Antecedents of Patient Satisfaction in Prenatal Care Quality: Evidence from a Maternal and Child Hospital in Rural Areas

Abstract

Aims: This study aimed to examine the influence of prenatal care quality on patient satisfaction and its subsequent effects on hospital reputation and intention to revisit among women receiving antenatal services in rural Indonesia.

Methods: A cross-sectional analytical study was conducted at a maternal and child hospital in Tabanan, Bali, involving 181 pregnant women who received antenatal care. Data were collected using the validated Quality of Prenatal Care Questionnaire (QPCQ) and analyzed with Partial Least Squares–Structural Equation Modeling (PLS-SEM) to evaluate the direct and mediating relationships among constructs.

Findings: The model demonstrated substantial explanatory power (R^2 = 0.667 for satisfaction, 0.700 for reputation, and 0.718 for revisit intention). Three dimensions of prenatal care quality, such as sufficient time (β = 0.260, p = 0.041), availability (β = 0.197, p = 0.012), and support and respect (β = 0.413, p = 0.002), significantly enhanced patient satisfaction. Satisfaction had a strong positive effect on hospital reputation (β = 0.836, $p < 0.001$) and a moderate effect on intention to revisit (β = 0.276, p = 0.013). Hospital reputation also significantly increased revisit intention (β = 0.603, $p < 0.001$).

Conclusion: Ensuring adequate consultation time, accessible services, and respectful, supportive care substantially improves satisfaction, strengthens hospital reputation, and fosters patient loyalty in rural maternal healthcare.

Keywords: *Prenatal care quality, patient satisfaction, hospital reputation, intention to revisit, maternal health services.*

Introduction

Maternal and child health represents a key priority in international health agendas. In alignment with Sustainable Development Goal 3.1, countries are expected to reduce maternal mortality worldwide, targeting fewer than 70 maternal deaths per 100,000 live births by the year 2030 [1]. Notwithstanding significant advancements in service coverage, almost 80% of maternal fatalities globally remain classified as preventable with high-quality and timely prenatal care [2]. Since 1990, Indonesia's maternal mortality has declined with better obstetric and prenatal access, yet it remains higher than most Southeast Asian countries. Persistent gaps between urban and rural areas in facilities, referral systems, and workforce show that expanding antenatal coverage is not enough; improving prenatal care quality, especially in rural and underserved regions, is essential for safer pregnancies and better maternal outcomes [3].

This need is underscored by Indonesia's maternal mortality ratio, which remained 249 per 100,000 live births in 2020, only a 45% reduction since 1990 [3]. Additionally, significant regional disparities are apparent: provinces beyond Java–Bali exhibit maternal mortality rates that exceed the national average by more than twofold [3]. Currently, the provision of comprehensive antenatal services is not keeping pace with the metrics of their utilization. For instance, the data indicates that merely 64.25% of pregnant women in rural West Java attended accurate ANC visits, as defined by meeting the recommended thresholds, in contrast to 79.81% in urban regions [4]. The data presented indicates that although a significant number of women seek care, the thoroughness and quality of these services are often inconsistent and inequitable, especially in rural areas. Together, these figures point to a coverage–quality gap.

Against this backdrop, national programs have increased antenatal care visits among Indonesian women, although studies continue to show variability in the quality and content of care delivered. Many expectant mothers receive routine clinical examinations but report inadequate counseling, limited explanation of pregnancy-related risks, and shortened consultation times. Research analyzing the Quality of Prenatal Care Questionnaire (QPCQ) has demonstrated that the interpersonal dimensions of care, encompassing information dissemination, anticipatory guidance, and provider support, frequently receive lower ratings compared to technical service elements [5].

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Addressing these limitations requires understanding how specific elements of care quality influence women's satisfaction and their future care-seeking behaviors, particularly in rural hospitals where resource constraints may exacerbate these issues.

Grounded in Donabedian's structure–process–outcome model, the QPCQ captures six process domains: information sharing, anticipatory guidance, sufficient time, approachability, availability, and support/respect, that shape women's evaluations of prenatal care [5]. Evidence shows that clear communication, consistent counseling, and empathic support improve understanding and reduce anxiety, whereas rushed or inconsistent encounters depress satisfaction [6,7]. In Indonesia and comparable settings, responsiveness, assurance, and staff empathy are strong predictors of satisfaction [8,9]. Building on this evidence, it is expected that each of the six QPCQ domains will demonstrate a positive association with overall patient satisfaction, reflecting their central role in shaping women's care experiences.

Patient satisfaction, the alignment of expectations with experienced interpersonal and technical care, functions as a proximal outcome and a driver of subsequent behavior. Higher satisfaction strengthens perceptions of hospital credibility, professionalism, and trustworthiness, thereby building institutional reputation that influences provider choice and word-of-mouth [10,11]. In Indonesian settings, satisfaction consistently predicts loyalty behaviors, including willingness to return, with assurance, responsiveness, and empathy as salient antecedents [12,13]. Patients who view a hospital as reputable report stronger intentions to revisit even after accounting for other factors, indicating that reputational capital translates perceived quality into concrete utilization decisions [11,14]. Accordingly, our conceptual model anticipates positive relationships between satisfaction and hospital reputation, between satisfaction and intention to revisit, and between hospital reputation and intention to revisit, including the possibility that reputation may strengthen or channel the satisfaction–revisit relationship.

To test this model in a resource-constrained setting, we conducted a cross-sectional study in a rural maternal and child hospital in Indonesia, using the QPCQ to measure the six care-quality domains and separate scales for satisfaction, hospital reputation, and intention to revisit. Partial least squares–structural equation modeling (PLS-SEM) was applied to evaluate the measurement properties and the proposed relational paths, providing evidence to guide improvements in antenatal care quality and patient-centered outcomes in rural services.

Materials and Methods

Research Type

This study applies a quantitative, cross-sectional design in which participants completed a structured questionnaire within a specified period. To analyze the associations among the study constructs, PLS-SEM was utilized.

Population and Sample

The study's target population consisted of pregnant women undergoing antenatal treatment at the maternal-child hospital in Tabanan, Bali, Indonesia. Participants were systematically recruited from the hospital's outpatient obstetric clinics for two weeks data collection period. The eligibility criteria comprised: (1) currently pregnant and attending antenatal care at the hospital for a minimum of two visits, (2) aged ≥18 years, (3) proficient in reading and comprehending Bahasa Indonesia, and (4) willing to give informed permission. Women experiencing obstetric problems necessitating tertiary referral or possessing cognitive or psychological impairments that would hinder questionnaire understanding were excluded.

Following the statistical power guidelines proposed by Cohen and colleagues, the required sample size was calculated using G*Power version 3.1.9.7. Using a medium effect size ($f^2 = 0.15$), a significance level of 0.05, a power level of 0.90, and up to eight predictor constructs, the analysis indicated that at least 136 respondents were needed [15]. Moreover, Kock et al. state that the minimum sample size necessary for research utilizing PLS-SEM can be approximated by the inverse square root and gamma-exponential techniques [16]. Their Monte Carlo simulation trials showed that these methods give correct estimates for getting a statistical power of at least 0.80 at a 0.05 significance level. The study suggest a minimum sample size of about 160 respondents as a general rule of thumb for PLS-SEM analyses when the requisite power cannot be known beforehand.

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Recruitment was carried out with assistance from midwives and clinic staff, who identified eligible women and invited them to participate after their visits. Each respondent received a brief explanation of the study purpose and completed the self-administered questionnaire in a designated private area of the clinic. Participation was anonymous and voluntary, and informed consent was obtained prior to data collection.

Research Tools and Data Analysis

Data were gathered using a structured questionnaire with closed-ended items and predetermined response options. The instrument covered six QPCQ domains: information sharing (IS1–IS4), anticipatory guidance (AG1–AG4), sufficient time (ST1–ST4), approachability (AP1–AP4), availability (AV1–AV4), and support and respect (SR1–SR4), which adapted from Heaman et al. [5]. Overall patient satisfaction was measured with four items (PS1–PS4) adapted from Hibsu et al. [17]. Hospital reputation used three items (HR1–HR3) adapted from Gaspersz, Antonio and Christopher [11], and intention to revisit used three items (IRV1–IRV3) adapted from Kasena and Antonio [18]. All items employed a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Participants selected the response options that best represented their perceptions or experiences with the antenatal services they received. The dataset was processed using the PLS-SEM approach through SmartPLS version 4.0 [19]. This technique was deemed suitable because it handles complex predictive frameworks with numerous latent constructs and indicators, and it performs well with moderate sample sizes and data that may deviate from normal distribution. The analysis adhered to the standard two-stage procedure, which includes assessing the measurement (outer) model followed by evaluating the structural (inner) model [20,21].

The assessment of the reflective measurement model focused on ensuring that the constructs met the required standards of reliability and validity. Items were kept only if they showed factor loadings greater than 0.70, indicating that each indicator contributed adequately to its construct. The consistency of the constructs was then examined using Cronbach's alpha and Composite Reliability, with both metrics needing to exceed 0.70 to be deemed reliable. Evidence of convergent validity was established when the Average Variance Extracted (AVE) for each construct was above 0.50. To determine whether the constructs were empirically distinct, discriminant validity was checked using the Heterotrait–Monotrait (HTMT) criterion; values under 0.85 confirmed that the constructs did not overlap excessively [20,21].

To investigate the proposed relationships among the model constructs, the structural component of the model was analyzed. Potential multicollinearity was assessed through the Variance Inflation Factor (VIF); all VIF values were below 5.0, indicating that the predictors did not exhibit problematic overlap [21]. The statistical significance of each proposed path was then evaluated using a bootstrapping resampling technique, which produced the standardized path estimates (β), along with their t-statistics and p-values [22].

The overall explanatory capacity of the model was judged using the R^2 statistic. According to commonly accepted guidelines, R^2 values around 0.25, 0.50, and 0.75 denote low, moderate, and high levels of explained variance, respectively [20]. To understand how much each predictor contributed to its outcome construct, effect sizes (f^2) were computed—categorized as small (0.02–0.15), medium (0.15–0.35), and large (greater than 0.35) impacts [15]. Furthermore, predictive relevance of the endogenous constructs was examined through the Stone–Geisser Q^2 statistic obtained via the blindfolding procedure.

IPMA (Importance–Performance Map Analysis) enhances the interpretation of PLS-SEM results by examining not only how strongly each predictor influences the target construct (its total effect) but also how well each construct performs based on its average latent variable scores [23]. This analysis delivers actionable insights by identifying the characteristics of prenatal care quality that most significantly influence patient satisfaction and the intention to revisit, thus offering practical direction for hospital administrators aiming to enhance service quality [24].

Findings

A total of 181 respondents participated in this study, all of whom were pregnant women receiving antenatal care at a maternal and child hospital in Tabanan, Bali. Figure 1 presents the outer model, demonstrating dependable indicator loadings across all constructs. The results presented in Table 1 show that every indicator achieved an outer loading above 0.70, indicating acceptable item

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reliability. All constructs also recorded Cronbach's alpha and Composite Reliability (CR) values greater than 0.70, supporting internal consistency. Moreover, each construct's AVE exceeded the 0.50 benchmark, confirming adequate convergent validity [20].

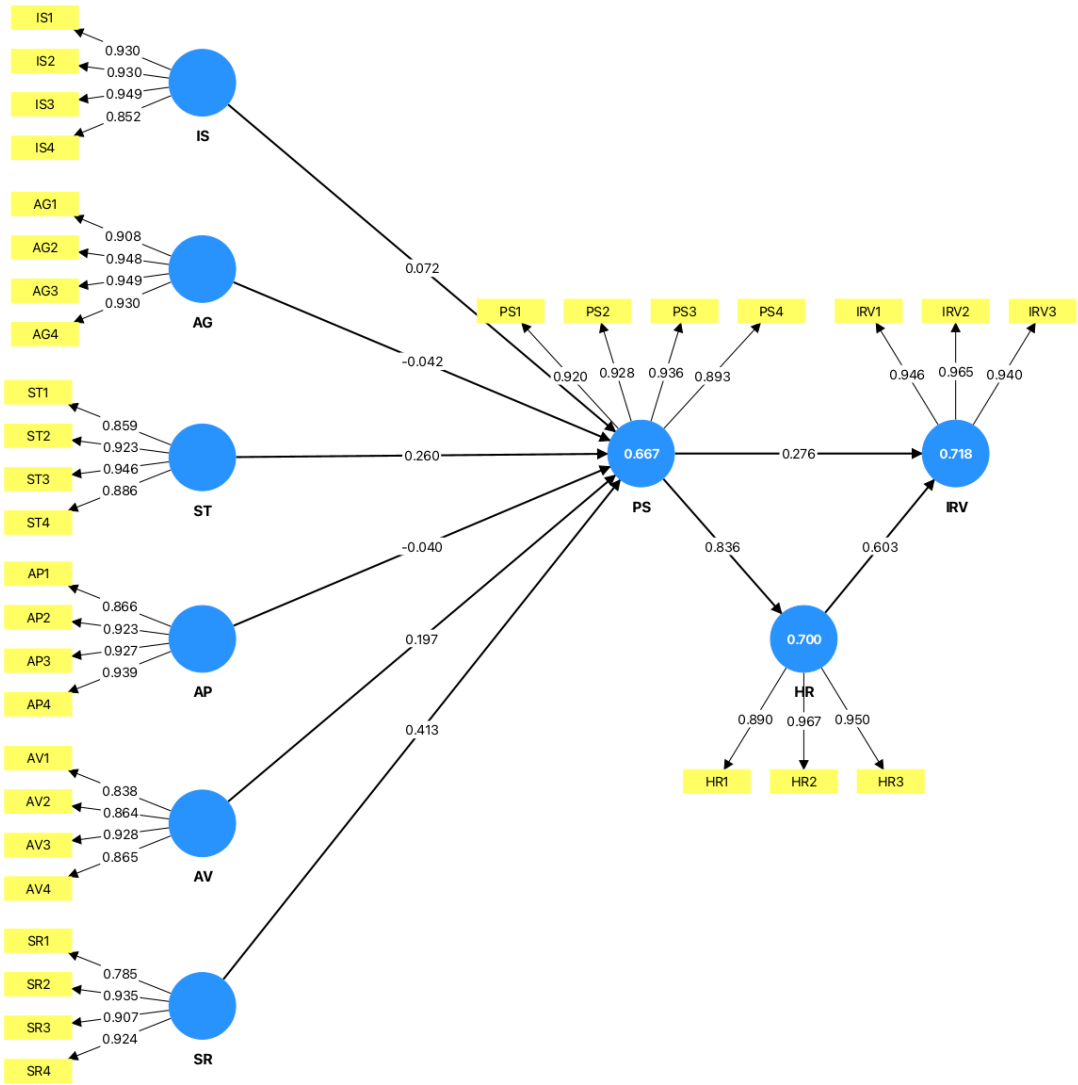

Figure 1. Outer Model

In addition, the HTMT values reported in Table 2 were all lower than the recommended cutoff of 0.90, confirming that the constructs were sufficiently distinct from one another [25]. Taken together, these results demonstrate that the measurement model meets the required standards of reliability and validity, allowing for subsequent analysis of the structural links among prenatal care quality, patient satisfaction, hospital reputation, and revisit intention.

Table 2. Outer Loadings and Construct Reliability and Validity (n = 181)

	Outer Loading	**Cronbach's alpha**	**Composite reliability (rho_a)**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
AG1	0.908	0.951	0.956	0.965	0.872
AG2	0.948				
AG3	0.949				
AG4	0.930				
AP1	0.866	0.937	1.016	0.953	0.836

AP2	0.923				
AP3	0.927				
AP4	0.939				
AV1	0.838	0.897	0.904	0.928	0.765
AV2	0.864				
AV3	0.928				
AV4	0.865				
HR1	0.890	0.929	0.936	0.955	0.876
HR2	0.967				
HR3	0.950				
IRV1	0.946	0.947	0.950	0.966	0.903
IRV2	0.965				
IRV3	0.940				
IS1	0.930	0.935	0.938	0.954	0.839
IS2	0.930				
IS3	0.949				
IS4	0.852				
PS1	0.920	0.939	0.941	0.956	0.846
PS2	0.928				
PS3	0.936				
PS4	0.893				
SR1	0.785	0.912	0.935	0.938	0.792
SR2	0.935				
SR3	0.907				
SR4	0.924				
ST1	0.859	0.925	0.927	0.947	0.817
ST2	0.923				
ST3	0.946				
ST4	0.886				

Table 2. Discriminant Validity (HTMT)

	AG	**AP**	**AV**	**HR**	**IRV**	**IS**	**PS**	**SR**	**ST**
AG									
AP	0.149								
AV	0.597	0.062							
HR	0.640	0.117	0.624						
IRV	0.517	0.128	0.563	0.885					
IS	0.890	0.237	0.502	0.619	0.584				
PS	0.631	0.097	0.705	0.890	0.823	0.630			
SR	0.724	0.053	0.749	0.789	0.770	0.692	0.827		
ST	0.766	0.112	0.686	0.813	0.711	0.787	0.801	0.889	

Figure 2 illustrates the outcomes of the structural (inner) model analysis. Prior to evaluating the structural relationships, an evaluation of collinearity among predictor constructs was performed utilizing the VIF. For the patient-satisfaction equation, VIF values were: approachability = 1.075; availability = 2.008; anticipatory guidance = 4.059; information sharing = 4.144; support and respect = 3.699; and sufficient time = 4.023. When examining predictors of hospital reputation, patient satisfaction showed a VIF of 1.000, indicating negligible collinearity in that equation. For the intention-to-revisit equation, both hospital reputation and patient satisfaction recorded VIFs of 3.329. All reported VIFs are below the conservative threshold of 5.0, which confirms that multicollinearity did not materially bias the estimation of the structural paths [20].

The R^2 results indicate strong explanatory capacity for all endogenous constructs. Patient satisfaction was explained at 0.667 (adjusted 0.655), hospital reputation at 0.700 (adjusted 0.698), and intention to revisit at 0.718 (adjusted 0.715), demonstrating substantial predictive accuracy

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across the model. In addition, the Stone–Geisser Q^2 values were 0.610 for patient satisfaction, 0.554 for hospital reputation, and 0.499 for intention to revisit, all of which exceed zero, confirming that each construct possesses meaningful predictive relevance within the model. Together, these findings underscore the model's strong capacity to account for both structural relationships and predictive performance in this maternal healthcare context.

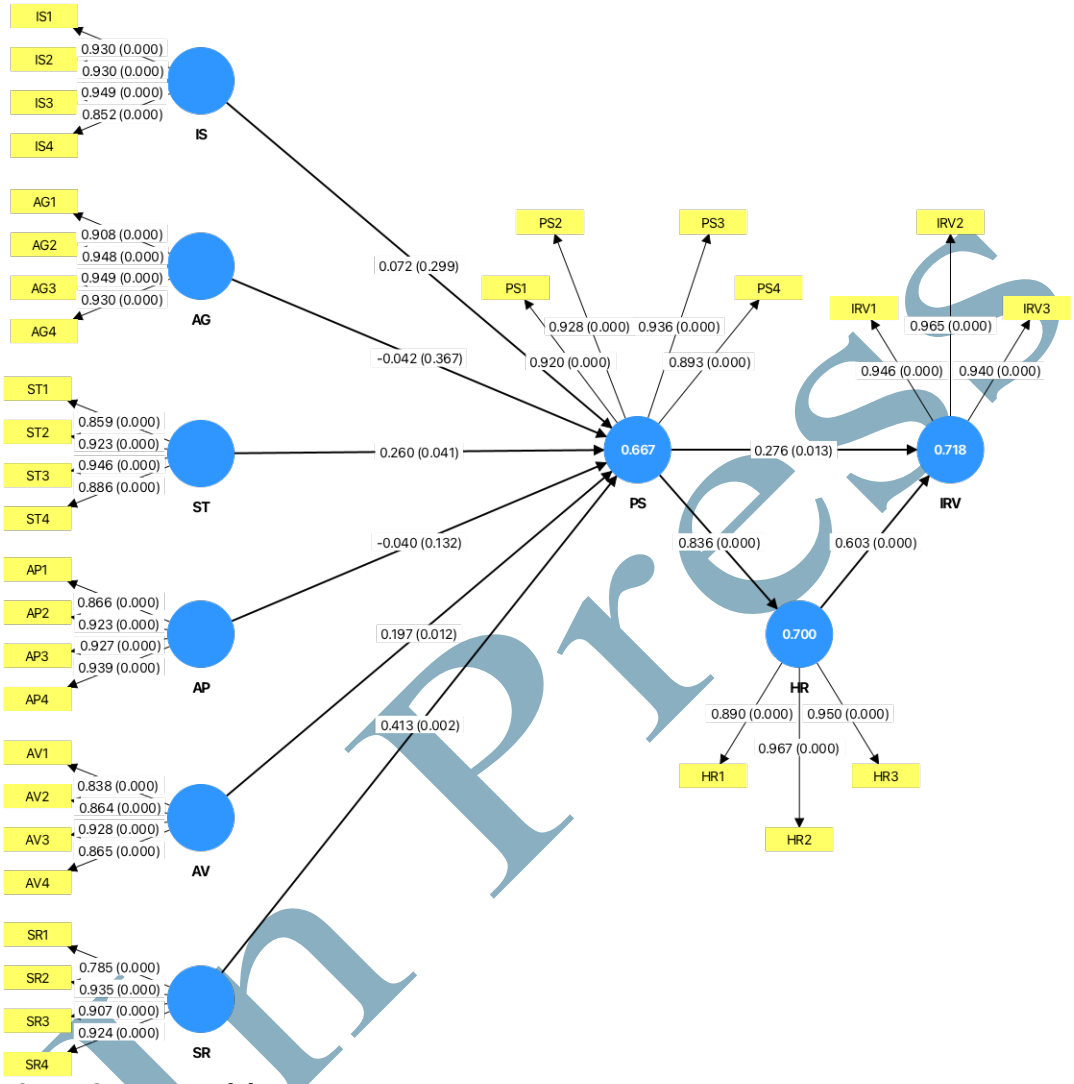

Figure 2. Inner Model

The structural analysis using one-tailed bootstrapping showed that sufficient time had a significant association with patient satisfaction ($\beta = 0.260$, $t = 1.743$, $p = 0.041$, $f^2 = 0.050$), accompanied by availability ($\beta = 0.197$, $t = 2.260$, $p = 0.012$, $f^2 = 0.058$) and support and respect ($\beta = 0.413$, $t = 2.920$, $p = 0.002$, $f^2 = 0.138$). Information sharing ($\beta = 0.072$, $t = 0.526$, $p = 0.299$, $f^2 = 0.004$), anticipatory guidance ($\beta = -0.042$, $t = 0.339$, $p = 0.367$, $f^2 = 0.001$), and approachability ($\beta = -0.040$, $t = 1.119$, $p = 0.132$, $f^2 = 0.005$) were not statistically significant. These results indicate that, within the studied rural hospital context, sufficient consultation time, accessibility of services, and respectful, supportive interactions are the primary drivers of patient satisfaction, whereas communication-related dimensions play a comparatively lesser role.

For the downstream relationships, patient satisfaction strongly predicted hospital reputation ($\beta = 0.836$, $t = 29.156$, $p < 0.001$, $f^2 = 2.329$), and also showed a moderate association with intention to revisit ($\beta = 0.276$, $t = 2.238$, $p = 0.013$, $f^2 = 0.081$). Hospital reputation further demonstrated a substantial positive effect on intention to revisit ($\beta = 0.603$, $t = 5.207$, $p < 0.001$, $f^2 = 0.388$). Overall, the pattern of effects highlights the primacy of time adequacy, service availability,

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and respectful care in shaping satisfaction, and the central role of satisfaction and reputation in influencing revisit behaviour.

Taken together, these results position patient satisfaction as an important mediating factor that connects prenatal care quality to both hospital reputation and patient loyalty. The high R^2 and Q^2 values further reinforce the model's robust explanatory and predictive performance in understanding satisfaction and revisit intentions among maternal healthcare users.

A more detailed assessment was conducted using the IPMA to identify which constructs most strongly influence patients' intention to revisit while evaluating their performance levels. The data illustrated in Figure 4 indicates that the mean importance value across constructs is 0.256, while the mean performance value stands at 77.66. Constructs situated above these mean values are deemed to possess enhanced strategic significance for the enhancement of hospital service quality. Figure 5 illustrates that none of the constructs are situated in the high-importance, low-performance quadrant, signifying that all predictors exhibit satisfactory performance levels. The constructs of patient satisfaction (importance = 0.780; performance = 85.41), hospital reputation (importance = 0.603; performance = 85.84), and support and respect (importance = 0.322; performance = 84.45) are positioned within the high-importance, high-performance quadrant, thereby affirming their essential contribution to the maintenance of patient loyalty. Meanwhile, anticipatory guidance, information sharing, availability, and sufficient time lie in the low-importance, high-performance quadrant, reflecting that these aspects are already performing well but contribute less significantly to patient loyalty outcomes. Lastly, approachability is positioned within the low-importance, low-performance quadrant, indicating that although it currently has limited influence, its relatively lower performance suggests an area that could still benefit from improvement.

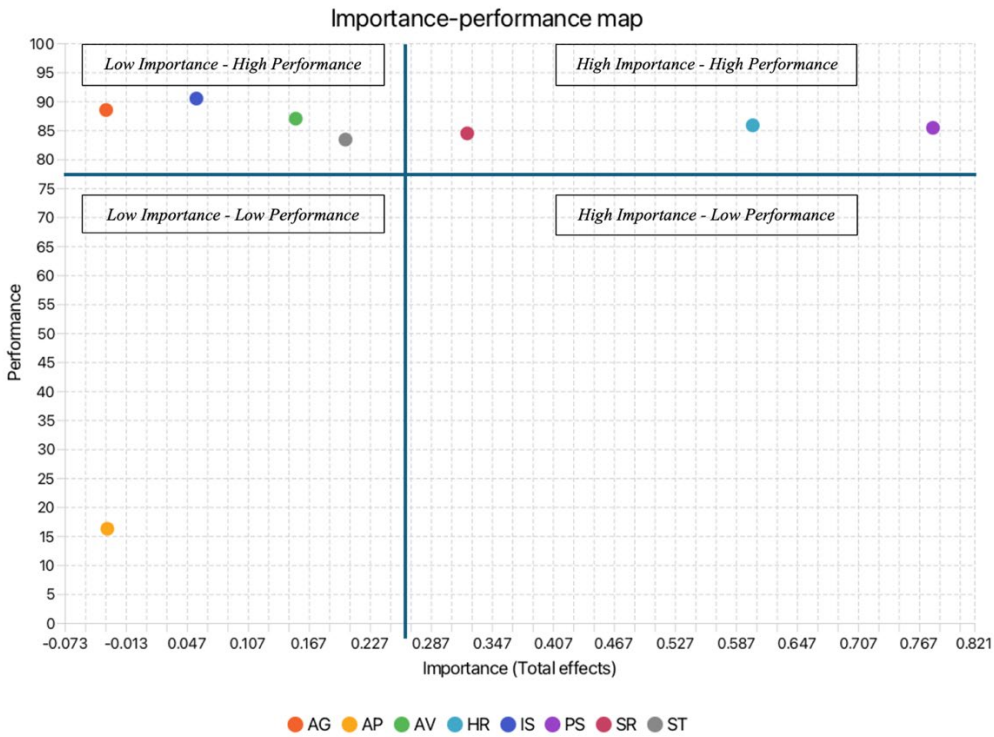

Figure 3. IPMA Constructs

At the indicator level, the average importance score is 0.072, and the average performance score is 76.34. Indicators above these means are key contributors to revisit intention, while those below may require managerial attention. Overall, the IPMA findings indicate that maintaining high performance in patient satisfaction, hospital reputation, and supportive–respectful care should remain the hospital's strategic priority, while continuous improvement in approachability may further strengthen the patient experience in prenatal services.

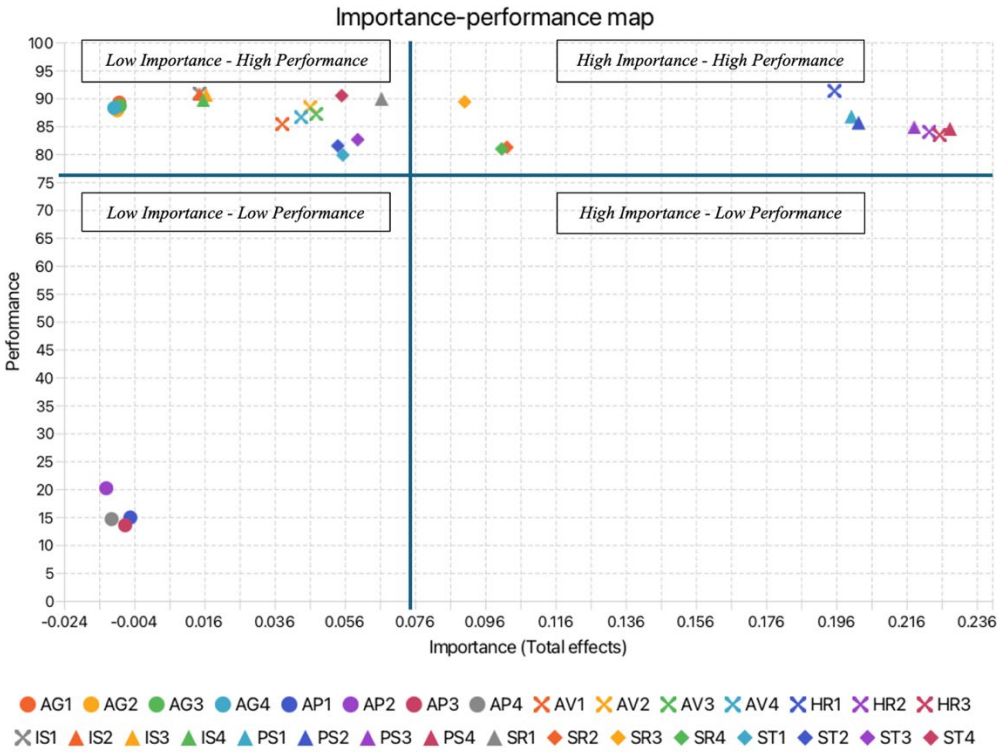

Figure 4. IPMA Indicators

Discussion

This study indicates that, in a rural Indonesian hospital context, antenatal satisfaction is shaped most strongly by sufficient time, service availability, and supportive–respectful care, whereas information sharing, anticipatory guidance, and approachability carry less weight for satisfaction. Satisfaction, in turn, affects the hospital's reputation and the intention to return through a significant indirect path via reputation.

Our findings align with recent Indonesian and LMIC evidence emphasizing the centrality of time and access in antenatal experience. A 2025 cross-sectional study from Bantul, Indonesia, found that waiting time and consultation duration were positively associated with integrated ANC quality, reinforcing that unhurried encounters and reduced bottlenecks are perceived as higher quality by pregnant women [26]. Beyond Indonesia, new analyses continue to report wide variation in ANC satisfaction across countries, with time and access dimensions frequently implicated in low ratings [27]. Comparable signals appear in East Africa, where facility and district surveys in Ethiopia report timeliness and service organization as persistent pain points that closely track overall ANC satisfaction [28,29]. In terms of support and respect pathway, recent facility studies in Ethiopia and Zanzibar demonstrate that polite communication, privacy, and being treated with dignity are independently associated with increased ANC satisfaction, after controlling for structural factors [27,30]. Systematic review for LMIC in 2023 also identified dignity, privacy, and compassionate communication as key drivers of positive experience and recent facility surveys likewise linking respectful interactions to higher overall satisfaction [31,32]. All of these studies point to the same thing: when women can get in, be seen quickly, and spend enough time with their providers, the overall quality of ANC improves, even if other areas are doing well [29,33,34].

The absence of independent effects for information sharing and anticipatory guidance should not be interpreted as clinical unimportance. Two, non-exclusive, explanations fit recent observations. First, communication items often show ceiling effects once basic counseling protocols are in place, shrinking their statistical leverage relative to time and access. This pattern is echoed in facility surveys that report high mean scores on counseling content alongside lower scores for waiting time and flow, indicating limited discriminative power for communication once minimum standards are met [27,28,33]. Second, in resource-constrained settings, patients appear to weight

tangible enablers (time to talk, ability to reach staff) more heavily than standardized counseling when forming satisfaction judgments. Additional ANC studies echo this pattern: A 2022 review flagged waiting time under sixty minutes as a consistent correlate of higher ANC satisfaction, highlighting the salience of service flow over didactic content when women summarize their experience [28]. A 2025 Ethiopian study [34] likewise linked respect, provider knowledge, and waiting time to satisfaction and a 2024 facility survey [33] reported very high overall satisfaction but lower ratings for waiting time and receiving test-result information, consistent with ceiling effects on communication items and heavier weighting of tangible enablers. Contemporary Indonesian ANC studies underline this pattern: even where coverage is improving, service organization factors (waits, reachability, coordination) dominate women's assessments [26].

Downstream, the sizeable satisfaction–reputation–revisit pathway reflects broader hospital loyalty evidence. New hospital-based analyses confirm that satisfaction improves revisit intention directly and through institution-level perceptions (reputation/credibility) [33,34]. Studies in Asian hospital systems indicate that satisfaction enhances revisit intention directly and indirectly through institutional image or reputation and related trust perceptions, suggesting that improvements in day-to-day ANC processes can compound into reputational capital that sustains future utilization [11,12,14]. Similar ANC-specific findings from Nigeria also indicate that a higher perceived quality of ANC services correlates with a willingness to return to the same facility, thereby reinforcing the satisfaction–reputation–loyalty chain identified in this context [35].

This study is not without limitations. The investigation took place in only one maternal and child hospital situated in a rural region of Bali, which may restrict the applicability of the results to other institutions or more urban populations. In addition, the study relied on participants' self-reported experiences, which may be affected by factors such as recall inaccuracies or a tendency to respond in socially desirable ways. Future studies should incorporate a broader range of hospitals across various geographic areas to allow comparisons and enhance the generalizability of the findings. Longitudinal or mixed-method approaches are also recommended to capture changes in patient satisfaction over time and to explore deeper qualitative insights into women's prenatal care experiences.

Conclusion

This study concludes that sufficient time, availability, and support and respect significantly influence patient satisfaction, while information sharing, anticipatory guidance, and approachability do not. Patient satisfaction strongly improves hospital reputation and positively affects intention to revisit, with hospital reputation also exerting a major influence on revisit intention. These results confirm that satisfaction mediates the relationship between prenatal care quality, reputation, and loyalty. Overall, ensuring adequate consultation time, accessible services, and respectful, supportive care is essential to strengthen patient satisfaction and loyalty in rural maternal healthcare settings.

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Ethical Permission

This study was approved by the Research Ethics Committee of Universitas Pelita Harapan, Indonesia (Reference Number: 047/MARS/EC/X/2025). Written informed consent was obtained from all participants prior to inclusion in the study.

Conflicts of Interests

Nothing to be reported.

Authors' Contribution

Cindy Thiovany Soetomo (First Author) – Conceptualization, Data Collection, Data Analysis, Manuscript Drafting (40%), Hendra Achmadi (Second Author) – Study Design, Supervision, Critical Review, Correspondence (30%), Made Favian Budi Gunawan (Third Author) – Data Interpretation,

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