Anti-Stigma Promotion to Improve Tuberculosis Detection and Referrals: A 9P Marketing Mix Case Study

Dian Ika Anggrai Ningrum[1], Mahendro Prasetyo Kusumo[2*]
[1,2]*Department of Hospital Administration, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta; Yogyakarta, Indonesia*

*Corresponding Author E-Mail: mahendro_prasetyo@umy.ac.id

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ABSTRACT

Tuberculosis (TB) referral hospitals frequently face a performance paradox in which treatment success rates improve while case detection and laboratory referrals decline. This study aims to analyze how the integration of the 9P marketing mix influences tuberculosis referral laboratory performance and to explain the imbalance between downstream clinical success and upstream service utilization. A qualitative case study design was employed, using in-depth interviews, observations, and document analysis involving physicians, nurses, laboratory personnel, and promotion officers. Data were analyzed thematically using the nine dimensions of the 9P framework. The findings reveal that strong product quality, competent people, and standardized process elements sustain high cure and treatment success rates. However, weak promotion and public relations strategies, fragmented referral communication, and persistent social stigma significantly constrain case detection and laboratory utilization. The results demonstrate that TB service performance is a systemic organizational outcome shaped by the integration of marketing, policy, and partnership mechanisms rather than clinical excellence alone. This study advances the 9P Marketing Mix as a strategic framework for strengthening infectious disease program performance through integrated anti-stigma communication and referral network optimization.

Keywords*: 9P Marketing Mix, Case Detection, Performance Paradox, Referral Networks, Tuberculosis.*

INTRODUCTION

Tuberculosis (TB) remains a persistent global health challenge, and Indonesia continues to rank among the world's highest TB burden countries (Iskandar et al., 2023; Saktiawati & Probandari, 2025). Recent global TB reporting emphasizes that progress toward End TB targets is constrained not only by treatment delivery but also by persistent gaps in early detection and linkage to diagnostic services, which sustain a large pool of undiagnosed and untreated transmission in the community (World Health Organization, 2023). Consistent with this, evidence syntheses underline that early detection is a central bottleneck in TB control because delayed diagnosis prolongs infectiousness, increases morbidity, and reduces the effectiveness of program investments (Yayan, 2024).

In referral hospitals, particularly specialized pulmonary referral hospitals, TB program performance may present a structural paradox: downstream clinical outcomes (cure rate, treatment success) improve, while upstream indicators such as presumptive TB identification, case detection, and referral laboratory utilization decline. This paradox suggests that clinical excellence and diagnostic capacity alone do not automatically translate into higher service utilization. Studies on diagnostic delay indicate that patient and system factors interact to postpone timely care-seeking and diagnostic completion, including barriers in pathways from first contact to confirmed diagnosis (Teo et al., 2021; Shah et al., 2022).

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A critical contextual driver in TB is stigma, which shapes health-seeking behavior, disclosure, and willingness to access diagnostic services (Ezeosim, 2023). In Indonesia, multi-site evidence shows TB-related stigma is highly salient and is associated with psychosocial burden that may reduce engagement with care, reinforcing under-detection even when services are available (Fuady et al., 2024). In addition to stigma, TB programs commonly experience losses across the referral and diagnostic cascade. Research on referral pathways demonstrates substantial pre-diagnostic loss to follow-up, where individuals who are screened or identified as presumptive TB do not complete testing, thereby weakening case detection and laboratory utilization metrics (Madybaeva et al., 2023). Qualitative evidence from high-burden contexts further shows that barriers such as fragmented coordination, limited communication, and weak community engagement constrain detection and referral completion, particularly among vulnerable groups (Greckhamer et al., 2018; Fenta et al., 2023).

Healthcare service performance is increasingly conceptualized as a multidimensional construct shaped by clinical capacity, organizational design, stakeholder engagement, and system-level integration. Contemporary health services research demonstrates that technical excellence alone does not ensure service utilization or program effectiveness, particularly in public health interventions that depend on early detection and referral coordination (Bevan & Hood, 2006; Doyle et al., 2013). In infectious disease control, upstream indicators such as screening coverage, suspect identification, and diagnostic completion are strongly influenced by communication systems, institutional trust, and referral network functionality (Meckawy et al., 2022).

Despite growing evidence on stigma, diagnostic delays, and cascade losses, TB research remains largely dominated by biomedical and epidemiological perspectives with limited attention to organizational and strategic determinants that shape service utilization and referral performance. Hospital-level communication architecture, how services are positioned, promoted, and integrated with policy and referral partners, has also not been sufficiently examined as a driver of upstream TB outcomes. Although the 9P Marketing Mix offers an integrative framework for these dimensions, its application in healthcare has mostly focused on branding, positioning, and patient satisfaction in curative services, leaving a gap in understanding how its integrated configuration affects infectious disease program performance, particularly within TB referral laboratory systems where alignment across clinical services, communication, community outreach, primary care coordination, and policy support is essential (Ge et al., 2025).

The 9P marketing mix framework product, price, place, promotion, people, process, physical evidence, policy, and partnership offers a systemic lens to evaluate how clinical capacity, communication mechanisms, policy alignment, and referral network integration collectively shape service uptake. However, empirical application of the 9P framework to infectious disease program performance, especially TB referral laboratory utilization and case detection, remains scarce. Therefore, this study aims to examine how the integration of the 9P Marketing Mix influences tuberculosis referral laboratory performance and to explain the observed imbalance between improved treatment outcomes and declining upstream detection indicators. By positioning marketing integration (including promotion, policy leverage, and partnership strengthening) as a determinant of TB program performance, this study contributes to bridging healthcare marketing theory and infectious disease systems strengthening in referral hospital settings.

LITERATURE REVIEW

9P Marketing Mix and Tuberculosis Referral System Performance

Tuberculosis (TB) control illustrates a multidimensional performance structure where clinical improvements alone do not ensure optimal program outcomes (Cazabon et al., 2017). Although treatment adherence and clinical management enhance cure rates, persistent diagnostic delays and referral cascade losses continue to undermine case detection (Madybaeva et al., 2023). In addition, TB-related stigma significantly reduces health-seeking behavior and engagement with diagnostic services, even in settings with

adequate laboratory infrastructure (Fuady et al., 2024). These findings indicate that TB performance depends not only on biomedical capacity but also on strategic and communicative integration.

To explain this complexity, the marketing mix framework is applied as a systemic approach. Originally developed as the 4P model, it evolved into the 7P Service Framework and further expanded into the 9P Marketing Mix by incorporating Policy and Partnership. This extended model captures the interaction between service quality (Product, People, Process), accessibility (Price, Place), communication (Promotion), physical credibility (Physical Evidence), regulatory alignment (Policy), and referral collaboration (Partnership). Empirical evidence shows that strong Product quality and standardized Process improve outcomes, while competent People enhance diagnostic accuracy and adherence (Psomas et al., 2024). However, service utilization is highly dependent on Promotion and Partnership, particularly in addressing stigma and strengthening referral systems (Berry & Bendapudi, 2007). Performance paradox theory further explains that emphasizing downstream outcomes without strengthening upstream detection creates an imbalance between clinical success and system effectiveness. Based on these insights, this study proposes that TB referral laboratory performance is determined by the level of integration among 9P dimensions rather than isolated factors, leading to different configurations that shape both upstream and downstream TB outcomes.

Application of the 9P Marketing Mix in Tuberculosis Laboratory Service

The 9P Marketing Mix strategy, an extension of the traditional 4P model, is increasingly applied in healthcare to improve service quality and operational efficiency. It comprises product, price, place, promotion, people, process, physical evidence, productivity, and performance, with a strong emphasis on patient-centered care (Park, 2020). In Tuberculosis (TB) referral laboratories, this framework supports both clinical effectiveness and service accessibility by strengthening diagnostic and management systems and improving overall service coordination. Key elements such as people and process are central to service quality, as trained healthcare professionals ensure accurate diagnosis, while standardized procedures improve efficiency and reduce delays (Ball et al., 2015). Similarly, price and place influence accessibility, where affordable testing and strategic service locations enhance patient engagement and trust, contributing to better TB control outcomes (Dabas et al., 2019; Kuupiel et al., 2019; Ravangard et al., 2020).

Promotion plays a critical role in increasing awareness and reducing TB-related stigma through education and community outreach programs (Idris et al., 2020). Physical Evidence, including laboratory facilities and diagnostic equipment, shapes patient perceptions of service quality and ensures reliable diagnostic results (Kunzharikova et al., 2025). Productivity and performance indicators such as turnaround time, service efficiency, and patient satisfaction are essential for evaluating effectiveness and ensuring continuous improvement in TB laboratory services (Mbuh et al., 2025).

RESEARCH METHODS

This study employed an embedded single-case design with a configurational approach inspired by Qualitative Comparative Analysis (QCA) to examine how combinations of the 9P Marketing Mix influence tuberculosis referral laboratory performance. The case was conducted in a specialized pulmonary referral hospital in East Java, Indonesia, and conceptualized the 9P dimensions (product, price, place, promotion, people, process, physical evidence, policy, and partnership) as interdependent strategic conditions rather than isolated variables. The embedded structure enabled analysis across three sub-units: clinical services, laboratory diagnostics, and promotion–referral coordination, allowing comparison of strategic configurations across organizational domains and their relationship to TB program outcomes.

Using a set-theoretic perspective, the study assumed that performance outcomes emerge from combinations of conditions rather than linear single-factor effects. Outcomes

were grouped into upstream indicators (case detection, referral completion, laboratory utilization) and downstream indicators (cure rate, treatment success, laboratory turnaround time). Findings indicate that downstream outcomes are primarily associated with the alignment of product quality, competent human resources, and standardized processes, while upstream outcomes are more strongly influenced by the alignment of promotion, partnership, and policy. These results suggest that different dimensions of TB program performance are driven by distinct but partially overlapping configurations of the 9P Marketing Mix.

The analysis applies asymmetry, indicating that factors driving high treatment success are not the opposite of those causing low case detection, with different outcomes arising from distinct but overlapping configurations. It also reflects causal complexity and equifinality, showing that similar outcomes can be achieved through multiple pathways, such as product–people–process alignment for treatment success and promotion–partnership or policy–place coordination for case detection. Participants were selected through purposive sampling across embedded units, including TB specialist physicians, nurses, laboratory staff, promotion officers, and management. Data were collected through semi-structured interviews, observations, and document analysis of TB reports (2022–2024), referral statistics, and policy documents, until configurational saturation was reached. Data analysis involved deductive coding based on the 9P framework combined with inductive coding for emerging themes, followed by NVivo 12 Plus matrix analysis to identify co-occurrence patterns and configurational synthesis to determine dominant combinations linked to performance domains.

Data analysis followed a configurational procedure. Data were coded deductively using the 9P Marketing Mix and inductively for emerging themes. NVivo 12 Plus matrix queries were used to identify co-occurrence patterns across embedded units. Patterns were compared to identify recurring combinations linked to TB performance outcomes. Dominant configurations were defined as patterns consistently appearing in at least two units and supported by triangulated data, while isolated patterns were excluded. Validated patterns were synthesized into configurational pathways for upstream and downstream outcomes. NVivo outputs were then interpreted qualitatively to construct strategic configurations, ensuring a transparent analytical process. Analytical rigor was ensured through triangulation, cross-unit comparison, member validation, and an audit trail. Analytical rigor was ensured through triangulation, cross-unit comparison, member validation, and an audit trail, with ethical approval obtained and informed consent provided by all participants.

RESULTS

The configurational analysis revealed that Tuberculosis (TB) referral laboratory performance was shaped by distinct combinations of 9P Marketing Mix dimensions rather than by isolated strategic elements. The findings demonstrate that upstream detection indicators and downstream treatment outcomes were governed by different, though partially overlapping, configurations of conditions. This multidimensional structure explains the observed performance imbalance within the hospital, with different domains of TB program performance. Rather than assuming linear causality, the findings demonstrate that upstream and downstream indicators are shaped by different conjunctural patterns of strategic alignment.

Table 1. Configuration Matrix of 9P Conditions and TB Program Outcomes

Element	C1: Clinical Alignment	C2: Communication Gap	C3: Integrated Model (Ideal)	C4: Partial Outreach
Product	Strong	Strong	Strong	Strong
People	Strong	Strong	Strong	Strong
Process	Strong	Strong	Strong	Strong
Promote	Weak	Weak	Strong	Moderate
Partner	Weak	Weak	Strong	Moderate
Policy	Moderate	Weak	Strong	Moderate
Detection	Weak	Weak	Strong	Moderate
Treatment	Strong	Strong	Strong	Strong

As summarized in Table 1, four dominant configurations emerged from cross-unit analysis. The most consistent pattern (Configuration 1) showed strong alignment among product, people, and process, while promotion and partnership dimensions remained weak. This configuration was systematically associated with strong downstream outcomes, particularly treatment success and cure rates. Informants emphasized that comprehensive diagnostic services, standardized workflows, and trained personnel ensured therapeutic effectiveness. However, this clinical alignment did not correspond with improved case detection or referral completion. From a set-theoretic perspective, the combination of product–people–process operated as a sufficient condition for downstream treatment success. Across all observed patterns, no configuration with weak clinical alignment produced strong therapeutic outcomes. This suggests that these dimensions function as necessary conditions for clinical performance, yet they are not sufficient for improving upstream detection indicators (Kruk et al., 2018).

In contrast, configurations characterized by weak promotion, partnership, and policy integration were consistently associated with declining case detection and reduced laboratory utilization. Promotion efforts were described as episodic and informational rather than strategic and sustained. Partnerships with primary health centers and community stakeholders were operational but not programmatically integrated into detection expansion strategies. Although regulatory support for TB control was formally present, it was not leveraged as part of a coherent communication framework. These findings indicate that the alignment of promotion–partnership–policy dimensions is critical for strengthening upstream detection performance. While strong communication integration did not independently determine clinical outcomes, its absence constrained case detection. This pattern suggests that promotion–partnership–policy alignment may operate as a necessary condition for detection improvement, though not independently sufficient without clinical credibility (Elbehiry et al., 2025).

The coexistence of strong clinical alignment and weak communication integration produced a structural performance paradox. Downstream treatment indicators improved, while upstream detection indicators declined. This asymmetry illustrates causal complexity, in which different outcome domains are driven by different configurations of conditions. Importantly, the conditions explaining high treatment success are not simply the inverse of those explaining weak case detection. Strong product–people–process alignment does not compensate for weak promotion–partnership integration (Chakaya et al., 2021).

The analysis further demonstrated elements of equifinality. Partial strengthening of communication elements (moderate promotion and partnership alignment) corresponded with moderate improvements in detection performance, even without full systemic integration. This suggests that multiple strategic pathways may lead to incremental performance gains, though full alignment across clinical and communication dimensions appears necessary for balanced program performance. The findings indicate that TB service performance within the hospital is not merely a function of clinical capacity but the result of interacting strategic configurations. The 9P dimensions operate as an integrated organizational system in which imbalances across clusters generate divergent performance outcomes (Pappas & Woodside, 2021).

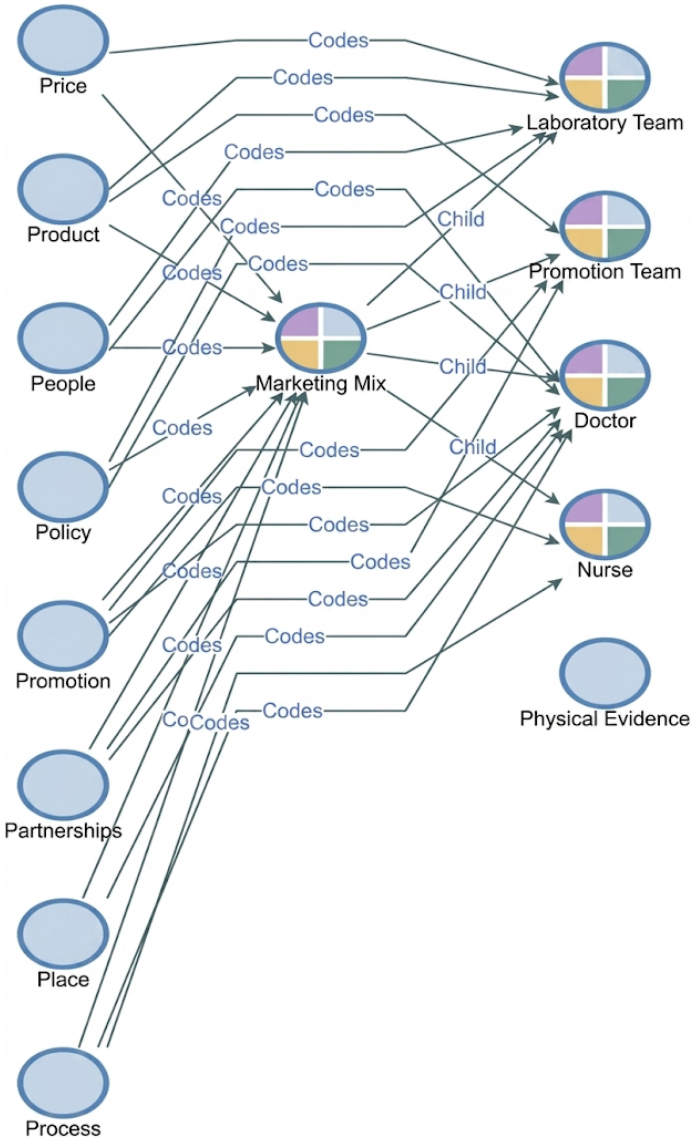

Figure 1. Structural Configuration of 9P Marketing Mix

Figure 1 illustrates the structural configuration of the 9P Marketing Mix dimensions within the tuberculosis service system. Rather than operating as isolated managerial tools, the nine elements function as an interdependent strategic architecture that shapes organizational performance (George et al., 2019). The analysis indicates that the 9P dimensions act as strategic determinants, jointly influencing policy direction, resource allocation, and operational coordination. Coding patterns reveal strong interconnections among specific clusters of conditions. For instance, a product is closely linked to people and processes, forming the core clinical configuration. Promotion demonstrates strong relational ties with Partnership, reflecting the interdependence between communication strategies and referral network expansion. Policy interacts with multiple dimensions, reinforcing or constraining strategic alignment.

The central positioning of the marketing mix node in the diagram reflects its integrative role. The effectiveness of TB service performance is not determined by the dominance of a single dimension but by the coherence of interactions among them (Marley et al., 2023). This systemic integration explains why strong clinical capacity (Product–People–Process) coexists with weak detection outcomes when promotion–partnership integration is limited. In this sense, performance is produced by the degree of configurational alignment rather than the strength of individual components. The diagram further shows that

strategic configurations are operationalized through service actors, physicians, nurses, laboratory personnel, and promotion officers who function as agents translating policy and marketing architecture into practice. Their roles are not merely technical but relational and communicative, shaping patient interaction, referral continuity, and public trust. The quality of TB performance. Therefore, it emerges from the interaction between strategic design and actor-level execution. The interpretation that TB referral laboratory performance is a systemic organizational outcome, generated through layered interactions among strategic determinants, managerial integration, and operational actors. This configurational structure provides the structural explanation for the observed performance paradox.

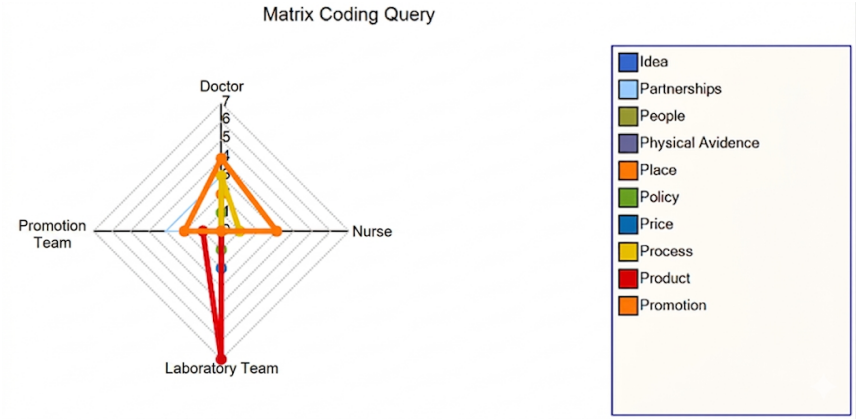

Figure 2. Diagram Matrix Coding Query

Figure 2 shows that the cross-actor matrix analysis further clarifies how different organizational actors are associated with distinct clusters of 9P dimensions, reinforcing the configurational explanation of Tuberculosis (TB) program performance. Rather than indicating quantitative dominance, the matrix illustrates relational intensity, namely, how frequently specific strategic dimensions co-occurred within narratives associated with particular actors. The pattern reveals a clear structural differentiation between clinical and communication-oriented roles. Physicians and nurses were predominantly associated with the product, process, and people dimensions. Their narratives emphasized diagnostic accuracy, treatment monitoring, and adherence management, reinforcing the clinical configuration that supports downstream treatment success. This pattern confirms that clinical actors function as primary carriers of the product–people–process cluster identified in configuration 1. The laboratory team demonstrated strong alignment with product, process, and physical evidence, underscoring their central role in ensuring diagnostic credibility and service reliability. The prominence of these dimensions supports the finding that technical quality is a necessary condition for downstream performance but does not automatically extend to detection expansion (Elbehiry et al., 2025; Kohli et al., 2025).

In contrast, the promotion unit was primarily associated with promotion, partnership, and place dimensions. However, the relational mapping indicates weaker integration between this cluster and clinical actors. This structural separation suggests limited cross-functional coordination between communication strategy and clinical operations, contributing to weak upstream detection performance (Li et al., 2022). The asymmetry between actor clusters reinforces the configurational findings. Clinical actors exhibit strong internal alignment, while communication and referral coordination functions operate with comparatively weaker systemic integration. This division explains how strong treatment success can coexist with declining case detection. Importantly, the matrix does not imply that one actor is more influential than another. Rather, it demonstrates that organizational performance emerges from how actor-specific configurations are integrated or remain fragmented within the broader strategic system.

The interpretation that the TB performance paradox is not the result of individual actor failure but of uneven configurational alignment across clinical and communication domains.

Figure 3. Word Cloud Nvivo 12

Figure 3 shows that the word frequency analysis was used as a supplementary interpretive tool to identify dominant linguistic patterns within interview narratives. Rather than serving as primary evidence, the word cloud supports the configurational findings by highlighting recurrent themes associated with collective responsibility, communication gaps, and referral fragmentation. The prominence of collective pronouns ("we") suggests that informants conceptualize TB control as a shared responsibility across institutional and community actors. This linguistic emphasis aligns with the identified importance of partnership and policy integration within upstream detection performance. The frequent references to "community" and "media" further reinforce the centrality of communication strategies in shaping service utilization, supporting the configuration linking promotion–partnership–policy dimensions to case detection outcomes.

Conversely, the recurring appearance of terms expressing limitation ("limited," "not yet," "lack") indicates perceived gaps in coordination and outreach coverage. These linguistic markers correspond with the weak integration observed in communication-related configurations. References to regional units, primary health centers, and screening activities reflect the fragmented nature of referral pathways, reinforcing the interpretation that detection challenges stem from systemic communication gaps rather than from deficiencies in clinical capacity. Importantly, the linguistic analysis does not independently establish causality but corroborates the configurational patterns identified through cross-unit and thematic analysis. The textual patterns strengthen the conclusion that TB program constraints are concentrated within the social-communicative interface rather than within the clinical domain.

DISCUSSION

This study advances the understanding of Tuberculosis (TB) program performance by demonstrating that referral laboratory outcomes are shaped by configurational alignment rather than isolated managerial interventions. The findings reveal that the 9P Marketing Mix operates as an interdependent strategic architecture in which clusters of dimensions produce differentiated effects across performance domains. This perspective is supported by Newton-Lewis et al. (2021) and Ștefan et al. (2025), who emphasize that healthcare

performance is a systemic construct emerging from organizational interdependencies rather than isolated service components.

The identification of strong product–people–process alignment as sufficient for downstream treatment success confirms the centrality of clinical capacity in therapeutic outcomes. However, the analysis demonstrates that clinical strength alone does not translate into detection expansion. This finding challenges linear assumptions in health service management that improvements in technical quality naturally generate increased service utilization. Berry and Bendapudi (2007) and Doyle et al. (2013) argue that patient engagement and service uptake are strongly influenced by relational trust and communication coherence, reinforcing that technical quality alone is insufficient for broader performance outcomes.

The weakness observed in promotion–partnership–policy integration illustrates that upstream detection performance is structurally dependent on communication architecture and referral coordination. In high-burden infectious disease contexts, service access is shaped not only by availability but by legitimacy, trust, and network continuity, as highlighted by Datiko et al. (2022). Barriers in TB detection are further reinforced when outreach mechanisms fail to address social perceptions and community engagement, particularly in relation to stigma and diagnostic delay (Teo et al., 2021; Fuady et al., 2024). This study extends these findings by conceptualizing such barriers as outcomes of incomplete strategic integration rather than isolated behavioral constraints.

Importantly, the coexistence of strong downstream outcomes and weak upstream detection exemplifies performance paradox dynamics. Van Thiel and Leeuw (2002) and Lewis (2016) explain that the performance paradox emerges when measurement systems and strategic priorities emphasize certain indicators while neglecting others. In this case, emphasis on clinical excellence generated therapeutic gains but did not ensure outreach expansion. This illustrates causal asymmetry, where the conditions driving treatment success differ fundamentally from those required for detection improvement. Strong clinical alignment, therefore, does not substitute for weak outreach integration. The configurational evidence also highlights causal complexity and equifinality, as organizational outcomes arise from conjunctural combinations of conditions, and multiple strategic pathways may produce similar performance levels. Fiss (2011) and Misangyi et al. (2017) demonstrate that equifinality allows different configurations to generate comparable outcomes, while incremental improvements in promotion and partnership may gradually enhance detection performance. However, balanced TB program performance requires simultaneous integration of both clinical and communicative strategic clusters.

This study contributes to healthcare marketing and public health systems research in three ways. First, it extends the 9P Marketing Mix framework beyond competitive positioning to explain infectious disease program performance (Dzulfriansyah, 2023). Second, it integrates marketing theory with performance paradox scholarship, providing a structural explanation for the multidimensional imbalance in referral systems. Third, it demonstrates the applicability of configurational reasoning in public health management, where causal complexity better captures institutional dynamics than linear models. From a governance perspective, the findings suggest that TB referral hospitals must treat promotion, partnership, and policy alignment as core strategic infrastructure rather than auxiliary activities. Anti-stigma engagement, referral network strengthening, and policy-driven communication coherence are structural prerequisites for detection improvement. Without such integration, clinical excellence alone may perpetuate performance imbalance. In summary, TB program effectiveness should be understood as an outcome of systemic configurational alignment. Addressing the performance paradox requires synchronized strengthening of clinical and communication architectures, reinforcing the view that infectious disease control is fundamentally an organizational integration challenge.

CONCLUSION

The findings show that TB program performance is multidimensional and depends on distinct but interacting strategic configurations. The alignment of product, people, and process forms a sufficient condition for strong clinical outcomes, particularly in improving diagnostic capacity, cure rates, and treatment success. However, these clinical strengths do not automatically translate into improved case detection or referral expansion. Upstream performance indicators, especially case detection and referral utilization, are strongly dependent on the integration of promotion, partnership, and policy. Weak alignment in this communication and referral network cluster explains the persistence of low detection performance despite strong clinical capacity. This demonstrates a causal asymmetry, where different performance dimensions require different strategic combinations. Thus, clinical excellence alone is insufficient to overcome barriers such as fragmented referral systems, communication gaps, and stigma-related challenges.

This study contributes by repositioning the 9P Marketing Mix as a configurational governance framework for infectious disease program performance, extending its role beyond a traditional marketing instrument. It also integrates marketing theory with performance paradox perspectives, showing that system imbalance arises from uneven strategic alignment across organizational domains. Referral hospitals should adopt a dual strategic orientation. First, sustained alignment of product, people, and process is necessary to maintain clinical effectiveness. Second, stronger integration of promotion, partnership, and policy is essential to improve detection and referral continuity. Operational strategies should include anti-stigma communication programs, strengthened coordination with primary healthcare facilities, and alignment of institutional outreach with national TB policies. This study is limited by its single-hospital context, which may restrict generalizability, and by its conceptual approach that requires further empirical validation. Future research should expand the framework across multiple settings and disease programs, and employ quantitative configurational methods such as fsQCA or SEM to test causal relationships. Additionally, future studies should incorporate patient-level behavioral factors to enrich the understanding of health-seeking and referral dynamics.

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REFERENCES

[1] Ball, J. R., Miller, B. T., & Balogh, E. P. (Eds.). (2015). *Improving diagnosis in health care*. Paris: National Academies Press.

[2] Berry, L. L., & Bendapudi, N. (2007). Health care: a fertile field for service research. *Journal of Service Research*, *10*(2), 111-122.

[3] Bevan, G., & Hood, C. (2006). What's measured is what matters: targets and gaming in the English public health care system. *Public Administration*, *84*(3), 517-538.

[4] Cazabon, D., Alsdurf, H., Satyanarayana, S., Nathavitharana, R., Subbaraman, R., Daftary, A., & Pai, M. (2017). Quality of tuberculosis care in high-burden countries: the urgent need to address gaps in the care cascade. *International Journal of Infectious Diseases*, *56*(9), 111-116.

[5] Chakaya, J., Khan, M., Ntoumi, F., Aklillu, E., Fatima, R., Mwaba, P., ... & Zumla, A. (2021). Global Tuberculosis Report 2020–Reflections on the Global TB burden, treatment and prevention efforts. *International Journal of Infectious Diseases*, *113*(9), 7-22.

[6] Dabas, H., Deo, S., Sabharwal, M., Pal, A., Salim, S., Nair, L., ... & Pai, M. (2019). Initiative for Promoting Affordable and Quality Tuberculosis Tests (IPAQT): A market-shaping intervention in India. *BMJ Global Health*, *4*(6), 134-145.

[7] Datiko, D. G., Jerene, D., Suarez, P., & Theobald, S. (2022). Health system barriers to tuberculosis case detection in high-burden countries: A systematic review. *BMJ Global Health, 7*(4), 82-93.

[8] Doyle, C., Lennox, L., & Bell, D. (2013). A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open*, *3*(1), 157-167.

[9] Dzulfriansyah, A. (2023). Marketing strategy analysis using a marketing mix approach (Case study of the Giriloyo Batik Bantul Home Industry - Yogyakarta). *Jurnal Ilmiah Manajemen Kesatuan*, *11*(3), 1139–1144.

[10] Elbehiry, A., Marzouk, E., Edrees, H. M., AlShaqi, R., Ellethy, A. T., Alzaben, F., ... & Abu-Okail, A. (2025). Advancing the fight against tuberculosis: integrating innovation and public health in diagnosis, treatment, vaccine development, and implementation science. *Frontiers in Medicine*, *12*(6), 126-140.

[11] Ezeosim, B. N. (2023). *Tuberculosis-associated knowledge, stigma, and health-seeking behavior among traders in Onitsha main market, Anambra State, Nigeria.* Walden: Walden University (Doctoral dissertation).

[12] Fenta, M. D., Ogundijo, O. A., Warsame, A. A. A., & Belay, A. G. (2023). Facilitators and barriers to tuberculosis active case findings in low-and middle-income countries: a systematic review of qualitative research. *BMC Infectious Diseases*, *23*(1), 515-525.

[13] Fiss, P. C. (2011). Building better causal theories: A fuzzy set approach to typologies in organization research. *Academy of Management Journal, 54*(2), 393–420.

[14] Fuady, A., Arifin, B., Yunita, F., Rauf, S., Fitriangga, A., Sugiharto, A., ... & Wingfield, T. (2024). Stigma, depression, quality of life, and the need for psychosocial support among people with tuberculosis in Indonesia: A multi-site cross-sectional study. *PLOS Global Public Health*, *4*(1), 24-39.

[15] Ge, S., Feng, Z., Lin, L., Li, R., Zhang, Y., Song, L., ... & Zhang, W. (2025). Patient pathway analysis of rifampicin-resistant TB diagnostic and treatment delays. *IJTLD open*, *2*(2), 90-95.

[16] George, B., Walker, R. M., & Monster, J. (2019). Does strategic planning improve organizational performance? A meta-analysis. *Public Administration Review*, *79*(6), 810-819.

[17] Greckhamer, T., Furnari, S., Fiss, P. C., & Aguilera, R. V. (2018). Studying configurations with qualitative comparative analysis: Best practices in strategy and organization research. *Strategic Organization*, *16*(4), 482-495.

[18] Idris, N. A., Zakaria, R., Muhamad, R., Husain, N. R. N., Ishak, A., & Mohammad, W. M. Z. W. (2020). The effectiveness of tuberculosis education programme in Kelantan, Malaysia on knowledge, attitude, practice and stigma towards tuberculosis among adolescents. *The Malaysian Journal of Medical Sciences: MJMS*, *27*(6), 102-115.

[19] Iskandar, D., Suwantika, A. A., Pradipta, I. S., Postma, M. J., & van Boven, J. F. (2023). Clinical and economic burden of drug-susceptible tuberculosis in Indonesia: national trends 2017–19. *The Lancet Global Health*, *11*(1), 117-125.

[20] Kohli, M., Korobitsyn, A., Ismail, N., Zignol, M., Kasaeva, T., Dewan, P., ... & Scientific TPP Development group. (2025). WHO target product profile for TB detection at peripheral settings: 2024 update. *PLOS Global Public Health*, *5*(6), 46-62.

[21] Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., ... & Pate, M. (2018). High-quality health systems in the sustainable development goals era: time for a revolution. *The Lancet Global Health*, *6*(11), 1196-1252.

[22] Kunzharikova, D., Kaliyeva, A. E., Baspakova, A., Kurmangaliyeva, S. S., & Alkaubayeva, A. (2025). Patient satisfaction with laboratory services: current trends and strategies for quality improvement. *J Environ Treat Tech*, *13*(7), 52-61.

[23] Kuupiel, D., Adu, K. M., Apiribu, F., Bawontuo, V., Adogboba, D. A., Ali, K. T., & Mashamba-Thompson, T. P. (2019). Geographic accessibility to public health facilities providing tuberculosis testing services at point-of-care in the upper east region, Ghana. *BMC Public Health*, *19*(1), 718-738.

[24] Lewis, J. M. (2016). The paradox of health care performance measurement and management. *The Oxford Handbook of Health Care Management*, *8*(4), 375-392.

[25] Li, S., Wang, K., Huo, B., Zhao, X., & Cui, X. (2022). The impact of cross-functional coordination on customer coordination and operational performance: an information processing view. *Industrial Management & Data Systems*, *122*(1), 167-193.

[26] Madybaeva, D., Duishekeeva, A., Meteliuk, A., Kulzhabaeva, A., Kadyrov, A., Shumskaia, N., & Kumar, A. M. (2023). "Together against tuberculosis": cascade of care of patients referred by the private health care providers in the Kyrgyz Republic. *Tropical Medicine and Infectious Disease*, *8*(6), 316-333.

[27] Marley, G., Zou, X., Nie, J., Cheng, W., Xie, Y., Liao, H., ... & Tang, W. (2023). Improving cascade outcomes for active TB: a global systematic review and meta-analysis of TB interventions. *PLoS Medicine*, *20*(1), 100-111.

[28] Mbuh, T. P., Amveilla, A. P., Mendjime, P., Donkeng Donfack, V. F., Youssouf Mfouapon, M., Beloko, H., ... & Etoundi Mballa, G. A. (2025). Evaluating turnaround time to improve clients' satisfaction in the tuberculosis reference laboratory in Douala. *PloS One*, *20*(6), 23-36.

[29] Meckawy, R., Stuckler, D., Mehta, A., Al-Ahdal, T., & Doebbeling, B. N. (2022). Effectiveness of early warning systems in the detection of infectious diseases outbreaks: a systematic review. *BMC Public Health*, *22*(1), 22-36.

[30] Misangyi, V. F., Greckhamer, T., Furnari, S., Fiss, P. C., Crilly, D., & Aguilera, R. (2017). Embracing causal complexity: The emergence of a neo-configurational perspective. *Journal of Management*, *43*(1), 255-282.

[31] Newton-Lewis, T., Munar, W., & Chanturidze, T. (2021). Performance management in complex adaptive systems: a conceptual framework for health systems. *BMJ Global Health*, *6*(7), 99-109.

[32] Pappas, I. O., & Woodside, A. G. (2021). Fuzzy-set qualitative comparative analysis (fsQCA): guidelines for research practice in information systems and marketing. *International Journal of Information Management*, *58*(9), 102-110.

[33] Park, S. (2020). *Marketing management* (Vol. 3). Paris: Seohee Academy.

[34] Psomas, E., Bouranta, N., & Antony, J. (2024). The impact of total quality management and educational innovation practices on quality management results in primary and secondary schools: Evidence from greece. In *International Conference on Lean Six Sigma for Higher Education Institutions* (pp. 53-60). Cham: Springer Nature Switzerland.

[35] Ravangard, R., Khodadad, A., & Bastani, P. (2020). How marketing mix (7Ps) affect the patients' selection of a hospital: experience of a low-income country. *Journal of the Egyptian Public Health Association*, *95*(1), 25-35.

[36] Saktiawati, A. M. I., & Probandari, A. (2025). Tuberculosis in Indonesia: challenges and future directions. *The Lancet Respiratory Medicine*, *13*(8), 669-671.

[37] Shah, H. D., Nazli Khatib, M., Syed, Z. Q., Gaidhane, A. M., Yasobant, S., Narkhede, K., ... & Saxena, D. (2022). Gaps and interventions across the diagnostic care cascade of TB patients at the level of patient, community and health system: a qualitative review of the literature. *Tropical Medicine and Infectious Disease*, *7*(7), 136-148.

[38] Ştefan, S. C., Popa, I., & Breazu, A. (2025). Healthcare organizations and performance: the role of environment, strategic orientation, and organizational structure. *Systems*, *13*(11), 10-18.

[39] Teo, A. K. J., Singh, S. R., Prem, K., Hsu, L. Y., & Yi, S. (2021). Duration and determinants of delayed tuberculosis diagnosis and treatment in high-burden countries: a mixed-methods systematic review and meta-analysis. *Respiratory Research*, *22*(1), 251-265.

[40] Van Thiel, S., & Leeuw, F. L. (2002). The performance paradox in the public sector. *Public Performance & Management Review*, *25*(3), 267-281.

[41] World Health Organization. (2023). *Global tuberculosis report 2023*. WHO. Retrieved on October 24, 2025, from https://www.who.int/teams/global-tuberculosis-programme/tb-reports/global-tuberculosis-report-2023.

[42] Yayan, J., Franke, K. J., Berger, M., Windisch, W., & Rasche, K. (2024). Early detection of tuberculosis: a systematic review. *Pneumonia*, *16*(1), 11-25.