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The Factors that Affect Customer Ratings in E-Commerce Company

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***Abstract*— In developing the e-commerce business in Indonesia, e-commerce companies must maintain customer satisfaction. In the e-commerce company, customer satisfaction can see from the ratings given by consumers. This research aims to find factors influencing consumers in providing ratings to improve services. The company's current condition does not know the indicators when consumers give ratings. The current situation is decreasing order because the number of bad rating is higher and impact to profit company. This research uses several methods, such as the Unified Theory of Acceptance and Use of Technology (UTAUT), the Technology Acceptance Model (TAM), and product quality that influences ratings. The target respondents are consumers who have given bad ratings and have never been given a rating, with 326 respondents. The statistical analysis processing used was Partial Least Square (PLS) with SmartPLS v.4 tools. The results of the research concluded that the factors that influence bad rating respondents in giving ratings with significant positive results are the factors of perceived ease of use, social influence, and customer satisfaction, with an r-square rating value of 0.354 (moderate). From moderation, the variable with the most significant positive effect is the female gender. Meanwhile, respondents who have never been given a rating that has a significant positive impact are performance expectancy, social influence, and customer satisfaction, with an r-square value for ratings of 0.823 (strong). The results of this research concluded that there are several improvements to improve service, namely improving application algorithms, developing operational teams, and several strategies to overcome the impact of the covid pandemic.**

***Keywords*— Rating, E-Commerce, Service E-Commerce, Customer Satisfaction, UTAUT, and TAM**

I. INTRODUCTION

The growing development of technology impacts the development of all business lines of life. All aspects of daily activities can't be separated from increasingly advanced technological developments. According to data from the Ministry of Communication and Information, Indonesia is the 4th largest country in the world by the number of internet users. Indonesia 2022 will have a population of 277.7 million, with 204.7 million internet users or 73.7% of the total population based on survey data conducted by Hoot suite and We are social. Where to the data, the number of people who are active in carrying out activities from social media is 191.4 million or 94% of internet users. The increasing use of the internet and the use of the internet is directly proportional to the increase in the number of e-commerce companies in Indonesia. In improving customer service, e-commerce companies provide several features to increase customer satisfaction, including filters for payment methods, locations, categories, price limits, seller types, ratings, shipping options, and promotions. This is a feature for customers regarding many choices of stores available in the application. To assist customers in obtaining stores that match their criteria and customer needs. Rating is one indicator of improving its service to customers. The management team also wants to know customers' views on the services they have provided. One of the indicators in determining customer satisfaction is a rating, where the current condition of the management team still doesn't know the factors that influence the customer to give a rating and impact the KPI is still not optimal.

Figure 1. Relation Average Daily Order and Rating

The table above shows that service and sales have a very close relationship, where if the service is not optimal, it will decrease sales significantly. This can be seen in Q1 that orders have increased, and the bad rating side has reduced for assistance even though it has not reached the target. The same thing can be seen in Q2-Q4, where daily orders did not increase but decreased proportionally to the increase in bad rating numbers. Where the higher the bad rating number, it can be concluded that customer satisfaction is getting worse for service companies. Because of that, team management must do a new strategy to increase customer satisfaction which impacts improving daily orders and profit companies. As we know, profit e-commerce comes from the everyday demands of customers.

II. LITERATURE REVIEW

A. Electronic Commerce

A marketing system utilizing electronic media is known as electronic commerce. The distribution, sale, purchase, marketing, and service of goods via electronic systems like the internet or other types of computer networks are referred to as electronic commerce [1]. E-commerce is not a service or a commodity but a combination of both. E-commerce through the internet network is one technique to boost the national economy using national services and speed up integration using global industrial activities. The existence of e-commerce has another goal, namely the accumulation of domestic trade throughout the state. Based on its understanding, e-commerce is now becoming more complex. E-commerce businesses can provide online stores to customers by accessing thousands of products, ordering, selecting their preferred delivery method, and paying using ATMs, mobile banking, or credit cards.

B. Customer Rating

Rating is a review component that expresses customer opinions through a star symbol rather than text. The Rating can be interpreted as a user's assessment of their preference for a product based on their experiences, which refer to psychological states and emotional states they experience when interacting with the product virtually in a mediated environment [2]. Consumers generally see the rating before deciding to buy something based on how frequently the rating or rating performed by this customer on a product [3].

C. Technology Acceptance Model

Technology Acceptance Model (TAM) is a theory where users can find out the development of the technology that has been implemented. This model aims to enable the user to use the implemented application. One that influences the use of technology is the behavior of the user. TAM is a suitable method for explaining and predicting user acceptance of technology by looking at the user's perception of the technology that has been implemented [4].

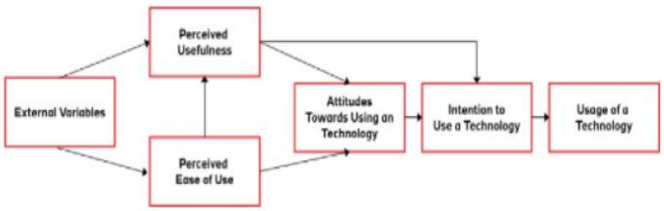

Figure 2. Technology Acceptance Model (TAM) [5]

Technology Acceptance Model (TAM) consists of two things, namely:

- Perceived Usefulness (PU): This describes whether someone can believe their performance can be improved by implementing this technology.
- Perceived Ease of Use (PEU): this is a description of the extent to which a person has made an effort to understand the implementation of the technology being implemented

D. Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a development of the Technology Acceptance Model (TAM). As an improvement to the TAM model, UTAUT has developed, including looking at factors of gender and age of the user [6]. Modeling using the Unified Theory of Acceptance and Use of Technology (UTAUT) has been widely used in various contexts of technology implementation. Validation has been carried out regarding Acceptance from Users regarding the implementation of technology [4]. In the Unified Theory of Acceptance and Use of Technology (UTAUT), several aspects influence the factor of technology application. The following is the Unified Theory of Acceptance and Use of Technology (UTAUT) model in the image below.

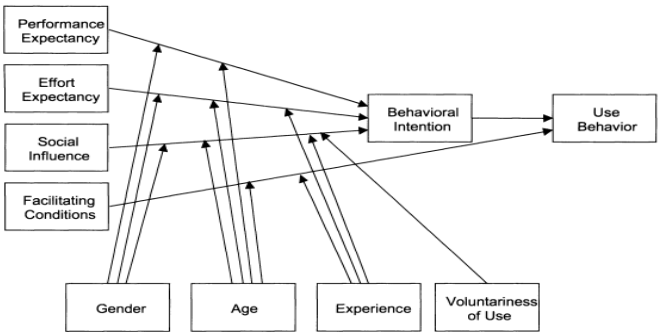

Figure 3. Unified Theory of Acceptance and Use of Technology (UTAUT)

E. Product Quality

Product quality is the quality of the product for the usability and capabilities of the item, and product quality is the ability of a product to carry out the functions of the product, which consists of durability, reliability, accuracy results, and ease of use [7]. Based on the research results, better product quality will increase customer satisfaction. Research proves that the quality of a product perceived by the customer provides a factor in user satisfaction. Based on the research that can show in figure 4 that the relationship between product quality and customer satisfaction is attached [8].

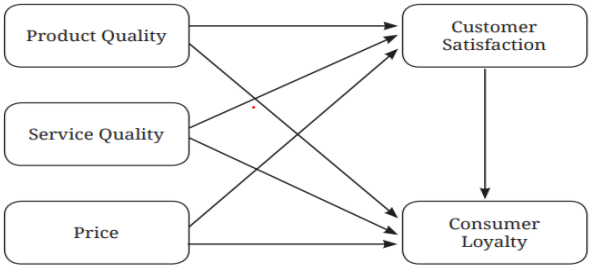

Figure 4. Product Quality and Customer Satisfaction

F. Structural Equation Modelling (SEM)

Processing data analysis using Structural Equation Modelling (SEM). Structural Equation Modelling (SEM) is a statistical technique that tests and estimates hypothetical relationships in a given conceptual model. So that it can determine the possible correlation between variables. The Structural Equation Modelling (SEM) method also applies Partial Least Squares (PLS). Partial Least Squares (PLS) consist of two phases: the measurement phase of the existing structural model assessment and the second phase deals with the relationship between each variable. SEM has several advantages, including models with many variables that can be studied. SEM also tests each variable's validity and measures the level of impact of a hypothesis

III. RESEARCH METHODOLOGY

This section describes the flow of each data collection process, data processing to the results of data analysis in this study which are shown 5.

A. Data Collection Method

In this study, the data collection process uses a sequential exploration model consisting of sequential quantitative and qualitative methods. The first-time data collection with a qualitative model involves collecting this data by interviewing the relevant stakeholders through g-meet. After getting the results of interviews which are information in improving the analysis of this research, the next step is the collecting data quantitative models, the process of collecting data by distributing questionnaires to the customer application.

Literature from the literature review becomes the basis for developing success criteria and theoretical frameworks. The success criteria obtained from the literature will be validated through interviews with stakeholders of the organization. The organization's stakeholders are team management directly related to increasing customer satisfaction.

The next stage is collecting data by distributing questionnaires to the customer using this application and distributing questionnaires using an online survey platform that is open source so that respondents can access it. The preparation of the questionnaire was also made based on the results of the analysis with team management. At this stage, research instruments were carried out in the form of questions for interviews with the management team and questionnaires that consumers wanted. Questions will use relevant literature studies in preparing question indicators in this study. This study consists of several variables from the two conceptual models TAM and UTAUT.

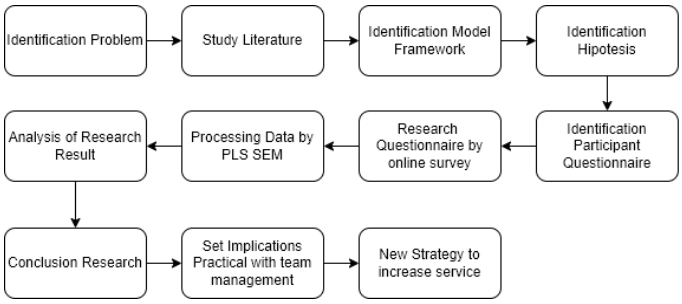

Figure 5. Flow Process Data Collection and Processing

The management team in this study consisted of 10 people, namely directors, senior managers, managers, and IT managers. At this stage, interviews and observations will be conducted regarding the gap analysis between expectations and reality. Interviews and observations were conducted offline after finding several hypotheses from interviews and observations with the management team. The management team, the next step is to process a questionnaire with Google Forms. Before the questionnaire is distributed to the respondents, what will be done is a readability test with a target of 15-20 respondents outside of the predetermined target respondents. After the readability test, the next step is distributing questionnaires with the target customer being users who have given bad ratings and those who have never given bad ratings.

B. Data Analysis Method

SEM is a multivariate statistical analysis technique that evolved from route analysis and regression. Three steps are carried out concurrently in SEM processing: confirming the instrument's reliability and validity (confirmatory factor analysis), examining the model of relationships between variables (Path analysis), and developing a model that is appropriate for the hypothesis (structural model analysis and regression analysis). Statistical software can be used to process SEM data more quickly and easily. SmartPLS 4 is the purses study to process the SEM data. The researcher decided to utilize SmartPLS 4 due to several benefits. The factorials, also known as Smart Partial Least Squares, is statistical software with the same goal as Lisrel and AMOS: to examine the association between variables. The SmartPLS approach is seen positively because it is not predicated on popular assumptions. SmartPLS uses the bootstrapping method. These tools support hypothesis results with a varied amount of data and variables. Therefore the assumption of normality isn't an issue for PLS. As a result, the data in the SmartPLS analysis need not also need to have a normal distribution. In addition to having to do with data normality, bootstrapping doesn't need a minimum quantity of samples. Because of the benefit of tools, the tools are suitable for this study.

The processing stage of SmartPLS analysis results includes three-stage, namely:

- Outer Model Testing is the testing phase of the measurement model, which aims to prove the validity & estimate the reliability of indicators and constructs consisting of loading a factor indicator that must be more than 0.7, AVE reflective construct of more than 0.7. Cronbach Alpha is more than 0.7, and composite reliability is more than 0.7

- Goodness of fit model testing phase aims to test the predictive power of the model and the feasibility of the model. Q2 predictive relevance to see the predictive strength of the model => blind folding SmartPLS output Model Fit to see whether the model and data are feasible or not to test the effect of variables. The condition is that SRMR must be less than 0.10

- Inner Model that is the testing phase to test the significance of the effect of exogenous variables on the endogenous variable significance test => significant effect impact value <0.05 or T value > 1.96 => SmartPLS bootstrapping output. Partial effect size => f2 and simultaneous influence => R2 from SmartPLS algorithm output

In this study, the SEM analysis process will be divided into two parts: SEM analysis of respondents who have given a bad rating on the application and SEM analysis of customers who have never given a bad rating on a customer application.

IV. ANALYSIS AND RESULT

This section describes the results of data processing and the practical implications that can be given to the management team of an e-commerce company.

A. SEM Analysis for Customer E-Commerce

At this stage, the SEM analysis is carried out for respondents who have given a bad rating on the application. SEM analysis includes path diagrams, outer models, discriminant validity, inner models, the goodness of fit models, and measurement model hypothesis testing. This study also has category moderating variables grouped in smart pls. Moderating variables consist of gender and age where, which is a framework in the previous chapter.

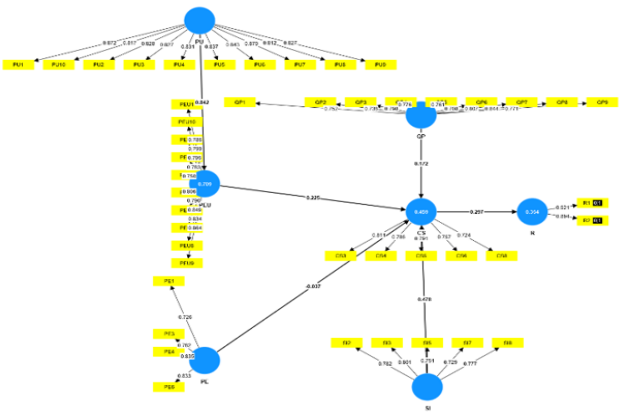

Figure 6.Path Diagram Customer Bad Rating

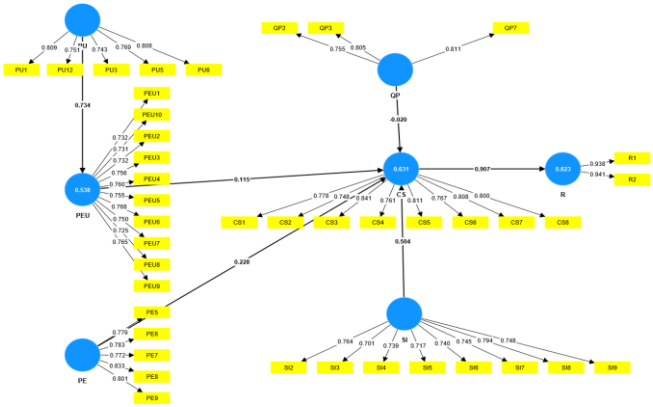

Figure 7.Path Diagram Customer Repeat Order

Convergent validity testing is carried out by looking at the outer loading value of each indicator on its latent variables. In this test, the outer loading value will be seen as> 0.7%, which means that the variable has explained 50% or more of the indicator variance. The loading factor value in smart pls can be seen from the outer loading value. The indicator is invalid if the loading factor value does not reach 0.7. The indicators will be removed and recalculated so that all indicators meet the minimum value. The results of the outer loading test with smartPLS 4 tools can be seen in the processing table with the PLS algorithm for outer loading presented in table 1 and table 2.

Table 1. Outer Loading Customer Bad Rating

Variabel - Indikator	Outer loadings
CS3 <- CS	0.811
CS4 <- CS	0.786
CS5 <- CS	0.791
CS6 <- CS	0.757
CS8 <- CS	0.724

Variabel - Indikator	Outer loadings
PE1 <- PE	0.726
PE3 <- PE	0.782
PE4 <- PE	0.835
PE6 <- PE	0.833

Variabel - Indikator	Outer loadings
PEU1 <- PEU	0.787
PEU2 <- PEU	0.795
PEU3 <- PEU	0.783
PEU4 <- PEU	0.750
PEU5 <- PEU	0.805
PEU6 <- PEU	0.790
PEU7 <- PEU	0.849
PEU8 <- PEU	0.834
PEU9 <- PEU	0.865
PEU10 <- PEU	0.798

Variabel - Indikator	Outer loadings
PU1 <- PU	0.872
PU2 <- PU	0.828
PU3 <- PU	0.827
PU4 <- PU	0.831
PU5 <- PU	0.837
PU6 <- PU	0.843
PU7 <- PU	0.879
PU8 <- PU	0.812
PU9 <- PU	0.827
PU10 <- PU	0.817

Variabel - Indikator	Outer loadings
QP1 <- QP	0.752
QP2 <- QP	0.738
QP3 <- QP	0.798
QP4 <- QP	0.776
QP5 <- QP	0.761
QP6 <- QP	0.708
QP7 <- QP	0.807
QP8 <- QP	0.844
QP9 <- QP	0.771

Variabel - Indikator	Outer loadings
R1 <- R	0.921
R2 <- R	0.894
SI2 <- SI	0.782
SI3 <- SI	0.801
SI5 <- SI	0.751
SI7 <- SI	0.729
SI8 <- SI	0.777

Table 2.Outer Loading Customer Repeat Order

Variabel	Outer loadings
CS1 <- CS	0.778
CS2 <- CS	0.748
CS3 <- CS	0.841
CS4 <- CS	0.761
CS5 <- CS	0.811
CS6 <- CS	0.767
CS7 <- CS	0.808
CS8 <- CS	0.800

Variabel	Outer loadings
PE5 <- PE	0.776
PE6 <- PE	0.783
PE7 <- PE	0.772
PE8 <- PE	0.833
PE9 <- PE	0.801

Variabel	Outer loadings
PEU1 <- PEU	0.732
PEU10 <- PEU	0.731
PEU2 <- PEU	0.732
PEU3 <- PEU	0.756
PEU4 <- PEU	0.760
PEU5 <- PEU	0.755
PEU6 <- PEU	0.768
PEU7 <- PEU	0.750
PEU8 <- PEU	0.725
PEU9 <- PEU	0.765

Variabel	Outer loadings
PU1 <- PU	0.809
PU12 <- PU	0.751
PU3 <- PU	0.743
PU5 <- PU	0.769
PU6 <- PU	0.808

Variabel	Outer loadings
QP2 <- QP	0.755
QP3 <- QP	0.805
QP7 <- QP	0.811

Variabel	Outer loadings
R1 <- R	0.938
R2 <- R	0.941
SI2 <- SI	0.764
SI3 <- SI	0.701
SI4 <- SI	0.739
SI5 <- SI	0.717
SI6 <- SI	0.740
SI7 <- SI	0.745
SI8 <- SI	0.794
SI9 <- SI	0.748

The inner model is tested in the following phase. There are various stages to validating the inner internal, including testing the model's accuracy (model fit) and the validity of the hypothesis. Using the inner model measurement, the researcher now assesses the relationship between the hypothesis and whether it is appropriate or not a model measurement in SmartPLS 4, calculated with the bootstrapping calculation feature. The significance value of the relationship between variables is used in partial hypothesis testing (direct and indirect effects. In this bootstrapping analysis, the researcher used settings including a standard iteration value of 5000 and a significance value of 0.05 which describes a 95% confidence level. The R-square value (R2) aims to determine the strength of the hypothesis of the structural model in SEM-PLS analysis. The criterion for an R square value close to 0.67 is considered strong, 0.33 as moderate, and 0.19 as weak [9]. The R-square value can be seen in the following table 3 and table 4.

Table 3. R-Square Customer Bad Rating

	R-square	Keterangan
CS	0.459	*Moderate*
PEU	0.709	*Strong*
R	0.354	*Moderate*

Table 4. R-Square Customer Repeat Order

	R-square	Keterangan
CS	0.631	*Moderate*
PEU	0.538	*Moderate*
R	0.823	*Strong*

B. *Hypothesis Testing*

After the evaluation stage has been completed, path diagrams and outer and inner model testing are carried out using the PLS-SEM concept and the help of the SmartPLS 4 application. Then the next step is to test the hypotheses that have been made before. Hypothesis testing has the aim of seeing whether the hypotheses that have been compiled in this theoretical framework are accepted or rejected. The original sample value is expected to be a positive relationship, while a value close to -1 indicates a negative relationship. The hypothesis will be tested by analyzing the path coefficient and t-statistic values calculated in the inner model's evaluation stage. The expected t-statistics value is more than 1.96, or the p-value is lower than the significance level (0.05), showing a meaningful association between the variables. Tables 5 and 6 below show the outcomes of the hypothesis test.

Table 5. Hypothesis Testing CustomBad Customers

	Original sample (O)	T statistics (|O/STDEV|)	P values
CS -> R	0.297	11.084	0.000
PE -> CS	-0.037	0.549	0.583
PEU -> CS	0.225	3.130	0.002
PU -> PEU	0.842	21.185	0.000
QP -> CS	0.172	1.773	0.076
SI -> CS	0.478	4.946	0.000

Table 6. Hypothesis Testing Customer Repeat Order

	Original sample (O)	T statistics (|O/STDEV|)	P values
CS -> R	0.907	53.944	0.000
PE -> CS	0.228	2.453	0.014
PEU -> CS	0.115	1.204	0.229
PU -> PEU	0.734	22.187	0.000
QP -> CS	-0.020	0.272	0.786
SI -> CS	0.504	4.633	0.000

C. *Discussion*

This study aims to determine the factors that influence customers' ratings of applications. The variables assessed in this model are social influence, performance expectancy, asocial influence, and perceived ease of use. The results of the analysis can show whether these variables can influence the customer in giving a rating. This study also pays attention to gender and age moderation, where this research also wants to find out factors in terms of gender and generation categories. Based on the result analysis carried out on custombad customers, the calculated value of R-square is obtained which shows how good the proposed research model is. From the calculation of the r-square, it is known that customer satisfaction and rating variables are endogenous variables that field as moderate while perceived d ease of use is classified as strong. While the results of data analysis that has been carried out on customer repeat orders, the calculated value of R-square is obtained, which shows how good the proposed research model is. . From the results of the calculation of the R-square, it is known that the rating is an endogenous variable that is classified as strong, while the variables of customer satisfaction and perceived ease of use are moderate.

D. *Implication Practical*

The results of this study produce two models and become a new strategy for improving the company's service. The strategy aims to give insight into the factors in providing ratings from the side of customers who have given bad ratings and customers who have never given ratings. Some of the moderation seen from this research is also in gender, age, and during the pandemic. This research is expected to be an input for companies' pro customer services. The practical implications that have been agreed upon with the management team are:

- Regroup each item that has a gift and provide more detailed product knowledge, especially for female customers and especially for generations of Gen X and Gen Y customers

- Review the algorithm's logic in the application related to incoming orders and forecast estimates reaching the buyer.
- Review related to the team packing and adding tools that help packing so that it conforms to standard packaging.
- Customer service 24/7 with a target SLA of 0.05%
- Added live streaming feature when packing goods to increase customer trust
- The lead time accuracy rate in the application is >95%
- Review weekly related to bad ratings and action plan
- Gathering customers and SMEs to provide product knowledge and customer satisfaction training

V. CONCLUSION

A. *Conclusion*

The following conclusions are obtained from this research after analyzing the models that have been discussed.

- The research results based on the customer model that has given a bad rating are the R-square results where the value is 0.354, and for the customer, the model has never given an inadequate rating of 0.823.
- Factors influencing bad rating respondents in giving ratings with significant positive results are perceived ease of use, social influence, and customer satisfaction. From the moderation side of the gender variable that has the most significant positive effect is the female gender, and the moderation of the age variable is the millennial generation. Meanwhile, respondents who have never given a rating with a significant positive impact are performance expectancy, social influence, and customer satisfaction. From a moderation perspective, the gender variable that has the most important positive effect is the male gender
- This research describes the situation that exists in Indonesia in the e-commerce business sector because the respondents and the place where this research was carried out all come from and are in Indonesia
- The results of this study indicate that both models conclude that social influence has a positive and significant effect on both models and all modes of moderation. Social influence is a factor that customers see when giving a rating to the application, even though other variables still have an influence, although not in all moderation, and for variables that have a significant effect.

B. *Recommendations For Next Research*

For the following research, researchers provide suggestions for taking data from the stakeholder side and all departments related to increasing service so that they can assess customer satisfaction from other departments. For further research, it is recommended to use a larger sample size. This study uses a sample of 360, but several cross-loading factors must be removed after data processing. So that further research is expected with a large number of samples because the number of e-commerce users is more than the target respondent according to the cross-loading factor

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