained were 65 respondents who made 1-3 transactions, 18 respondents made transactions 4-6 transactions, 19 respondents transacted 7-9 transactions, and 12 respondents transacted more than 9 transactions.

#### B. Validity Test and Reliability

The validity test is used to specify the level of reliability of the measuring instrument used. The validity test is done by comparing the calculated r-value (Pearson Correlation)

with the r table which has a significant level of 5% [12]. In this study, the data is said to be valid if the value of r count > 0.1909. Pearson correlation calculation can be found in Table I.

TABLE I. VALIDITY TEST

Latent Variable	Indicator	Pearson Correlation	Validity
Security	X1.1	0.840**	Valid
	X1.2	0.818**	Valid
	X1.3	0.869**	Valid
Trust	X2.1	0.784**	Valid
	X2.2	0.840**	Valid
	X2.3	0.869**	Valid
Loyalty	X3.1	0.802**	Valid
	X3.2	0.808**	Valid
	X3.3	0.800**	Valid

The reliability test used to determine the level of consistency of respondents in answering questions. The reliability test is seen in Cronbach's Alpha value with a limit value of > 0.7 [13]. The calculation of Cronbach's Alpha latent variables in this research can be found in Table II.

TABLE II. RELIABILITY TEST

Latent Variable	Cronbach's Alpha	Reliability
Security	0.791	Reliable
Trust	0.758	Reliable
Loyalty	0.724	Reliable

C. Measurement model stage and Confirmatory Factor Analysis

TABLE III. STANDARDIZED REGRESSION WEIGHTS AND REGRESSION WEIGHTS

			Estimate	C.R.
Trust	<---	Security	0.796	6.498
Loyalty	<---	Security	0.589	2.470
Loyalty	<---	Trust	0.197	0.883
X1.3	<---	Security	0.835	
X1.2	<---	Security	0.666	6.831
X1.1	<---	Security	0.763	7.954
X2.3	<---	Trust	0.800	
X2.2	<---	Trust	0.608	5.898
X2.1	<---	Trust	0.798	7.662
X3.1	<---	Loyalty	0.632	
X3.2	<---	Loyalty	0.644	5.003
X3.3	<---	Loyalty	0.768	5.482

Table III shows that the Critical Ratio (CR) value for all indicators is following the required CR value, where the CR

value must be  $\geq 2.0$  [14]. This means that 9 indicators of Model 1 have been able to validly measure what should be measured in the model presented.

The next step in this research is to test the confirmatory factor analysis. The confirmatory factor analysis test was carried out on standardized estimates conditions. Testing is done by looking at the results of standardized regression weight in the output table of the AMOS program as shown in Table III. If there is an estimated value from indicators that have a significance level of  $\leq 0.50$  then the indicator cannot describe the construct [15]. From the results of the data output, it can be explained that almost all indicators have met the requirements for an estimated value above 0.5. So that it can describe a construct.

D. Analysis Stage of the Structural Equation Model (SEM)

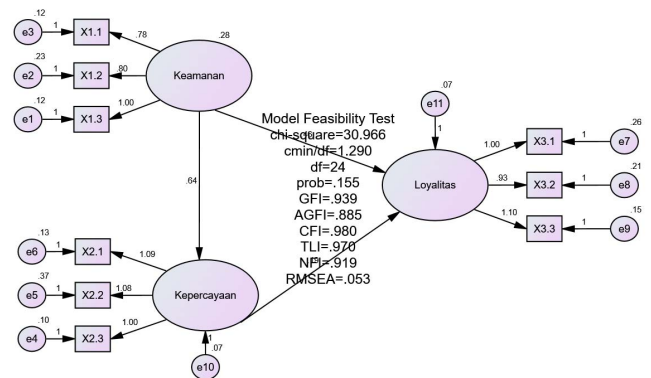


Fig.3 Structural Equation Model Influence of Web Security and Customer Trust on Shopee.co.id Website Customer Loyalty

TABLE IV. EVALUATION OF GOODNESS OF FIT CRITERIA IN THE STRUCTURAL EQUATION MODEL THE EFFECT OF WEB SECURITY AND CUSTOMER TRUST ON CUSTOMER LOYALTY ON THE SHOPEE.CO.ID WEBSITE

The goodness of Fit Index	Cut-off Value	Model	Information
X <sup>2</sup> - Chi-Square	Smaller value is expected	30.966	Good
Significance Probability	$\geq 0,05$	0,155	Good
CMIN/DF	$\leq 2,00$	1,290	Good
GFI	$\geq 0,90$	0,939	Good
AGFI	$\geq 0,90$	0,885	Marginal / Good
TLI	$\geq 0,95$	0,970	Good
CFI	$\geq 0,95$	0,980	Good
RMSEA	$\leq 0,08$	0,053	Good

Based on the data in Table 4, it is known that the Chi-square value obtained by the model is 30.966 with a probability of 0.155, which can be said to be a fit model because the probability value is greater than 0.05. Based on the GFI and AGFI indices, it can be seen that the model has a value smaller than 0.90, namely 0.939 and 0.855, respectively. This value is still acceptable in the bail and marginal categories so that it still meets the requirements.

The TLI and CFI indices have also met the requirements because the values of the two indices in the model have a value greater than 0.95, namely 0.970 and 0.980, respectively. Based on the CMIN / DF index, it can be seen that the index in the model has a value of  $\leq 2.00$ , which is 1.290. The RMSEA index of the model is smaller than 0.08, which is 0.053. So it can be concluded, even though the models are both fit [16].

#### E. Hypothesis Test Results / structural parameter estimates

Structural Parameter Estimates tests were conducted to determine the connection among the constructs or independent and dependent variables in the structural model. Table 5 concerning the measurement model unstandardized and standardized weight.

TABLE V. REGRESSION WEIGHTS

			Estimate	C.R.	P	Information
Trust	<--	Security	0.644	6.498	***	Significant
Loyalty	<--	Security	0.461	2.470	0.014	Significant
Loyalty	<--	Trust	0.190	.883	0.377	Non-Significant

Based on Fig. 3 in the model and table 5, it can be concluded that:

1) The coefficient value of standardized regression weight between the security variable and the customer trust variable is 0.644 and the CR is 6.498 with a probability of 0.000, smaller than 0.05 or  $p < 0.05$ . This means that the web security variable has a significant effect on the customer trust variable on the Shopee.co.id website,

2) The standardized regression weight coefficient value between the security variable and the customer loyalty variable is 0.461 and CR is 2.470 with a probability of 0.014 smaller than 0.05 or  $p < 0.05$ . This means that the web security variable has a significant effect on the customer loyalty variable on the Shopee.co.id website.

3) The standardized regression weight coefficient value between the customer trust variable and the customer loyalty variable is 0.190 and the CR is 0.883 with a probability of 0.377 greater than 0.05 or  $p > 0.05$ . This means that the customer trust variable does not have a significant effect on the customer loyalty variable on the Shopee.co.id website

From the results of the research above, where the web security variable has a significant effect on the customer trust variable on the Shopee.co.id website. This is consistent with research conducted by [2], and [3]. Second, the web security variable has a significant effect on the customer loyalty variable on the Shopee.co.id website. This is in accordance with research conducted by [1], [2], [3], [4]. Third, the customer trust variable does not have a significant effect on the customer loyalty variable on the Shopee.co.id website. This is probably caused by shopee.co.id customers who are in a transition period between conventional purchases and online purchases.

## V. CONCLUSION

The conclusion of this research is the web security variable has a significant effect on the customer trust variable, the web security variable has a significant effect on the customer loyalty variable, and the customer trust variable does not have a significant effect on the customer loyalty variable on the Shopee.co.id website. The results of this research can be considered by Shopee's management to pay attention to the variables of web security and customer trust that can shape customer loyalty so that later the company's goals will be achieved. The limitation of this study is that it uses a narrow population. For future research, can use a larger number of samples for the accuracy of the results and use variables and other analysis methods to examine the factors that affect e-commerce customer loyalty.

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