The Effect of Perceived Ease of Use and Perceived Usefulness on Trust, Loyalty of E-Commerce Customers

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Abstract. The e-commerce market opportunity supported by the government has encouraged the increasingly competitive digital-based businesses in Indonesia. This study was performed in this regard to investigate and test the direct impact of perceived ease of use on perceived usefulness, perceived ease of use on trust, perceived ease of use on loyalty, perceived usefulness on trust, perceived usefulness on loyalty, and trust on loyalty. The results of data analysis from 198 respondents reveal that five of the six hypotheses proposed in this study: there is a significant and direct effect of perceived ease of use on perceived usefulness, there is a significant and direct effect of perceived ease of use on trust, there is a significant and direct effect of perceived usefulness on trust, there is a significant and direct effect of perceived usefulness on loyalty, and there is a significant and direct effect of trust on loyalty are supported. While the third hypothesis: there is a significant and direct effect of perceived ease of use on loyalty is not supported. Theoretically, the results of this study are expected to contribute to developing a theory of customer loyalty in the perspective of the Technology Acceptance Model (TAM); and pragmatically, it is expected to be useful for companies that apply e-commerce platforms to increase customer loyalty.

Keywords: Perceived ease of use · Perceived usefulness · Trust · Loyalty · E-commerce

1 Introduction

Electronic commerce (e-commerce) refers to both financial and informational inter-net - based transactions among an institution and any related parties it deals with. It is frequently broken down into a sell-side e-commerce standpoint, which relates to transactions with selling products to a firm's customers, and a buy-side e-commerce viewpoint, which relates to industry transactions to acquire resources required by an organization [1].

The development of an electronic-based economy in Indonesia is supported by the Government through the XIV Economic Policy Package on e-commerce with the Presidential Decree no. 74 of 2017 concerning the National Electronic-based Trading System Roadmap. From the demand side, the e-commerce market opportunity in Indonesia is

also very attractive because 88.1% of internet users in Indonesia shop with e-commerce [2].

E-commerce market opportunities that are supported by government policies through infrastructure development and ease of regulation have encouraged the development of digital-based businesses in Indonesia. The Indonesian Central Statistics Agency reported that 50.71% of businesses immediately started e-commerce activities when they started operating, 15.98% of businesses started e-commerce activities 1–2 years after operating, a total of 11.27% of businesses started their e-commerce after operating for 3–5 years, and 22.04% of new businesses started e-commerce activities after operating for more than 5 years [3]. The increase in the number of new entrants indicates that the level of competition in the e-commerce industry is increasingly competitive and has the potential to cause customers to switch to competing companies. Thus, the sustainability of the e-commerce platform depends on its customers' loyalty.

Customer loyalty is a promise to repurchase or strongly recommend a product or a service in the coming years, despite contextual factors and marketing efforts that may cause switching behavior [4]. Loyalty can be defined as a customer's willingness to continue purchasing a company's product over time, preferably exclusively, as well as to advise the company and its products to friends and colleagues [5]. Regarding the importance of customer loyalty for the sustainability of every business, a number of previous studies reveal that e-commerce's customer loyalty is positively and significantly influenced by trust [6–11].

Trust is an intention that those one prefers to respect will not take advantage of the situation opportunistically [12]. Well-known and trusted brands with strong customer loyalty are in an excellent position to win online because most consumers go straight to the site by entering a URL, bookmark, or email [1]. Several previous studies have found that perceived usefulness does have a significantly positive impact on trust [6, 10, 12, 13].

The belief that using latest tech will strengthen or improve one's performance is referred to as perceived usefulness – PU [13]. According to previous research, the perception of usefulness has a significantly positive influence on loyalty intention [12, 14–16]. Apart from serving as a predictor of e-commerce customer trust and loyalty, PU is also defined as a result of perceived ease of use [12].

Perceived ease of use (PEOU) is defined as an individual's belief about using latest tech will be effortless [13]. Ease of use in e-commerce refers to buyers' perceptions that online shopping will require minimal effort [13]. According to Gefen et al. [12], PEOU has a significant positive impact on PU, but Parks et al. [17] find the opposite effect, namely that PEOU has no effect on PU. Besides functioning as a consequence of PU [12], PEOU also functions as an antecedent of e-commerce customer loyalty [7, 14–16, 18].

Referring to the findings of a number of previous studies, this research was conducted to develop an empirical model with the pattern of "PEOU - PU - trust – loyalty" in the perspective of the Technology Acceptance Model (TAM) [13].

Figure 1 depicts a schematic representation of this proposed model.
Note:

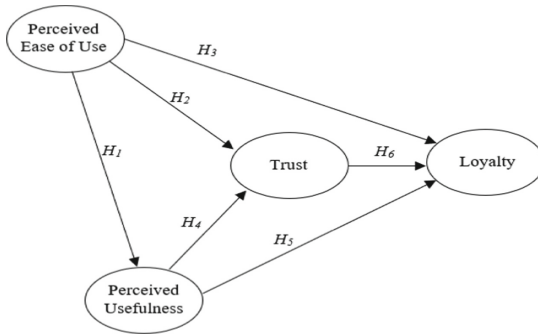*H1* = There is a direct effect of PEOU on PU.

Fig. 1. Research Model

H2 = The PEOU has a direct impact on trust.
H3 = The PEOU has a direct effect on loyalty.
H4 = Trust is directly affected by PU.
H5 = The PU and loyalty have a direct relationship.
H6 = There is direct effect of trust on loyalty.

2   Research Methods

The population of this research was consumers who have bought products on several e-commerce platforms in Tarakan City, North Kalimantan, Indonesia. The research sample was drawn by the non-probability sampling method. The questionnaire prepared in the Google form was distributed through WhatsApp in February 2022. The number of responses that entered Google Drive was 198. The respondents of this study consisted of consumers who bought products online through Tokopedia (30.81%), Shopee (29.80%), Lazada (23.74%), and Bukalapak (15.66%). The majority of respondents were females (58.08%), aged 36–46 years (59.60%), with education level of senior high school (49.49%), and employees (52.02%).

Four variables were used in this study: PEOU, PU, trust, and loyalty. The indicators adapted from Chen and Barnes were used to assess PEOU and PU [6], trust was measured by six indicators developed by Jarvenpaa et al. [19], and loyalty was measured through three indicators adapted from Salisbury et al. [20]. A Likert scale measured alternative answers for each indicator, ranging from 1 (strongly disagree) to 5 (strongly agree).

The measurement model and hypothesis test were analyzed using PLS-SEM and processed with SmartPLS 3.3.7 Professionals. PLS is a SEM approach based on the recursion of the main components and regression to explain the variance of the model constructs [21].

3   Results and Discussion

Constructs utilized in a developed research model were resulted from valid and reliable instruments or measurement tools. Validity instruments can be measured by convergent

validity. Validity test results on Table 1, show that all research variables recorded loading factors of more than 0.50, AVE of more than 0.50, and composite reliability of more than 0.70. Based on Table 2, the Fornell Lacker Criterion, it also fulfills the discriminate validity value, because the square-root of the AVE value for each variable was higher than the correlation value between each variable.

The evaluation of collinearity symptoms in the structural model of this study (Table 2) shows that the VIF value between predictor constructs is higher than 0.20 and lower than 5.00; thereby, it is not necessary to eliminate constructs or combine predictors in one construct [22]. Thus, the assessment of structural models to determine the significance of path coefficient, prediction power (R^2), and predictive relevance (Q^2) can be continued (Fig. 2).

Five of the six pathways developed in this research model have significant coefficients (Fig. 2). The direct effect of PEOU on PU path has a coefficient of $\beta = 0.636$; $p = 0.000$, PEOU path to tryst has a coefficient of $\beta = 0.226$; $p = 0.004$, PEOU to loyalty has a coefficient of $\beta = 0.034$; $p = 0.615$, PU to trust has a coefficient of $\beta = 0.511$; $p = 0.000$, PU to the loyalty has a coefficient $\beta = 0.322$; $p = 0.000$, and trust to loyalty has a coefficient $\beta = 0.579$; $p = 0.000$. Furthermore, the value of R^2 for each endogenous variable can be categorized as high because it is greater than 0.20 [22] and evaluation based on Q^2 values also shows that exogenous constructs have predictive relevance to endogenous constructs because they are greater than 0.

The first hypothesis proposed in this study there is a direct and significant impact of PEOU on PU is supported by the data. Thus, companies that want to increase the PU of online stores must be able to create online store applications that are easy for their customers to use. This finding is in line with Gefen et al. [12] but contradicts the findings of Parks et al. [17] which reveal that the effect of PEOU on PU is not significant.

The second hypothesis of this study: the data show that PEOU has a significant and direct effect on trust. Depending on the study's findings, it is possible to conclude that ease of use will increase trust in e-store. The results of this study support Gefen et al. [12], Primanda et al. [10], but contradict the results of the Chen and Barnes study [6].

The third hypothesis proposed in this study: the data does not support the notion that PEOU has a significant and direct effect on loyalty. Although PEOU has a positive effect on loyalty, it is not significant. Thus, the findings of this study contradict the findings of Chinomoma [7], Hamid [14], Cho and Sagynov [15], Suleman et al. [18], and Andre et al. [16]. In other words, an e-commerce that solely relies on website usability will not be able to increase loyalty if the usefulness and trustworthiness of the online store are still lacking.

The fourth hypothesis of this research: the data support and accept that there is a direct and significant effect of PU on trust. This study's findings are consistent with those of Gefen et al. [12], Chen and Barnes [6], and Primanda et al. [10]. Based on this result, it is possible to conclude that the higher an e-commerce customer's perception of the usefulness of the online store, the greater the customer's trust in the web store.

The fifth hypothesis proposed by this study: there is a significant and direct effect of PU on loyalty is supported by data and proven.

Table 1. Measurement Results

Latent Variables, Items and Symbols	Outer Loading	Composite Reliability	AVE
Perceived Ease of Use		0.894	0.737
The online store is easy to learn to use	0.848		
It is easy to get the online store to do what I want	0.868		
My interactions with the online store are clear and understandable	0.869		
Perceived Usefulness		0.897	0.684
The content or information on this online store is useful for buying the products or services that it sells or markets	0.838		
The online information on this online store facilitates decision-making processes	0.806		
The online store is easy and functional for purchasing online	0.857		
The online store can increase my shopping effectiveness	0.808		
Trust		0.930	0.692
The online store is trustworthy	0.647		
The store wants to be known as one who keeps his promises	0.884		
I trust the online store keeps my best interests in mind	0.877		
I think it makes sense to be cautious with the online store *(R)*	0.935		
The online store has more to lose than to gain by not delivering on their promises	0.820		
The online store's behaviour meets my expectations	0.799		
Loyalty		0.919	0.791
I could see myself using the online store to buy a product	0.900		
Using the online store for purchasing a product is something I would do	0.885		
I could see myself using the online store to buy a product	0.883		

Source: SmartPLS Output. Note: AVE = average variance extracted; *(R)* = Reverse

Table 2. Discriminant Validity

Variables	AVE	Sqrt AVE	Correlation (FornellLacker Criterion)			
			Perceived Ease of Use	Perceived Usefulness	Trust	Loyalty
Perceived Ease of Use	0.737	0.858	1.000			
Perceived Usefulness	0.684	0.827	0.636	1.000		
Trust	0.692	0.832	0.550	0.655	1.000	
Loyalty	0.791	0.889	0.558	0.732	0.809	1.000

Source: SmartPLS Output

Table 3. Collinearity Statistic (VIF)

	Perceived Usefulness	Trust	Loyalty
Perceived Ease of Use	1.000	1.677	1.771
Perceived Usefulness		1.677	2.160
Trust			1.848
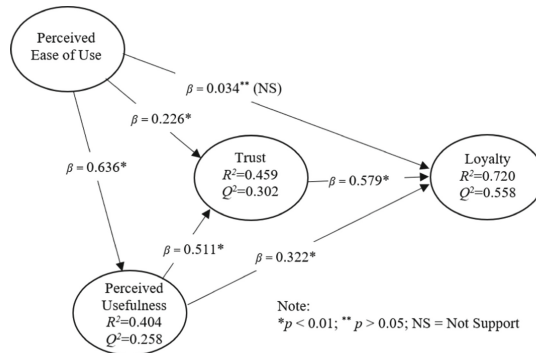
Fig. 2. Structural Model

This study's findings are consistent with the findings of several previous studies, which show that PU has a positive and significant effect on loyalty intention [6, 12, 14, 16].

The sixth hypothesis of this study: there is a significant and direct effect of trust on loyalty is supported by the data and is accepted. This study reinforces the findings of some previous studies that show that e-commerce customer loyalty is positively and significantly influenced by trust [6–11]. Based on the results of this study, it can be

Table 4. Path Coefficient, T-Statistics, and *p*-Value

	Path Relationship	β	T	P	Remarks
H_1:	Perceived Ease of Use → Perceived Usefulness	0.636	7.086	0.000	Supported
H_2:	Perceived Ease of Use → Trust	0.226	2.857	0.004	Supported
H_3:	Perceived Ease of Use → Loyalty	0.034	0.504	0.615	Not Supported
H_4:	Perceived Usefulness → Trust	0.511	7.653	0.000	Supported
H_5:	Perceived Usefulness → Loyalty	0.322	4.577	0.000	Supported
H_6:	Trust → Loyalty	0.579	8.590	0.000	Supported

Source: SmartPLS Output. Note: *H* = Hypothesis; β = Path Coefficient; T = T-Statistics; P = *p*-Value

concluded that the higher the level of trust of e-commerce customers towards the online store, the higher the level of their loyalty to the online store.

4   Conclusion

The e-commerce customer loyalty model proposed and tested in this study was developed based on TAM [13] with the addition of a trust variable to represent the affective component of attitudes. According to the findings of this study, the pattern of the e-commerce loyalty model is "PEOU - PU - trust – loyalty"

For businesses that use e-commerce platforms to reach their target markets, it is advisable to pay attention to PEOU, usefulness, and customer trust. PEOU can be increased by developing applications that are simple to use, easy to obtain, and have clear and understandable interactions with the online store. PU can be increased by providing helpful content or information for purchasing products or services; online information aids decision-making processes, is simple and functional for buying online, and it can improve purchasing effectiveness. To build customer trust, businesses must be able to provide or deliver products as promised to their customers.

References

1. Chaffey, D., & Ellis-Chadwick, F. (2016). *Digital marketing: Strategy, implementation and practice* (6th ed.). Pearson Education Limited.
2. CNN Indonesia, 88,1. (2021). *Persen Pengguna Internet Belanja dengan E-Commerce.* Accessed, February 15, 2022. https://www.cnnindonesia.com/ekonomi/20211111123945-78-719672/881-persen-pengguna-internet-belanja-dengan-e-commerce
3. BPS. (2021). *"Statistik E-Commerce 2021", Badan Pusat Statistik* (Indonesian Central Statistics Agency).

4. Oliver, R. L. (2010). *Satisfaction: A behavioral perspective on the consumer* (2nd ed.). Routledge.

5. Wirtz, J., & Lovelock, C. (2018). *Essential of service marketing* (3rd ed.) Pearson Education Limited.

6. Chen, Y. H., & Barnes, S. (2007). Initial trust and online buyer behaviour. *Industrial Management & Data Systems, 107*(1), 21–36. https://doi.org/10.1108/02635570710719034

7. Chinomona, R. (2003). The influence of perceived ease of use and perceived usefulness on trust and intention to use mobile social software. *African Journal for Physical, Health Education, Recreation and Dance, 19*(2), 258–273.

8. Oliveira, T., Faria, M., Thomas, M. A., & Popovica, A. (2014). Extending the understanding of mobile banking adoption: When UTAUT meets TTF and ITM. *International Journal of Information Management, 34*, 689–703.

9. Garcia, J. M., Freire, O. B. D. L., Santos, E. B. A., & Andrade, J. (2020). Factors affecting satisfaction and loyalty to online group buying. *Revista de Gestao, 27*(3), 211–228. https://doi.org/10.1108/REGE-02-2018-0037

10. Primanda, R., Setyaning, A. N. A., Hidayat, A., & Ekasasi, S. R. (2020). The role of trust on perceived usefulness and perceived ease of use toward purchase intention among Yogyakarta's Students. *INOBIS: Jurnal Inovasi Bisnis dan Manajemen Indonesia, 3*(3), 316–326.

11. Hidayatullah, S., Respati, H., Farhan, A., Rachmawati, I. K., & Aristanto, E. (2021). The influence of perceived trust on the relationship between image interactive technology and behavioral intention associated with online purchase of goods in Malang City. *KnE Social Sciences,* 213–220.https://doi.org/10.18502/kss.v5i6.9198

12. Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly, 27*(1), 51–90.

13. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319. https://doi.org/10.2307/249008

14. Hamid, A. A., Razak, F. Z. A., Bakar, A. A., Salihin, W., & Abdullah, W. (2016). The effects of perceived usefulness and perceived ease of use on continuance intention to use e-government. *Procedia Economics and Finance, 35*, 644–649.

15. Cho, Y. C., & Sagynov, E. (2015). Exploring factors that affect usefulness, ease of use, trust, and purchase intention in the online environment. *International Journal of Management & Information Systems, 19*(1), 21–36.

16. Andre, Pebriyanti, H. L., Kartono, R., & Sundjaja, A. M. (2021). The effect of perceived usefulness, perceived ease of use, perceived risk and technology readiness on intention to use e-banking in Jakarta. *Turkish Journal of Computer and Mathematics Education, 12*(10), 6829–6836.

17. Park, J. S., Hyun, J., Fairhurst, A., & Lee, K. H. (2012). Perceptions of presence as antecedents to e-tail shopping - An extended technology acceptance model. *The Research Journal of the Costume Culture, 20*(3), 451–462.

18. Suleman, D., Ali, H., Nusraningrum, D., & Ali, M. M. (2019). Perceived ease of use, trust and risk toward attitude and intention in shopping for online fashion products in Indonesia. *Business Research, 7*(4), 240–253. https://doi.org/10.14738/abr.74.6482

19. Jarvenpaa, S. L., Tractinsky, N., & Vitale, M. (2000). Consumer trust in an internet store. *Information Technology and Management, 1*(12), 45–71.

20. Salisbury, W. D., Pearson, R. A., Pearson, A. W., & Miller, D. W. (2001). Perceived security and World Wide Web purchase Intention. *Industrial Management & Data Systems, 101*(4), 165–176.

21. Chin, W. (1998). The partial least squares approach to structural equation modelling. In G. A. Marcoulides (Ed.), *Modern methods for business research* (pp. 295–336). Lawrence Erlbaum Associates Publisher.
22. Hair Jr., J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2014). *A premier partial least squares structural equation modelling (PLS-SEM)*. Sage Publications.