



Analysis Of The Use Of The Tuberculosis Information System On The Effectiveness Of Tb Treatment Services Using The Hot-Fit Model Approach At Dr. Rehatta Regional General Hospital, Central Java Province

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<p>Track Record Article</p> <p>Revised: 20 May 2026 Accepted: 26 June 2026 Published: 28 June 2026</p> <p>How to cite : Saputro, F. B. J., Agushyana, F., & Purnami, C. T. (2026). Analysis Of The Use Of The Tuberculosis Information System On The Effectiveness Of Tb Treatment Services Using The Hot-Fit Model Approach At Dr. Rehatta Regional General Hospital, Central Java Province. <i>Contagion : Scientific Periodical of Public Health and Coastal Health</i>, 8(2), 380–394.</p>	<p style="text-align: center;">Abstract</p> <p><i>The Tuberculosis Information System (SITB) has been implemented at Dr Rehatta Regional General Hospital in Central Java to support the recording, reporting and monitoring of the TB programme; however, its effectiveness still needs to be evaluated. This study aims to evaluate the effectiveness of the SITB in supporting TB treatment services based on the HOT-Fit model. This is a quantitative analytical survey with a cross-sectional design involving 21 healthcare workers who use the SITB as the sample, selected via total sampling, as well as 4 respondents selected via purposive sampling for open-ended questions. Data were collected using a Likert-scale questionnaire and analysed using validity tests, internal consistency tests, descriptive statistics, and Spearman’s rank correlation test. The results indicate that respondents’ perceptions of human and technological factors fell within the ‘good’ to ‘very good’ categories, with the quality of technical support services identified as a weak point. There was a positive and significant relationship between user skills, adoption, system quality, service quality and technical support on the effectiveness of TB services; however, user satisfaction did not show a significant relationship. This study concluded that the SITB makes a positive contribution to the effectiveness of TB services; however, improvements in technical support, regular training and the involvement of doctors are still required to optimise its benefits.</i></p> <p>Keywords: <i>Tuberculosis Information System, HOT-Fit Model, Effectiveness of TB Services</i></p>
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INTRODUCTION

The rising prevalence of tuberculosis (TB) at both global and national levels poses a serious threat to public health, as reflected in the increasing risks of morbidity and mortality (World Health Organization, 2023). Urgent, coordinated, and evidence-based actions are required to achieve the target of ending the global TB epidemic by 2030, as committed by all Member States of the United Nations and the World Health Organization (World Health Organization, 2024).

According to the WHO Global Tuberculosis Report 2024, TB once again emerged as the leading cause of death from infectious diseases worldwide in 2023, with 10.8 million new cases reported globally. In Indonesia, data from the Ministry of Health documented approximately 889,000 TB cases, placing the country second after India, with an estimated 14 deaths occurring every hour. These figures underscore that TB remains a critical public health threat, necessitating integrated and sustained efforts to achieve the 2030 elimination target (Kementerian Kesehatan Republik Indonesia, 2025).

Tuberculosis (TB) remains a major challenge in global public health, including in Indonesia. The disease primarily affects the lungs and is caused by infection with *Mycobacterium tuberculosis* (Jawetz & Adelberg, 2012; World Health Organization, 2023b). Transmission generally occurs through saliva droplets containing the bacteria, which are expelled when an infected individual coughs or sneezes. These droplets can persist in indoor air for a considerable period, thereby facilitating the spread of this disease (Jawetz & Adelberg, 2012).

Indonesia's tuberculosis (TB) control strategy encompasses extensive case detection, the provision of Tuberculosis Preventive Therapy (TPT), free Anti-Tuberculosis Drugs (OAT), implementation of the DOTS strategy, BCG vaccination, and improvements in sanitation and ventilation. In practice, healthcare facilities such as community health centers (*Puskesmas*) and hospitals play a central role in diagnosing, treating, and monitoring TB patients (Kementerian Kesehatan Republik Indonesia, 2016; Kementerian Kesehatan Republik Indonesia, 2020).

The Jepara Regency Government has demonstrated a strong commitment to tuberculosis (TB) control, notably through the issuance of Jepara Regent Regulation number 27 of 2024 concerning the Regional Action Plan for Tuberculosis Control (Pemerintah Daerah Jepara, 2024). This policy seeks to accelerate TB elimination in Jepara by enhancing case detection, strengthening recording and reporting systems, and ensuring the availability of quality treatment through cross-sector collaboration among health services, healthcare facilities, and the community.

dr. Rehatta Regional General Hospital Central Java Province is a healthcare facility actively engaged in tuberculosis (TB) control through the Directly Observed Treatment Short-course (DOTS) program, a globally recognized TB treatment strategy (Badan Perencanaan Pembangunan Pengembangan Daerah Provinsi Jawa Tengah, 2024). The hospital also contributes to early detection in collaboration with community health centers, including public education on pulmonary TB and joint sputum examinations, as part of its commitment to community outreach and case screening improvement (Dinas Kesehatan Kabupaten Jepara, 2024). TB patients referred from primary healthcare facilities receive treatment in accordance with established protocols, with case reports submitted electronically through the Tuberculosis Information System (SITB) to the District and Provincial Health Offices (Kementerian Kesehatan Republik Indonesia, 2023).

To enhance diagnostic effectiveness, the hospital is also optimizing the reporting of Molecular Rapid Test (MRT) results for suspected TB patients, including the use of WhatsApp to expedite the delivery of information (Novianti, 2023). With comprehensive services

encompassing diagnostics, DOTS treatment, cross-sector collaboration, and technological innovation, dr. Rehatta Regional General Hospital Central Java Province plays an important role in the national effort to eliminate tuberculosis

Hospitals are responsible for accurately recording and reporting every tuberculosis (TB) case and TB service within a centralized system, enabling integrated and real-time national data that supports policymakers in evaluating programs and planning targeted interventions to achieve TB elimination goals (Kementerian Kesehatan Republik Indonesia, 2016; Kementerian Kesehatan Republik Indonesia, 2020). Effective TB control requires an accurate, complete, and timely recording and reporting system (Kementerian Kesehatan Republik Indonesia, 2020) To strengthen prevention and control efforts, the Indonesian government issued Minister of Health Regulation No. 67 of 2016 on Tuberculosis Control. Under this regulation, TB case recording and reporting were conducted using the Integrated Tuberculosis Information System (SITT), which provided both offline and online options. However, since 2020, SITT has been transformed into the Tuberculosis Information System (SITB), with all recording and reporting processes now conducted exclusively online (Kementerian Kesehatan Republik Indonesia, 2021; Syam & Nurfita, 2022).

Evaluation of the Tuberculosis Information System (SITB) in hospitals has become the focus of several studies aimed at improving the effectiveness of TB case recording and reporting. A study conducted at Syarif Hidayatullah Hospital identified key obstacles in the implementation of the Integrated Tuberculosis Information System (SITT), including limited human resources (nurses) for manual recording, the absence of dedicated funding for the TB DOTS program, and the lack of integration of the Hospital Management Information System (SIMRS) across all service units. The study concluded that strengthening management commitment to the implementation of the TB DOTS program is essential to address these (Ratnasari et al., 2021).

Another study conducted at the Gambirsari Health Center in Surakarta City evaluated the Tuberculosis Information System (SITB) from the perspectives of human resources, organizational support, and technology. The findings revealed that SITB implementation was not yet optimal, with obstacles including insufficient staff training, limited technological infrastructure, and inadequate organizational support in system implementation. The study recommended enhanced staff training, improvements in technological infrastructure, and stronger organizational support to increase the effectiveness of SITB (Nurul Pratiwi, 2023).

Based on the preliminary study results at dr. Rehatta Regional General Hospital Central Java Province, the trend of tuberculosis (TB) cases shows a significant year-on-year increase .

In 2021, there were 144 suspected TB cases with 31 patients treated, which rose sharply in 2024 to 587 suspected cases and 203 patients treated. As of August 13, 2025, 424 suspected cases had been recorded, with 112 patients already receiving treatment. This trend underscores the urgency of strengthening the TB recording and reporting system. However, the implementation of SITB continues to face obstacles, including limited human resources that concentrate the workload on a single officer, delayed reporting due to unstable internet connectivity, and incomplete and inaccurate data, all of which weaken patient monitoring and hinder overall TB program analysis.

Overall, the implementation of the SITB at Dr. Rehatta Regional General Hospital in Central Java Province still faces various challenges, including infrastructure constraints, a lack of human resource training, and suboptimal system integration. To evaluate the actual impact of this system, this study will use the HOT-Fit model. The selection of the HOT-Fit (Human, Organization, Technology-Fit) model in this study is based on several strong considerations. This model, developed by Yusof, is a comprehensive framework for evaluating health information systems because it considers the fit between human, organizational, and technological aspects (Yusof et al., 2008). In general, the HOT-Fit model can be used to assess improvements in both diagnostic effectiveness and treatment effectiveness. However, this study deliberately focuses only on the effectiveness of TB treatment services, specifically the net benefits experienced by users of the tuberculosis information system.

This narrow focus was adopted because treatment services are a crucial stage in the TB control chain, in which the SITB plays a highly strategic role in ensuring treatment continuity and preventing treatment discontinuation. By focusing on treatment services, this study is expected to produce more precise and practical recommendations tailored to the conditions at dr. Rehatta Regional General Hospital in Central Java Province.

Therefore, this study will analyze the effectiveness of the SITB from the Human, Organizational, and Technology perspectives to ensure that the system provides optimal net benefits and supports TB prevention and control efforts. By analyzing the use of the SITB through the HOT-FIT model approach, this study will reveal how the information system influences the effectiveness of TB treatment services at dr. Rehatta Regional General Hospital in Central Java Province.

METHODS

This research employed a quantitative design with an analytical survey approach to analyze the impact of the Tuberculosis Information System (SITB) on the effectiveness of TB

treatment services at dr. Rehatta Regional General Hospital in Central Java Province. The research was conducted from October 2025 to February 2026 using the HOT-Fit model.

The independent variables consist of human factors (user satisfaction, user skills, and adoption rate) and technological factors (system quality, information quality, and technical support service quality), while the dependent variable is the improvement in the effectiveness of TB treatment services, measured as the net benefit.

The study employed a quantitative analytical survey design using total sampling. A total of 21 respondents (active healthcare workers who use SITB) completed a Likert-scale questionnaire based on the HOT-Fit variables. This was followed by open-ended questions for 4 selected respondents (purposive sampling). The data were analyzed using SPSS, including validity tests, internal consistency tests, descriptive statistics, and Spearman's rank correlation test.

Primary data were collected through a structured questionnaire with a 5-point Likert scale, while secondary data were obtained from TB case recording and reporting documents. The research instrument was tested for validity using the Pearson Product Moment correlation ($r\text{-table} = 0.433$; $n = 21$) and for reliability using Cronbach's Alpha ($\alpha > 0.60$), with all items to be valid and reliable.

Data analysis was conducted both descriptively and inferentially using multiple linear regression with the assistance SPSS, following the fulfillment of classical assumption tests, including normality, multicollinearity, and heteroscedasticity. Ethical approval for this study was obtained from the Health Research Ethics Committee of the Faculty of Public Health, Diponegoro University (Approval number 335/EA/KEPK-FKM/2025) prior to data collection, ensuring that all research procedures complied with established ethical principles.

RESULTS

Table 1. Frequency Distribution of Respondent Characteristics

Characteristics	f	%
Gender		
Male	9	42,9
Female	12	57,1
Age		
25 - 35 years	9	42,9
36 - 45 years	8	38,1
> 45 years	4	19,0
Position / Profession		
Nurse	9	42,9
Laboratory Technician	5	23,8
Doctor	4	19,0
Pharmacist	1	4,8
Medical Records Officer	1	4,8

Characteristics	f	%
Pharmaceutical Technical Staff	1	4,8
Duration of SITB Use		
> 3 year	8	38,1
< 6 months	6	28,6
1 - 3 years	5	23,8
6 months - 1 year	2	9,5

Overall, the respondent profile in this study is dominated by female healthcare workers of productive age, primarily with professional backgrounds as nurses and laboratory technicians. Their relatively extensive experience in using Tuberculosis Information System represents a key strength of this research. Given these demographic and professional characteristics, the respondents are considered representative of the implementation and utilization of the Tuberculosis Information System in hospitals.

Table 2. Overview of satisfaction levels, skills, adoption, system quality, service quality, and effectiveness of TB treatment services

Variable	Perception										Mean	Indexs
	SS		S		CS		TS		STS			
	F	%	F	%	F	%	F	%	F	%		
Level of satisfaction												
Ease of use of SITB	2	9,5	19	90,5	-	-	-	-	-	-	4,10	0,820
SITB helps in work	6	28,6	14	66,7	1	4,8	-	-	-	-	4,24	0,848
Validity and ease of understanding of data	11	52,4	8	38,1	2	9,5	-	-	-	-	4,43	0,886
Satisfaction with the experience of using SITB	13	61,9	5	23,8	3	14,3	-	-	-	-	4,48	0,896
User Skills												
Skills in operating SITB	7	33,3	12	57,1	2	9,5	-	-	-	-	4,24	0,848
Skills in operating SITB	6	28,6	11	52,4	4	19,0	-	-	-	-	4,1	0,820
User confidence	8	38,1	10	47,6	3	14,3	-	-	-	-	4,24	0,848
Use of SITB												
Routine use of SITB	6	28,6	11	52,4	4	19,0	-	-	-	-	4,10	0,820
SITB as the main tool	6	28,6	11	52,4	4	19,0	-	-	-	-	4,10	0,820
SITB as an integral part of work procedures	7	33,3	12	57,1	2	9,5	-	-	-	-	4,24	0,848
System Quality												
System stability	5	23,8	11	52,4	5	23,8	-	-	-	-	4,00	0,800
System responsiveness and speed	6	28,6	11	52,4	4	19,0	-	-	-	-	4,10	0,820
Ease of understanding the user interface	8	38,1	10	47,6	3	14,3	-	-	-	-	4,24	0,848

Variable	Perception										Mean	Indexs
	SS		S		CS		TS		STS			
	F	%	F	%	F	%	F	%	F	%		
Accuracy and reliability of diagnostic inform	6	28,6	11	52,4	4	19,0	-	-	-	-	4,10	0,820
Information Quality												
Up-to-date information	6	28,6	11	52,4	4	19,0	-	-	-	-	4,10	0,820
Ease of access to technical support	6	28,6	11	52,4	4	19,0	-	-	-	-	4,10	0,820
Speed and effectiveness in handling technical issues	7	33,3	12	57,1	2	9,5	-	-	-	-	4,24	0,848
Contribution to the effectiveness of TB case detection	3	14,3	13	61,9	4	19,0	1	4,8	-	-	3,86	0,772
Quality of Technical Support Service												
Monitoring of Treatment adherence	4	19,0	13	61,9	4	19,0	-	-	-	-	4,00	0,800
Contribution to improving treatment success rates	3	14,3	8	38,1	7	33,3	3	14,3	-	-	3,52	0,704
Acceleration of the TB diagnosis process	3	14,3	14	66,7	4	19,0	-	-	-	-	3,95	0,790
Improvement in the Effectiveness of TB Treatment Services												
Organization of medical records	3	14,3	14	66,7	4	19,0	-	-	-	-	3,95	0,790
Assurance of services in accordance with standards	3	14,3	8	38,1	7	33,3	3	14,3	-	-	3,52	0,704
Reduction in recording and reporting time	4	19,0	13	61,9	4	19,0	-	-	-	-	4,00	0,800
Savings in paper use and administrative costs	3	14,3	8	38,1	7	33,3	3	14,3	-	-	3,52	0,704
Benefits of data for management and performance evaluation	3	14,3	14	66,7	4	19,0	-	-	-	-	3,95	0,790
Benefits of data for management and performance evaluation	3	14,3	14	66,7	4	19,0	-	-	-	-	3,95	0,790

Table 3. Results of the Spearman Rank Correlation Test

Independent Variable	Correlation Coefficient (r)	Sig. (2-tailed)	r table	Hypothesis Conclusion
User Satisfaction	0,162	0,482	0,433	There is no significant and positive relationship
User Skills	0.676	0,001	0,433	There is a Significant and Positive Relationship
Adoption and Use	0.435	0,049	0,433	There is a Significant and Positive Relationship
System Quality	0.629	0,002	0,433	There is a Significant and Positive Relationship
Service Quality	0.457	0,037	0,433	There is a Significant and Positive Relationship
Quality of Technical Support Services	0.993	0,000	0,433	There is a Significant and Positive Relationship

The results of the correlation analysis reveal an uneven pattern of relationships between independent variables and the improvement in TB treatment service effectiveness. User satisfaction shows a very low correlation with service effectiveness ($r = 0.162$; $p = 0.482$, $p > 0.05$). In contrast, user skills demonstrate a fairly strong and highly significant correlation ($r = 0.676$; $p = 0.001$). The adoption and use of SITB exhibit a moderate positive relationship ($r = 0.435$; $p = 0.049$). System quality shows a strong positive correlation ($r = 0.629$; $p = 0.002$). Finally, the quality of technical support services demonstrates a very strong, nearly perfect correlation ($r = 0.993$; $p = 0.000$).

DISCUSSION

Effectiveness of TB Service Data Management Using the Tuberculosis Information System (SITB) at dr. Rehatta Regional General Hospital in Central Java Province

Descriptive analysis of respondents' perceptions of the implementation of the Tuberculosis Information System (SITB) at dr. Rehatta Regional General Hospital in Central Java Province provides a fairly comprehensive overview while also highlighting several important issues. Although respondents generally expressed a positive attitude toward the existence of SITB, this finding should not be overinterpreted as evidence of complete success. A clear imbalance remains between strengths in the human dimension and significant weaknesses in the technological and clinical outcome aspects. This condition reflects the persistent challenges of implementing health information systems in Indonesia, where formal adoption often outpaces improvements in quality and measurable impact.

The Human Factor shows the most encouraging results. The variables of User Satisfaction, User Skills, and SITB Usage consistently fall into the high category. Respondents reported that SITB is easy to use, supports their work, presents valid data, and has been integrated into their daily work routines. Respondents A (nurse/TB program coordinator) stated that it is sufficient

to record the patient's ID number, medical history, and treatment, which can be accessed anywhere. Respondents B (pharmacy officer) and Respondents C (laboratory officer) also acknowledged the ease of data input and reporting. This is supported by additional information from Respondent D (doctor), who expressed a high level of satisfaction with their experience of using the SITB, as they were able to view detailed patient data and long-term treatment histories, all of which were accessible via the SITB. From the skills perspective, most respondents expressed confidence due to daily use and the socialization provided by the Health Department. The use of SITB has also become mandatory, particularly because it is directly linked to reporting to the Health Department and BPJS claims.

However, behind this positive assessment lies a critical note that should not be overlooked. High satisfaction appears largely surface-level. Several informants still reported issues with data editing, suboptimal synchronization between units, and limited number of staff assigned to data entry despite the wide coverage of TB patients. In terms of skills, training is considered insufficiently in-depth and rarely conducted on a regular basis. Respondents B (pharmacy officer) firmly stated that the training tends to be theoretical, lack real case simulations, and that no implementation support has been provided in the pharmacy unit. This indicates that although healthcare workers "accept" SITB, their readiness is not yet fully developed to optimally utilize the system.

The Technological Factor has emerged as the most problematic area. While the Quality of the System and the Quality of Information received relatively good ratings, with respondents acknowledging the interface as relatively easy to understand and the data as sufficiently up-to-date, several weaknesses remain. Respondents C (laboratory officer) noted that laboratory results are accurate as long as the input is correct, while Respondents A (nurse/TB program coordinator) highlighted the presence of system notifications when discrepancies with standards occur. However, system stability is frequently disrupted during peak hours, access speed is slow, and integration with the electronic medical record has not yet been achieved. The system's interface is also considered less modern and insufficiently responsive on mobile devices.

The quality of Technical Support Services represents the weakest point. Although SITB assists in monitoring medication adherence through checklist features and medication history, respondents expressed doubt about its real contribution to improving treatment success rates (lowest mean 3.52). Respondents A (nurse/TB program coordinator) emphasized the need for better patient control reminder features, while Respondents B (pharmacy officer) and Respondents C (laboratory officer) perceived SITB's benefits primarily in administrative

aspects rather than in improving clinical outcomes. Technical support when problems arise is also regarded slow and inconsistent, particularly with respect to improvements from the central level.

The quality of technical support services is a crucial pillar influencing both user satisfaction and the net benefits of a system. Weaknesses in this area have the potential to erode long-term user trust and lead to underutilization of important SITB features. These findings are consistent with previous studies in Indonesia, which highlight IT infrastructure and technical support as common bottlenecks in the implementation of health systems (Achmadi & Oktrivina, 2021).

In terms of outcome, the improvement in TB treatment service effectiveness shows moderate but not optimal progress. SITB has successfully enhanced the organization of medical records, reduced reporting time (by up to 50%, according to Respondents C (laboratory officer), minimized paper usage, and provided data for hospital evaluation and accreditation. However, perceptions of service certainty according to standards and administrative cost savings remain low and varied. This indicates a gap between expectations and reality: SITB functions more effectively as a recording and reporting tool than as a clinical support system capable of significantly improving early case detection and treatment success.

Overall, the implementation of SITB at dr. Rehatta Regional General Hospital in Central Java Province demonstrates structural imbalance. The human factor is the primary strength, but weaknesses in the technological dimension have limited the achievement of higher outcomes. This condition risks leading to "token adoption," where the system is used out of obligation, rather than because it is perceived to deliver substantial clinical impact. In the context of the national TB program, which requires rapid case detection, strong treatment adherence, and reduced dropout rates, these weaknesses demand serious attention.

These findings underscore the importance of a holistic approach to health technology implementation. Strengths in the human dimension must be continuously maintained and enhanced through ongoing training, while technological weaknesses must be fundamentally addressed through infrastructure improvements, system integration, enhancement of clinical features, and strengthening technical support services. Without appropriate intervention, SITB risks becoming merely an "expensive administrative system" rather than an effective strategic tool for tuberculosis control.

Human Factors in Improving the Effectiveness of TB Treatment Services

Within the human factor group, the pattern of relationships between variables is inconsistent and reveals notable complexity. The User Satisfaction variable shows a very low

and statistically insignificant correlation coefficient. This finding is somewhat surprising, given that respondents' satisfaction levels were descriptively in the high category with minimal variation in their responses. Although healthcare workers expressed satisfaction with the ease of use, system benefits, and data quality, as noted by Respondents A (nurse/TB program coordinator) and Respondent D (doctor), who stated that SITB "greatly facilitates" and Respondents B (pharmacy officer), who reported being quite satisfied), this satisfaction has not translated into a significant improvement in service effectiveness.

This suggests the presence of a ceiling effect, whereby satisfaction levels are already too homogeneous and high to explain variations in the outcome variable. Satisfaction alone appears insufficient; it must be accompanied by other factors to generate a tangible impact. This finding aligns with critiques of the Technology Acceptance Model (TAM), which is often considered overly simplistic, as user satisfaction does not always correlate linearly with improvements in organizational performance (Budi et al., 2025; Schorr, 2023).

In contrast, user skills demonstrate a strong and statistically significant positive relationship. The higher the respondents' skills in operating SITB, the greater the perceived effectiveness of the service. This is supported by informants' statements that daily use and socialization provided by the Health Department have increased their confidence. Respondents A (nurse/TB program coordinator), Respondents C (laboratory officer) and Respondent D (doctor) reported being skilled due to frequent system use, although Respondent B (pharmacy officer) acknowledged that certain advanced features unfamiliar.

The adoption and use variables also show a significant positive relationship, though of moderate strength. SITB has become an integral part of work procedures, particularly due to reporting requirements and BPJS claim obligations, as emphasized by Respondents A (nurse/TB program coordinator). However, the continued reliance on manual recording as a backup, noted by Respondents B (pharmacy officer) and Respondents C (laboratory officer), indicates that adoption is not yet fully optimal.

Although human factors overall have an influence, their strength is not as great as expected. This highlights that human readiness alone is not enough if it is not supported by a reliable system. The dominance of nurses and laboratory technicians in the research sample likely reinforces this relationship, while other units that rarely interact with the system may show different patterns.

The Role of Technology in Enhancing the Effectiveness of TB Treatment Services

In contrast to human factors, the technology factor group demonstrates a more consistent and stronger relationship with improvements of service effectiveness. The variables of system

quality and information quality show significant positive correlations, with strengths ranging from moderate to strong. Respondents who perceive the system as stable, responsive, and capable of presenting accurate data tend to report more tangible improvements in service effectiveness.

The most prominent finding concerns the quality of technical support services, which exhibits a very high and highly significant correlation coefficient. This result is particularly noteworthy because, in the descriptive analysis, this variable received the lowest rating. It suggests that although technical support currently suffers from shortcomings, such as slow response times, limited ongoing training, and minimal reminder features, effective technical support can be a decisive factor that significantly determines the success of SITB.

This finding reinforces the DeLone and McLean model, which identifies service quality as a crucial determinant of a system's net benefit. In the context of this study, responsive technical support enables healthcare workers to quickly overcome technical obstacles, thereby facilitating smoother processes of monitoring compliance, reporting, and program evaluation. Conversely, weaknesses in technical support have the potential to undermine the entire investment made in the system.

Overall, the relationship analysis indicates that the technology factors exert a more dominant influence than human factors on improvements in TB treatment service effectiveness. This finding contrasts with many earlier studies that emphasized the human dimension. At dr. Rehatta Hospital, system quality, and especially technical support, emerges as both the primary "bottleneck" and the key "lever" for SITB's success.

The implications are clear: although healthcare workers are satisfied and skilled, without adequate infrastructure and technical support, the full potential of SITB is difficult to realize. This reflects the broader reality in many Indonesian hospitals, where health information systems are often implemented without insufficient technical support and ongoing maintenance (Nurul Pratiwi, 2023; Kumalasari & Prabawati, 2021).

A practical recommendation is to strengthen the synergy between human and technological factors. Hospitals should maintain user skills and adoption through regular training, while simultaneously improving technical support services by providing a dedicated IT team, integrating SITB with electronic medical records, and refining clinical features such as patient control reminders. Without fundamental technological improvements, SITB risks becoming a system "used out of obligation" rather than a transformative tool for TB control.

Implications of the Findings

This research carries important implications for the management of dr. Rehatta Regional General Hospital in Central Java Province and other TB program stakeholders. Practically, for dr. Rehatta Regional General Hospital in Central Java Province, priority should be given to improving the quality of technical support services, as this factor has the greatest impact. Although user satisfaction was not found to be statistically significant, it remains important to maintain so that it does not decline over time. The combination of strong human resources and optimal technology will yield better outcomes in the effectiveness of TB treatment services, consistent with the objectives of the National Tuberculosis Control Program.

Theoretically, this study contributes empirical insights by applying the HOT-fit framework and DeLone & McLean as foundations for analyzing the implementation of health information systems in the Indonesian context. This approach is specifically relevant to infectious diseases such as TB in public health facilities. Furthermore, the use of Spearman's correlation test to analyze relationships between variables enriches the literature on determinants of health information system success in developing countries, where the quality of technical support often becomes a crucial but underexplored element.

The findings also provide a strong basis for future system improvement recommendations. Specifically, efforts should focus on maintaining the strength of established human factors while simultaneously strengthening the technological dimension in a more targeted manner. In this way, improvements in TB program diagnosis, treatment, and management can be achieved more consistently, sustainably, and with broader impact on the quality of public health services.

Research Limitations

The researchers acknowledge several limitations of this study. The small sample size (N=21) restricts the generalizability of the findings and prevents the assumptions required for multiple regression analysis from being met, limiting the analysis to the correlation level. Future research is recommended to employ larger samples across multiple hospitals, incorporate organizational variables more comprehensively, and, if possible, adopt a longitudinal study design.

CONCLUSION

The implementation of the Tuberculosis Information System (SITB) at dr. Rehatta Regional General Hospital in Central Java Province has contributed positively to the improvement of TB treatment service effectiveness. The user profile is dominated by nurses and laboratory staff in the productive age group with adequate experience, placing the human

factor overall falls into the good category. User skills and the level of adoption and use of the SITB have been proven to have a significant positive relationship with the effectiveness of TB treatment services, while user satisfaction does not show a meaningful relationship. In the Technology dimension, system quality, information quality, and technical support service quality all show a significantly positive relationship, with technical support service quality being the most dominant factor. These findings affirm that the success of health information system implementation is determined by the optimal synergy between Human and Technology factors as formulated in the HOT-Fit model.

The management of dr. Rehatta Regional General Hospital in Central Java Province needs to prioritize strengthening the quality of technical support services through improving the responsiveness of the information technology team and accelerating the resolution of system disruptions. The involvement of doctors in the use of SITB needs to be optimized through training integrated into clinical workflows, accompanied by periodic mentoring programs for new users to minimize the impact of personnel rotation. Periodic monitoring and evaluation of all HOT-Fit dimensions are necessary as a foundation for continuous improvement. Further research is recommended to expand the sample scope and comprehensively integrate organizational factors within the HOT-Fit framework. It is also interesting to note that satisfaction alone is not sufficient to drive service effectiveness without the support of reliable technology.

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