AI Chatbot Responsiveness and Perceived Usefulness Driving Customer Engagement through Service Marketing Perspective in J&T Express

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Abstract.
Rapid advancements in digital technology compel service providers to implement efficient and responsive solutions, specifically through AI-powered chatbots. Existing academic literature offers limited insights into chatbot-driven customer engagement within the Indonesian logistics sector. Research efforts here focus on evaluating how chatbot responsiveness and perceived utility influence engagement levels among J&T Express consumers. Quantitative methodology was employed, utilizing survey data from 150 active users selected via purposive sampling criteria. Data analysis was performed using Structural Equation Modeling (SEM-PLS) facilitated by SmartPLS 4 software. Results demonstrate that both responsiveness and perceived usefulness significantly enhance customer engagement, with utility exerting the most substantial impact. Findings suggest that functional advantages and ease of use serve as stronger drivers of engagement than mere response velocity. Improving both emotional and functional chatbot quality is essential for fostering long-term customer loyalty in the logistics industry.

Keywords: Chatbot Responsiveness, Perceived Usefulness, Customer Engagement, J&T Express.

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R. Hurriyati et al. (eds.), *Proceedings of the 10th Global Conference on Business, Management, and Entrepreneurship (GCBME 2025)*, Advances in Economics, Business and Management Research 407,
https://doi.org/10.2991/978-94-6239-819-1_64

1 Introduction

The development of digital technology has driven companies to continually innovate in delivering services to customers in a faster, more accurate, and personalized manner [1]. One of the innovations widely adopted in the service industry is the use of Artificial Intelligence (AI) in the form of chatbots [2]. Logistics companies in Indonesia, such as J&T Express, have integrated chatbots as a communication medium with customers, particularly to handle inquiries related to shipments, tracking, and complaints [3]. This phenomenon reflects a fundamental change in the way consumers interact with services, while also creating new opportunities to enhance customer engagement. However, it is important to examine how customer perceptions of chatbot responsiveness and usefulness affect their emotional and behavioral engagement [4]. The impact of digital advancements on service marketing has been a central theme in academic discourse, with a particular emphasis on how chatbots refine the user experience. Prior research indicates that chatbots characterized by high responsiveness and ease of use not only bolster customer satisfaction but also solidify enduring corporate-client relationships [5]. Furthermore, the perceived utility of these AI interfaces serves as a primary driver in determining a user's propensity to continue using the technology over time [6]. In the logistics sector, an industry where the immediacy and precision of data are paramount, the capacity of a chatbot to provide instantaneous feedback acts as a vital competitive advantage [7]. Despite extensive exploration of AI in banking and e-commerce, empirical evidence within the logistics field, specifically regarding providers like J&T Express in the Southeast Asian context, is still notably scarce.

Based on the above discussion, this study aims to fill the gap in the literature by examining in depth how AI chatbot responsiveness and perceived usefulness can drive customer engagement through the lens of service marketing. This research not only highlights the technical elements of chatbots but also broadens the understanding of digital interaction dynamics in building sustainable customer engagement. The uniqueness of this study lies in the integration of service marketing approaches with AI technology in the context of Indonesia's logistics industry, as well as the use of J&T Express as a research subject, which has been rarely studied academically.

2 Method

The study's participants comprise all individuals in Indonesia who interact with AI-driven chatbot services provided by J&T Express through its digital channels. Since the number of active J&T Express users is large and there is no available data on the exact number of users who have interacted with the chatbot, the population for this study is categorized as an infinite population. Based on a purposive sampling approach, the sample is determined by selecting respondents who meet specific criteria, namely active J&T Express users who have used the chatbot feature at least once in the last six months.

The total sample size used in this study is 150 respondents. The determination of this sample size refers to the approach suggested by [6], which recommends a minimum sample size of 5–10 times the number of indicators in the model. With a total of 12 indicators in the questionnaire, the required sample size is between 60 and

120 respondents. To strengthen the validity of the analysis results, the sample size was increased to 150 respondents.

Data collection was conducted using an online questionnaire based on Google Forms, distributed through social media. The questionnaire was designed using a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree). The dimensions used in this study are as follows:

1. Chatbot Responsiveness: Adapted from [5], including re-sponse speed, accuracy of answers, and problem-solving ability.
2. Perceived Usefulness: Adapted from [4] and adjusted by [16], including the perceived benefits of completing tasks and efficiency.
3. Customer Engagement: Refers to [8], covering cognitive, affective, and behavioral engagement in interactions with J&T Express ser-vices.

The data analysis technique used in this study is Partial Least Squares-based Structural Equation Modeling (PLS-SEM) with the assistance of SmartPLS 4 software. This anal-ysis method is selected because it can simultaneously and efficiently test the relation-ships between latent variables, even with a relatively small sample size [6]

3 Discussion

Data integrity in this research was ensured through comprehensive validity and reliability assessments. Validity testing confirms how accurately the instrument captures the intended constructs [8]. Each item within the questionnaire underwent specific scrutiny to verify its individual validity [9]. Reliability measurements reflect the instrument's stability and its capacity to produce error-free data consistently over time [10]. Identical conditions during repeated testing should yield similar results to satisfy reliability requirements [11].

Convergent validity was established using the Average Variance Extracted (AVE) method, requiring a minimum value of 0.5 for every construct [12]. Internal consistency was further evaluated through Cronbach's Alpha and Composite Reliability (CR) metrics. Professional standards dictate that both Cronbach's Alpha and CR must exceed a 0.7 threshold for the instrument to be considered reliable [13].

Table 1. Outer Model (Measurement Validity and Reliability)

Construct	Cronbach Alpha	Composite Reliability	AVE
Chatbot Responsiveness	0.87	0.91	0.72
Perceived Usefulness	0.89	0.93	0.76
Customer Engagement	0.91	0.94	0.79

Source: Data Processing, 2025

Table 1 shows that all constructs have AVE values > 0.5 and CR > 0.7, with Cronbach Alpha values above 0.8. This indicates that all constructs used in this study meet the requirements for convergent validity and internal reliability. Therefore, the items in the questionnaire can be considered suitable for measuring the research variables.

The structural model in this study aims to analyze the impact of two independent vari-ables, Chatbot Responsiveness and Perceived Usefulness, on the dependent variable, Customer Engagement. Based on Table 2, both impact paths show significant coeffi-cient values with a p-value < 0.05, meaning there is a significant effect of each inde-pendent variable on customer engagement.

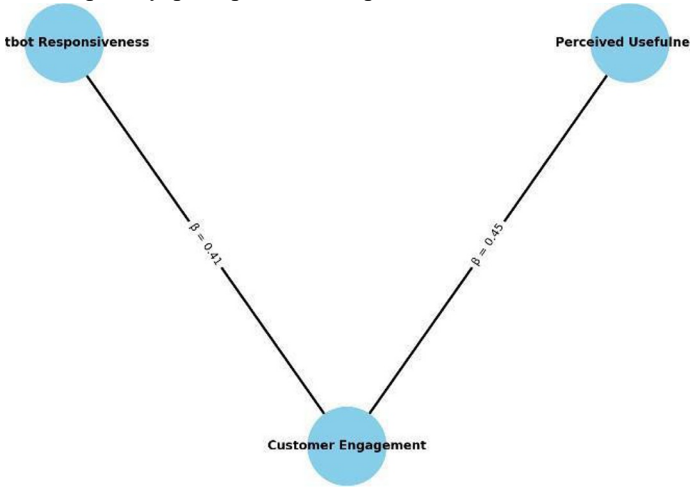
Table 2. Inner Model (Path Coefficients and Significance)

Path	Beta Coefficient	t-statistic	p-value	Description
Chatbot Responsiveness → Engagement	0.41	6.21	0.000	Significant
Perceived Usefulness → Engagement	0.45	7.08	0.000	Significant

Source: Data Processing, 2025

Table 2 shows that the impact of Perceived Usefulness is higher than that of Chatbot Responsiveness. This means that while chatbot responsiveness is important in creating a positive experience, the perceived functional value of the chatbot has a larger contri-bution in shaping customer engagement.

The table on path coefficient analysis shows that the perceived usefulness has a slightly greater impact on customer engagement than chatbot responsiveness. This indicates that, although speed and accuracy are important, the functional value and practical ben-efits of the chatbot play a more significant role in building emotional and behavioral attachments with users. Customers are not only looking for quick interactions, but also for precise solutions that ease their activities. Theoretically, this finding strengthens the position of chatbots as value creators in digital service marketing. The interaction be-tween humans and AI is now relational, where customer experiences are shaped by perceptions of sophistication, effectiveness, and ease of



technology.

Fig. 1. Structural Model

Figure 1 above shows the relationship between variables in the study, where Chatbot Responsiveness and Perceived Usefulness are independent variables influencing Customer Engagement as the dependent variable. Arrows indicate the direction of influence, and the values next to the arrows represent the beta coefficient (β) results from the SEM-PLS analysis. A $\beta = 0.41$ indicates that Chatbot Responsiveness has a significant positive effect on Customer Engagement. Meanwhile, $\beta = 0.45$ indicates that Perceived Usefulness has a stronger impact than Chatbot Responsiveness. This visualization supports the conclusion that perceived usefulness plays a more significant role in shaping customer engagement.

Chatbot responsiveness has been proven to significantly affect customer engagement. The speed, accuracy, and relevance of the chatbot's responses create a positive impres-sion for users. Customers feel valued when they receive quick responses, aligning with Gnewuch et al. (2020)'s findings about the importance of response time in chatbot in-teractions. In a service context, response speed becomes part of service quality that enhances perceptions of efficiency and professionalism.

Perceived usefulness also plays an important role in increasing customer engagement. When customers perceive tangible benefits from using the chatbot, such as solving shipping problems, easily obtaining information, and saving time, they are more likely to continue using the service and recommend it to others. This finding supports the Technology Acceptance Model (TAM) developed by [4], where perceived usefulness is a key predictor of technology adoption.

This study aims to analyze the impact of AI chatbot responsiveness and perceived use-fulness on customer engagement in J&T Express's digital services. The SEM-PLS anal-ysis results show that both independent variables have a significant impact on consumer engagement in terms of cognitive, affective, and behavioral aspects.

Table 3. R-square (R^2)

Endogenous Variable	R^2	Description
Customer Engagement	0.62	62% of the variation in engagement is explained by X1 and X2

Source: Data Processing, 2025

Based on Table 3, the R-Square value obtained for the endogenous variable, customer engagement, is 0.62. This value indicates that 62% of the variation in customer engage-ment can be explained by the two independent variables (X1 and X2). According to the criteria established by Chin (1998), an R^2 value of 0.62 falls into the moderate-to-strong category, meaning the model has a fairly good explanatory power. This shows that the structural model used has adequate empirical relevance in explaining customer engage-ment based on the variables studied.

4 Conclusion

This study demonstrates that Chatbot Responsiveness and Perceived Usefulness signif-icantly influence Customer Engagement in the digital services of J&T Express. The instruments used were valid and reliable, and the model has a strong explanatory power ($R^2 = 0.62$). The influence of Perceived Usefulness is more dominant, indicating that the functional benefits of the chatbot are more crucial in forming customer engagement

compared to rapid responses alone. J&T Express is advised to improve the quality of chatbot responses, not only by making them faster but also more relevant and personal. Additionally, the chatbot features should be enhanced to provide more value and ease of use for customers. Regular evaluations and internal training are also important to ensure that the chatbot continues to provide a positive experience that supports customer loyalty.

References

1. Al Hakim, S., Prasetyo, E., & Nurkhin, A. (2021). *Validitas dan reliabilitas instrumen penelitian sosial*. Jurnal Penelitian Pendidikan, 38(2), 129–138.
2. Al-oraini, B. S. (2025). *Chatbot dynamics : trust , social presence and customer satisfaction in AI-driven services*. https://doi.org/10.1108/JIDT-08-2024-0022
3. Darma, R. (2021). *Evaluasi instrumen penelitian: Uji validitas dan reliabilitas*. Jurnal Metodologi Pendidikan, 7(1), 55–64.
4. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
5. Gnewuch, U., Morana, S., Adam, M. T. P., & Maedche, A. (2020). Faster is not always better: Understanding the effect of dynamic response delays in human–chatbot interaction. *Journal of Management Information Systems*, 37(4), 1179–1211. https://doi.org/10.1080/07421222.2020.1832902
6. Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Evaluation of Formative Measurement Models*. https://doi.org/10.1007/978-3-030-80519-7_5
7. Honora, A., Wang, K.-Y., & Chih, W.-H. (2024). Gaining customer engagement in social media recovery: the moderating roles of timeliness and personalization. *Internet Research*, *ahead-of-p*(ahead-of-print). https://doi.org/10.1108/INTR-06-2022-0439
8. Hollebeek, L. D., Sprott, D. E., & Andreassen, T. W. (2020). Customer engagement in evolving technological environments: Synopsis and guiding propositions. *Journal of Business Research*, 121, 124–130.
9. Khumaedi, M. (2012). Validitas dan reliabilitas alat ukur dalam penelitian pendidikan. *Jurnal Pendidikan*, 3(2), 121–129.
10. Kumar, A., Shankar, A., Behl, A., Chakraborty, D., & Gundala, R. R. (2025). Anthropomorphic generative AI chatbots for enhancing customer engagement, experience and recommendation. *Journal of Consumer Marketing*, *December 2024*. https://doi.org/10.1108/JCM-06-2024-6922
11. Lu, V. N., Kuo, Y. F., & Zeng, L. (2023). Artificial Intelligence and Customer Experience: An Empirical Study on Service Chatbots. *Journal of Service Management*, 34(1), 1–25. https://doi.org/10.1108/JOSM-07-2022-0224
12. Mäkinen, J. (2024). *Consumer Perceptions of AI-driven Chatbots in Digital Platforms: Factors Affecting Service Quality and Satisfaction*. https://urn.fi/URN:NBN:fi-fe2024051329906
13. Sarstedt, M., Hair, J. F., Cheah, J. H., Becker, J. M., & Ringle, C. M. (2022). How to specify, estimate, and validate higher-order constructs in PLS-SEM. *Australasian Marketing Journal*, 30(1), 9–25. https://doi.org/10.1177/18393349211004802

14. Thi, D., Huong, T., Thi, A., & Linh, D. (2024). *Factors Affecting Logistics Service Quality : A Study At J & T Express Company , Viet Nam*. *5*(March), 51–54.
15. Venkatesh, V., & Bala, H. (2022). Technology Acceptance Revisited: Empirical Test of TAM in the Post-Digital Era. *MIS Quarterly*, 46(3), 1007–1031. https://doi.org/10.25300/MISQ/2022/16693
16. Zierau, N., Janson, A., & Leimeister, J. M. (2021). AI-based chatbots in customer service and their effects on user compliance. *Electronic Markets*, 31(2), 379–398. https://doi.org/10.1007/s12525-021-00474-9

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