Effect of Data Quality and Task Technology Fit on SIHA Performance in West Papua Province

Tresia Novita Susana Wake[1], Dedi I. Inan[1], Ratna Juita[1], Muhamad Indra[1]
[1] Department of Informatics Engineering, Universitas Papua, Papua Barat, Indonesia
202165021@student.unipa.ac.id
d.inan@unipa.ac.id
r.juita@unipa.ac.id
m.indra@unipa.ac.id

Accepted on June 02, 2025
Approved on June 16, 2025

***Abstract*— HIV/AIDS remains a major public health issue in Indonesia, especially in geographically challenging regions like West Papua Province. To support monitoring efforts, the HIV/AIDS and IMS Information System (SIHA) has been in use since 2012. However, poor data quality often limits its effectiveness. This study analyzes how data quality in SIHA affects the effectiveness of HIV/AIDS monitoring using the Task Technology Fit (TTF) framework. A quantitative method was applied through the distribution of questionnaires to 103 SIHA users, and the data were analyzed using SEM-PLS. The results indicate that data quality significantly influences task-technology fit (TTF) and system performance, while task, technology, and individual characteristics did not show a significant influence. The R-Square values for TTF and performance were 0.234 and 0.212 respectively, meaning that this model only explains approximately 21–23% of the variance in these variables. This suggests that there are still other influential factors that have not yet been investigated in this study. These findings provide fundamental insights into the importance of data quality for health information systems in challenging areas, but further research is needed to explore other variables that could enhance the effectiveness of SIHA in HIV/AIDS monitoring and control in West Papua.**

Keywords: Data Quality, Disease Spread Monitoring, HIV/AIDS, SIHA, Task Technology Fit, West Papua

I. Introduction

Infectious diseases remain a major challenge in many countries, including Indonesia. One disease that receives special attention is HIV, because until now no country has been completely free from this problem [1]. HIV itself is a virus that attacks the immune system, making those infected more vulnerable to various other infections [2]. HIV continues to be a significant global public health issue because individuals who do not receive treatment will experience chronic infection that can progress to Acquired Immunodeficiency Syndrome (AIDS), a condition resulting from a weakened immune system that carries a risk of mortality [3]. In Indonesia, HIV case detection within the national population from 2021 to 2023 shows an increase in tests conducted, correlating with a rise in identified positive individuals. The majority of people with HIV (PLHIV) are within the productive age group of 25–49 years (69.5%), although the positivity rate has remained relatively stable at around 0.9% to 1.1%. As of 2024, the total number of PLHIV recorded was 503,261, with 351,378 individuals aware of their status. Of this number, 217,482 people (62%) are receiving antiretroviral (ARV) treatment, 99,463 individuals (46%) have undergone viral load testing, and 91,662 individuals (42%) have successfully achieved viral suppression in their bodies [4]. A similar situation is observed in developing regions, such as West Papua. According to reports from the Provincial Health Office Chief, from 2013 to 2025, over 214,000 people have undergone HIV tests, and nearly 6,000 of them tested positive. However, only about 1,400 individuals have consistently received ARV therapy to suppress viral development in their bodies [5].

Amid various challenges, the use of information technology in the digital era has increasingly supported efforts to address HIV/AIDS. As digital transformation progresses, information technology has become an essential component in facilitating these initiatives. Based on Government Regulation No. 46 of 2014 concerning the Health Information System, health data, information, and indicators must be classified and regulated within the Health Information System to support the implementation of health improvement [6]. The Health Office has launched several applications to assist in managing health data and information through electronic platforms, particularly in the field of Communicable Disease Prevention and Control (P2PM). One such application is the HIV-AIDS and STIs Information System (SIHA). SIHA serves as the official system for documenting and reporting cases of HIV/AIDS and Sexually Transmitted Infections (STIs) across national, provincial, and district or city levels. SIHA has been used by the Health Office since 2012 [7]. Therefore, it is important to analyze SIHA to ensure the system can provide accurate data that meets user needs. This analysis helps identify system weaknesses, assess technological suitability, and improve data quality to support more effective HIV/AIDS monitoring and control.

A study conducted by [8] aimed to identify challenges in HIV surveillance data quality in the United States, including issues of representativeness, completeness, accuracy, and the level of detail of information affecting the country's ability to track and respond to HIV epidemiological trends. Therefore, this study emphasizes the importance of high-quality data in information systems for effective monitoring of HIV/AIDS transmission. The study by [9] explains that Task Technology Fit (TTF) involves the relationship between existing tasks, individual capabilities, and the role of technology. This means that the ability to complete a task depends on the support of technological functions. Similarly, a study by [10] also developed the Task Technology Fit (TTF) theory in the context of mobile information systems supporting administrative tasks. This research highlights the importance of the fit between tasks, technology, and the context of mobile information system usage.

In this study, the authors apply the Task Technology Fit (TTF) theory, which centers on the compatibility between task demands and the capabilities of the supporting technology. This includes the extent to which the system assists users, regardless of their skill level [9]. According to [11], the Task Technology Fit (TTF) model is a formal framework, also known as Task-Technology Fit, which refers to the degree to which technology features align with task needs within a work context, particularly the potential of information technology to support task execution.

The studies conducted by [9], [10], and [11] have several limitations in examining Task Technology Fit (TTF). Goodhue [9] did not fully consider contextual factors, the role of users, and technological developments, making the model less flexible. Gabauer [10] also did not thoroughly discuss organizational factors and the long-term impact of mobile information systems. Meanwhile, [11] only used a partial set of TTF variables, employed a cross-sectional research design that did not capture changes over time, and produced findings that are difficult to generalize to other sectors. Overall, these three studies emphasize the importance of alignment between tasks and technology, but still have limitations in considering other variables impacting the success of information system.

This study aims to fill the shortcomings of earlier research by examining not just the alignment between tasks and technology as described by the Task Technology Fit (TTF) theory, but also by incorporating an additional external factor, namely Data Quality (DQ). The inclusion of the DQ variable can close previous gaps because DQ ensures that data reported through SIHA is more accurate, complete, consistent, and timely. This, in turn, enhances the reliability of information for decision-making and program evaluation. Therefore, it's crucial to understand how data quality within SIHA contributes to HIV/AIDS monitoring performance in this region. Given the significant role of data quality in supporting reliable health information systems, especially in HIV/AIDS reporting, a more in-depth study of the system in use is necessary. This research focuses on data quality within SIHA and its impact on the performance of HIV/AIDS transmission monitoring in West Papua. Using the Task Technology Fit (TTF) framework, this research seeks to examine how data quality and technology alignment relate to and influence the success of monitoring and controlling the spread of HIV/AIDS. However, unlike previous studies, this research is conducted in a developing region, West Papua, an area with unique geographical characteristics and accessibility challenges that add complexity to health data management.

Through the findings of this research, we hope to gain in-depth insights that are not only relevant for West Papua but can also serve as a reference for other regions facing similar conditions in improving the effectiveness of health information systems for epidemic control. The Task Technology Fit (TTF) framework is applied to evaluate how well the SIHA system meets the practical requirements of field users, including activities like documenting, reporting, and overseeing HIV/AIDS case management. By understanding this fit, the research can identify whether the technology used supports or hinders task execution. Furthermore, the addition of the Data Quality (DQ) aspect is crucial to ensure that the collected data is accurate, complete, consistent, and timely. Good data quality is vital for effective monitoring and decision-making, serving as a critical foundation for developing targeted interventions. Thus, the integration of the Task Technology Fit and Data Quality approaches is expected to make a tangible contribution to strengthening health information systems, not only in West Papua but also nationally, in enhancing the effectiveness of health information systems for epidemic control.

This research centers on examining the influence of Data Quality within the HIV/AIDS Information System (SIHA) on the effectiveness of monitoring HIV/AIDS transmission in West Papua from the Task Technology Fit (TTF) perspective. Digital information systems, such as SIHA, play a crucial role in managing public health data, particularly in monitoring and controlling infectious diseases like HIV/AIDS. However, the effectiveness of SIHA is not solely dependent on its existence but also on the extent to which users perceive the system as having high-quality data and how this influences its performance in supporting healthcare tasks, such as recording, reporting, and decision-making related to HIV/AIDS transmission monitoring.

II. Methodology

A. *Task Technology Fit in SIHA*

The Task-Technology Fit (TTF) approach developed by Goodhue [12] serves as the basis for designing the user evaluation instrument. This instrument aims to assess the extent to which the information system supports the execution of managerial tasks, particularly in utilizing organizational data for decision-making. Additionally, these instruments are used to test various propositions related to factors influencing user evaluations and their resulting impacts.

According to [12], Task-Technology Fit (TTF) consists of several key elements, including task characteristics, which encompass complexity, information dependence, and the nature of the task; technology characteristics, which include ease of use, system capabilities, and supporting features; and the degree of fit between technology and tasks, which determines the effectiveness of an information system. TTF also looks at how it affects how well people or organizations perform. Basically, the better the match between the task and the tech, the more it helps improve work results.

The TTF approach developed by [9] introduces a distinct difference by incorporating the utilization of technology by users in performing their tasks. In this model, Goodhue and Thompson (1998) emphasize that the fit between tasks and technology not only has a direct impact on performance but also influences it through the extent to which the technology is actually used by its users.

B. *Data Quality in SIHA*

According to [13], Data Quality is assessed based on several key aspects, including data validity, which relates to the relevance and accuracy of information in supporting decision-making.

In the use of SIHA, Data Quality plays a crucial role in supporting the effectiveness of monitoring and decision-making related to HIV/AIDS mitigation. Relevant and accurate data enable healthcare professionals to obtain the right information for planning and implementing HIV/AIDS prevention and treatment measures. Additionally, maintaining accurate data is also a key factor, which includes efforts to ensure that data remains up-to-date, consistent, and error-free throughout the processes of collection, storage, and utilization.

It can be concluded that good Data Quality not only enhances the efficiency of system users but also strengthens trust in the information generated, thereby supporting more effective and targeted decision-making. With high-quality data, monitoring performance can be improved through early case detection, more accurate tracking of transmission trends, and better-targeted prevention and treatment programs. Conversely, poor data can lead to delays, analytical errors, and misguided decisions, ultimately hindering the effectiveness of disease mitigation efforts.

This study employs a quantitative method, which focuses on collecting and analyzing numerical data to examine the relationship between variables [14]. In this study, a quantitative method is applied to analyze the impact of data quality in the HIV/AIDS Information System on the performance of disease transmission monitoring in West Papua.

This study's research framework is based on the Task Technology Fit (TTF) model, which has been extended by adding several independent variables: Task Characteristics, Technology Characteristics, Individual, and Data Quality. The dependent variable is Performance Impact. Meanwhile, SIHA's Task Technology Fit works as a mediator that helps show how those independent variables affect system performance.

The research model indicates that the Task Technology Fit (TTF) within the HIV/AIDS Information System (SIHA) directly affects how well HIV/AIDS monitoring is carried out. Data quality, along with task, technology, and individual characteristics, affects TTF, while data quality also has a direct impact on performance. In conclusion, high-quality data and a system that aligns with user needs are key factors in enhancing the effectiveness of HIV/AIDS monitoring in West Papua.

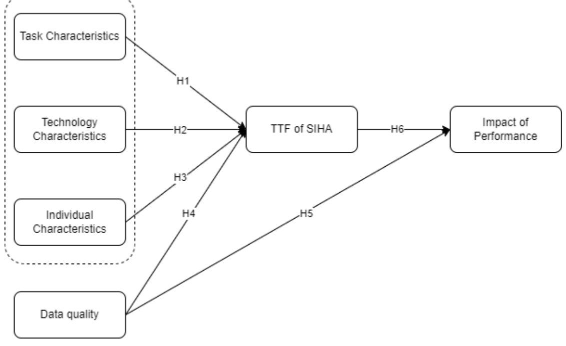

Fig 1. Research Model

From the conceptual framework shown above, all the variables are linked to each other. A hypothesis is a provisional statement that requires testing. In this context, hypotheses can be categorized into research hypotheses and working hypotheses (statistical hypotheses). A researcher needs hypotheses to guide their research plan and steps. A hypothesis is stated as a temporary truth and serves as both a working foundation and a guideline for data analysis [15].

According to [16] Task characteristics are defined as actions performed by individuals to transform inputs into outputs in order to meet the information needs of task fit. Therefore, this study proposes the following hypothesis (H1):

H1: Task Characteristics have a significant influence on the Task Technology Fit in the use of SIHA.

According to [17] Technology characteristics indicate that information technology consists of various tools that not only assist individuals in managing information and completing data processing tasks but also include communication technologies that enable information transmission to support organizational needs. Therefore, this study proposes the following hypothesis (H2):

H2: Technology Characteristics have a significant influence on the Task Technology Fit in the use of SIHA.

According to [16] The role of individuals in the use of information technology is crucial. This is because technological skills, experience, awareness, and perceived benefits of technology can influence the level of acceptance and effectiveness of its use. Therefore, this study proposes the following hypothesis (H3):

H3: Individual Characteristics have a significant influence on the Task Technology Fit in the use of SIHA.

According to [13] Data quality is assessed based on several key aspects, including data validity, which relates to the relevance and accuracy of information in supporting decision-making. Additionally, maintaining accurate data is also a crucial factor. Therefore, this study proposes the following hypotheses (H4 and H5):

H4: Data Quality has a significant influence on the Task Technology Fit in the use of SIHA.

H5: Data Quality has a significant influence on the Impact of Performance in the use of SIHA.

According to User evaluation of Task Technology Fit will have explanatory power in predicting the perceived impact on performance. Therefore, this study proposes the following hypothesis (H6):

H6: Task Technology Fit has a significant influence on the Impact of Performance in the use of SIHA.

C. Sampel

The population in this study consists of SIHA users in West Papua Province. To assess the validity of the analysis, the author also used the G*Power tool. By setting the effect size at 0.15, the alpha significance level at 5%, and the statistical power at 95%, with six predictor variables, the minimum required sample size was 75 respondents. However, to enhance the reliability of the results, the author collected a larger dataset, totaling 103 respondents [18]. Data collection was conducted by distributing questionnaires via Google Forms, with assistance from the Head of the Disease Prevention and Control Division of the West Papua Provincial Health Office.

D. Analysis Method

The research and data collection process was conducted over three months, from October to December 2024, in West Papua, with a total of 103 valid respondents. The demographic data collected included gender, age, highest level of education, and work unit.

TABLE I. RESPONDENTS DEMOGRAPHIC DESCRIPTION

Category	Item	Quantity	Percentage
Gender	Male	33	32%
	Female	70	68%
Age	18 - 35 years	49	47,60%
	36 - 50 years	54	52,40%
Highest Level of Education	(D1/D2/D3	54	52,40%
	(S1)	47	45,60%
	(S2)	1	1%
	Other	1	1%

III. RESULT AND DISCUSSION

A. Measurement Model Evaluation (Outer Model)

The outer model is the first of two steps in data analysis. In this study, three criteria are used to evaluate the outer model: convergent validity, composite reliability, and discriminant validity. The first criterion, convergent validity, is assessed by examining the Loading Factor (LF), where an LF value is generally considered acceptable if it is greater than 0.7 [16]. Next, the measurement of Average Variance Extracted (AVE) is considered, with an AVE value of 0.5. An AVE value of 0.5 or higher is deemed adequate, indicating that the latent construct can explain more than half of the variance in its indicator variables [19]. In the reliability test, each variable is evaluated using two methods: Cronbach's Alpha (CA) and Composite Reliability (CR). Each variable indicator is considered reliable if the CA and CR values are greater than 0.70 [20].

In this research instrument, some statements were removed. To ensure that the indicator removal process was conducted scientifically, planned, and justifiable, the researchers established instrument evaluation criteria based on relevant references, where, Loading Factor (LF) An indicator is declared valid if its loading factor value is ≥ 0.7. Average

Variance Extracted (AVE) A construct is declared valid if its AVE is ≥ 0.5. And Cronbach's Alpha (CA) and Composite Reliability (CR) A construct is considered reliable if its CA and CR values are ≥ 0.7. Therefore, indicators that did not meet these criteria in this study were considered for removal and were not included in the Research Instrument table. After the indicator removal, the AVE, CA, and CR values of each construct were re-evaluated to ensure they continued to meet the established criteria. This process was carried out gradually and iteratively until all remaining indicators were valid and reliable.

TABLE II. RESEARCH INSTRUMENT

Variable	Statement Item	Code	LF	Reference
Task Characteristics (TSC) CA, CR, AVE = 0.856, 0.933, 0.874	I often encounter problems with data input and online patient data reporting through SIHA.	TSC1	0.962	[19]
	I often feel that the SIHA usage problems I deal with are : difficulties in updating data, data recording, and reporting.	TSC2	0.938	
Technology Characteristics (TCH) CA, CR, AVE = 0.725, 0.862, 0.760	I find that using SIHA online presents no difficulties and makes it easy for healthcare workers to input data that needs to be updated.	TCH2	0.962	[19]
	I feel that using SIHA online improves time efficiency in managing data without having to go through complicated manual processes.	TCH3	0.771	
Individual Characteristics (IC) CA, CR, AVE = 0.758, 0.891, 0.803	I feel the work experience in the healthcare field with SIHA has a positive impact on the continuous monitoring of patients.	IC2	0.919	[14]
	I feel that the personality of healthcare workers influences their understanding of the system and their attitude towards SIHA use.	IC3	0.873	
Data quality (DQ) CA, CR, AVE = 0.739, 0.884, 0.793	I feel the data used in SIHA is indeed accurate and provides information that has been rigorously validated.	DQ1	0.902	[11]
	I feel that using SIHA provides me with administrative data in carrying out my HIV/AIDS reporting tasks.	DQ2	0.879	
Task Technology Fit (TTF) CA, CR, AVE = 0.909, 0.943, 0.846	I feel that SIHA supports my tasks as a healthcare worker in monitoring treatment, report generation, and patient data recording.	TTF1	0.92	[14]
	I feel that SIHA provides me with the suitability for the demands of the tasks I have to complete as a healthcare worker.	TTF2	0.888	
	I feel that SIHA assists healthcare workers in making better decisions regarding the care needed by patients.	TTF3	0.929	
Impact of Performance (IOP) CA, CR, AVE = 0.901, 0.938, 0.874	I feel that SIHA can assist me in making decisions such as: prioritizing areas, allocating resources, evaluating programs, identifying trends, and developing faster and more accurate education strategies.	IOP1	0.899	

Variable	Statement Item	Code	LF	Reference
	I feel that SIHA can improve efficiency in all aspects such as: continuous monitoring, automated analysis, precise allocation, efficient strategy evaluation, and data integration.	IOP2	0.903	
	I feel that SIHA can improve data accessibility such as: data can be accessed from anywhere, easy-to-understand data visualization, access rights according to user roles, and ,mobile integration.	IOP3	0.938	[11]

Discriminant validity can be evaluated using an alternative method, namely HTMT [21]. This method uses the multitrait-multimethod matrix as the basis for measurement. The HTMT value must be less than 0.90 to ensure discriminant validity between two reflective constructs [22].

Based on Table III, all values are below 0.90, which means that discriminant validity has been met. This indicates that each construct in the reflective model has a clear distinction from one another and does not experience conceptual overlap issues.

TABLE III. RESULTS OF DISCRIMINANT VALIDITY TEST HTMT

	DQ	IC	IOP	TCH	TSC	TTF
DQ						
IC	0.304					
IOP	0.484	0.339				
TCH	0.249	0.103	0.247			
TSC	0.380	0.220	0.144	0.310		
TTF	0.542	0.276	0.422	0.213	0.237	

B. *Structural Model Evaluation (Inner Model)*

Structural model analysis is crucial for understanding how variables interact and influence each other within a model. In this study, the evaluation of the magnitude and significance of these relationships will be conducted to test the proposed hypotheses. Several tests are employed in the structural model analysis, including the Variance Inflation Factor (VIF) test and the Determinant Coefficient (R-Square) test, to assess the validity of the hypotheses [23].

The VIF test is used to assess collinearity among constructs in the research model. This test ensures that the constructs do not exhibit excessive interdependence, which could affect the model's validity. The VIF value for a construct should be greater than or equal to 5 and less than or equal to 0.2, indicating that the construct has collinearity issues [21].

In SEM-PLS analysis, a VIF value above 5 indicates a multicollinearity issue, while a value below 5 suggests no multicollinearity problem [23] [24]. In this study, based on the test results in Table 4 , all constructs have VIF values ranging from 1.152 to 1.163. These values are well below the threshold of 5, indicating that there is no multicollinearity issue in this research model.

The hypothesis testing in this study aims to determine whether the proposed hypotheses can be accepted or rejected . Hypothesis testing is conducted by comparing the obtained t-statistic and p-value. According to [25], the t-statistic value must be >1.96 with a significance level of 5%, and the p-value must be <0.05 for the hypothesis to be accepted.

TABLE IV. MULTICOLLINEARITY TEST RESULTS VARIANCE INFLATION FACTOR (VIF)

	DQ	IC	IOP	TCH	TSC	TTF
DQ			1.249			1.152
IC						1.071
IOP						
TCH						1.068
TSC						1.163
TTF			1.249			

TABLE V. HYPOTHESIS TESTING RESULTS

Hypothesis	Variable	T-Statistic	P-Values	Description
H1	TSC → TTF	0.542	0.588	Rejected
H2	TCH → TTF	1.244	0.214	Rejected
H3	IC → TTF	1.613	0.107	Rejected
H4	DQ → TTF	4.008	0.000	Accepted
H5	DQ → IOP	2.494	0.013	Accepted
H6	TTF → IOP	2.878	0.004	Accepted

Furthermore, the R-square value is used to assess the impact of independent latent variables on the dependent variable. The R-square value ranges from

0 to 1, with values closer to 1 indicating a stronger model fit. An R-square value of 0.75 is considered strong, 0.50 is considered moderate, and 0.25 is considered weak [23].

TABLE VI. R-SQUARE TEST RESULTS

Variable	R-square	Category
IOP	0.212	Weak
TTF	0.234	Weak

Based on the analysis results, data quality is a significant factor influencing both Task Technology Fit and Impact of Performance in the SIHA system. However, the R-Square values obtained for these two variables are still relatively weak (0.234 and 0.212, respectively). This indicates that the current research model can only explain approximately 21–23% of the variation in Task Technology Fit and Impact of Performance , while the remaining variability is likely influenced by other factors not yet included in the model. Therefore, although the factors identified in this study are important, further research is needed to explore other factors that could contribute to improving the effectiveness of the SIHA system.

Based on Table VI, six hypotheses were proposed and tested. Three hypotheses have a T-statistic > 1.96 and a p-value < 0.05, indicating that these hypotheses are accepted. Meanwhile, three hypotheses have a T-statistic < 1.96 and a p-value > 0.05, meaning that these hypotheses are rejected as they do not meet the hypothesis criteria.

H1 is rejected because it has a T-Statistic value < 1.96 (0.542) and a P-Value > 0.05 (0.588). This indicates that Task Characteristics does not have a significant impact on the Task Technology Fit of SIHA. In other words, the complexity or simplicity of a task does not directly influence whether the technology used is suitable for supporting that task.

Furthermore, H2 is rejected because it has a T-Statistic value < 1.96 (1.244) and a P-Value > 0.05 (0.214). Technology Characteristics, such as ease of use or feature sophistication, do not have a significant impact on the Task Technology Fit of SIHA. This indicates that the compatibility of SIHA with tasks is not solely dependent on its features.

Furthermore, H3 is rejected because it has a T-Statistic value < 1.96 (1.613) and a P-Value > 0.05 (0.107). Individual Characteristics, such as user experience or skills, do not have a significant impact on the Task Technology Fit of SIHA. This indicates that individual factors are not the primary determinants of technology-task compatibility in the use of SIHA.

Furthermore, H4 is accepted because it has a T-Statistic value > 1.96 (4.008) and a P-Value < 0.05 (0.000). Data Quality has a significant impact on the Task Technology Fit of SIHA. This indicates that accurate, complete, and reliable data enhance the compatibility of technology with the tasks performed. It highlights the importance of data quality in supporting the effective use of SIHA.

Furthermore, H5 is accepted because it has a T-Statistic value > 1.96 (2.494) and a P-Value < 0.05 (0.013). Data Quality has a significant impact on the Impact of Performance. This indicates that high-quality data enhance the effectiveness and efficiency of the system in supporting decision-making and monitoring the spread of HIV/AIDS.

And finally, H6 is accepted because it has a T-Statistic value > 1.96 (2.878) and a P-Value < 0.05 (0.004). Task Technology Fit of SIHA has a significant impact on the Impact of Performance. This indicates that the better the technology aligns with task requirements, the better the performance of SIHA. This finding is consistent with previous research by [13]. These findings confirm that Task Technology Fit serves as a mediating variable that explains how data quality contributes to performance impact through better alignment between technology and user tasks in the use of SIHA.

Based on the hypothesis testing results, it was found that Data Quality has a significant impact on Task Technology Fit (TTF) and Impact of Performance (IOP). Meanwhile, Task Characteristics, Technology Characteristics, and Individual Characteristics do not have a significant impact on TTF. This indicates that the effectiveness of SIHA usage is more determined by the quality of available data rather than other factors such as task, technology, or user characteristics.

This study aims to analyze the relationship between data quality, technology fit, and their impact on the effectiveness of monitoring and controlling the spread of HIV/AIDS in West Papua Province. The research employs a quantitative method using the Task Technology Fit (TTF) approach.

The findings of this study prove that Data Quality in SIHA in West Papua significantly influences Task Technology Fit and its Impact on Performance. The test results show that the R-Square value for Impact on Performance (IOP) is 0.212 and for Task Technology Fit (TTF) is 0.234. This means that the model explains approximately 21.2% of the variability in IOP and 23.4% of the variability in TTF. This indicates that other factors outside the model also contribute to the effectiveness of SIHA in West Papua. Based on hypothesis testing results, it was found that Data Quality has a significant influence on Task Technology Fit (TTF) and Impact on Performance (IOP). Additionally, Task Technology Fit also significantly influences Impact on Performance, meaning that the better the alignment between technology and user task requirements, the better the performance in monitoring the spread of HIV/AIDS in West Papua.

However, this study also found that three factors do not have a significant influence on Task Technology Fit in West Papua. First, Task Characteristics do not have a significant effect because the tasks performed by respondents in this study are routine or standardized, making technology use not the primary factor in determining the fit between tasks and technology. Second, Technology Characteristics do not have a significant effect, possibly because the technology used in this study is already considered standard and no longer serves as a differentiating factor in supporting task execution. If the available technology has common features or is similar to previous systems, users may not perceive a significant improvement in fit. Third, Individual Characteristics do not have a significant effect due to uniformity in the level of skills, experience, or user perceptions of technology within the study environment in West Papua. If most individuals have relatively similar abilities in using technology, differences in individual characteristics do not significantly impact the fit between tasks and technology.

These findings indicate that the success of SIHA in supporting HIV/AIDS monitoring in West Papua is primarily determined by data quality rather than technical factors or individual user characteristics. Overall, this study confirms that improving data quality is the key factor in the effectiveness of SIHA in West Papua, compared to technical or user-related factors. Therefore, efforts to develop SIHA in West Papua should focus on data validation, healthcare worker training, and strengthening technological infrastructure to ensure accessibility and accuracy of information in HIV/AIDS monitoring.

C. Theoretical Implications

This study provides a significant contribution to the development of the Task Technology Fit (TTF) theory, particularly within the context of health information systems in regions with geographical challenges, such as West Papua. The findings demonstrate that among the four independent variables tested (task characteristics, technology characteristics, individual characteristics, and data quality), only data quality has a significant effect on both task-technology fit and performance impact. This highlights the dominant role of data quality in enhancing system effectiveness, extending the theoretical understanding of the TTF model.

The first theoretical implication is the importance of integrating data quality dimensions as a central component within the TTF model. While prior research has primarily focused on the alignment between task, technology, and user characteristics, this study reveals that, in the context of health information systems, data accuracy, completeness, and validity play a more critical role in determining system performance. Therefore, the TTF model may need to be revised or extended to account for external factors such as data quality that significantly influence system effectiveness.

The second implication is the unexpected insignificance of task characteristics, technology characteristics, and individual characteristics in shaping TTF. This contradicts core assumptions of the original TTF theory. It suggests that in certain settings such as standardized systems with relatively homogeneous users these variables may lose their predictive power. Thus, the application of TTF should be context-sensitive, with awareness of contextual moderators that may reduce the relevance of traditional constructs.

The third implication is the need for a more holistic approach in evaluating the effectiveness of health information systems. This study shows that even when technology and user characteristics are neutral or non-significant, high-quality data can still drive performance improvements through its influence on TTF. This strengthens the argument that system evaluations should go beyond the fit between task and technology and focus on the quality of the information generated by these systems.

Overall, the findings of this research suggest that the TTF model should be modified or expanded to more accurately reflect the realities of health information system implementation especially in under-resourced or geographically challenging settings like West Papua. Incorporating external variables such as data quality into the model enhances its explanatory power and relevance for real-world applications in healthcare monitoring and decision-making.

D. Practical Implications

Based on the findings of this study, several practical implications can be applied to enhance the effectiveness of monitoring the spread of HIV/AIDS in West Papua. This research indicates that Data Quality (DQ) and Task Technology Fit (TTF) have a significant impact on the Impact of Performance (IOP) in the use of SIHA. Therefore, more accurate, complete, and reliable data enable healthcare professionals to conduct more comprehensive analyses, make faster decisions, and improve efficiency in reporting processes and public health interventions. The timeliness of data provision also supports a more proactive response to disease transmission trends. Thus, data quality serves as a crucial foundation for effective HIV/AIDS prevention and control efforts.

The findings of this study align with the three accepted hypotheses: Data Quality, Task Technology Fit (TTF), and Impact of Performance. The alignment between technology and the tasks performed by healthcare workers has been proven to strengthen the relationship between data quality and monitoring performance. With a system that meets user needs, the processes of data recording, processing, and reporting can be carried out more efficiently and accurately. Therefore, improving data quality should be a top priority in the future development of SIHA. This includes implementing stricter data validation, enhancing system integration among relevant institutions, and adopting user-friendly technology to facilitate use by healthcare workers in the field.

Additionally, these findings provide valuable insights for policymakers and stakeholders in managing health information systems. The government, healthcare institutions, and non-governmental organizations can utilize this research to develop sustainable system improvement strategies. These strategies include enhancing capacity and training for healthcare workers in using SIHA, strengthening technological infrastructure to ensure optimal data availability and accessibility, and refining standard operating procedures (SOPs) for HIV/AIDS data recording and reporting. Furthermore, cross-sector collaboration must be reinforced to facilitate smooth data exchange and coordination in HIV/AIDS prevention and control efforts.

In the long term, the development of SIHA, supported by high-quality data, will not only enhance monitoring effectiveness but also strengthen the overall healthcare system in West Papua. These efforts are expected to accelerate HIV/AIDS case management, reduce new infection rates, and improve the quality of life for affected communities. Therefore, the synergy between technology, reliable data, and appropriate policy support is the key to establishing an effective and sustainable health information system.

E. Limitation

This study has several limitations. One of the main limitations is the low R-Square values for the for the Impact of Performance and 0.234 for Task Technology Fit. This indicates that there are still other factors outside the model that contribute to the performance of SIHA, which have not been included in this study. To improve the R-Square value, it is necessary to add external variables, use a combinative research method, and expand the scope of the study. With these improvements, it is expected that the research model will be stronger in explaining the factors influencing the effectiveness of SIHA, thereby providing more accurate recommendations for the development of health information systems in the future.

Second, this study was conducted only in the West Papua region, so the results may not be generalizable to other areas with different characteristics. Third, this study employs a quantitative method with a survey approach, which does not explore in depth the qualitative factors that may influence the effectiveness of SIHA. Fourth, this study focuses solely on the aspects of Data Quality, Task Technology Fit, and Impact of Performance, without considering other external variables that may contribute to the successful implementation of the health information system.

F. Future Research Directions

For future research, several aspects can be explored further. First, a qualitative approach should be employed to gain a deeper understanding of the challenges and obstacles in the implementation of SIHA. Second, a broader study with a larger geographical scope will provide a more comprehensive understanding of SIHA's effectiveness across different regions. Third, future research can integrate other factors such as health policies, management support, and technological infrastructure readiness to holistically understand the success factors of SIHA in HIV/AIDS monitoring. Thus, future research findings can provide more accurate recommendations for improving health information systems in Indonesia.

IV. Conclusion

This study indicates that data quality is a significant factor influencing the fit between tasks and technology, as well as the performance impact in the implementation of SIHA for HIV/AIDS monitoring in West Papua. Other factors such as task characteristics, technological characteristics, and individual characteristics were not found to be significant in this model.

However, it should be noted that the R-squared values for Task Technology Fit (0.234) and Performance Impact (0.212) suggest that this model only explains approximately 21–23% of the variance in the dependent variables. This implies that a large portion of the variation—more than 77%—is likely influenced by other factors not yet included in the current model.

Therefore, although data quality is proven to have a significant influence, these findings need to be interpreted with caution. Further research is needed to identify additional factors that may affect the effectiveness of SIHA in HIV/AIDS monitoring. Efforts to improve data accuracy, completeness, and reliability remain crucial, but future development also needs to consider other factors such as organizational aspects, environmental factors, or policies to maximize the impact of health information systems in challenging regions.

References

[1] S. Mukarromah and M. Azinar, "Penghambat Kepatuhan Terapi Antiretroviral pada Orang dengan HIV/AIDS (Studi Kasus pada Odha Loss To Follow Up Therapy)," Indones. J. Public Heal. Nutr., vol. 1, no. 1, pp. 101–113, 2021. [Online]. Available: http://journal.unnes.ac.id/sju/inde

x.php/IJPHN
[2] V. Silalahi, "Pendidikan Kesehatan Tentang Perilaku Seksual Berisiko HIV / AIDS Pada Remaja Health Education On HIV / AIDS Sexual Risk Behavior Among Teenagers," J. Ilm. Tatengkorang, vol. 5, no. 2, pp. 50–55, 2021.
[3] R. D. Govender, M. J. Hashim, M. A. Khan, H. Mustafa, and G. Khan, "Global Epidemiology of HIV/AIDS: A Resurgence in North America and Europe," *J. Epidemiol. Glob. Health*, vol. 11, no. 3, pp. 296–301, 2021, doi: 10.2991/jegh.k.210621.001.
[4] Kementrian Kesehatan Republik Indonesia, "Laporan Penilaian Risiko Cepat MPOX MPOX di Indonesia," 2023.
[5] orideknews.com, "6.000 Orang di Papua Barat Positif HIV, Mayoritas Usia Produktif," Accessed: May 07, 2025. [Online]. Available: https://orideknews.com/2025/05/07/6-000-orang-di-papua-barat-positif-hiv-mayoritas-usia-produktif/
[6] Permenkes No. 24, "Peraturan Menteri Kesehatan RI No 24 tahun 2022 tentang Rekam Medis," *Peratur. Menteri Kesehat. Republik Indones. Nomor 24 Tahun 2022*, vol. 151, no. 2, pp. 1–19, 2022.
[7] D. K. Artati *et al.*, "Tingkat Penerimaan Aplikasi SIHA 2 . 1 pada Petugas Kesehatan di Provinsi Jawa Tengah," vol. 5, no. 3, pp. 186–193, 2024, doi: 10.25047/j-remi.v5i3.4620.
[8] B. K. Ngugi, B. Harrington, E. N. Porcher, and R. G. Wamai, "Data quality shortcomings with the US HIV/AIDS surveillance system," *Health Informatics J.*, vol. 25, no. 2, pp. 304–314, 2019, doi: 10.1177/1460458217706183.
[9] D. L. Goodhue, "Development and measurement validity of a task-technology fit instrument for user evaluations of information systems," *Decis. Sci.*, vol. 29, no. 1, pp. 105–138, 1998, doi: 10.1111/j.1540-5915.1998.tb01346.x.
[10] J. Gebauer, M. J. Shaw, and M. L. Gribbins, "Task-Technology Fit for Mobile Information Systems," 2020. [Online]. Available: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=43a388e74e1de114d6ac249a5ffd19dffc2423ff
[11] K. C. Maulina and E. S. Astuti, "Pengaruh Karakteristik Tugas, Teknologi Informasi Dan Individu Terhadap Task-Technology Fit (TTF), Utilisasi Dan Kinerja," JISIP J. Ilmu Sos. Ilmu Polit., vol. 4, no. 1, pp. 108–119, 2015.
[12] D. L. Goodhue and R. L. Thompson, "Task-Technology Fit and Individual Performance," Inf. Syst. Res., vol. 19, no. 2, pp. 213–236, 1995. [Online]. Available: http://www.jstor.org/stable/249689
[13] M. J. Wills, O. F. El-Gayar, and A. V. Deokar, "Evaluating task-technology fit and user performance for an electronic health record system," *15th Am. Conf. Inf. Syst. 2009, AMCIS 2009*, vol. 4, pp. 2708–2717, 2009.
[14] P. E. Setiawati, D. I. Inan, R. N. Wurahrah, R. Juita, and M. Sanglise, "How the perceived enjoyment effect m-payment adoption in west papua province: delone and mclean information systems success model," vol. 9, no. 3, pp. 1494–1505, 2024.
[15] M. Arifudin, M. H. Arfah, M. Riskayanti, S. F. Husaimah, and L. Rahim, "Makalah Mata Kuliah Statistika," no. June, 2022.
[16] J. D'Ambra, C. S. Wilson, and S. Akter, "Application of the task-technology fit model to structure and evaluate the adoption of E-books by academics," *J. Am. Soc. Inf. Sci. Technol.*, vol. 64, no. 1, pp. 48–64, 2013, doi: 10.1002/asi.22757.
[17] R. A. Putri, R. A. Putra, and M. L. Dalafranka, "Analisis Penerimaan Pengguna Sistem Informasi Akademik STIQ Al-Lathifiyyah Menggunakan Task Technology Fit," *J. Comput. Inf. Syst. Ampera*, vol. 3, no. 2, pp. 111–132, 2022, doi: 10.51519/journalcisa.v3i2.177.
[18] N. Kock and P. Hadaya, "Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods," *Inf. Syst. J.*, vol. 28, no. 1, pp. 227–261, 2018, doi: 10.1111/isj.12131.
[19] Y. A. Takke, L. F. Marini, and L. Y. Baisa, "Analisis Kepuasan Pengguna Aplikasi PELNI Mobile Menggunakan Metode Technology Acceptance Model (TAM) dan End User Computing Satisfaction (EUCS)," *G-Tech J. Teknol. Terap.*, vol. 8, no. 3, pp. 1921–1930, 2024, doi: 10.33379/gtech.v8i3.4700.
[20] S. Sayyida, "Structural Equation Modeling (Sem) Dengan Smartpls Dalam Menyelesaiakan Permasalahan Di Bidang Ekonomi," *J. MISSY (Management Bus. Strateg.*, vol. 4, no. 1, pp. 6–13, 2023, doi: 10.24929/missy.v4i1.2610.
[21] D. I. Inan *et al.*, "Service quality and self-determination theory towards continuance usage intention of mobile banking," *J. Sci. Technol. Policy Manag.*, vol. 14, no. 2, pp. 303–328, 2023, doi: 10.1108/JSTPM-01-2021-0005.
[22] E. Roemer, F. Schuberth, and J. Henseler, "HTMT2–an improved criterion for assessing discriminant validity in structural equation modeling," *Ind. Manag. Data Syst.*,

vol. 121, no. 12, pp. 2637–2650, 2021, doi: 10.1108/IMDS-02-2021-0082.
[23] A. Saputra, D. I. Inan, R. Juita, M. Sanglise, and M. Indra, "Determinants of User Satisfaction with a Mobile Application Using the Extended Webqual 4 . 0 Method and Structural Equation Modelling : A Case of the PLN Mobile Application," vol. 10, no. 1, pp. 39–48, 2024.
[24] C. F. Risdiyanto, D. I. Inan, R. N. Wurarah, and O. A. Fenetiruma, "Analisis Faktor-faktor Pendukung dan Penghambat Beralih Mengadopsi Mobile Banking di Papua Barat Memanfaatkan PLS-SEM dan Perspektif Status Quo Bias," *MALCOM Indones. J. Mach. Learn. Comput. Sci.*, vol. 4, no. 2, pp. 637–646, 2024, doi: 10.57152/malcom.v4i2.1289.
[25] G. Di Leo and F. Sardanelli, "Statistical significance: p value, 0.05 threshold, and applications to radiomics—reasons for a conservative approach," *Eur. Radiol. Exp.*, vol. 4, no. 1, 2020, doi: 10.1186/s41747-020-0145-y.