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RESEARCH ARTICLE

Prioritizing Service Quality Investments in Aesthetic Dental Clinics: An Importance-Performance Map Analysis (IPMA) Approach

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Abstract
This study examines the role of service quality in shaping revisit intention in private aesthetic dental services among millennials. A quantitative cross-sectional design was employed, with data collected from 241 respondents across eight accredited private dental clinics in Jakarta using an online survey. The study adopts the 6Q service quality framework and analyzes the data using Partial Least Squares Structural Equation Modeling (PLS-SEM) complemented by Importance-Performance Map Analysis (IPMA). The results indicate that technical quality has the strongest influence on revisit intention, followed by interpersonal and personnel quality. The model demonstrates substantial explanatory power, with an R^2 value of 0.604. IPMA findings reveal that indicators related to clinical outcomes and service efficiency, particularly aesthetic results and administrative processes, require priority improvement due to their high importance but relatively lower performance. Meanwhile, communication and clinical competence are identified as key strengths that should be maintained. These findings provide actionable insights for dental clinic managers to allocate resources more effectively by focusing on high-impact service attributes. The study contributes to the literature by extending the application of the 6Q framework in aesthetic healthcare services and integrating IPMA for more practical decision-making.

Keywords
Service quality; 6Q Framework; Revisit Intention; PLS-SEM; IPMA; Aesthetic Dental Services.

1 | INTRODUCTION

The dental service industry has changed considerably in recent years, reflecting shifts in consumer expectations and lifestyle preferences. Demand for aesthetic dental procedures, including teeth whitening, orthodontics, veneers, and smile makeovers, continues to rise as patients place greater emphasis on appearance and self-presentation (Wood, 2024). Dental care is increasingly viewed not only as a means of maintaining oral health but also as a way to improve confidence, social interactions, and professional image (Alhammadi *et al.*, 2019; Militi *et al.*, 2021). This trend has encouraged private clinics to expand their service portfolios and invest in technologies that support cosmetic treatments. As spending on aesthetic dentistry grows, clinics have greater opportunities to increase revenue beyond routine clinical services (Park *et al.*, 2021). However, market growth also creates stronger competitive pressure. In major cities such as Jakarta, patients can easily compare treatment quality, prices, practitioner expertise, and service experiences across numerous providers. Clinics that rely solely on technical competence may struggle to differentiate themselves. Sustainable growth increasingly depends on the ability to understand patient preferences, deliver consistent service quality, and build trust-based relationships. For this reason, many clinics are placing greater attention on data-informed decision making and patient-focused strategies to strengthen patient retention, improve service performance, and maintain their position in a crowded marketplace (Octaviani *et al.*, 2023).

One of the central concerns for dental clinics is identifying the factors that encourage patients to return after completing a treatment. Revisit intention is closely associated with business sustainability because repeat patients generate stable revenue streams, increase customer lifetime value, and often become a source of positive word-of-mouth referrals (Abbasi-Moghaddam *et al.*, 2019; Cham *et al.*, 2021). This issue is particularly relevant in aesthetic dentistry, where treatment processes frequently extend beyond a single appointment and may involve consultations, corrective procedures, periodic monitoring, and maintenance visits over time (Wood, 2024). As the number of providers continues to grow, retaining existing patients becomes just as important as attracting new ones. For this reason, clinic managers need a clear understanding of which aspects of service delivery influence patients' decisions to continue receiving care. Such information supports more effective managerial decisions and helps clinics prioritize investments that strengthen patient relationships and service performance (Ghanem *et al.*, 2023). Service quality has long been examined through the SERVQUAL model, which evaluates reliability, assurance, tangibles, empathy, and responsiveness as key dimensions of customer evaluation (Riaz & Sughra, 2021). While this framework remains widely used, its application in healthcare has attracted increasing discussion. Patients do not assess healthcare services solely through interpersonal interactions or operational efficiency. Their judgments are also shaped by treatment outcomes, perceived safety, professional expertise, diagnostic accuracy, and confidence in clinical procedures (Endeshaw, 2020). As a result, relying exclusively on conventional service quality dimensions may overlook factors that strongly influence patient loyalty and future treatment decisions in aesthetic dental practice.

In response to ongoing concerns regarding the suitability of traditional service quality models in healthcare, Grönroos proposed a distinction between functional quality and technical quality (Grönroos, 1984). Functional quality refers to how services are delivered, including communication, responsiveness, and interactions between patients and healthcare providers. Technical quality relates to what patients actually receive, such as treatment effectiveness, clinical accuracy, and professional competence. This distinction is particularly relevant in healthcare because patients evaluate not only their service experience but also the outcomes of care (Kang & James, 2004; Nasrul, 2020). Building on this perspective, Swain and Kar introduced the 6Q service quality framework, which consists of infrastructural, interpersonal, personnel, procedural, social support, and technical quality dimensions (Swain & Kar, 2018). Unlike SERVQUAL, the 6Q framework recognizes that patient perceptions are influenced by both organizational and clinical factors. This approach is especially suitable for aesthetic dental services, where treatment outcomes, provider expertise, and service experiences jointly shape patients' willingness to return for future treatments (Seong *et al.*, 2015; Woo & Choi, 2021).

Although the 6Q service quality framework offers a broader perspective for evaluating healthcare services, its application in aesthetic dental settings remains relatively scarce, particularly among millennial patients in emerging economies. This gap is noteworthy because millennials represent a major consumer segment for aesthetic treatments and often place considerable value on appearance, self-confidence, and personal branding (Ma, 2023; Militi *et al.*, 2021). Their expectations commonly extend beyond clinical outcomes to include convenience, communication quality, transparency, and overall service experience. Another concern relates to the practical relevance of existing research. Many studies focus on identifying statistically significant relationships between service quality dimensions and patient behavior, yet offer limited guidance regarding which areas should receive managerial attention first (Teeluckdharry *et al.*, 2022). As a result, clinic managers may recognize influential factors without having a clear basis for prioritizing investments. This issue becomes more critical when financial and operational resources are constrained. Under such conditions, improving every aspect of service quality is rarely feasible. Managers require evidence that considers both the importance of service attributes and their current performance levels, allowing resources to be allocated more effectively and improvement efforts to generate stronger patient retention outcomes.

To address this issue, the present study integrates Importance–Performance Map Analysis (IPMA) with Partial Least

Squares Structural Equation Modeling (PLS-SEM) to generate findings that are more useful for managerial decision-making. Although PLS-SEM can identify the strength of relationships among variables, it does not indicate which service attributes should be prioritized when resources are constrained. As a result, managers may know what influences patient behavior without having a clear basis for determining where improvement efforts should begin. IPMA complements PLS-SEM by incorporating performance scores alongside importance values derived from total effects within the structural model (Sarstedt *et al.*, 2024). This approach enables the identification of service attributes that strongly influence patient outcomes but are currently performing below expectations. Such information is particularly valuable in aesthetic dental services, where competition is intense and patient expectations continue to rise (Teeluckdharry *et al.*, 2022). By classifying attributes into strategic quadrants, IPMA helps managers identify priorities, allocate resources more effectively, and focus quality improvement initiatives on areas most likely to strengthen patient retention and revisit intention (Ringle & Sarstedt, 2016).

This study contributes to the literature in several ways. First, it extends the application of the 6Q service quality framework to the context of aesthetic dental services among millennials, a segment with high consumption potential and distinct behavioral characteristics. Second, it integrates PLS-SEM and IPMA to bridge the gap between statistical modeling and managerial application, offering a more comprehensive analytical approach. Third, from an economic perspective, this study provides insights into how service quality dimensions can be translated into investment priorities, thereby supporting more efficient allocation of resources in healthcare service management. Ultimately, the findings are expected to contribute not only to service quality theory but also to practical strategies for enhancing competitiveness and financial sustainability in the aesthetic dental industry.

2 | METHOD

This study employed a quantitative, cross-sectional research design to examine the effect of service quality on revisit intention in aesthetic dental services. The study adopts a Partial Least Squares Structural Equation Modeling (PLS-SEM) approach, which is well-suited to predictive analysis and to complex models involving multiple constructs (Hair *et al.*, 2022). Moreover, PLS-SEM with SmartPLS (Ringle *et al.*, 2024) provides an advanced analytical menu, such as the IPMA analysis technique (Ringle & Sarstedt, 2016). The conceptual framework in this study is based on the 6Q service quality model proposed by Swain & Kar (2018) which captures six key dimensions of service quality in healthcare settings, alongside revisit intention as the outcome variable.

The target population consists of millennial patients who have received aesthetic dental treatments at private dental clinics. A purposive sampling technique was applied with the following criteria: respondents must be in the millennial age group (approximately 25–40 years old), have received aesthetic dental services, and have visited a private dental clinic within the past year. Data were collected from eight accredited private dental clinics in Jakarta. In line with PLS-SEM requirements, a minimum sample size of 160 respondents was determined to ensure adequate statistical power and robustness of the model estimation (Hair *et al.*, 2022).

The measurement of variables in Table 1 was conducted using a structured questionnaire with a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire items were adapted from Swain and Kar (2018) and subsequently translated into Indonesian to fit the context of aesthetic dental clinics, with the translation process conducted and validated by a professional expert to ensure linguistic accuracy and contextual relevance The study includes seven constructs: six dimensions of service quality, namely infrastructural quality, interpersonal quality, personnel quality, procedural quality, social support quality, and technical quality, and one dependent variable, revisit intention. Each construct was operationalized using multiple indicators adapted from prior studies based on the 6Q framework, ensuring content validity and contextual relevance to aesthetic dental services. Data collection was carried out through an online survey distributed via Google Forms, allowing respondents to complete the questionnaire efficiently and anonymously. This method facilitated broader reach and convenience while maintaining data consistency. Before analysis, the dataset was screened for completeness and suitability for multivariate analysis.

Table 1. Variables and Indicators

Variable	Code	Indicator: Item Questionnaire
Infrastructural Quality	IFQ1	The dental clinic location is easily accessible to patients.
	IFQ2	The patient waiting room at this dental clinic is comfortable.
	IFQ3	The treatment rooms (e.g., dental chairs) are well-maintained.
Interpersonal Quality	IPQ1	The dentist provides a complete explanation of the dental treatment procedure.
	IPQ2	The dentist listens carefully to the patient's complaints.
	IPQ3	The dentist provides a consultation without feeling rushed.
Personnel Quality	PEQ1	The dentists at this clinic show empathy towards patients.

	PEQ2	The staff at this dental clinic demonstrates politeness and warm welcome
	PEQ3	The appearance of the medical staff at this clinic is clean.
Procedural Quality	PRQ1	The admission and payment process at this clinic was quick.
	PRQ2	The waiting time for dental services at this dental clinic was tolerable.
	PRQ3	I believe my dental care followed proper procedures and follow standards
Social Support Quality	SSQ1	I feel this dental clinic is known in the community for prioritizing patient interests.
	SSQ2	I feel this dental clinic operates responsibly and in accordance with regulations.
	SSQ3	This dental clinic is known for its good reputation among its patients.
Technical Quality	TCQ1	Sanitization measures are taken according to medical procedures to prevent infection.
	TCQ2	The dentist performs a thorough and thorough examination of the patient's teeth.
	TCQ3	The aesthetic appearance of the teeth after treatment shows a significant difference compared to before treatment.
Revisit Intention	RVI1	I plan to visit this dental clinic in the future
	RVI2	This dental clinic will be my first choice when I need aesthetic dental treatment services in the future
	RVI3	I prefer to have aesthetic dental treatment at this clinic rather than looking for other private dental clinics.

The data were analyzed using PLS-SEM following the guidelines of Hair *et al.* (2022) The analysis involved two main stages: evaluation of the measurement model and the structural model. The measurement model was assessed in terms of indicator reliability (outer loadings), internal consistency reliability (Cronbach's alpha and composite reliability), convergent validity (Average Variance Extracted/AVE), and discriminant validity (HTMT criterion). To enhance the managerial relevance of the findings, Importance–Performance Map Analysis (IPMA) was conducted following the approach introduced by Ringle and Sarstedt (2016). IPMA extends the standard PLS-SEM results by incorporating both the importance (total effects of exogenous constructs on the target construct) and performance (average latent variable scores rescaled to a 0–100 range). This analysis enables the identification of priority areas for improvement by distinguishing between high-impact but underperforming indicators and those that are already performing well, thereby supporting more effective and targeted managerial decision-making.

3 | RESULTS AND DISCUSSION

4.1 Results

The survey obtained a sample of 241 eligible respondents who met the criteria. The respondent profile in Table 2 indicates that the sample is predominantly female (85%), with males representing only 15%, suggesting that aesthetic dental services are more actively utilized by women within the millennial segment. In terms of educational background, the majority of respondents are well-educated, with 45% holding undergraduate degrees and an additional 16% having graduate or postgraduate qualifications. This implies that the sample largely consists of individuals with relatively high levels of education, which may influence their awareness, expectations, and decision-making regarding aesthetic dental treatments. Furthermore, the frequency of dental service utilization is notably high, with 54% of respondents reporting 4–5 visits in the past year and 17% exceeding five visits, indicating a strong engagement with dental care services and reinforcing the relevance of revisit intention as a key behavioral outcome.

From an occupational perspective, the respondents are diverse, with the largest group being private employees (33%), followed by housewives (19%) and entrepreneurs (17%), reflecting a mix of economically active and household-based individuals. Smaller proportions include government employees (10%), students (9%), professionals (8%), and part-time workers (11%), suggesting a relatively broad socioeconomic representation within the millennial cohort. In terms of service types, teeth whitening emerges as the most commonly utilized aesthetic treatment (81%), followed by orthodontic procedures such as braces (41%), dental crowns and bridges (35%), and more advanced procedures like implants and smile makeovers (20%). This distribution indicates that respondents tend to prioritize minimally invasive and appearance-enhancing treatments, while still showing a considerable interest in more complex aesthetic procedures, highlighting the growing demand for comprehensive aesthetic dental services in this segment.

Table 2. Respondent Profile (n=241)

Description	Category	Frequency (n)	Persentase (%)
Sex	Male	32	15
	Female	186	85

Description	Category	Frequency (n)	Persentase (%)
Formal education background	High school	18	8
	College	67	31
	Undergraduate	98	45
	Graduate/post graduate	35	16
Frequency of receiving dental services in the last one year	2-3 times	62	28
	4-5 times	118	54
	> 5 times	38	17
Current occupation	Student	19	9
	Government employee	21	10
	Private employee	71	33
	Entrepreneur	36	17
	House wife	41	19
	Professional	17	8
	Part timer	24	11
	Others	8	4
Types of aesthetic dental services received at the clinic (more than one can be selected)	Teeth whitening	182	81
	Orthodontic treatment (e.g. braces)	89	41
	Dental crown & bridge	77	35
	Dental implant & smile makeover	44	20

The measurement model assessment using SmartPLS 4, as in Figure 1, indicates that all constructs meet the recommended reliability and validity thresholds. A total of indicators across six service quality dimensions and revisit intention were retained, as all outer loadings exceeded the minimum criterion of 0.70, confirming strong indicator reliability. Internal consistency reliability was established with Cronbach's alpha values above 0.70 for all constructs. In addition, convergent validity was confirmed as the Average Variance Extracted (AVE) values for each construct were above the threshold of 0.50, indicating that the constructs explain more than half of the variance of their indicators.

Discriminant validity was further assessed using the Heterotrait–Monotrait Ratio (HTMT), with all values below the conservative threshold of 0.85, confirming that each construct is empirically distinct. Multicollinearity was also examined through the Variance Inflation Factor (VIF), where all values were below 5, indicating no critical collinearity issues among predictor constructs. The correlation pattern observed in the model shows that all service quality dimensions, such as technical, procedural, interpersonal, personnel, infrastructural, and social support quality, have positive relationships with revisit intention. Among these, technical quality ($\beta = 0.695$) demonstrates the strongest association, followed by interpersonal quality ($\beta = 0.632$) and personnel quality ($\beta = 0.631$), suggesting that both clinical outcomes and human interaction aspects play a crucial role in shaping patient behavior.

The PLS-SEM model, as in Figure 1, reveals that the R^2 value for revisit intention is 0.604, indicating a substantial level of explanatory power according to established PLS-SEM guidelines. This implies that approximately 60.4% of the variance in revisit intention is explained by the six dimensions of service quality included in the model. Such a result highlights the strong predictive relevance of the proposed framework in the context of aesthetic dental services and suggests that service quality is a key determinant of patients' intention to return to private dental clinics. Since all criteria for the measurement model have been satisfactorily met, the analysis can be confidently extended to the Importance–Performance Map Analysis (IPMA), which was conducted following established procedures and produced importance values derived from total effects and performance values based on rescaled mean scores.

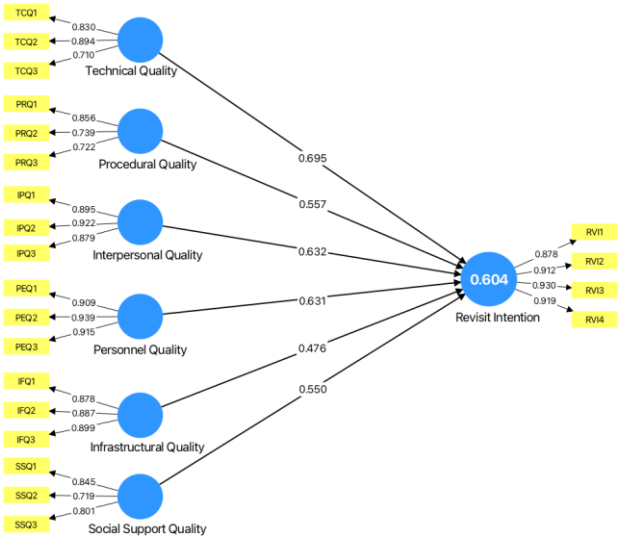

Figure 1. Measurement Model

The IPMA results in Table 3 show that the overall mean importance is 0.064 and the mean performance is 69.633, which can be used as benchmark thresholds for managerial interpretation. Several indicators demonstrate performance above the average, particularly those related to interaction and technical quality, such as IPQ1 (80.556), IPQ2 (79.524), and IFQ3 (76.508), indicating that these aspects are already well-perceived by respondents. In terms of importance, TCQ2 (0.110), TCQ1 (0.105), and IPQ1 (0.095) stand out as the most influential indicators driving revisit intention, suggesting that technical outcomes and interpersonal interactions are key determinants in aesthetic dental service evaluation.

Table 3. Importance – Performance Value

Indicator Variable	Importance (total effect)	Performance (Rescale to 100)
IFQ1	0.070	69.633
IFQ2	0.070	69.101
IFQ3	0.068	76.508
IPQ1	0.095	80.556
IPQ2	0.090	79.524
IPQ3	0.090	79.127
PEQ1	0.055	70.688
PEQ2	0.053	68.995
PEQ3	0.049	68.889
PRQ1	0.093	68.466
PRQ2	0.046	54.392
PRQ3	0.056	67.619
SSQ1	0.008	55.714
SSQ2	0.005	63.704
SSQ3	0.006	61.164
TCQ1	0.105	71.852
TCQ2	0.110	74.392
TCQ3	0.093	65.873
Mean	0.064	69.633

The results show that several indicators fall below the mean performance threshold (69.633) and therefore require managerial attention. Notably, PRQ2 (54.392), SSQ1 (55.714), SSQ2 (63.704), and SSQ3 (61.164) exhibit relatively low performance scores, indicating weaknesses in procedural and social support aspects. Additionally, PEQ2 (68.995), PEQ3 (68.889), and TCQ3 (65.873) are slightly below the average, suggesting moderate areas for improvement. Among these, PRQ2 is particularly critical due to its combination of low performance and moderate importance, making it a priority for service enhancement. Overall, the IPMA highlights that while core service delivery (technical and interaction quality) performs well, supporting dimensions such as procedural efficiency and social support require strategic improvement to optimize patient revisit intention.

The mean values obtained from the IPMA table can be visualized in Figure 2, specifically, the average importance

(0.064) and average performance (69.633), serve as critical reference points to construct the importance–performance map. These mean scores are used to draw the vertical (importance) and horizontal (performance) lines, which divide the map into four quadrants. As illustrated in the figure, this segmentation enables a clear classification of indicators into: (1) high importance–high performance (keep up the good work), (2) high importance–low performance (priority for improvement), (3) low importance–high performance (possible overinvestment), and (4) low importance–low performance (low priority). By using these mean thresholds, the analysis provides a more interpretable and strategic visualization of which service quality attributes require managerial attention and resource allocation.

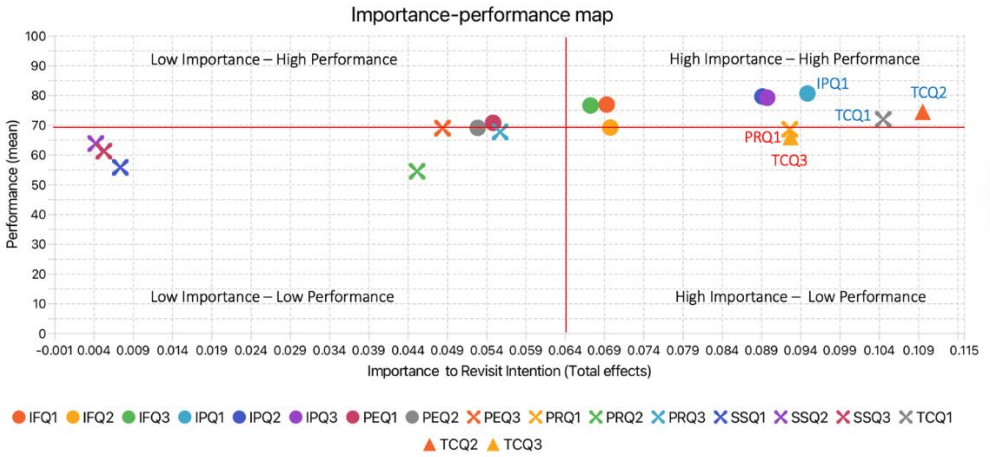

Figure 2. IPMA Mapping

3.2 Discussion

The PLS-SEM results indicate that technical quality exerts the strongest influence on revisit intention, followed by interpersonal quality and personnel quality, making these dimensions the top managerial priorities. The findings of this study are consistent with prior research, particularly the work of Park *et al.* (2021), which highlights the critical role of technical quality in shaping patient behavioral outcomes. In particular, indicators such as TCQ2 (The dentist performs a thorough and thorough examination of the patient's teeth) and TCQ1 (Sanitization measures are taken according to medical procedures to prevent infection), along with IPQ1 (The dentist provides a complete explanation of the dental treatment procedure), show the highest importance in driving patient return behavior. This suggests that patients place primary value on clinical competence, treatment safety, and clear communication. From an operational perspective, clinics should prioritize investments in advanced diagnostic technologies, continuous clinical training for dentists, and standardized patient communication protocols (e.g., treatment briefing guidelines or visual consultation tools). Strengthening these areas will not only improve perceived service quality but also enhance patient trust and increase the likelihood of repeat visits, ultimately contributing to long-term revenue growth.

In essence, the Importance–Performance Map Analysis (IPMA) provides practical managerial insights by classifying service attributes into four quadrants based on their importance and performance values using the mean thresholds (importance = 0.064; performance = 69.633). Indicators located in the high importance–high performance quadrant represent key strengths that must be consistently maintained. These include IPQ1 (The dentist provides a complete explanation of the dental treatment procedure), IPQ2 (The dentist listens carefully to the patient's complaints), and IPQ3 (The dentist provides a consultation without feeling rushed), as well as TCQ1 (Sanitization measures are taken according to medical procedures to prevent infection) and TCQ2 (The dentist performs a thorough and thorough examination of the patient's teeth). These findings indicate that both interpersonal communication and technical competence are critical drivers of revisit intention and are already performing well. From a managerial economics perspective, maintaining these strengths is essential to sustain patient trust, satisfaction, and repeat visits.

In addition, infrastructural quality indicators such as IFQ1 (The dental clinic is easily accessible to patients), IFQ2 (The patient waiting room at this clinic is comfortable), and IFQ3 (The treatment rooms (e.g., dental chairs) are well-maintained) show relatively strong performance levels, although their importance is moderate. This suggests that physical environment and accessibility contribute positively to patient experience and should be maintained as supporting factors. These elements function as operational enablers, ensuring that the core service delivery is complemented by a comfortable and accessible clinical setting, which indirectly supports patient retention and perceived service value.

More critical attention is required for indicators in the high importance–low performance quadrant, which represent priority areas for improvement. These include TCQ3 (The aesthetic appearance of the teeth after treatment shows a significant difference compared to before treatment) and PRQ1 (The admission and payment process at this clinic was quick). Despite their high importance, their performance levels are below the average threshold, indicating a gap between

patient expectations and actual service delivery. From an economic standpoint, improving these aspects can yield significant returns, as better treatment outcomes and more efficient administrative processes directly enhance perceived value and influence revisit intention.

Further improvements are also needed for PRQ2 (The waiting time for dental services at this dental clinic was tolerable) and PRQ3 (I believe my dental care followed proper procedures), which exhibit relatively low performance. Long waiting times and perceived inefficiencies in procedures may reduce patient satisfaction and increase the likelihood of switching to competing clinics. Addressing these issues through better scheduling systems, process optimization, and adherence to standardized procedures can improve operational efficiency and reduce service bottlenecks, ultimately enhancing overall service quality.

Indicators such as PEQ1 (The dentists at this clinic show empathy towards patients), PEQ2 (The staff at this dental clinic demonstrates politeness), and PEQ3 (The appearance of the medical staff at this clinic is clean) fall into the low importance high performance quadrant. While these attributes perform well, their relatively lower importance suggests that additional investment may not significantly increase revisit intention. Therefore, clinics should maintain current service standards in these areas without over-allocating resources, ensuring that investments remain focused on more impactful service dimensions.

Further, indicators in the low importance–low performance quadrant include SSQ1 (I feel this dental clinic is known in the community for prioritizing patient interests), SSQ2 (I feel this dental clinic operates responsibly and in accordance with regulations), and SSQ3 (This dental clinic is known for its good reputation among its patients). These aspects currently have limited influence on revisit intention and relatively low performance, indicating that they are not immediate priorities for managerial intervention. However, in the long term, these factors may contribute to brand image and trust, suggesting that gradual improvements can still be considered as part of a broader strategic positioning effort.

The results of this study further support prior research (Teeluckdharry *et al.*, 2022), indicating that Importance–Performance Map Analysis (IPMA) is an effective analytical tool in service industries, particularly within healthcare settings. In the context of private dental clinics, IPMA proves valuable in translating complex PLS-SEM results into actionable managerial insights by simultaneously considering the importance and performance of service attributes. These findings reinforce earlier evidence that IPMA is especially useful in healthcare services (Octaviani *et al.*, 2023), where improving patient experience and optimizing resource allocation are critical for enhancing competitiveness and long-term sustainability.

4 | CONCLUSIONS AND FUTURE WORK

This study concludes that investments in aesthetic dental clinics should be primarily directed toward high-impact service quality dimensions that significantly drive revisit intention. Technical quality, particularly TCQ2 (The dentist performs a thorough and thorough examination of the patient's teeth) and TCQ1 (Sanitization measures are taken according to medical procedures to prevent infection), emerges as the most influential factor, followed by interpersonal quality such as IPQ1 (The dentist provides a complete explanation of the dental treatment procedure). In addition, indicators like TCQ3 (The aesthetic appearance of the teeth after treatment shows a significant difference compared to before treatment) and PRQ1 (The admission and payment process at this clinic was quick) require immediate improvement due to their high importance but relatively lower performance. These findings suggest that clinics should prioritize investments in clinical excellence, treatment outcomes, and service efficiency to maximize patient retention and economic returns.

The application of Importance–Performance Map Analysis (IPMA) proves to be an effective analytical approach in translating PLS-SEM results into actionable managerial insights. Unlike conventional structural analysis, IPMA not only identifies the significance of each variable through total effects but also incorporates performance scores, enabling a more comprehensive evaluation of service attributes. This dual perspective allows managers to distinguish between attributes that must be maintained, improved, or deprioritized. As a result, IPMA supports more efficient resource allocation and strategic decision-making, particularly in service industries where both perceived importance and actual performance influence customer behavior.

However, this study has several limitations that should be acknowledged. First, the data were collected using a cross-sectional design within a specific geographic context, which may limit the generalizability of the findings to other regions or populations. Second, the study focuses solely on millennials, potentially overlooking behavioral differences across other generational groups. Future research is recommended to adopt a longitudinal design, include broader demographic segments, and explore additional variables such as perceived value or trust as mediators. Expanding the model and applying it in different healthcare settings would further enhance the robustness and applicability of the findings.

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