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Development of the E-SERVQUAL Model for Online Travel Agent to Enhance Customer Experience

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ABSTRACT

The tourism industry in Indonesia plays a crucial role in the national economy. The digital transformation has brought about substantial changes in the tourism sector, particularly in travel agencies. This transformation has led to increased consumer demand for travel services that are easily accessible and reliable. Such demand has been met by the emergence of various Online Travel Agent (OTA) that facilitate the sale of travel-related services through official websites and mobile applications. This study aims to analyze service quality by developing an e-service quality model for the top three OTA with the highest number of users in Indonesia. The limited number of studies specifically addressing service quality models for OTA as urgency of this research. Data collection in this study was conducted through data scraping from the Google Play Store. The research process involved six main stages: data collection, review categorization and mapping, model development, dimensional scoring, result analysis and discussion, and the formulation of solution recommendations. The analysis identified 22 review categories distributed across 8 E-Servqual dimensions. The highest number of reviews was found in the responsiveness dimension, with 114 reviews and an average score of 1.2 out of 5. A more in-depth analysis using the IPA method indicated that the responsiveness and information dimensions were the most frequently reviewed and needed for immediate improvement. Therefore, the study proposes improvements and solution designs to enhance CX through data-driven strategies.

Keyword: E-Service Quality, Online Travel Agent, IPA, Customer Experience

ABSTRAK

Industri pariwisata di Indonesia memegang peranan penting dalam perekonomian nasional. Transformasi digital telah membawa perubahan substansial dalam sektor pariwisata, khususnya pada biro perjalanan. Transformasi ini telah menyebabkan meningkatnya permintaan konsumen terhadap layanan perjalanan yang mudah diakses dan dapat diandalkan. Permintaan tersebut telah dipenuhi oleh munculnya berbagai *Online Travel Agent* (OTA) yang memfasilitasi penjualan layanan terkait perjalanan melalui situs web resmi dan aplikasi seluler. Penelitian ini bertujuan untuk menganalisis kualitas layanan dengan mengembangkan model kualitas layanan elektronik untuk tiga OTA teratas dengan jumlah pengguna tertinggi di Indonesia. Terbatasnya jumlah penelitian yang secara khusus membahas model kualitas layanan untuk OTA menjadi urgensi dari penelitian ini. Pengumpulan data dalam penelitian ini dilakukan melalui pengikisan data dari Google Play Store. Proses penelitian melibatkan enam tahap utama: pengumpulan data, kategorisasi dan pemetaan ulasan, pengembangan model, penilaian dimensi, analisis dan pembahasan hasil, dan perumusan rekomendasi solusi. Analisis mengidentifikasi 22 kategori ulasan yang didistribusikan di 8 dimensi E-SERVQUAL. Jumlah ulasan tertinggi ditemukan pada dimensi responsivitas, dengan 114 ulasan dan skor rata-rata 1,2 dari 5. Analisis yang lebih mendalam menggunakan metode IPA menunjukkan bahwa dimensi responsivitas dan informasi merupakan dimensi yang paling



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sering ditinjau dan perlu segera diperbaiki. Oleh karena itu, penelitian ini mengusulkan perbaikan dan desain solusi untuk meningkatkan CX melalui strategi berbasis data.

Keyword: Kualitas Layanan, IPA, Online Travel Agent, Customer Experience

1. Introduction

Technological and informational advancements have brought significant changes across various sectors, including the tourism industry. In Indonesia, tourism plays an important role in the national economy, as reflected in its contribution to the Gross Domestic Product (GDP) of tourism [1]. This is further supported by the increase in tourist visits at the end of 2024 compared to the previous year, with international tourists rising by 8.72%, domestic tourists by 11.63%, and national tourists by 19.13% [2].

Digital transformation in the tourism industry sector is marked by significant changes in travel agencies [3], which have greatly influenced the increasing consumer demand for accessible and reliable travel services. Since the onset of digital transformation, travel companies have strived to offer efficient, integrated services that align with market demands [4]. Lifestyle shifts in Indonesia also indicate that a growing segment of the population now prioritizes spending on experiences over physical consumer goods, thereby driving rapid growth in OTA [5]. Currently, various OTAs such as Traveloka, Tiket.com, Agoda, and others continue to expand in an effort to meet evolving consumer needs. OTA are digital platforms that facilitate the sale of various travel-related services to customers through official websites and mobile applications [6]. The increasingly competitive OTA landscape necessitates the enhancement of optimal digital service quality to strengthen customer experience (CX) and maintain customer loyalty.

The success of an organization or company is significantly influenced by the quality of its services, which in turn enhances user satisfaction and loyalty [7]. Therefore, a model is needed to assess service quality and customer satisfaction in internet-based services. In this context, the development of the electronic service quality (e-SERVQUAL) model is particularly relevant. The e-SERVQUAL model aims to evaluate the extent to which customer expectations align with their actual experiences of the services received and to measure the gaps between them based on specific service quality dimensions [8]. This model is commonly used to identify which aspects of service quality need to be maintained or improved, particularly in the context of e-commerce. Its implementation enables companies to address service-related issues and improve customer satisfaction [9].

Previous studies have discussed the application of the e-SERVQUAL model to enhance service quality, such as integrating e-SERVQUAL with Importance Performance Analysis (IPA) to identify the gap between user expectations and perceptions and to prioritize improvements in healthcare services [10], evaluate e-commerce service quality [11], and examine the impact of e-SERVQUAL on customer loyalty within OTA platforms [12]. Most previous studies applying the e-SERVQUAL model have focused on general platforms, with limited attention given to OTA services, especially in the context of the Indonesian market.

Moreover, existing studies commonly rely on survey-based data collection, which may not fully capture real-time user experiences and complaints. The increasing number of OTA users underscores the need for research that formulates CX strategies, especially those related to system service quality in delivering accurate information and responsive customer support [8]. Furthermore, customer experience has a significant impact on repurchase intentions, which are influenced by the perceived service quality during and after product usage [13]. This study aims to develop an e-SERVQUAL model for OTA platforms in Indonesia based on customer reviews. This study is also to integrate the IPA method to identify and prioritize key areas for service improvement in order to enhance CX through data-driven strategies.

2. Methods

This study is based on an analysis of user reviews from the top three OTA platforms: Traveloka, Tiket.com, and Agoda. It were selected based on a 2023 survey involving 6,055 respondents across Indonesia. The survey indicated a high usage rate of OTA in the country, with Traveloka being the most preferred platform by 84.62% of users. Tiket.com ranked second with 64.43%, followed by Agoda in third place with 40.79% of users [14]

. This research develops an e-SERVQUAL model for OTA as a foundation for designing appropriate strategies to enhance CX. The research methodology is illustrated in Figure 1.

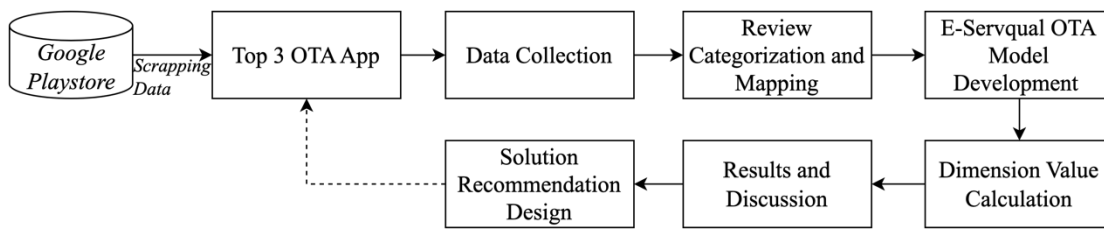


Figure 1. Methodology Research

2.1. Data Collection

The population in this study consists of users of OTA platforms in Indonesia who have submitted public reviews through the Google Play Store. The sampling frame includes all publicly available user reviews on the top three OTA platforms with the highest number of users, namely Traveloka, Tiket.com, and Agoda. A total of 100 reviews were collected from each platform, resulting in dataset of 300 reviews. The data collection was carried out using a web scraping technique supported by an automated data processing algorithm. The reviews were randomly selected from the most recent entries to ensure that the dataset accurately reflects current user experiences and perceptions. Once gathered, the data were compiled and organized using Microsoft Excel for further analysis in subsequent stages of the research.

2.2. Review Categorization and Mapping

The compiled data were then categorized based on the types of products offered by each OTA platform. Subsequently, the reviews were mapped into the e-SERVQUAL dimensions, which include interface design, reliability, responsiveness, security, fulfilment, personalization, information, and empathy. These dimensions were selected based on enhancements to service quality dimensions that are more relevant to electronic service environments [15] [16]. Table 1 presents the definitions of each e-SERVQUAL dimension used in this study. The e-SERVQUAL dimensions facilitate the identification of areas requiring improvement, based on the specified dimensions, in order to enhance overall e-service quality.

Table 1. E-Servqual Dimension

Dimension	Definition
<i>Interface Design</i>	Physical facilities, equipment, and company appearance that serve as key elements in service accessibility and support the success of the payment process.
<i>Reliability</i>	Enhancement of customer trust in the company's credibility and consistency in fulfilling its promises.
<i>Responsiveness</i>	Improving customer convenience during the purchasing process and ensuring seamless transactions.
<i>Security</i>	Assurance of customer safety from potential hazards, risks, and concerns.
<i>Fulfillment</i>	Guarantee that the information received by customers is accurate, timely, and reliable regarding the availability of products and services.
<i>Personalization</i>	Services designed to meet customers' individual needs and preferences optimally.
<i>Information</i>	Provision of sufficient information to assist customers in making informed purchasing decisions.
<i>Empathy</i>	Responsiveness in addressing customer needs related to company information.

2.3. Model Development

The results of the data mapping serve as a reference for developing the e-SERVQUAL model for OTA platforms. The proposed model is expected to serve as a foundation for companies in formulating strategies to enhance CX.

2.4. Dimension Value Calculation

After the model was developed, calculations were conducted for each e-SERVQUAL dimension. The modeled data were analyzed based on the e-SERVQUAL framework. The results of the analysis are presented in the form of a bar chart illustrating the distribution of user review counts, a radar chart showing the distribution of review scores, and a table displaying the spread of user review scores. In addition, the IPA

model was also applied to analyze the relationship between user perceptions and the prioritization of service or product quality improvements. This model produces a calculation indicating the level of alignment between user expectations and service realization, which in turn determines the priority order for enhancing factors that influence customer satisfaction [17].

2.5. Result Analysis and Discussion

The results of the e-SERVQUAL calculations, as represented through bar charts, radar charts, and score tables, were then analyzed to derive insights aligned with the research objectives. The bar chart was utilized to display the frequency distribution of user reviews across each e-SERVQUAL dimension, allowing identification of the most frequently discussed service aspects. The radar chart served to visualize and compare the average performance scores of each dimension, thereby revealing disparities in service quality. The score tables provided detailed numerical data to support the interpretation of user sentiment within each review category. These calculations help identify which e-SERVQUAL dimensions are most frequently reviewed by users, as well as the corresponding sentiment scores. These insights serve as a reference for developing appropriate e-SERVQUAL improvement strategies. The results from the IPA were also analyzed to determine the priority areas for improvement in OTA platforms.

The IPA model consists of four quadrants. Quadrant I represent the top priority area, which includes the most critical aspects that require more resources and attention from the company. Quadrant II contains aspects that should be maintained, as they are important and contribute significantly to customer satisfaction, thus necessitating the continuation of current performance levels. Quadrant III is classified as low priority, indicating areas that do not require immediate focus. Lastly, Quadrant IV represents areas of possible overkill, involving aspects deemed less important, where resource allocation can be shifted toward more critical areas identified in the IPA [17].

2.6. Solution Recommendation Design

The results of the e-SERVQUAL and IPA analyses serve as the basis for recommending improvements to OTA platforms based on prioritized aspects. The proposed solutions are expected to provide valuable insights for companies in optimizing their e-SERVQUAL performance.

3. Results and Discussion

Based on the data collection results, a total of 300 data entries were obtained, comprising usernames, dates, content, and user review scores.

3.1. Review Categorization

Table 2 presents the results of the review categorization based on thematic analysis. The categorization was conducted by interpreting the meaning of each e-SERVQUAL dimension. These review categories serve as codes or groupings. Based on the analysis, a total of 22 review categories were identified.

Table 2. Review Categorization of OTA

Code	Review Category	Number of Review	Review Percentage
A1	Efficiency and speed of the refund process	65	21,7%
A2	Consistency and transparency of price and location information	39	13,0%
A3	Prompt responses and effective solutions from customer service	34	11,3%
A4	Accuracy of paylater system in accordance with available credit limits	21	7,0%
A5	Service facility alignment with descriptions and updates on non-partner hotels	20	6,7%
A6	Application stability, error-free performance, and responsiveness	18	6,0%
A7	Completeness of transportation options with a smooth booking process	15	5,0%
A8	Accuracy of service availability and policy information	15	5,0%

Code	Review Category	Number of Review	Review Percentage
A9	Speed of order confirmation and registration	15	5,0%
A10	Product variety, including flexible vouchers, promotions, and insurance	13	4,3%
A11	Optimal functionality of booking and payment features	11	3,7%
A12	Accuracy of payment status, booking ID, and order details to prevent errors	9	3,0%
A13	Availability and functionality of ticket features and data correction options	5	1,7%
A14	Clarity of information on cashback, fast track check-in, and promotional emails	5	1,7%
A15	Optimal data verification functions for paylater services	3	1,0%
A16	Additional security measures for user personal data	3	1,0%
A17	Ease and speed of the payment process	2	0,7%
A18	Ad display settings that do not disturb users	2	0,7%
A19	System stability in booking without automatic cancellations	2	0,7%
A20	Transparency of ticket price differences among users	1	0,3%
A21	Comfort of the paylater billing system	1	0,3%
A22	Variety of payment methods to suit user preferences	1	0,3%
Total		300	100%

3.2. Review Categorization and Mapping

The categories were then mapped based on themes or e-SERVQUAL dimensions. The grouping is illustrated in Figure 2 below.

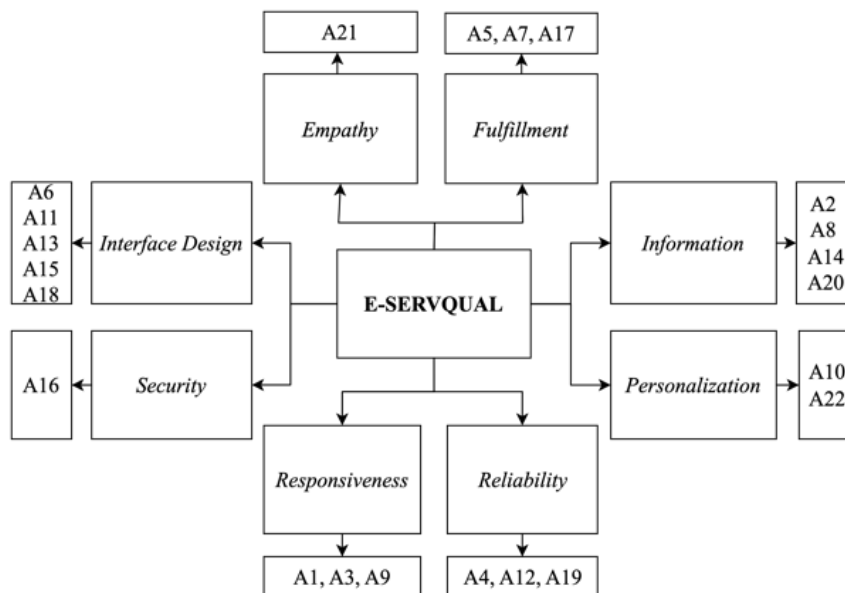


Figure 2. E-SERVQUAL Model

3.3. Dimension Value Calculation

The analysis of e-SERVQUAL score calculations, as illustrated in Figure 3, represents the number of user reviews grouped under each e-SERVQUAL dimension. The analysis indicates that Responsiveness is the most frequently reviewed dimension, with a total of 114 reviews. This is followed by Information, which received 60 reviews, and Interface Design with 39 reviews. Based on these figures, it can be inferred that these three dimensions are likely the most prominent aspects noticed by OTA users.

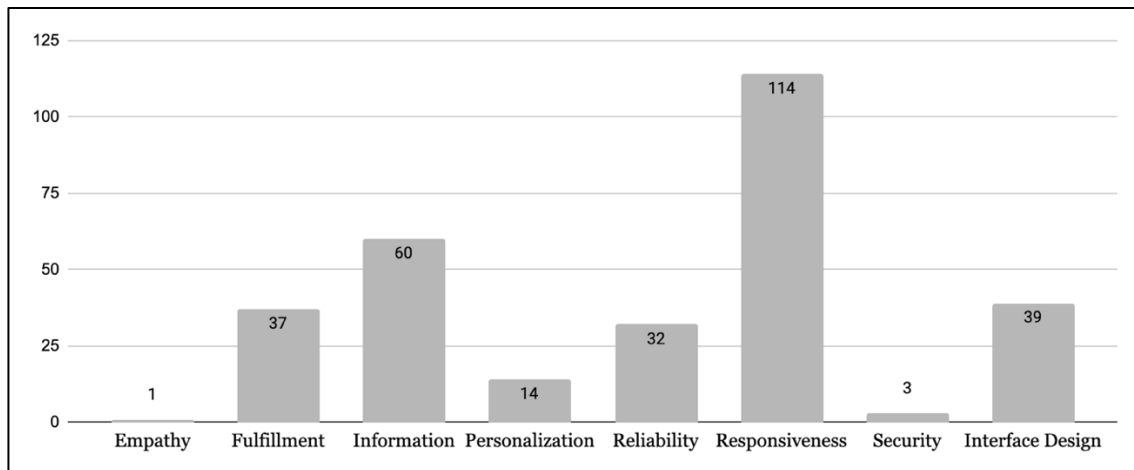


Figure 3. Distribution of Review E-SERVQUAL Dimensions

Figure 4 illustrates the distribution of review scores mapped to the corresponding e-SERVQUAL dimensions. Based on the score distribution, the Personalization dimension received the highest average review score from users, reaching a value of 5. This indicates that users are highly satisfied with service quality related to personalization. The second-highest score was recorded for the Fulfillment dimension, with an average score above 3. In contrast, when compared with Figure 1, the Responsiveness dimension despite being the most frequently reviewed received a relatively low average score, below 1. This suggests that users who commented on this dimension tended to give low ratings, indicating dissatisfaction with responsiveness-related service quality.

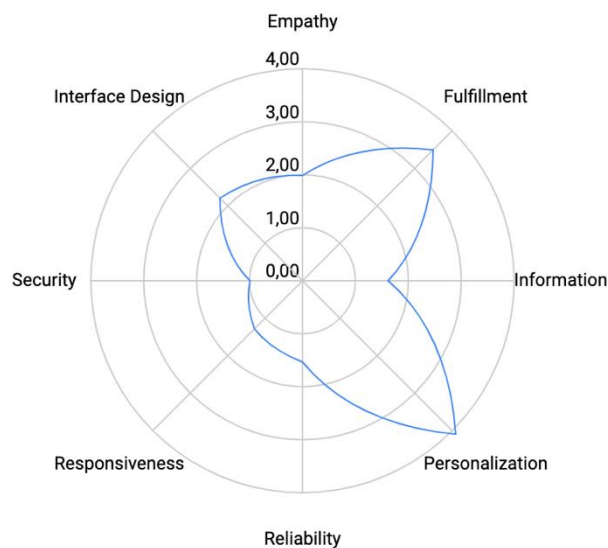


Figure 4. Radar Chart of E-SERVQUAL Dimensions

Table 3 presents the distribution of review scores across the e-SERVQUAL dimensions, based on the review categories defined in Table 2. According to the review scores, the highest rating was found in the Personalization dimension, specifically under code A22, indicating that customers were satisfied with service features that offered payment methods aligned with their preferences. According to previous studies, customers are more likely to make purchases when presented with relevant recommendations and personalized offers [18], making this aspect highly important to users. However, within the same Personalization dimension, code A10 received a lower score compared to A22, where users expressed dissatisfaction with the variety and flexibility of products such as vouchers, promotions, and insurance. Customers tend to be more satisfied when they are able to benefit from discounts and promotional offers during the purchasing process [19]. This lack of flexibility may stem from terms and conditions imposed on the use of vouchers, promotions, and insurance. These conditions can lead customers to choose competing applications that are perceived to be more beneficial and affordable [20], potentially threatening customer loyalty.

Table 3. Distribution of Review Scores on E-SERVQUAL Dimensions

Dimension	Code	Score	Dimension	Code	Score
<i>Empathy</i>	A21	2,00	<i>Reliability</i>	A12	1,33
<i>Fulfillment</i>	A7	4,67		A19	1,00
	A17	4,50	<i>Responsiveness</i>	A3	1,28
	A5	1,25		A1	1,26
<i>Information</i>	A20	2,00		A9	1,13
	A2	1,77	<i>Security</i>	A16	1,00
	A8	1,73		A13	4,20
	A14	1,00	<i>Interface Design</i>	A6	2,78
<i>Personalization</i>	A22	5,00		A11	1,82
	A10	3,15		A15	1,33
<i>Reliability</i>	A4	2,24		A18	1,00

The highest score was achieved by the Fulfillment dimension, specifically code A7. The high score indicates that the OTA services sufficiently met customer needs regarding transportation options with a smooth booking process. Another Fulfillment code with a relatively high score was A17, which pertains to the ease and speed of the payment process. It suggests that users generally rated payment-related services positively. However, code A5, which relates to the suitability of service facilities with descriptions and updates of non-partner hotel listings, received a lower score. Overall, OTA platforms have adequately met customer needs.

Then, the Interface Design dimension, particularly code A13, received relatively high scores, indicating user satisfaction with the availability and functionality of ticket features and data correction options. However, other codes under Interface Design, such as A6, received lower scores. Code A6 is related to the stability of the application—specifically its error-free and responsive performance. In addition, code A11, which pertains to the optimal functionality of order and registration features, was also rated lower.

3.4. Importance Performance Analysis

Figure 4 presents the results of the IPA, represented using a Cartesian diagram. Based on the analysis, Responsiveness and Information are located in Quadrant I. This quadrant indicates that these two dimensions are highly important to users but currently have low performance, implying that companies need to give immediate attention and plan for improvements. According to the review scores in Table 3, OTA services must improve responsiveness in terms of refund efficiency and speed, prompt and effective customer service responses, and order confirmation and registration speed. Given that these aspects were the most frequently reviewed by users, companies should focus on enhancing them. Failure to address these issues may result in a decline in customer loyalty, which could ultimately affect company revenue [21]. Additionally, improvements in the Information dimension should focus on consistency and transparency in price and location information, as well as the accuracy of service availability and policy information.

In Quadrant II, the Interface Design dimension is found. This quadrant represents aspects that are highly important and perform well. Thus, companies should maintain performance in this dimension. Quadrant III indicates aspects that are considered less important and have low performance, where the dimensions Security and Empathy are located. Although not top priorities, improvements in these areas are still necessary. Lastly, Quadrant IV represents dimensions that are less important but exhibit high performance, namely fulfillment and personalization. These areas may be considered as models for improvement in other dimensions or may have their resources reallocated to other areas in need, to ensure more balanced service quality across digital platforms.

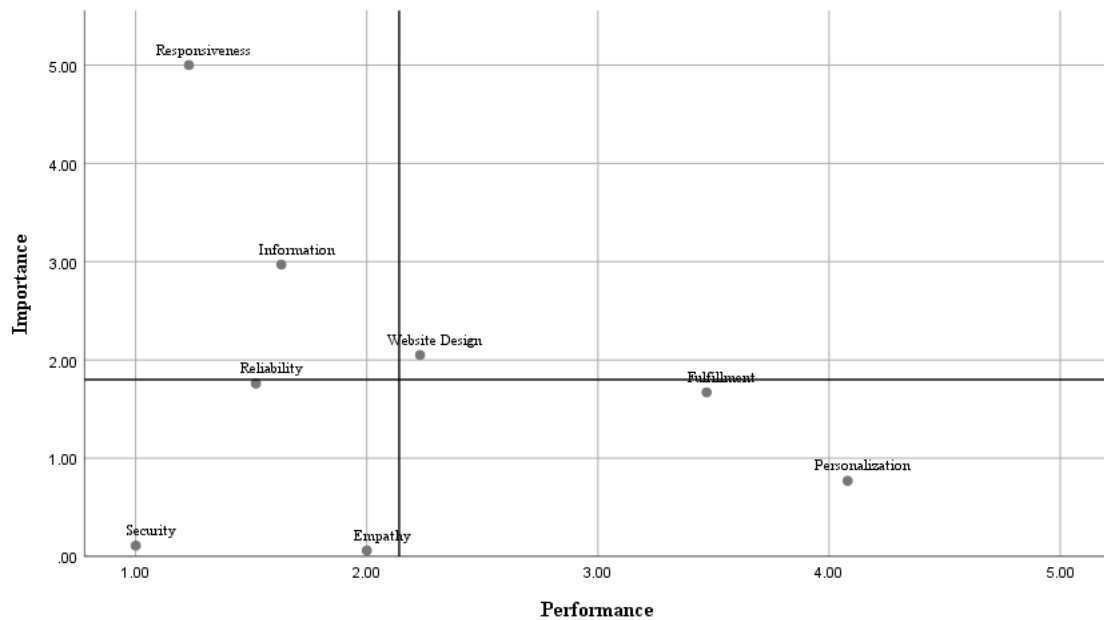


Figure 5. Cartesian Diagram of Importance Performance Analysis

3.5. Solution Recommendation

Following the e-SERVQUAL and IPA score calculations and analyses, several insights emerged that may serve as guidance for OTA companies seeking improvement. Based on the analysis, companies should prioritize enhancements in the Responsiveness and Information dimensions. To improve responsiveness, one solution is to enhance customer service response through Natural Language Processing (NLP)-based chatbots or Dialogflow. NLP-based chatbots can provide faster and more natural responses to customers [21]. Studies have shown that implementing NLP in customer service significantly improves user experience, which in turn positively influences customer satisfaction and loyalty [22].

Furthermore, issues related to the refund process can be addressed by implementing an automated refund system. One promising technology is blockchain, which enables the use of decentralized payment systems via Distributed Ledger Technology (DLT). This technology can accelerate transactions by reducing intermediaries [23]. To address slow booking and registration confirmations, the implementation of smart contracts may offer a viable solution, while also helping to prevent potential fraud [24].

In the Information dimension, blockchain technology can also be applied to ensure consistency and transparency of price, location, and service availability information in real time. Moreover, automatic notification performance can be enhanced by optimizing the supporting algorithm. With improved algorithms, the system can better analyze user behavior and send more relevant and prioritized notifications, such as in cases of sudden ticket cancellations or flight schedule changes. Based on the overall IPA analysis, resources allocated to Quadrant IV could be redistributed to Quadrant I in order to further optimize e-service quality. Prior to implementation, companies should conduct further research into the feasibility of the proposed recommendations and consider their existing resource capacities. Appropriate improvements can lead to significant enhancements in overall CX.

4. Conclusion

This study developed an e-SERVQUAL model for OTA platforms in Indonesia using customer review data and integrated the IPA method to identify service attributes that require improvement. A total of 22 review categories were identified and mapped into eight e-SERVQUAL dimensions, providing a comprehensive overview of user perceptions and expectations. The analysis revealed that responsiveness and information are the most critical dimensions influencing customer satisfaction and should be prioritized in service improvement efforts. Meanwhile, personalization and fulfilment received consistently high ratings, reflecting existing service strengths.

To address the identified service gaps, the study recommends implementing NLP-based chatbots to enhance real-time responsiveness and adopting blockchain technology to improve transaction transparency and information accuracy. These solutions aim to strengthen digital service quality, improve CX, and increase

customer retention. By applying the e-SERVQUAL framework and data-driven strategies, OTA platforms can not only improve their service quality but also maintain competitive advantage and drive revenue growth. This research offers actionable insights for service managers to allocate resources more effectively, develop user-oriented innovations, and build a more responsive and trustworthy digital tourism ecosystem.

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