JEMSI (Jurnal Ekonomi, Manajemen, dan Akuntansi)
Available at: https://journal.lembagakita.org/index.php/jemsi

E-ISSN: 2579-5635 | P-ISSN: 2460-5891
Volume 12 (3) Juni 2026 | PP. 2184-2196
https://doi.org/10.35870/jemsi.v12i3.6360

RESEARCH ARTICLE

Determinant Factors of User Satisfaction in the Integrated Customs and Excise System

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Histori Artikel:
Dikirim 18 Januari 2026; *Diterima dalam bentuk revisi* 10 Maret 2026; *Diterima* 10 April 2026; *Diterbitkan* 1 Juni 2026.

Suggested citation:
Prafajar, L. H. S., & Tannady, H. (2026). Determinant Factors of User Satisfaction in the Integrated Customs and Excise System. *JEMSI (Jurnal Ekonomi, Manajemen, Dan Akuntansi)*, *12*(3), 2184-2196. https://doi.org/10.35870/jemsi.v12i3.6360.

Abstrak

Penelitian ini dimotivasi oleh variasi tingkat kepuasan pengguna dalam implementasi sistem CEISA 4.0 di perusahaan Freight Forwarder, serta adanya kesenjangan penelitian mengenai pengaruh kualitas informasi terhadap kepercayaan yang dirasakan dan hubungan antara kepercayaan yang dirasakan dan kepuasan pengguna. Tujuan penelitian ini adalah untuk menganalisis pengaruh kualitas informasi, kemudahan penggunaan yang dirasakan, kegunaan yang dirasakan, dan kepercayaan yang dirasakan terhadap kepuasan pengguna. Penelitian ini menggunakan pendekatan kuantitatif dengan menggunakan Covariance-Based Structural Equation Modeling (CB-SEM), yang melibatkan 120 responden sebagai pengguna CEISA 4.0 yang dipilih melalui purposive sampling. Hasil penelitian menunjukkan bahwa kualitas informasi memiliki pengaruh signifikan terhadap kemudahan penggunaan yang dirasakan dan kegunaan yang dirasakan. Lebih lanjut, kemudahan penggunaan yang dirasakan dan kegunaan yang dirasakan secara signifikan memengaruhi kepuasan pengguna, sedangkan pengaruh kualitas informasi terhadap kepercayaan yang dirasakan dan pengaruh kepercayaan yang dirasakan terhadap kepuasan pengguna ditemukan tidak signifikan. Secara teoritis, penelitian ini berkontribusi dengan mengkonfirmasi dan memperluas model penerimaan teknologi. Secara praktis dan manajerial, hasil penelitian ini memberikan rekomendasi bagi administrator sistem untuk meningkatkan kualitas informasi, kemudahan penggunaan, dan persepsi kegunaan guna meningkatkan kepuasan pengguna dan mendorong pemanfaatan sistem secara berkelanjutan.

Kata Kunci: Kualitas Informasi; Kemudahan Penggunaan yang Dirasakan; Kegunaan yang Dirasakan; Kepercayaan yang Dirasakan; Kepuasan Pengguna; Ceisa 4.0.

Abstract

This research is motivated by variations in user satisfaction levels in the implementation of the Ceisa 4.0 system within Freight Forwarder companies, as well as an existing research gap concerning the influence of quality of information on perceived trust and the relationship between perceived trust and user satisfaction. The objective of this study is to analyze the influence of quality of information, perceived ease of use, perceived usefulness, and perceived trust on user satisfaction. The research employs a quantitative approach using Covariance-Based Structural Equation Modeling (CB-SEM), involving 120 respondents as user CEISA 4.0 selected through purposive sampling. The findings indicate that quality of information has a significant effect on perceived ease of use and perceived usefulness. Furthermore, perceived ease of use and perceived usefulness significantly influence user satisfaction, while the influence of quality of information on perceived trust and the influence of perceived trust on user satisfaction were found to be insignificant. Theoretically, this study contributes by confirming and extending the technology acceptance model. Practically and managerially, the results provide recommendations for system administrators to improve information quality, ease of use, and perceived usefulness in order to enhance user satisfaction and encourage continuous system utilization.

Keyword: Quality of Information; Perceived Ease of Use; Perceived Usefulness; Perceived Trust; User Satisfaction; Ceisa 4.0.

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1. Introduction

In the digital era, quality of information (QI) demonstrates that high-quality data plays a role in the successful adoption of new technologies, one of which is the Ceisa 4.0 system, which is mandatory in the customs and logistics sectors. Accurate, relevant, complete, and reliable information not only improves the perceived ease of use and usefulness of the system but also strengthens user trust and satisfaction (Tyas & Nurhasanah, 2019). Systems that present information with high noise levels, are secure, and easily accessible have great potential to significantly improve the user experience, while supporting sustainable technology adoption (DeLone & McLean, 2003). Conversely, systems with low information quality can reduce user satisfaction and ultimately negatively impact the success of technology implementation (Salim *et al*., 2021). Perceived ease of use (PEOU) is a key factor that increases satisfaction, builds trust, and strengthens loyalty in using a system and technology (Rahmawati & Ramli, 2024). This can encourage users to continue using the system (Davis, 1989; Venkatesh *et al*., 2003). On the other hand, perceived usefulness (PU) of technology, such as operational efficiency and the ability to achieve goals more quickly, provides added value that strengthens technology acceptance in various contexts (Priyatma, 2022). Although perceived usefulness and perceived ease of use encourage users to voluntarily adopt a system, they are incomplete without trust. In the digital era, fraught with security and privacy risks, perceived trust (PT) is a critical determinant of system and technology adoption, especially in new systems managed by the government. Ahmad *et al*. (2025) emphasize that trust encourages users to take risks in using technology, particularly new technologies or systems. Ultimately, user satisfaction (US) is a key indicator of information system success, reflecting not only system effectiveness but also user loyalty to the technology (Jian *et al*., 2022). Systems that meet users' needs and expectations reinforce their positive experiences, encourage them to recommend the technology to others, and increase the likelihood of continued system use (DeLone & McLean, 2003; Legramante *et al*., 2023).

In this study, these variables were tested on the Ceisa 4.0 system used by a freight forwarder company. The Ceisa 4.0 system is a new technology developed by the Directorate General of Customs and Excise with the aim of integrating all customs application modules into a single, integrated web-based platform and becoming a mandatory system for operational activities for customs service users, including freight forwarders. This system is designed to make customs document management processes, such as exports, imports, and manifests, more efficient, transparent, and connected between relevant parties, thereby supporting the comprehensive digitalization of customs services. Extensive research has been conducted previously on the variables of quality of information, perceived ease of use, perceived usefulness, perceived trust, and user satisfaction. Information quality, including accuracy, clarity, completeness, and consistency of a technological system, has been shown to influence perceived ease of use (Abdulnabi, 2024; Alturki & Aldraiweesh, 2022) and perceived usefulness (Belmonte *et al*., 2024; Deng *et al*., 2024). Furthermore, several researchers have stated that information quality also positively influences perceived trust, because accurate, relevant, and reliable information fosters user confidence that the system is consistently useful without posing risks (Huang *et al*., 2024; Ojo *et al*., 2024). Perceived ease of use positively influences perceived trust; the easier a system is to use, the higher the user's trust in the reliability of the system and technology (Almaiah *et al*., 2022; Awofala *et al*., 2025). This ease of use also increases user satisfaction through more efficient interactions (Alfarrel & Noerlina, 2023; Badran *et al*., 2024). Perceived usefulness also has a positive effect on perceived trust. Perceived tangible benefits can increase user confidence in its credibility (Almaiah *et al*., 2022; Balaskas *et al*., 2025), and provide relevant added value to User Satisfaction (Alfarrel & Noerlina, 2023; Panyahuti *et al*., 2024). Furthermore, several researchers have stated that perceived trust has been shown to play a significant role in increasing user satisfaction, as a high level of trust in the system can create a sense of security, comfort, and satisfaction in the user experience (Al-Oraini, 2025; Rehman *et al*., 2023). Referring to various previous studies, several studies have examined the relationship between information quality, perceived ease of use, and perceived usefulness within various technology acceptance model frameworks. These findings indicate that information quality plays a significant role in enhancing perceived ease of use and perceived usefulness of a system. Furthermore, research by Swe & Yang (2024) and Legramante *et al*.

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(2023) has consistently demonstrated that both variables impact user satisfaction. However, there is limited research directly examining the effect of information quality on perceived trust, as noted by Thuy *et al*. (2023) and Huang *et al*. (2024) where empirical findings still show inconsistent and contextual results depending on the technology studied. Similarly, the relationship between perceived trust and user satisfaction still yields mixed findings, as demonstrated by studies by Rehman *et al*. (2023) and Al-Oraini (2025) where the effect of trust on user satisfaction is highly dependent on the level of system security, user compliance, and system process reliability.

Thus, the main research gap in this study is the lack of a comprehensive model that simultaneously examines the relationship between information quality, perceived trust, and user satisfaction in the context of a mandatory system like Ceisa 4.0 used in the Indonesian customs sector. The novelty of this research lies in examining the influence of information quality not only on perceived ease of use and perceived usefulness, as in previous studies, but also on perceived trust as a potential mediating variable in the user satisfaction model. Furthermore, this research offers a new empirical context, as most previous studies were conducted on commercial or voluntary systems, while this study is applied to a government operational environment with different regulatory and procedural characteristics. Based on this, this research is expected to contribute scientifically to the expansion of the Technology Acceptance Model (TAM) theory and provide an empirical foundation for improving the quality of digital customs systems. The purpose of this study is to analyze the influence of information quality, perceived ease of use, perceived usefulness, and perceived trust on user satisfaction, while also addressing the research gap regarding the role of information quality on perceived trust and the relationship between perceived trust and user satisfaction, which has shown inconsistent results in previous studies.

2. Literatur Review

The adoption of technology in various sectors has been extensively studied, with a significant focus on the factors influencing user satisfaction and acceptance. According to Davis (1989), perceived usefulness and perceived ease of use are critical determinants of user acceptance, forming the foundation of the Technology Acceptance Model (TAM). Subsequent research has expanded on this model, highlighting the role of information quality in enhancing user perceptions of technology (DeLone & McLean, 2003). For instance, Tyas and Nurhasanah (2019) emphasize that high-quality information significantly impacts user trust and satisfaction, particularly in digital systems. Moreover, recent studies by Huang *et al*. (2024) and Ojo *et al*. (2024) suggest that accurate and reliable information fosters user confidence, which is essential for the successful implementation of new technologies. Furthermore, the relationship between perceived trust and user satisfaction has been explored, with findings indicating that trust plays a vital role in user engagement with technology (Al-Oraini, 2025; Rehman *et al*., 2023). However, gaps remain in understanding how these factors interact within mandatory systems, as noted by Thuy *et al*. (2023), suggesting that the context of technology use, particularly in government-regulated environments, may influence user perceptions differently than in commercial settings. This highlights the need for further empirical research to explore these dynamics, particularly in the context of the Ceisa 4.0 system used in Indonesia's customs sector.

3. Research Methodology

This study uses a quantitative approach with a questionnaire instrument adapted from various relevant previous studies. The Quality of Information variable is measured through six question items adapted from Anthony (2024), Legramante *et al*. (2023), Sulaiman *et al*. (2023), while the Perceived Ease of Use and Perceived Usefulness variables are each measured with six items adapted from Legramante *et al*. (2023), Prioteasa *et al*. (2024), Xu *et al*. (2024). The Perceived Trust variable is measured using three items

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adapted from Balaskas *et al*. (2025), Song *et al*. (2023), Ahmad *et al*. (2025), while the User Satisfaction variable is measured with three items referring to Liu & Luo (2022), Xu *et al*. (2022), Yang *et al*. (2023). All items are measured using a five-point Likert scale, resulting in a total of 24 questions. Data collection was conducted through an online survey using Google Forms using a purposive sampling technique among employees of a freight forwarding company in Jakarta that uses the CEISA 4.0 system. Data were collected from September to November 2025, with a sample size of 120 respondents, in accordance with the recommendations of Hair *et al*. (2021). To minimize the potential for Common Method Bias, the questionnaires were randomly assigned, maintaining respondent anonymity, and Harman's Single Factor Test was conducted.

Data analysis was conducted using the Covariance-Based Structural Equation Modeling (CB-SEM) method with the assistance of SPSS 29 and LISREL 8.80 software. SPSS was used for descriptive analysis, validity testing using KMO and MSA, reliability testing using Cronbach's Alpha, and testing for Common Method Bias. LISREL was used to test the measurement and structural models, including Standardized Loading Factor (SLF), Construct Reliability (CR), and Average Variance Extracted (AVE) tests to ensure construct validity and reliability. Model fit evaluation was performed using various goodness of fit indices such as Chi-Square/df, RMSEA, NFI, NNFI, CFI, IFI, RFI, and SRMR with criteria referring to Hair *et al*., Kline, and Hu and Bentler. Hypothesis testing was conducted through path coefficient analysis, T-statistic values, and R-Square to assess the significance and strength of the relationship between variables. The final decision regarding acceptance or rejection of the hypothesis was determined based on the statistical significance and empirical predictive ability of the model.

4. Results and Discussion

4.1 Results

Based on the results of the instrument test on 30 initial respondents, all research variables showed feasibility for further analysis. The Kaiser-Meyer-Olkin (KMO) value was above 0.5 for all variables, namely Quality of Information (QI) of 0.843, Perceived Ease of Use (PEOU) of 0.790, Perceived Usefulness (PU) of 0.854, Perceived Trust (PT) of 0.694, and User Satisfaction (US) of 0.740, which indicates that the data meets the sample adequacy requirements for factor analysis. Each item in the five variables also has a Measure of Sampling Adequacy (MSA) value above 0.5, with a range of QI (0.809–0.896), PEOU (0.693–0.901), PU (0.809–0.929), PT (0.634–0.748), and US (0.695–0.738), so that all items are declared valid. The results of the reliability test show that all variables have very good Cronbach's Alpha values, namely QI = 0.851, PEOU = 0.879, PU = 0.928, PT = 0.876, and US = 0.898, each exceeding the minimum limit of 0.70, so that the instrument is declared reliable and consistent. This study involved 120 primary respondents from 46 freight forwarding companies using Ceisa 4.0 in Jakarta. The results of the Common Method Bias (CMB) test using Harman's Single Factor Test, with primary respondents, employees using Ceisa 4.0, showed that a single factor explained 47.50% of the total variance, lower than the 50% threshold. Therefore, it can be concluded that there is no indication of bias in the data. Therefore, this research instrument is declared valid, reliable, and free from bias. Based on demographic characteristics, the majority of respondents were male (90 respondents (75%), while 30 were female (25%), indicating that customs operations and system use are predominantly male. In terms of age, the majority of respondents were in the 26–35 year age range with a total of 90 people (75%), followed by the 18–25 year age group with 15 people (12.5%), 36–45 year age group with 7 people (5.83%), 46–55 year age group with 8 people (6.67%), and no respondents were over 56 years old; this condition illustrates that Ceisa 4.0 users are dominated by the productive age group who are relatively adaptive to technology. In terms of education, the majority of respondents had a Bachelor's degree (S1/D4) with 103 people (86%), followed by 11 people with Diploma (9%), 4 people with High School (3%), and 2 people with Master's degrees (2%), with no respondents with Doctoral degrees, thus indicating that the use of the Ceisa 4.0 system is generally handled by human resources with higher educational qualifications relevant to the technical and administrative needs in the customs sector.

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The results of the validity and reliability analysis on the first-order measurement model indicate that all indicators forming the variables Quality of Information (QI), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Perceived Trust (PT), and User Satisfaction (US) have met the measurement feasibility criteria. This feasibility is indicated by the fulfillment of the Standardized Loading Factor (SLF), Construct Reliability (CR), and Average Variance Extracted (AVE) values according to the model evaluation standards used in the LISREL analysis. One indicator, namely QI3, must be removed because even though the SLF value is above the minimum limit (0.51), the indicator shows a high error variance value (0.74) so that it reduces the AVE value of the QI construct to below the limit of ≥ 0.50, if maintained it will disrupt the quality of the construct's convergent validity. After the indicators were removed, all variables showed SLF values ≥ 0.50, AVE values ≥ 0.50, and CR values ≥ 0.70, with the results of QI (CR=0.84; AVE=0.51), PEOU (CR=0.91; AVE=0.62), PU (CR=0.92; AVE=0.67), PT (CR=0.76; AVE=0.52), and US (CR=0.82; AVE=0.61). Thus, it can be concluded that the indicators used have been able to represent the latent constructs appropriately and consistently, and fulfill the validity and reliability aspects, so they are suitable for use in the advanced validity and reliability testing stage in the second-order measurement model. The results of the Goodness of Fit evaluation on the structural model indicate that the research model is generally in the category of moderate fit (marginal fit) for use in hypothesis testing. Based on the test results, a p-value of 0.00 (<0.05) indicates that the model does not meet the absolute good fit criteria. The Chi-Square/df value of 3.56 is slightly above the ideal limit of ≤ 3.0, but can still be categorized as moderate fit. Furthermore, the Root Mean Square Error of Approximation (RMSEA) value of 0.14 exceeds the threshold of ≤ 0.08, thus indicating that the model has not achieved a good level of fit based on the absolute fit index. Meanwhile, the Normed Fit Index (NFI) value of 0.89 and the Relative Fit Index (RFI) of 0.88 are slightly below the criteria of ≥ 0.90, which indicates a moderate level of fit. On the other hand, the Non-Normed Fit Index (NNFI) value of 0.91, Comparative Fit Index (CFI) of 0.92, and Incremental Fit Index (IFI) of 0.92 have met the criteria ≥ 0.90, thus indicating a good fit based on the incremental fit index. In addition, the Standardized Root Mean Square Residual (SRMR) value of 0.089 is below the maximum limit of ≤ 0.10, which also indicates a good level of model fit. Overall, although some absolute fit indices have not been optimally met, the dominance of good incremental fit results indicates that the structural model can be categorized as a marginal fit and is still suitable for continuing testing the relationship between latent variables by considering the limitations of the model. Based on the results of the structural model analysis, the relationship between variables that QI has a significant influence on PEOU with a path coefficient of 1.49 and a t-value of 6.53, and an R^2 value of 0.69, which explains 69% of PEOU variability can be explained by QI. Furthermore, QI also has a significant effect on PU with a coefficient of 1.80, a t-value of 6.41, and an R^2 of 0.76, so it can be interpreted that 76% of PU variation is explained by QI, indicating a very strong relationship. For the PT variable, the model shows a coefficient of influence from QI of 0.89 (t = 1.81), while the influence of PEOU (0.13, t = 0.86) and PU (0.10, t = 0.66) is insignificant because the t-value is below the threshold of 1.96. The R^2 value of 0.62 indicates that 62% of the change in PT is explained by the three previous variables, although only QI makes the largest contribution to shaping user trust. Furthermore, the US variable is influenced by PEOU, PU, and PT with coefficients of 0.25 (t = 2.13), 0.35 (t = 3.03), and 0.061 (t = 0.46), respectively. Based on the t-value, only PEOU and PU have a significant influence, while PT does not have a significant influence on US because its t-value is less than 1.96. The R^2 value of 0.58 indicates that 58% of the variation in user satisfaction can be explained by these three variables, with the largest contribution coming from PU.

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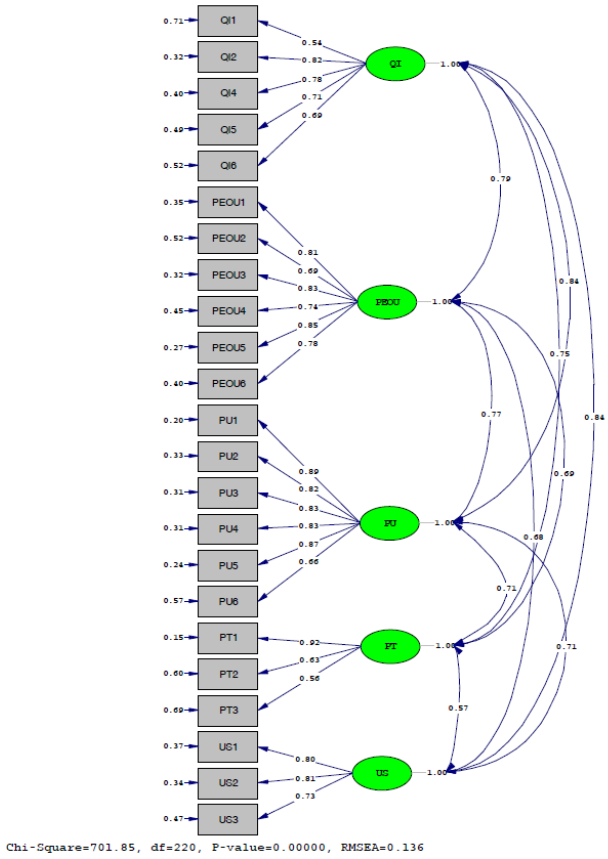

Figure 1. Structure Analysis Result

Overall, the results of the study indicate that the research instrument and model are valid, reliable, and free from bias, making them suitable for further analysis. The structural model also meets the eligibility criteria based on the Goodness of Fit indicator. Analysis of the relationship between variables indicates that information quality significantly influences perceived ease of use and perceived usefulness, and is the most dominant factor in shaping perceived trust. Furthermore, perceived ease of use and perceived usefulness are shown to significantly influence user satisfaction, while perceived trust does not. The R-Square value indicates that the model has good predictive ability for the dependent variable, thus this study successfully identifies the main factors influencing Ceisa 4.0 user satisfaction in a Freight Forwarder company. The results of this study indicate that information quality plays a crucial role in shaping user perceptions of the Ceisa 4.0 system. This finding aligns with the views of Diop *et al.* (2020) and Alturki & Aldraiweesh (2022), who explain that accurate, relevant, clear, and timely information can improve user understanding of digital systems. In this study, respondents who perceived good information quality in Ceisa 4.0 tended to understand the system's workflow more quickly, resulting in a significant increase in perceived ease of use. Furthermore, information quality has also been shown to significantly influence perceived usefulness, meaning the better the information quality, the higher the user's assessment of the system's usefulness in supporting their work. This finding supports previous studies such as Saputra *et al.* (2023), Jo & Park (2023) and Deng *et al.* (2024), which place information quality as a core element in technology acceptance. Practically, Ceisa 4.0 users perceive increased system benefits when information is accessible without constraints, minimizes errors, and supports operational efficiency. Therefore, this variable can be considered a crucial foundation for the successful implementation of technology-based information systems in the customs sector. However, the relationship between information quality and perceived trust differs from some previous studies. In this study, although the coefficient was positive, the t-statistic did not reach the significance level, thus declaring the relationship statistically insignificant. This

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finding contradicts research by Thuy *et al.* (2023) and Huang *et al.* (2024), which emphasized that information quality is a key determinant of trust in digital systems. This suggests that in the context of Ceisa 4.0, user trust is not solely determined by information quality but is also influenced by other factors such as data security, regulatory certainty, system stability, and transparency of the data transmission process. Furthermore, Ceisa 4.0 users may still face uncertainty regarding system consistency or technical issues, so even if the information provided is good, trust may not be fully established. This situation also reflects the fact that in government systems or mandatory systems, trust does not automatically arise simply from good information but requires assurance of credibility from the system provider. Thus, these results provide a novel contribution, demonstrating that trust formation in digital public service systems is influenced by more non-informational factors. The perceived ease of use variable also shows an inconsistent pattern in the formation of perceived trust. The results of this study indicate that perceived ease of use does not significantly influence trust, although the direction of the relationship remains positive. This result differs from the findings of Almaiah *et al.* (2022) and Awofala *et al.* (2025), which stated that the easier a system is to use, the higher the level of user trust in the technology. The findings in this study indicate that in Ceisa 4.0, ease of use is not yet a primary basis for building user trust. This potentially occurs because the Ceisa 4.0 system was developed as a regulation- and policy-based application, so ease of use is not a top priority for users when assessing trust levels. In other contexts, users are more concerned with process validity, sensitive data security, long-term system stability, and guaranteed operational legality. Therefore, it can be assumed that the antecedents of trust in customs service systems differ from those in commercial systems or voluntary-based technology adoption. This result is an important finding and enriches the literature that trust in digital public systems is not solely driven by user experience, but by institutional factors and policies that govern the system.

Furthermore, the relationship between perceived usefulness and perceived trust also showed insignificant results in this study. This is despite the fact that, theoretically, the Technology Acceptance Model (TAM) and previous studies such as Ha *et al.* (2022) and Prasetyani *et al.* (2024) suggest that when users perceive a system to provide tangible benefits, trust in the system increases. However, the results of this study indicate that although users acknowledge Ceisa 4.0 as beneficial in improving efficiency and supporting operational compliance, this perception is not sufficient to increase trust. Ceisa 4.0 users still perceive that the system's benefits do not automatically reflect the system's overall reliability or security. This suggests a psychological structure where technological benefits are not directly proportional to trust, particularly in the context of mandatory government-regulated systems. These findings indicate that building trust in the digital government ecosystem requires objective evidence such as performance stability, data auditability, system transparency, and verifiable security assurance. Thus, these findings provide a new direction, suggesting that perceived usefulness is not always the primary predictor of trust in digital systems in the public sector. Unlike the previous variables, the relationship between perceived ease of use and user satisfaction proved significant in this study. This finding aligns with the research of Liu & Luo (2022) and Swe & Yang (2024), which states that user-friendly technology can reduce psychological and operational barriers, creating a positive experience that impacts user satisfaction. In the context of Ceisa 4.0, users feel more satisfied when the system can be used without high error rates, unnecessary repetitive procedures, and technical obstacles that hinder workflow. A responsive, easy-to-learn system with intuitive navigation has been shown to create a better user experience, especially for customs operational workers who are required to work quickly and accurately. Thus, usability plays a strategic role in shaping the digital system experience and is a key determinant of Ceisa 4.0 user satisfaction. Furthermore, the relationship between perceived usefulness and user satisfaction also proved significant in this study. This finding is consistent with the Technology Acceptance Model (TAM) theory and research by Xu *et al.* (2022) and Alfarrel & Noerlina (2023) found that perceived usefulness is a key predictor of user satisfaction with technology. In this study, respondents assessed that Ceisa 4.0 facilitated customs-related operational processes, such as document status tracking, accelerated administrative processes, and increased reporting accuracy. When users experienced direct benefits in the form of time efficiency, reduced input errors, and improved work output, their satisfaction increased. Thus, systems perceived as useful tend to foster user loyalty and encourage continued

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technology adoption. This finding reinforces the perspective that practical benefits are central to user evaluations of digital system performance. Furthermore, the research findings indicate that perceived trust does not significantly influence user satisfaction. This finding differs from the research of Rehman *et al.* (2023) and Al-Oraini (2025), which stated that trust is a crucial element in shaping satisfaction with digital systems. However, in this study, respondents did not consider trust as the primary metric for assessing satisfaction with Ceisa 4.0. This suggests that users focused more on functionality, access speed, system performance stability, and practical benefits than on trust or security. This may be because Ceisa 4.0 is a mandatory system, not an option, so trust is not a determining factor in the user experience. Therefore, the user behavior dimension in the context of a mandatory government system exhibits different dynamics than that of a commercial system based on user preferences. From a structural model evaluation perspective, the Goodness of Fit results indicate that the model is in the acceptable fit category. CFI and IFI values exceeding the minimum threshold of 0.90, and SRMR values below 0.10, indicate that the theoretical model is in good agreement with the empirical data. Although the NFI value is in the moderate category (0.89), this result is still acceptable in research with complex variables and the context of public digital systems. This confirms that this research model, as a whole, can adequately represent the relationships between variables. Furthermore, the R-Square values for each dependent variable demonstrate strong predictive ability, namely PEOU (69%), PU (76%), PT (62%), and US (58%). Thus, this research model has a solid predictive structure for understanding the factors influencing Ceisa 4.0 user satisfaction in the freight forwarding sector. The findings of this study indicate that the most dominant factors influencing technology acceptance and user satisfaction are quality of information and perceived usefulness. This indicates that before considering emotional aspects such as trust, users prioritize the tangible benefits the system provides in supporting their work. Theoretically, these results strengthen the Technology Acceptance Model (TAM) framework, which emphasizes the important role of perceived ease of use and perceived usefulness in shaping user satisfaction. However, the different results for the perceived trust variable, which showed no significant effect, constitute an important contribution to the literature, particularly in the context of a mandatory system like Ceisa 4.0. This indicates that user trust has not been optimally established and is influenced by factors external to the system's functionality, such as data security, process transparency, and regulatory reliability. Therefore, increasing user trust needs to be directed through strengthening security mechanisms, clarifying process flows, and delivering more transparent and consistent system information.

4.2 Discussion

The findings of this study indicate that information quality significantly influences perceived ease of use and perceived usefulness in the context of the Ceisa 4.0 system, aligning with the conclusions drawn by Abdulnabi (2024) and Alturki & Aldraiweesh (2022), who assert that high-quality information enhances user perceptions of technology. This study further reveals that perceived ease of use and perceived usefulness are critical factors that contribute to user satisfaction, corroborating the work of Liu & Luo (2022) and Swe & Yang (2024), which emphasize that user-friendly systems positively affect overall satisfaction. Interestingly, while perceived trust was hypothesized to mediate the relationship between information quality and user satisfaction, the results indicate that it does not have a significant effect in this context. This finding contrasts with the assertions of Al-Oraini (2025) and Rehman *et al*. (2023), who argue that trust is a crucial element in enhancing user satisfaction with digital systems. The lack of a significant relationship between perceived trust and user satisfaction in this study suggests that in mandatory systems like Ceisa 4.0, users may prioritize functional aspects over trust, which aligns with the observations made by Thuy *et al*. (2023) regarding the unique dynamics of government-regulated systems. Overall, this research contributes to the literature by highlighting the importance of information quality and usability in shaping user satisfaction while suggesting that trust may not play as pivotal a role in mandatory contexts as it does in voluntary systems.

E-ISSN: 2579-5635 | P-ISSN: 2460-5891
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5. Conclusion

This study aims to analyze the influence of Quality of Information, Perceived Ease of Use, Perceived Usefulness, and Perceived Trust on User Satisfaction of CEISA 4.0 system users in freight forwarder companies in Jakarta, with the results indicating that most of the hypotheses are confirmed. The main findings reveal that quality of information has a significant effect on perceived ease of use and perceived usefulness, while perceived ease of use and perceived usefulness are proven to have a significant effect on user satisfaction, confirming that ease of use and system usefulness are key factors in increasing user satisfaction. However, quality of information does not have a significant effect on perceived trust, and perceived trust also does not have a significant effect on user satisfaction or act as a mediating variable, so trust is not a major factor in the context of user satisfaction of CEISA 4.0 customs system. Overall, the research objectives have been achieved, the research model is declared feasible, and the instrument is proven to be valid, reliable, and free from bias, so that these findings provide theoretical and practical contributions as a reference in the development and evaluation of customs information systems.

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