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CONTENT

Volume XXI, Issue (1) (2025) 365-375

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DOI: 10.5937/IMCSM25365D *Original Research*

EVALUATING TRANSATLANTIC CRUISE SERVICE QUALITY: AN INTEGRATED SERVQUAL AND IPA APPROACH

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Abstract: This study investigates the service quality of transatlantic cruises by applying the SERVQUAL model combined with Importance-Performance Analysis (IPA) and gap analysis. Transatlantic cruises are a unique segment within the rapidly growing cruise tourism industry, where high service quality is crucial for customer satisfaction and loyalty. Despite its importance, empirical research applying robust service quality frameworks to this specific sector is still limited. This research utilizes a quantitative survey approach using a structured SERVQUAL questionnaire. Gap analysis revealed negative gaps across all five SERVQUAL dimensions, indicating that passenger's perceptions consistently fell short of their expectations. The Responsiveness, Reliability, and Empathy dimensions showed the largest gaps highlighting critical areas for improvement. A modified IPA analysis identified specific attributes requiring immediate attention, such as service timeliness and staff responsiveness to passenger requests. Additionally, it provided strategic guidance for resource allocation according to the categorization of other quality service attributes. The findings from the integrated IPA and gap analysis reveal a consistent pattern of performance deficits across all evaluated attributes, thereby highlighting the necessity for comprehensive service quality improvements within the observed transatlantic cruise operator. This study provides valuable insights for cruise service providers seeking to improve service delivery and passenger satisfaction.

Keywords: Service quality, SERVQUAL, Cruise tourism, IPA, Gap analysis

1. INTRODUCTION

In the contemporary landscape of the global tourism industry cruise services have emerged as one of the fastest growing segments, experiencing significant transformation over recent decades. Transatlantic cruises, in particular, offer a distinctive segment within this

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industry, characterized by extended voyages and a focus on providing comprehensive onboard services and amenities. As such, the evaluation of service quality in this context becomes paramount for ensuring customer satisfaction and fostering long-term loyalty. Service quality is defined as the consumer's judgment of a service's overall excellence or superiority. It is perceived quality that differs from objective quality (Yoon & Cha, 2020) and is recognized as a key determinant of business success.

Cruise tourism represents one of the fastest-growing segments within the global travel and leisure industry. Among its many subcategories, transatlantic cruises offer unique experiential value, combining long-haul travel with wide-ranging onboard services. As competition intensifies among cruise operators, maintaining high service quality has become essential for securing customer satisfaction and loyalty. Unlike traditional hospitality environments, cruise ships operate as self-contained service ecosystems where the quality of service significantly influences various stages of the passenger journey, from check-in and dining to entertainment and disembarkation (Arasli et al., 2020).

In this context, measuring and managing service quality poses distinct challenges. The SERVQUAL model, developed by Parasuraman et al. (1988), provides a structured, multidimensional framework that compares passengers' pre-travel expectations with their post-travel perceptions. This gap-based approach has been widely adopted in hospitality, health care, retail, and more recently, maritime tourism. However, empirical applications of this service quality model in cruise tourism remain still limited, particularly in the transatlantic sector. Furthermore, there is a growing need to complement SERVQUAL insights with actionable strategic tools like the Importance-Performance Analysis matrix developed by Martilla and James (1977), which helps service managers prioritize resource allocation.

This paper investigates the service quality of transatlantic cruises using the SERVQUAL model, a widely recognized framework for assessing the gap between customer expectations and perceptions of delivered service (Prasad & Verma, 2022). The goal of this research is to provide practical insights into the dynamics of service quality in the cruise industry, to assist cruise operators in improving their service delivery strategies and enhancing overall passenger satisfaction.

2. LITERATURE REVIEW

The measurement of service quality in the tourism and hospitality sectors has long been a subject of academic interest. Research indicates that high service quality can lead to increased customer satisfaction, profitability, customer loyalty, retention, and a positive corporate image (Alonazi et al., 2023; Daniel & Berinyuy, 2010).

Despite the growing academic interest in the cruise sector, research regarding service quality remains relatively fragmented, primarily due to the field's multidisciplinary character and its comparatively recent emergence. Much of the existing literature has focused on business, management, and economics aspects. While quantitative studies have covered service quality, cruise attributes and perceived value, qualitative approaches have also been used to a lesser extent on topics such as branding and corporate sustainability (Yoon & Cha, 2020).

Service quality in cruise tourism encompasses multiple dimensions, including tangible elements like ship infrastructure and intangible aspects such as emotional satisfaction and interpersonal interactions with staff. In the context of cruise services, these dimensions are interpreted through both human interactions (e.g., crew professionalism, responsiveness) and environmental features (e.g., ship cleanliness, amenities). Yulianti (2020) conducted an empirical investigation of global cruise service quality and passenger loyalty, identifying tangible elements such as cabin comfort and ship facilities as primary satisfaction drivers.

These findings align with those of Mikuličić et al. (2024), who systematically reviewed maritime passenger transport and found SERVQUAL's dimensions to be especially effective when supplemented with context-specific servicescape variables.

Recent empirical studies show a growing interest in applying the SERVQUAL model to evaluate service quality in the cruise industry. It remains one of the most frequently employed instruments for such assessments due to its ability to identify gaps across five service quality dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Milana, 2018; Parasuraman et al., 1988). Originally designed for service environments like banking and healthcare, this model has since been adapted to suit hospitality contexts including hotels, resorts, and cruise lines (Alonazi et al., 2023). For instance, a study conducted by Alonazi et al. (2023) assessed the impact of service quality on tourists' satisfaction and corporate image, as well as their intentions to increase their expenditures and revisit. The findings indicated that four SERVQUAL dimensions (reliability, responsiveness, assurance and empathy) significantly influenced tourist satisfaction, highlighting the model's relevance in post-COVID-19 cruise tourism recovery efforts.

However, SERVQUAL alone may not be sufficient for strategic decision-making. Integrating the assessment of service quality with strategic management tools such as the IPA matrix enables decision makers to convert diagnostic findings into actionable priorities. The IPA matrix evaluates both perceived performance and the importance of specific service attributes (Deng & Pierskalla, 2018), allowing managers to allocate resources more effectively. The synergistic application of these two methods provides a robust framework for understanding and enhancing service quality in the cruise tourism industry by identifying both the gaps in service delivery and the key areas where managerial efforts should be concentrated.

Importance-Performance Analysis is a widely used methodology to evaluate customer satisfaction by analyzing the relationship between the importance of service attributes and their actual performance. This approach has been extensively applied in various sectors, including maritime tourism and service quality (Dwyer et al., 2016; Simpson et al., 2020) to identify areas that require improvement and prioritize resources effectively.

Collectively, these studies highlight the relevance of using SERVQUAL and IPA in tandem to assess, interpret and act upon service quality data within the context of cruise tourism. However, their applications to transatlantic cruises remain scarce. This paper addresses that gap by offering a comprehensive evaluation of passenger experiences on transatlantic voyages through the integrated use of these two analytical tools.

3. RESEARCH METHODOLOGY

This study adopted a quantitative survey designed to assess service quality and customer satisfaction in the cruise tourism sector. The chosen approach allowed for measuring cruise passengers' expectations and perceptions of service quality, and for assessing how these perceptions impacted their overall satisfaction.

Data were collected using a self-administered structured questionnaire on a sample of 230 respondents. Cruise passengers rated both their pre-cruise expectations and post-cruise perceptions of service quality on a 5-point Likert scale (1-5). The initial questionnaire, serving as the foundational instrument for assessing service quality, was adapted from the work of Lai (2004) and subsequently modified and validated through practical application. The questionnaire included 22 SERVQUAL items (paired expectation vs. perception) covering five RATER dimensions: Tangibles (4 items), Reliability (5 items), Responsiveness (4 items), Assurance (5 items), and Empathy/Customer Relations (4 items), consistent with the

SERVQUAL framework (Lonial et al., 2010). In addition, respondents provided demographic information (sex, age group, number of previous cruises, and education level).

The theoretical foundation for assessing service quality in this research is the widely applied SERVQUAL model, an attribute-based measurement method for service quality (Akbaba, 2006) which is measured by evaluating the gap between customer expectations of the service and their perceptions of the received service (Perception - Expectation). The model comprises five core RATER dimensions of service quality. Tangibles refer to the physical elements associated with the service environment, including the appearance of facilities, equipment and personnel. Reliability is the ability to perform the promised service dependably and accurately. Responsiveness is the willingness to help customers and provide prompt service. Assurance refers to the knowledge and courtesy of employees and their ability to inspire trust and confidence among customers. Empathy refers to the degree of personalized care and individual attention provided to customers.

The SERVQUAL model presents a conceptual framework that outlines various discrepancies affecting how customers assess service quality. Although the original formulation identified five key gaps, subsequent revisions of the model expanded this framework to encompass seven primary gaps (Daniel & Berinyuy, 2010). In this study the gap five was measured, which is considered the true measure of service quality from the customer's perspective. This gap score analysis was performed by calculating the difference between customer perception ratings and their expectation ratings (P - E). In general, a positive gap means performance exceeds expectation, whereas a negative gap indicates the service is falling short of what customers expect.

A modified Importance-Performance Analysis was conducted using mean expectation as the importance score and mean perception as the performance score for each service attribute (item). Theoretically, using expectations as a stand-in for importance in IPA should be applied cautiously, however many researchers have used SERVQUAL expectation scores as a proxy for importance, when collecting separate importance ratings was not feasible (Liestyanti & Prawiraatmadja, 2021; Tzeng & Chang, 2011).

A combination of IPA and gap analysis helps provide more information on the differences between importance (sometimes represented by expectations) and performance (sometimes represented by satisfaction) to examine service quality (Choi et al., 2018). While IPA provides a visual analysis of importance and performance on a grid, gap analysis specifically focuses on the numerical difference between the two. The combination helps to provide more information on these differences after conducting an IPA. The results are typically visualized on a two-dimensional grid, commonly divided into four distinct quadrants: "Keep up the good work" (high importance, high performance), "Potential overkill" (low importance, high performance), "Low priority" (low importance, low performance), and "Concentrate here" (high importance, low performance) (Deng & Pierskalla, 2018; Zhang & Chow, 2004).

This framework serves as a diagnostic tool, facilitating the identification of attributes where a product or service is underperforming or overperforming in achieving its objectives. Statistical analysis was performed using a specialized statistical package SPSS.

4. RESULTS AND DISCUSSION

4.1. Descriptive statistics

Table 1 presents the demographics of the respondents. Slightly more respondents were female (51.7%) than male (48.3%). The age distribution was skewed toward older passengers:

only 2.6% were aged 18-25, while the largest groups were ages 45-55 (39.6%) and 55 and above (37.4%). Most respondents were relatively experienced cruisers: 42.6% had taken three or more cruises previously. The majority had higher education (81.7% with a bachelor's degree or higher). In summary, the sample consisted mainly of well-educated older adults who are mostly seasoned cruise customers.

Table 1. Demographic characteristics of respondents (N = 230)

Variable	Category	Frequency	Percentage (%)
Sex	Male	111	48.3%
	Female	119	51.7%
Age (years)	18-25	6	2.6%
	25-35	11	4.8%
	35-45	36	15.7%
	45-55	91	39.6%
	55+	86	37.4%
Number of Cruises (prior trips)	1	52	22.6%
	2	80	34.8%
	≥ 3	98	42.6%
Education Level	Primary school	6	2.6%
	High school	36	15.7%
	Junior college	95	41.3%
	Graduate degree	93	40.4%

4.2. SERVQUAL Analysis

The SERVQUAL gap (perception minus expectation) was calculated for each RATER dimension as the mean of perception items minus the mean of expectation items. In cruise tourism, tangibles include the design and upkeep of the vessel, the cleanliness and comfort of cabins and public spaces, staff presentation (e.g., uniforms and grooming), and the quality of printed or digital information provided to guests. Reliability is demonstrated by adherence to schedules (e.g., embarkation, excursions), the accuracy of reservations and billing, and the consistency of service delivery across different departments on board. Responsiveness takes into account how quickly and efficiently crew members respond to guest inquiries, requests, or complaints, and their readiness to provide assistance throughout the voyage. In the cruise setting, assurance is reflected in staff competence, multilingual communication skills, visible safety procedures and the demeanor of crew members who interact directly with passengers. On a cruise ship empathy can be seen in how staff accommodate dietary or accessibility needs,

remember guests' names, offer tailored recommendations, or demonstrate cultural sensitivity during service interactions.

Based on the statistical analysis, mean gaps were negative and statistically significant in all five dimensions (Tangibles, Assurance, Reliability, Responsiveness, Empathy), indicating that customer perceptions fell short of expectations (Table 2). For example, the Tangibles dimension had a mean expectation of 4.55 (SD = 0.50) and a mean perception of 3.60 (SD = 0.66), yielding a mean gap of -0.95 (SD = 0.56, $t(229) = -25.83$, $p < 0.001$). Similarly, all other dimensions showed large negative gaps (-0.90 to -1.14) with $p < 0.001$. These negative gap scores conform to Parasuraman's service-quality gap model, where a negative gap (perceived quality is less than expected quality) signifies service underperformances. In practical terms, cruise passengers rated all aspects of service below their high expectations, suggesting systemic quality deficiencies across RATER dimensions.

Table 2. Mean expectation and perception scores by dimension

Dimension	**Mean Expectation (SD)**	**Mean Perception (SD)**	**Gap** $(\overline{\boldsymbol{P}} - \overline{\boldsymbol{E}})$	**Paired *t*-test**	**Sig**
Tangibles	4.55 (0.50)	3.60 (0.66)	-0.95	-25.83	*
Assurance	4.67 (0.50)	3.77 (0.57)	-0.90	-26.30	*
Reliability	4.65 (0.45)	3.52 (0.43)	-1.13	-39.69	*
Responsiveness	4.65 (0.62)	3.51 (0.74)	-1.14	-22.68	*
Empathy	4.77 (0.56)	3.68 (0.58)	-1.09	-28.20	*

*Note:*All gaps are significantly different from zero at $p < 0.001$*

These results indicate that customers' expectations consistently exceeded their experiences in every dimension. From a managerial standpoint, this consistent deficiency in service quality highlights a critical need for targeted strategic improvements in service delivery processes. In particular, dimensions with the largest gaps (Responsiveness, Reliability and Empathy) represent areas of greatest concern. These findings are consistent with the SERVQUAL framework, wherein negative gap scores indicate that the service delivery is falling to satisfy standards anticipated by customers (Daniel & Berinyuy, 2010). The statistically significant gaps (all $p < 0.001$) confirm that these discrepancies are unlikely due to chance.

4.3. Modified Importance-Performance Analysis (IPA) and gap analysis

The analysis followed standard procedures for Importance-Performance Analysis and gap analysis of service attributes. The provided dataset was prepared based on the mean Importance (expectation) and Performance (perception) ratings for each of 22 items. First, the gap was calculated for each item. Paired-sample t-tests (two-tailed) were conducted for each attribute to assess whether the mean gap differed significantly from zero (Table 3). An attribute with a negative gap indicates performance below expectation, which typically results in decreased customer satisfaction based on disconfirmation paradigm (Deng & Pierskalla, 2018).

Table 3. Gap analysis for quality service attributes

Ranking	Attributes	Importance	Performance	Gap	t-value	Sig
1	RES3	4.78	3.34	-1.44	14.4	*
2	REL2	4.79	3.40	-1.39	13.9	*
3	ASR4	4.87	3.61	-1.26	12.6	*
4	RES1	4.77	3.52	-1.25	12.5	*
5	CRE2	4.79	3.55	-1.24	12.4	*
6	RES4	4.76	3.53	-1.23	12.3	*
7	REL3	4.55	3.36	-1.19	11.9	*
8	CRE3	4.87	3.69	-1.18	11.8	*
9	TAN4	4.79	3.62	-1.17	11.7	*
10	REL1	4.77	3.60	-1.17	11.7	*
11	TAN3	4.66	3.50	-1.16	11.6	*
12	CRE4	4.76	3.70	-1.06	10.6	*
13	REL5	4.70	3.66	-1.04	10.4	*
14	ASR3	4.81	3.85	-0.96	9.6	*
15	REL4	4.45	3.59	-0.86	8.6	*
16	CRE1	4.63	3.78	-0.85	8.5	*
17	ASR2	4.81	3.98	-0.83	8.3	*
18	TAN1	4.53	3.78	-0.75	7.5	*
19	ASR5	4.45	3.72	-0.73	7.3	*
20	TAN2	4.21	3.51	-0.70	7.0	*
21	ASR1	4.40	3.71	-0.69	6.9	*
22	RES2	4.28	3.66	-0.62	6.2	*

*Note: *All gaps are significantly different from zero at $p < 0.001$*

In this analysis, item abbreviations were used to represent the five service quality dimensions. Tangibles (TAN1-TAN4) refer to physical facilities and appearance. Assurance (ASR1-ASR5) measures staff competence and trustworthiness. Reliability (REL1-REL5) assesses consistency and accuracy in service delivery. Responsiveness (RES1-RES4) covers promptness and willingness to help passengers. Customer Relations (CRE1-CRE4), also associated with Empathy, reflects personalized attention and care for passengers. These abbreviations will be used to streamline discussion across tables, figures, and analysis.

Next, the IPA matrix was constructed by plotting each item's mean importance on the vertical axis and mean performance on the horizontal axis (Figure 1). Crosshairs were placed at the grand mean of importance (4.66) and performance (3.62) scores, thus dividing the plot into four quadrants. Finally, a combined IPA - gap analysis was performed by adding a 45° iso-priority diagonal line through the origin (P = I). Points above this line have performance exceeding importance (positive disconfirmation), while points below have performance below importance (negative disconfirmation). This diagonal line thus visually highlights the magnitude and direction of each gap alongside the quadrant placement (Boley et al., 2017).

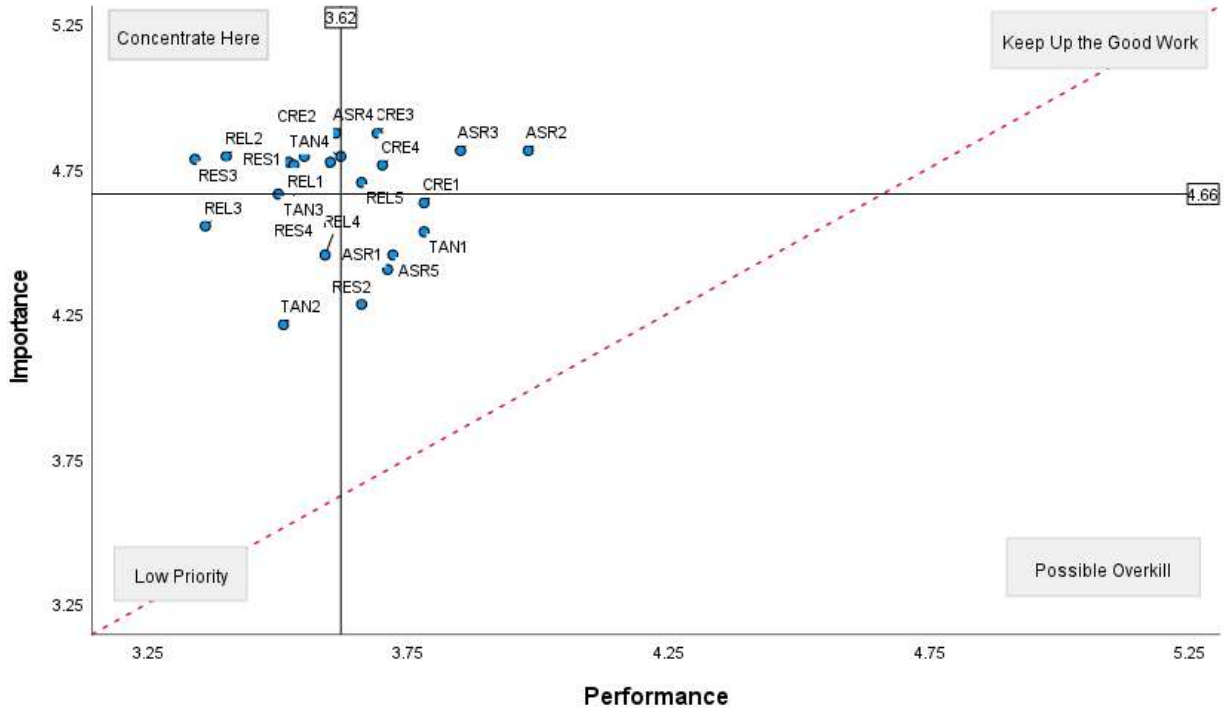

Figure 1. Combined gap analysis and IPA

The results of the Importance-Performance Analysis revealed how passengers rated each of the 22 service quality items based on their position within one of the four IPA quadrants. Their placement identifies key areas for improvement, strengths to maintain, and potential resource reallocation.

Concentrate Here (High Importance, Low Performance) items exhibit both exceptionally high expectation and pronounced underperformance, demanding immediate action. For example, REL2 (Services provided at promised time, events start without delay) showed a gap of -1.39, and RES3 (Employees react quickly in handling requests/complaints) had the largest gap at -1.44. Similarly, ASR4, RES1, RES4 and CRE2 all fall here. These reflect critical deficiencies in reliability (timeliness) and responsiveness (prompt assistance). Their combination of critical importance to passengers and substantial performance shortfalls indicates these are the service dimensions most urgently in need of process improvements, additional training, or resource allocation.

Keep Up the Good Work (High Importance, High Performance) attributes meet passenger expectations and reflect organizational strengths. For instance, ASR2 (Staff members are competent in performing their duties) and ASR3 both achieved high performance, with smaller gaps (-0.83 and -0.96, respectively). Equally, CRE3 (Staff members show sympathy and are reassuring when problems occur), CRE4 and TAN1 (A modern fleet of ships is maintained) occupy this quadrant. These items represent core competencies of the staff. Management should continue investing in staff training and safety communication to sustain these positive perceptions.

Possible Overkill (Low Importance, High Performance). Here, resources may be reallocated without harming satisfaction as these attributes exceed passenger expectations but are not highly valued. ASR5, TAN2 (Attractive ambience and decor), ASR1, RES2 (Employees promptly inform passengers of service/event timings), and TAN1 are plotted here with modest gaps (-0.62 to -0.75). While maintaining acceptable levels is important, some

effort currently devoted to these areas could be shifted toward the Concentrate Here attributes to close more impactful service gaps.

Low Priority (Low Importance, Low Performance) quadrant includes service aspects that passengers rate as less critical and where performance is also lower. Examples include TAN4 (Brochures, menus, and price lists are visually appealing and easy to understand), CRE1 (Employees give individual attention to passengers' specific needs), as well as TAN3. Although these items underperform, their lower importance suggests that immediate strategic focus elsewhere will yield greater returns. Basic standards should be maintained, but significant new investments are not recommended here.

According to Choi et al. (2018), while traditional IPA is effective, it has limitations in strategic analysis. Introducing the concept of a service quality gap model is a way to correct or enhance the traditional IPA model. Using the IPA grid along with the gap analysis's iso-rating line provides multidimensional information that aids in improving the precision of resource distribution strategy. The 45° iso-rating or iso-priority line in Figure 1 serves as a visual indicator for gap analysis, separating the graph into two areas based on the relationship between importance and performance (Deng & Pierskalla, 2018). Based on the Figure 1, all of the service quality items are positioned above the line which is consistent with findings from some previous studies (Boley et al., 2017; Choi et al., 2018). Quality attributes plotted above this line indicate situations where importance exceeds performance. These are considered negative gap points. According to the sources, this pattern indicates that management attention is required for all measured attributes because performance fails to meet importance.

5. CONCLUSION

This study evaluated the service quality of transatlantic cruises using an integrated model incorporating SERVQUAL, gap analysis and Importance-Performance Analysis. The results demonstrate a consistent pattern of service quality underperformances on all five SERVQUAL dimensions (Tangibles, Reliability, Responsiveness, Assurance, and Empathy), as evidenced by negative gaps between passenger expectations and perceptions. Passengers expected a greater level of service quality than what they experienced on board.

The gap analysis highlighted Responsiveness, Reliability and Empathy as the dimensions with the most substantial deficiencies, indicating where the highest managerial attention is needed. In practical terms, this means that passengers are often faced with delays or unfulfilled promises and slower-than-expected service, which can undermine satisfaction and loyalty. The subsequent IPA, enhanced by incorporating the gap analysis perspective, provided more granular insights for strategic decision-making. Attributes falling into the "Concentrate here" quadrant, such as the timeliness of service delivery and the promptness of staff response to requests, demand immediate corrective action due to their high importance and low performance ratings. Conversely, attributes in the "Keep up the good work" quadrant, like staff competence and reassurance, represent existing strengths that should be maintained and leveraged. Areas identified as "Possible overkill" and "Low priority" suggest opportunities for potential resource reallocation toward more critical service aspects.

The consistent positioning of all service attributes above the iso-priority line in the combined IPA-gap analysis underscores that, from the passengers' perspective, performance lags behind importance across the board. This indicates the necessity for comprehensive improvement efforts.

In conclusion, this study contributes to the limited body of research on service quality, specifically within the transatlantic cruise segment. By synergistically applying SERVQUAL and IPA, it offers actionable insights for cruise operators. Addressing the identified gaps,

particularly in responsiveness and reliability, is of the utmost importance for enhancing passenger satisfaction, fostering loyalty and maintaining competitiveness in this market, which is experiencing significant expansion. Future efforts should focus on implementing identified targeted strategies to close these service quality gaps and continuously monitor passenger perceptions to ensure sustained service excellence.

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